TRANSPORT PROBLEMS ASSOCIATED WITH POVERTY IN SOUTH AFRICA

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ABSTRACT

Since 1994 the eradication of poverty and the redressing of inequalities in South African society has been a central theme of the South African government. Despite its high profile, an international standard definition of poverty is not available. For this paper 'poverty' is seen as a relative concept, and the view is taken that we should not be considering one South African poverty problem, but rather developing strategies for the metropolitan, urban and the rural poor. Accordingly, the analysis in the paper subdivides South African the population into metropolitan, urban and rural households, and then further subdivides households into 'quintiles' according to income. Detailed analysis of a broad range of transport issues follows: overall amount of travel; travel purpose; public transport accessibility, affordability and attitudes of customers; vehicle ownership; accessibility to shopping, education and medical facilities.

The first major theme to emerge from the analysis is that of difference, between the rural and metro/urban poverty experiences. Secondly, there is a theme of better accessibility for the urban poor than for the metropolitan poor. The third theme is the overarching importance to the poor of the walking trip. The fourth theme is an overall pattern of decreasing accessibility with decreasing income. This was particularly true in metropolitan areas. Finally the important role of the minibus taxi to the poor was clear. As a vehicular mode it dominated in the poor sector.

In conclusion the paper argues for transport planning policies directed to the poor in the so-called 'Second Economy'. At a practical level transport planning for this economy would:

- Provide safe, secure, direct, well maintained walk and walk/cycle paths, and road-crossing facilities, especially to schools.
- Improve bus routing between informal areas and key services
- Partner with education authorities with respect to schools locations, not only in rural areas but also in metros
- Partner with police and national government with respect to the regulation and enforcement of improved safety standards for taxi vehicles and taxi driving
- Invest in the upgrading of taxi terminals

1. POVERTY IN A SOUTH AFRICAN CONTEXT

1.1 Introduction

Since 1994 the eradication of poverty and the redressing of inequalities in South African society has been a central theme of the South African government. In 2005, as part of his presidential address at the state opening of parliament President Mbeki stated:

> "we must achieve new and decisive advances towards [amongst others]…eradicating poverty and underdevelopment, within the context of a thriving and growing First Economy and the successful transformation of the Second Economy…These objectives constitute the central architecture of our policies and programmes, intended to ensure that South Africa truly belongs to all who live in it, black and white."

In this context of a policy drive towards poverty eradication, the nature of poverty needs to be discussed. Any international definition of it remains lacking, despite recent high profile events such as the 'Make Poverty History' campaign in the UK, and the work of the United Nations in establishing the Millennium Development Goals. The only agreement in academic circles regarding the nature of poverty, is that "poverty is a contested concept" (Noble et al, 2004). Noble argues that it is contested for good reason. Ultimately, he argues, the definition of poverty is political, and it reflects the values of society, by establishing a norm for what is acceptable, or not. One implication of this argument is that definitions of poverty are tied in a country's particular circumstances and culture. The 'poor' of Europe are not the same as the 'poor' of Africa, and hence poverty definitions need to be made locally, and in relation to the current norms of that society.

1.2 Towards a working definition of poverty

Parnell and Mosdell (2003) and Noble, Ratcliffe and Wright (2004) have worked in the field of poverty in South Africa, and have contrasted the various approaches to defining poverty. They suggest that there are several approaches, ranging from a predefined measure of income, to a consideration of basic needs, to ideas about human rights and access to a healthy environment. The approaches vary from the simplistic to the complex, with varying degrees of consideration of economic, environmental, social and human dimensions. The analysis of the 2003 first National Household Travel Survey (NHTS) (DoT, 2005) which follows takes the following position with regard to defining poverty:

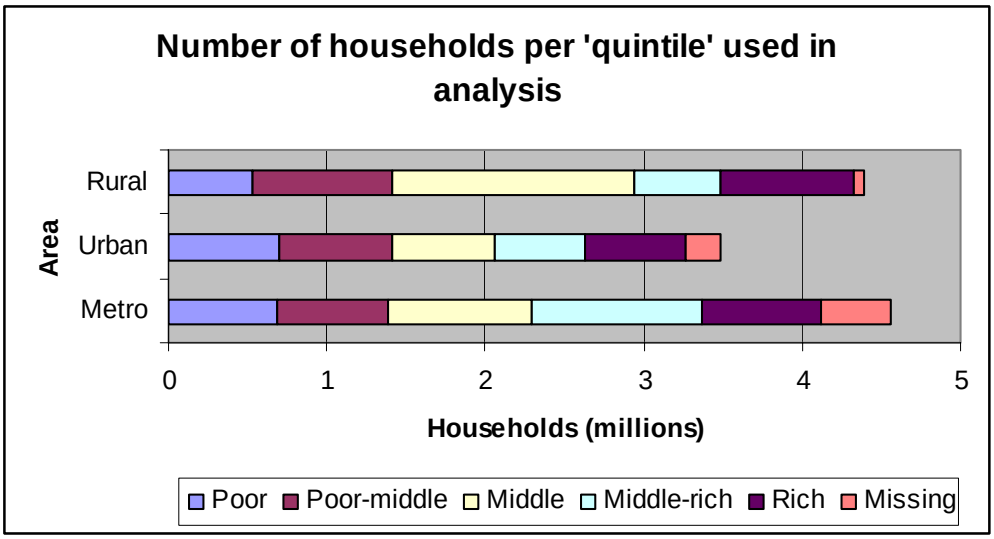
> Poverty is a relative concept, that is, the poor cannot be easily defined using an absolute income measure, as this will vary widely across rural and urban contexts. Urban living is more expensive than rural living for various reasons (see Parnell, 2003) and we should not be considering one South African poverty problem, but rather developing strategies for the urban and the rural poor.

Accordingly, the analysis which follows subdivides the South African population into metropolitan, urban and rural households, and then further subdivides households into approximately 20% sized subsets of data ('quintiles') according to income.

1.3 Analysis method

Full details of how the 'quintiles' were developed, their exact sizes and income ranges are discussed fully in the appendix. The main points to note are:

- The metropolitan, urban and rural populations of South Africa are not the same size. The metro areas comprise 4.56 million households; the urban areas comprise 3.48 million households and the rural areas comprise 4.39 million households;
- although described as 'quintiles' the data subsets are not exactly 20% of each area's households. Some so-called 'quintiles' are larger, or smaller than one fifth of the total survey population minus missing data. Full details why are given in the appendix to the paper.
- The figure below illustrates the 'quintile' size discrepancy by area. Although quite significant in places, it is the best possible solution given the analysis method selected for this paper, and still provides a well sized subset of poor households for detailed analysis.



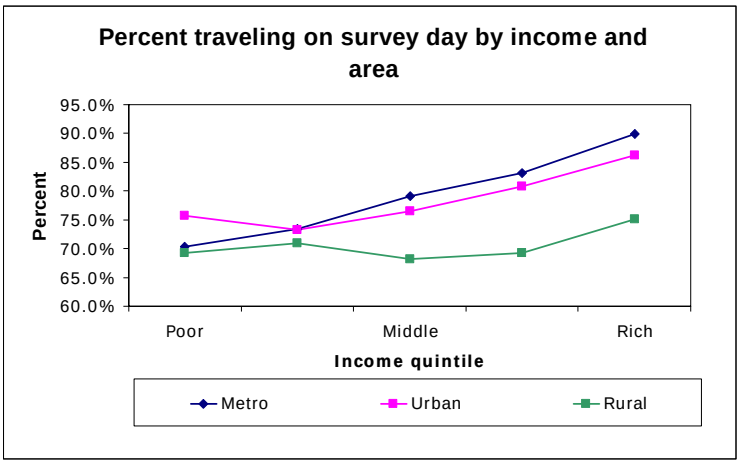
2. NHTS MAIN OUTCOMES WITH RESPECT TO POVERTY

2.1 Introduction

As transport planners we tend to talk in a fairly standard way about transport. Trips, trip purposes and mode splits are all familiar terms in the planners' vocabulary. In the next section of the paper these standard survey outcomes are described for South Africa, with particular emphasis on the poor. Following this section are a series of sections which consider accessibility to, and use of, public transport, and then the accessibility of selected trip purposes. In each section the emphasis is on the poorest 20%, the poor income 'quintile' of each metropolitan, urban or rural population.

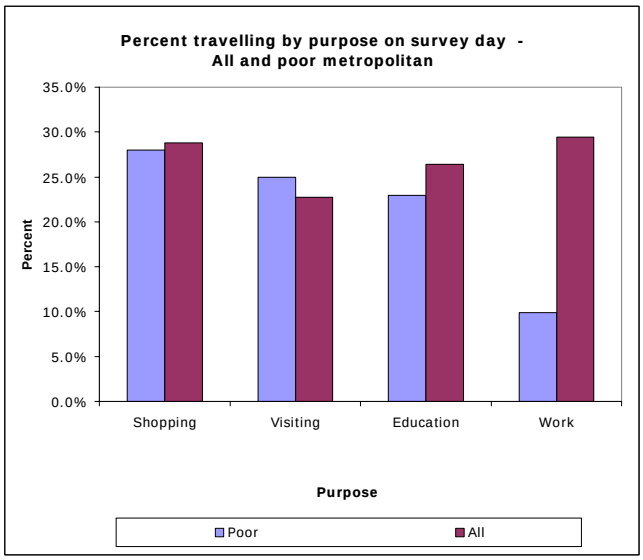
2.2 Amount of travel

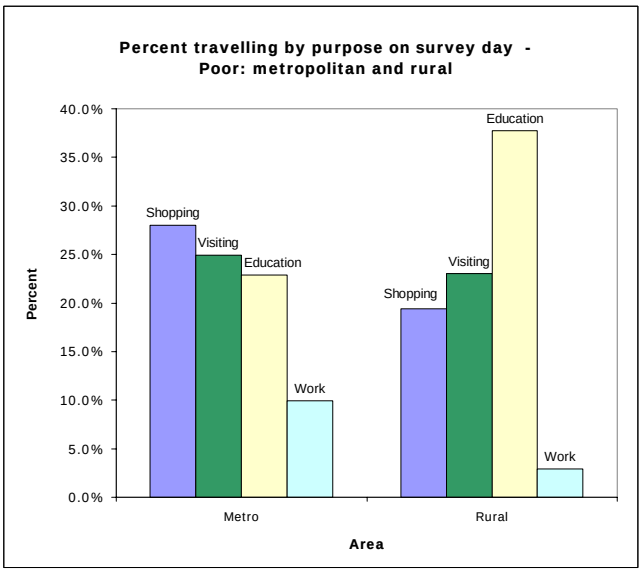
Although numbers of trips and trip lengths were not directly measured by the NHTS, an estimate of the overall amount of travel is possible. The figure opposite shows the percentage of people who traveled on the survey day, by all modes including walking, by income quintiles. Two interesting points emerge: firstly the fewer trips taken overall in the rural setting. This may be attributed to difficulty in access: longer walk times to some destinations, and lack of affordable or reasonable motorized transport for others in rural areas, as well as fewer opportunities for work and shopping.



Secondly, the general trend is for an increase in metro/urban trip-making activity as incomes increase, with the rich traveling 20% more than the poor in metropolitan areas, and 10% more in urban areas.

2.3 Purpose of travel



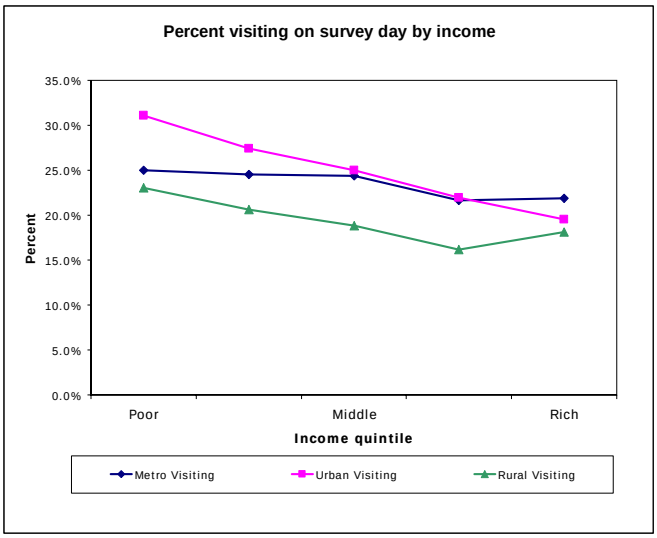


For the poor in metropolitan areas the most popular purposes were shopping (28%); visiting (25%); and education (23%). Urban areas show a similar pattern. For all income groups combined, however, the most popular purposes are distinctly different with work and shopping being the most popular purposes in metropolitan areas (29%), followed by education (26%) and visiting (23%). Again urban areas follow similarly.

Notably in the rural areas, although there are fewer trips overall, the most popular trip

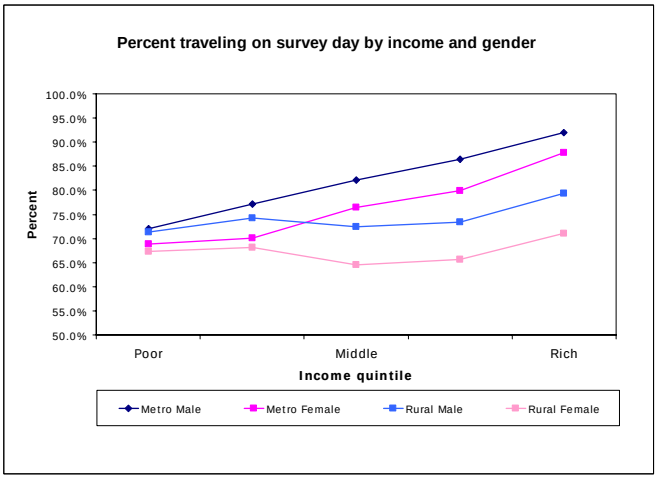
purpose is education, with 38% of the poor reporting education trips; followed by visiting (23%) and shopping (19%).

Visiting is the second most important purpose for the poor, in all areas, and accounted for approximately one quarter of all trips. According writers on poverty, social networks are an important asset of the poor, and one which protects them against hardship, through, for example: sharing of chores; informal care for sick, elderly and children; and informal lending of food and money. The graph opposite shows the decreasing importance of the visiting trip as incomes increase.



2.4 Travel by gender

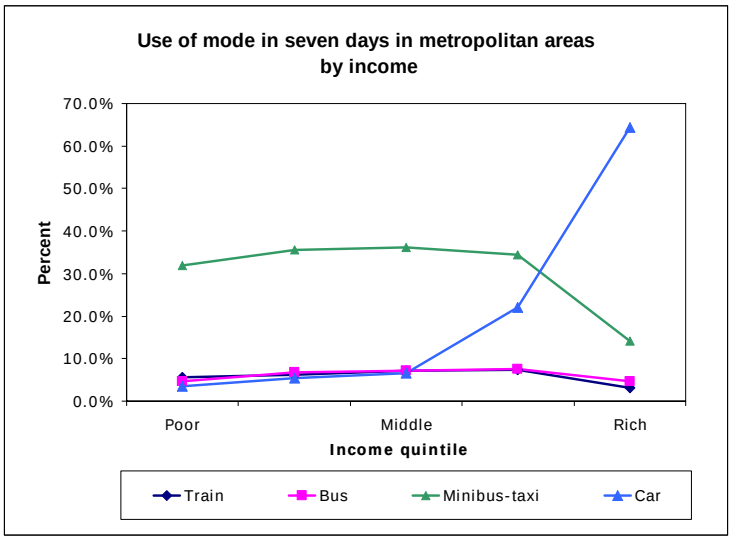
It is beyond the scope of this work to look at differences in travel by gender in any detail, although many have argued that this is an important issue in developing countries (Grieco and Turner, 2003; Mashiri and Mahapa, 2002). However, when considering a basic analysis of the amount of travel by gender an interesting trend emerges. According to the survey fewer women traveled on the survey day than men (6-8% fewer). For the poor in urban and rural areas, however, the degrees of travel are similar with women traveling 3-4% less.



Unpacking the reasons for these differences requires more analysis, and is discussed briefly in the 'further work' section of this paper.

3. OVERALL VEHICULAR MODE USE

3.1 Introduction



This section discusses vehicle use by the South African poor, and therefore excludes discussion of the walking trip, which is discussed later in the paper. An NHTS question which asked whether a vehicle had been used at all in the previous seven days, was analysed. Although this does not give an indication of trip distance of vehicle use, it gives an idea of overall modal popularity. Considering the metropolitan areas, it can be seen that the poor, in common with the lowest three income quintiles share a similar vehicle use, with minibus taxi use between 32-36% and bus, car and train use between 4-7% each. This is in contrast to the upper income group for whom car use is by far the most popular (64%) while minibus taxi is 14%. This graph provides some reason for the difference between the transport problem as generally perceived by the poor (which concerns issues of minibus safety and facilities), and the rich (who are concerned with car congestion).

The pattern is similar in urban areas, although train trips are not significant there, whilst in rural areas bus use is more of a factor, and there is a smaller degree of car use in the upper quintiles.

There are several vehicle types noted by the NHTS which were used only modestly in the survey periods. However, some interesting trends can be seen when these are analysed by income group. The use of metered taxis in metropolitan areas, although small in percentage terms (1.8% overall), is highest in the poorest group (2.5%). One may speculate that this is due to insufficient alternatives for emergency, difficult or late night trips. In urban areas the use of metered taxis, and sedan taxis, by the poor is also higher than average.

3.2 The minibus taxi

Given the important role that the minibus taxi plays in the life of the poor, this has been analysed further, using the attitudinal sections of the NHTS. Notable are the high levels of concern amongst the poor with issues which probably require regulatory control and strict enforcement before improvement will be seen: safety, roadworthiness and driver behaviour.

Problems and Issues of the poor with taxis

Top four metro/urban taxi problems for poor:
1. Safety from accidents (69%)
2. Facilities at taxi ranks (62%)
3. Roadworthiness of taxis (58%)
4. Behaviour of taxi drivers (57%)

(level of dissatisfaction in brackets)

Also requiring public sector investment are taxi facilities. The rural poor, not surprisingly given they have, in absolute terms less income than the metropolitan poor, also express dissatisfaction with taxi fares.

By contrast, both metro/urban and rural poor express high levels of satisfaction with travel time and distance between home and taxi.

Top four rural taxi problems for poor:
1. Facilities at taxi ranks (69%)
2. Taxi fares (67%)
3. Safety from accidents (63%)
Roadworthiness of taxis (61%)
(level of dissatisfaction in brackets)

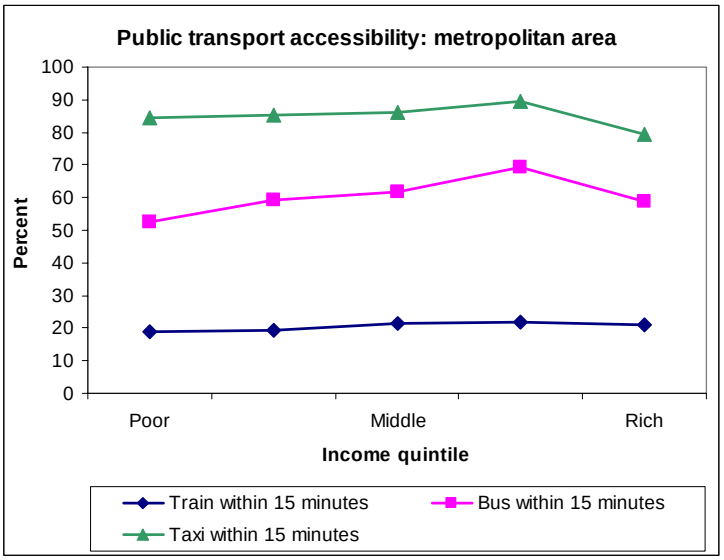
Top four acknowledgements for taxi service from the metro/urban poor:
1. Travel time (79%)
2. Distance between home and taxi (72%)
3. Frequency of taxis during the peak (68%)
4. Waiting time (64%)
(level of satisfaction in brackets)

Top four acknowledgements for taxi service from the rural poor:

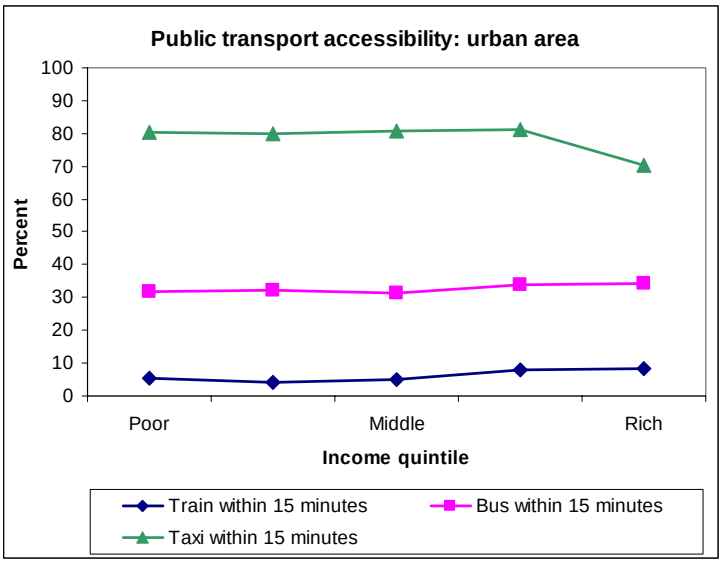
1. Travel time (69%)
2. Distance between home and taxi (57%)
3. Behaviour of taxi drivers (56%)
Security on walk to taxi (56%)
(level of satisfaction in brackets)

3.3 General public transport accessibility

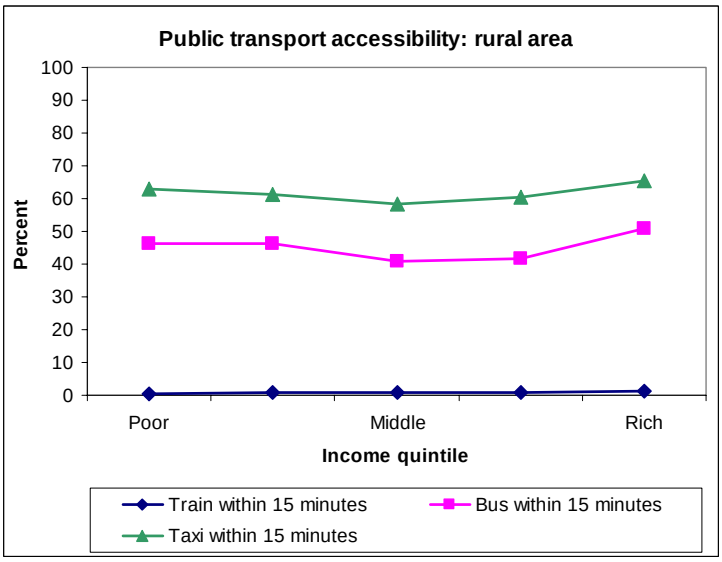
Considering issues of general accessibility to public transport, as measured by percentage of households within 15 minutes walk of a station or stop, it is clear that in metropolitan areas good public transport access is income dependent, except for the highest income brackets which are either poorly served by public transport or perceived to be.



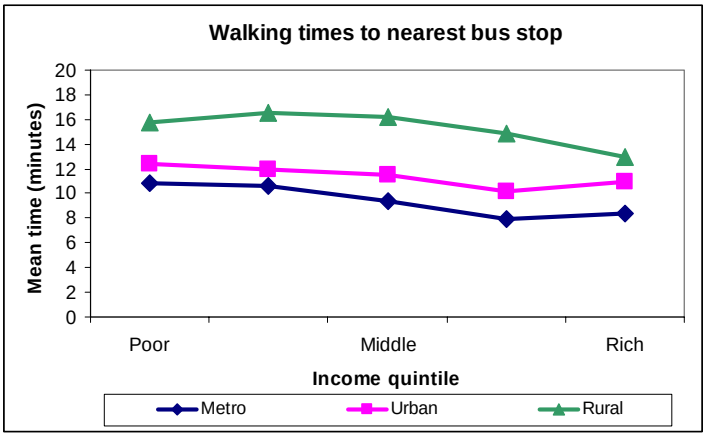
In urban areas access to all modes is reasonably similar across income groups, except in the highest income group where taxi access is markedly lower.



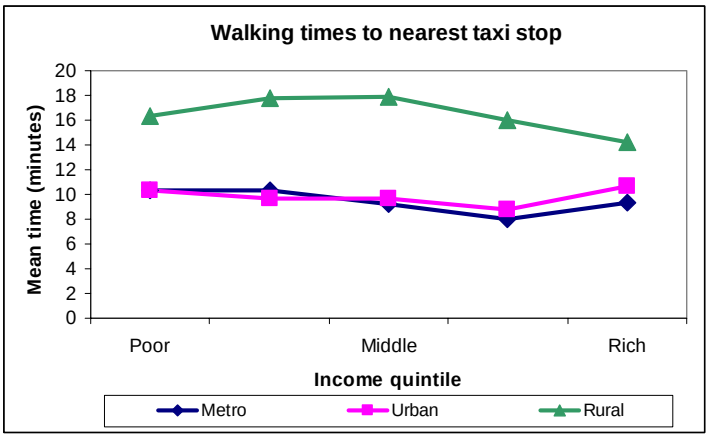
The reverse is true in rural areas, where the poorest are better served by bus and taxi than other income groups. Train accessibility is very small across all groups.



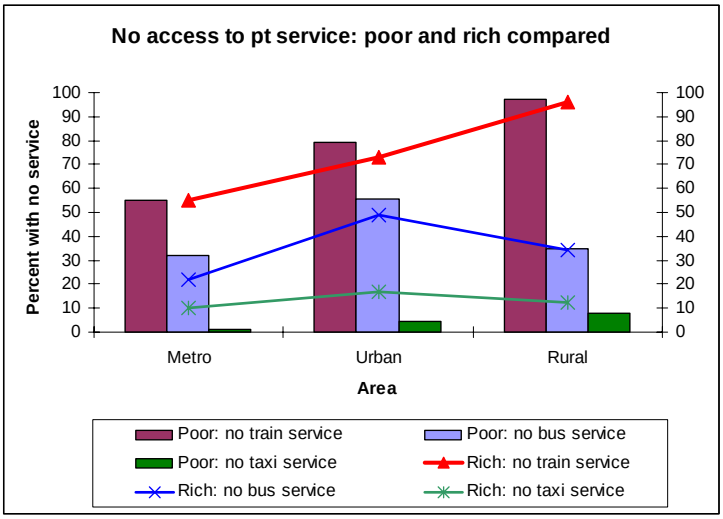
Actual walk times to public transport stops have been calculates and plotted according to income opposite. Three issues emerge. Firstly the relatively high access times in rural areas for both bus and taxi. Secondly the trend in metro/urban areas for a declining time to public transport stops with increasing income, except for the highest income groups. This is in contrast with rural areas which show a different pattern.



Thirdly, the metro areas have better access times to bus than urban areas, whilst in both areas access times to taxis are broadly similar.



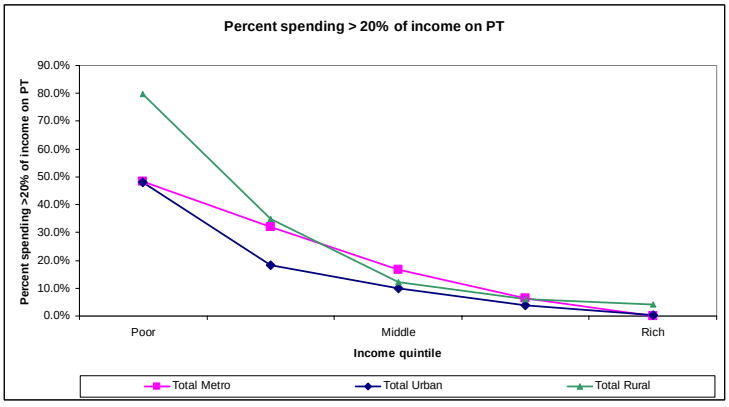
The central role played by taxis in servicing the needs of the poor is illustrated by plotting percentage of households with no access. (Shown as bars in figure opposite). In all areas taxi service penetration for the poor is relatively high, when compared with train and bus. Few of the metro/urban poor are unable to access any taxi service at all. The train service reaches the least numbers of people.



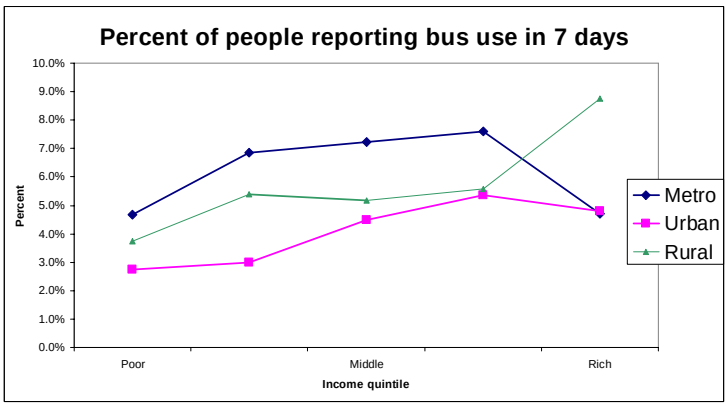
An interesting feature emerges when the percentage of rich with no access is also plotted. (Shown as lines in the figure opposite). For train and bus, the rich are marginally better served (despite their relatively low usage) whilst for taxi the picture is distinctly different. Far fewer poor have no access than rich, which illustrates the role of the taxi as the mode of choice for the poor, and the one which serves them best in terms of network accessibility.

3.4 Affordability

Considering issues of affordability, and the spend on public transport, it is not altogether surprising that the poor spend the most in percentage terms on public transport. This is clearly a considerable burden, with almost 50% of metro/urban households spending more than 20% of their declared income on public transport. Almost 80% of rural households spend more than 20% of their income on public transport.

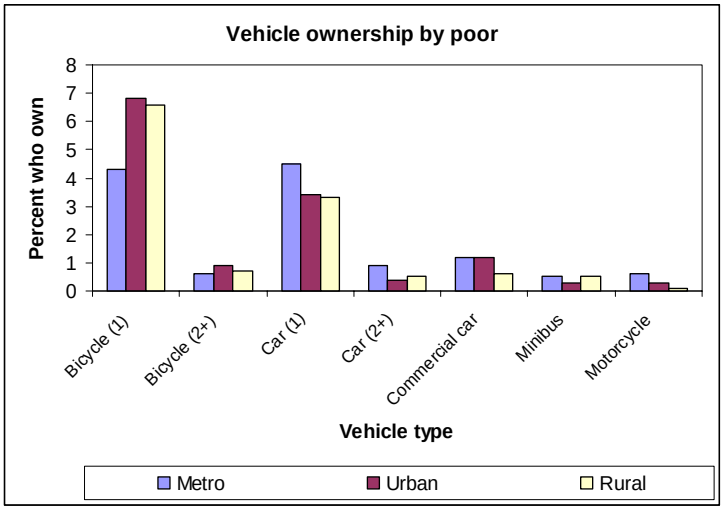


It could be argued that the bus subsidies should, to an extent, be assisting with this problem, but with only 3-5% of the poor reporting bus use during the survey period, (the smallest reported use out of all the income quintiles) this is evidently not a major help in terms of affordability of transport for the poor.

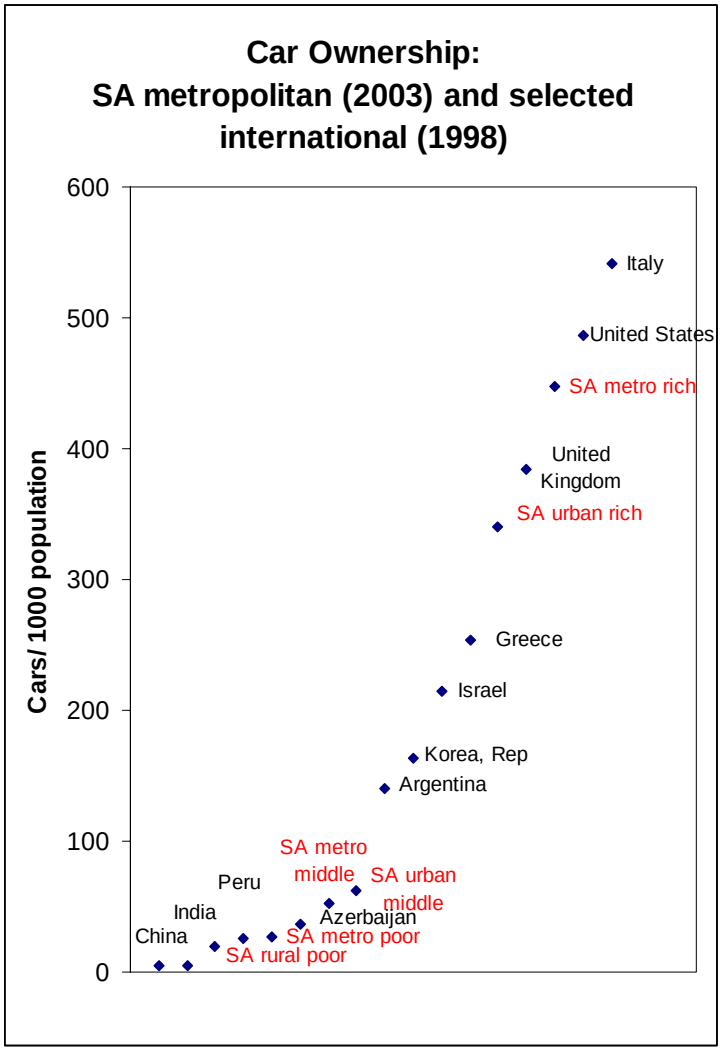


3.5 Vehicle ownership

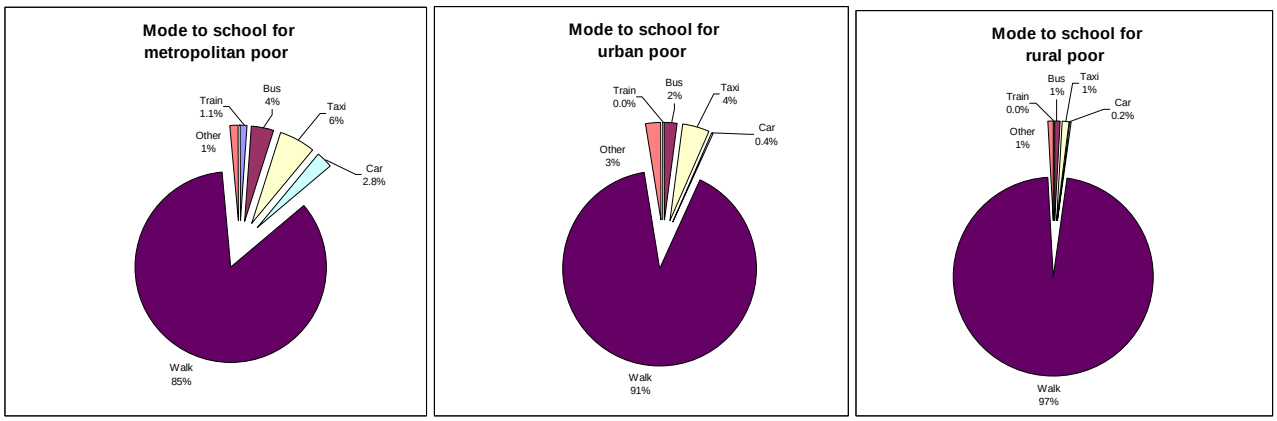
Vehicle ownership by the poor is, not surprisingly, very low. However, an examination of the data shows that **the bicycle is the most commonly held vehicle by the poor.** Five percent of metropolitan households; almost eight percent of urban households; and over seven percent of rural households own at least one bicycle.



Car ownership is a frequently quoted statistic in transport planning work and so the NHTS data on car ownership was divided into the income quintiles and compared with a selection of international countries with similar statistics (although the most recent comprehensive dataset was 1998). The comparison is very revealing, indicating that the metro/urban rich have car ownership broadly in line with US/UK values, whilst the poor are more in line with China, India and Peru.



4. ACCESSIBILITY TO EDUCATION



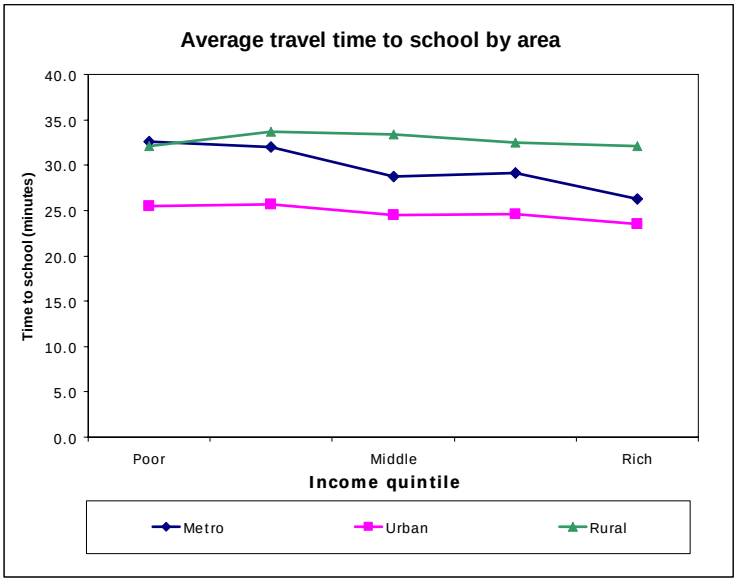
3.1 Mode split to education

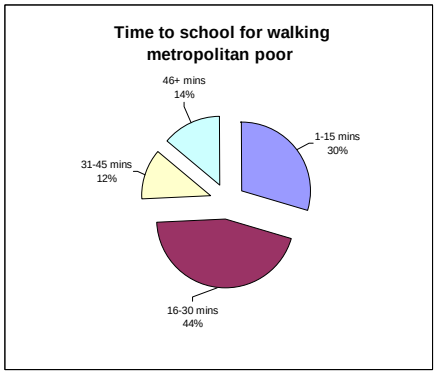
It is clear from the pie charts of mode split to school that the school trip for the poor is overwhelmingly a walking trip. This is especially so in rural areas where 97% of scholars walk and only 1% use a bus or taxi. It can be argued that this is only problematic when

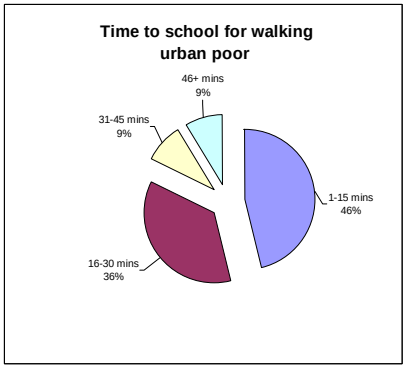
children face either unsafe or insecure journeys, or excessive walk times on their journey. Walk times to education are considered below.

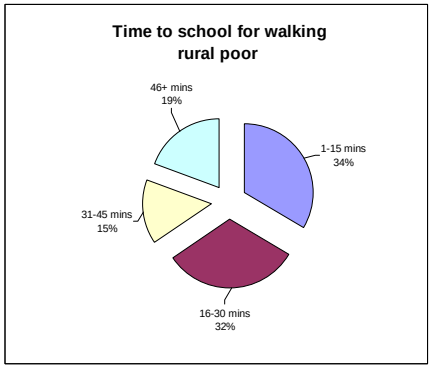
3.2 Time to education

Comparing travel time to income, shown opposite, there is a general trend of decreasing journey time to school with increasing income, in metropolitan areas. This may be ascribed to the increase in vehicular trips as incomes increase. The poorest rural and urban children, however, have a shorter journey time than the next income group higher. More analysis would be required to identify the causes behind these variations.



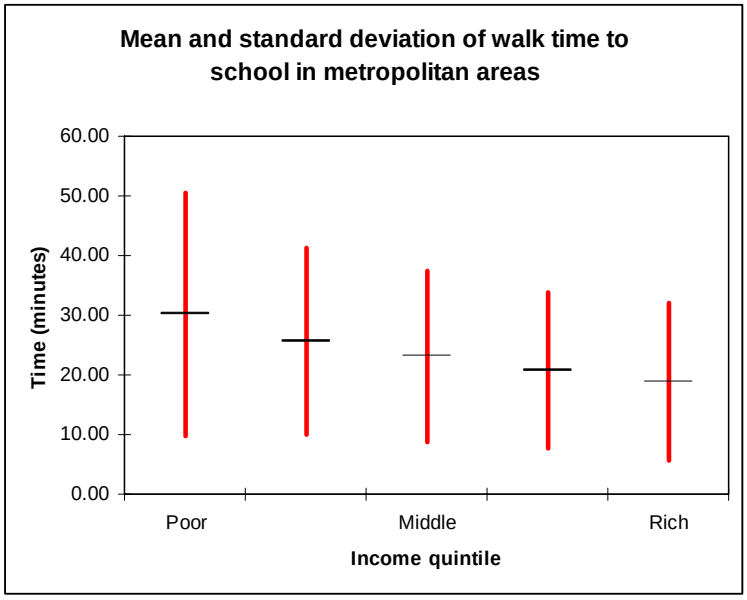






The issue of scholar fatigue due to long travel times to school may be examined by an analysis of longest travel times to education. Depending on area 9-19% of poor scholars face walk times of more than 46 minutes to and from school. Hence, in a typical rural classroom of 40 poor children, 11 children will have walked for more than 31 minutes, and 2 of these for more than 61 minutes**.** However, these mean values mask extremes of walk times, particularly in urban areas.

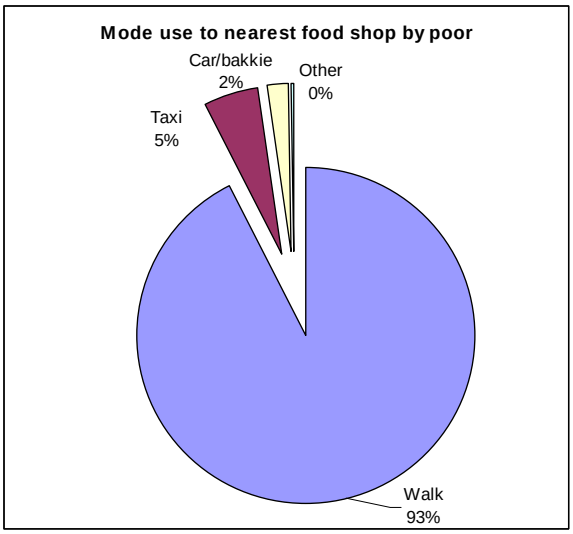
By plotting the standard deviation (which is essentially a measure of variation) with the mean of walk times, it can be seen that the metropolitan poor walk-times are more widely varied for the poor than for other income groups. Further analysis is required to pinpoint these extremes and address the inherent transport and land use problems.



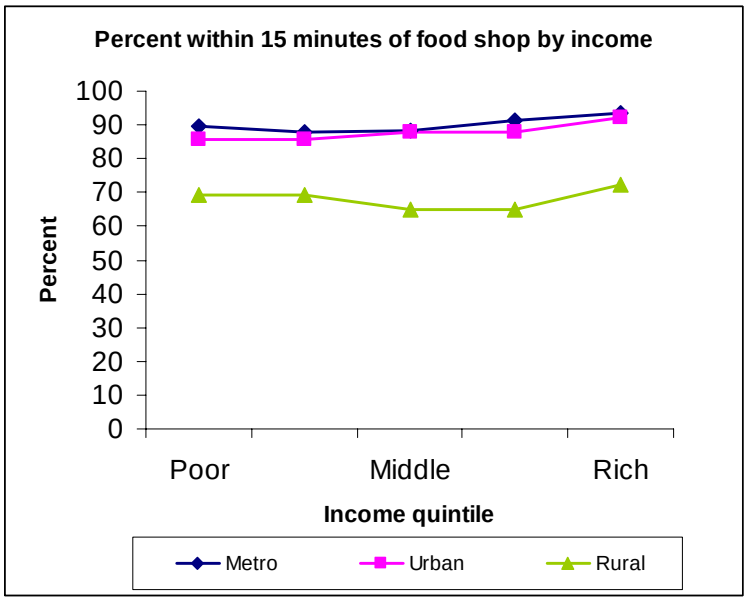
Transport planners wishing to address problems of the education trip of the poor are therefore faced with two major issues : ensuring adequate pedestrian infrastructure (well drained, safe, secure and avoiding major obstacles such as freeways or rivers); and liaising with education authorities in order to better serve students who are compromised in their learning by long journeys to school.

5. ACCESSIBILITY TO LOCAL FOOD SHOPS

Given the importance of the shopping trip to the poor, some further analysis is worthwhile. Across all three areas the mode use pattern is very similar, with approximately 92% of households walking to the nearest shop, with the remainder mainly using taxis.

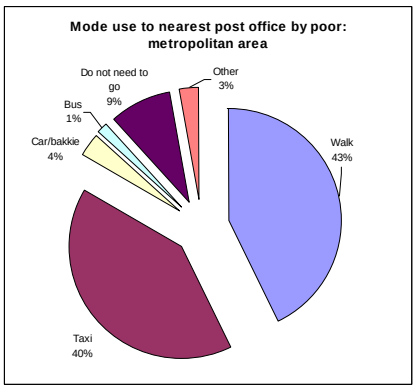


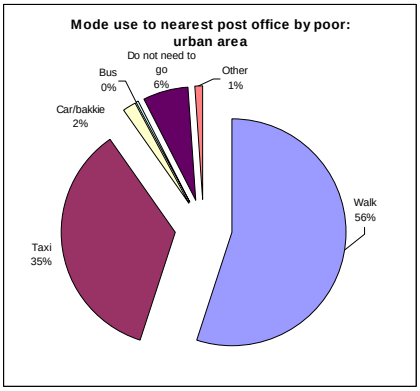
Access to shops in the metropolitan and urban areas is good according to the survey, with 85-90% having a food shop within a 15 minute journey time.

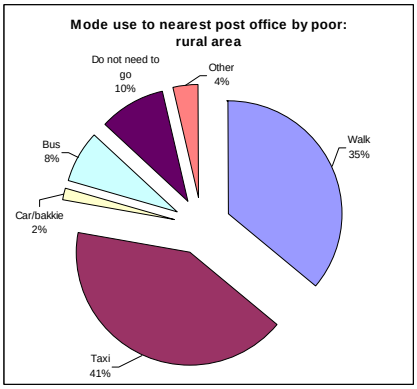


An interesting feature emerges when comparing less than 15 minute access times to food shopping by income and area, with the metropolitan poor having slightly better access to the nearest shop than the next two higher income groups, despite the higher income groups making more use of taxi and car. One possible reason could be linked to how 'food shop' is defined by the different groups; another reason could be the difference between informal areas (where food shops such as spazzas will open according to market demand) and more formal areas which are regulated by zoning systems. Analysis of the data according to household type would shed more light on this issue.

6. ACCESSIBILITY TO HIGHER ORDER SHOPPING

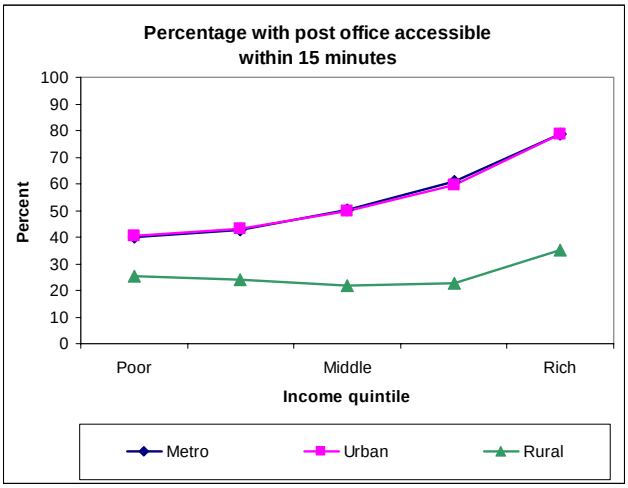


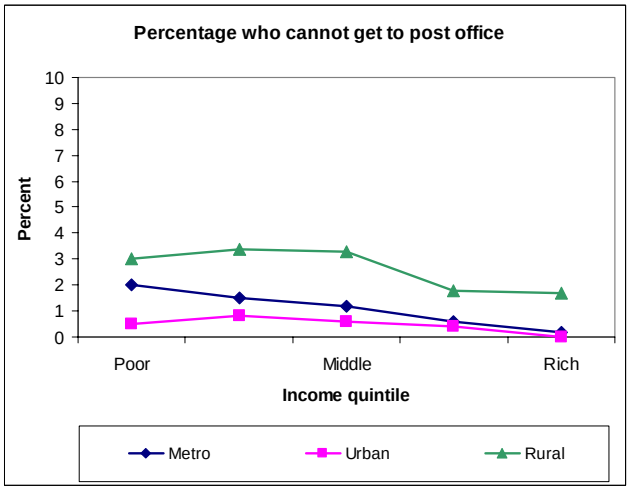




The NHTS survey does not distinguish between types of shopping, and so for the purposes of this paper access to Post Offices has been used as a proxy for a higher order shopping experience, since in many cases a Post Office will be located alongside a selection of other services and shops.

When considering access to Post Offices, it can be seen that the walk mode is still the majority mode for the poor in metro/urban areas, although in rural areas, perhaps due to longer travel distances, the taxi is most popular. In metro/urban areas 40% of the poor can reach a Post Office within 15 minutes travel time. Accessibility is seen to improve as incomes increase.

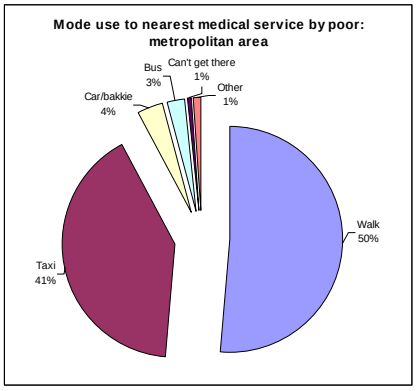


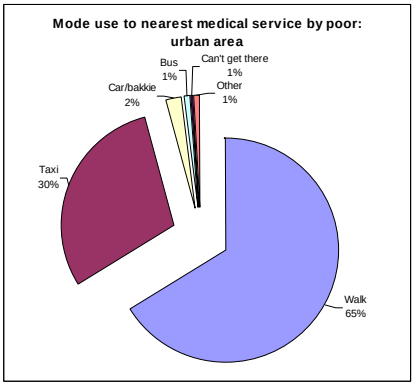


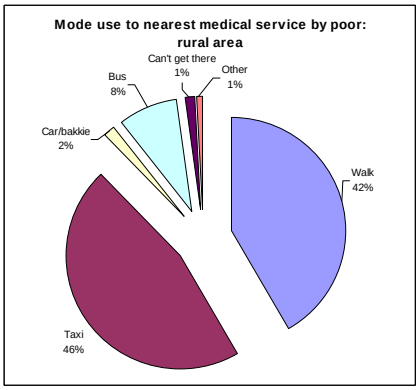
An interesting feature is the number of respondents who say they 'can't get there'. Only 0.5% of the urban poor say they cannot get to a Post Office whereas equivalent values for rural areas were 3% and for metropolitan areas were 2%. For rural areas, one would expect long distances to form a barrier to travel. In urban areas this would not be such a consideration. In metropolitan areas distances may also be a barrier to accessibility, but other barriers could also be involved: rail reserves, rivers, security estates, industrial areas, and freeways.

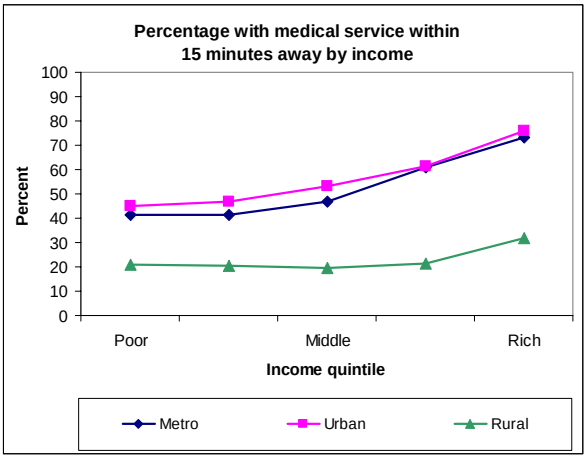
7. ACCESSIBILITY TO MEDICAL FACILITIES

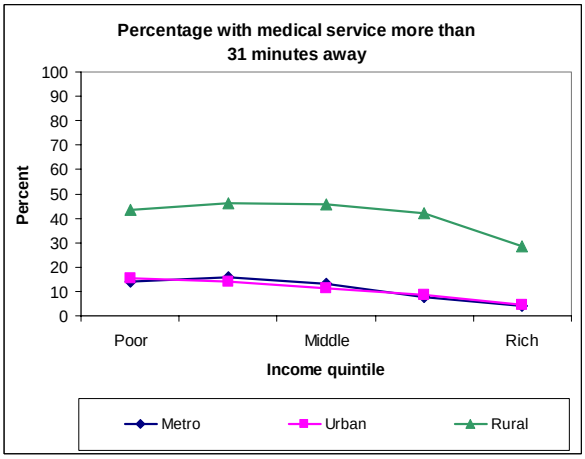
The access pattern to medical facilities follows the familiar pattern for the poor, with walking being the majority mode in metro/urban areas, and with accessibility increasing with income. Almost all poor respondents reported being able to access medical help but for 14-16% of metro/urban dwellers this takes more than 31 minutes and in rural areas 33% need more than 31 minutes to reach medical help.





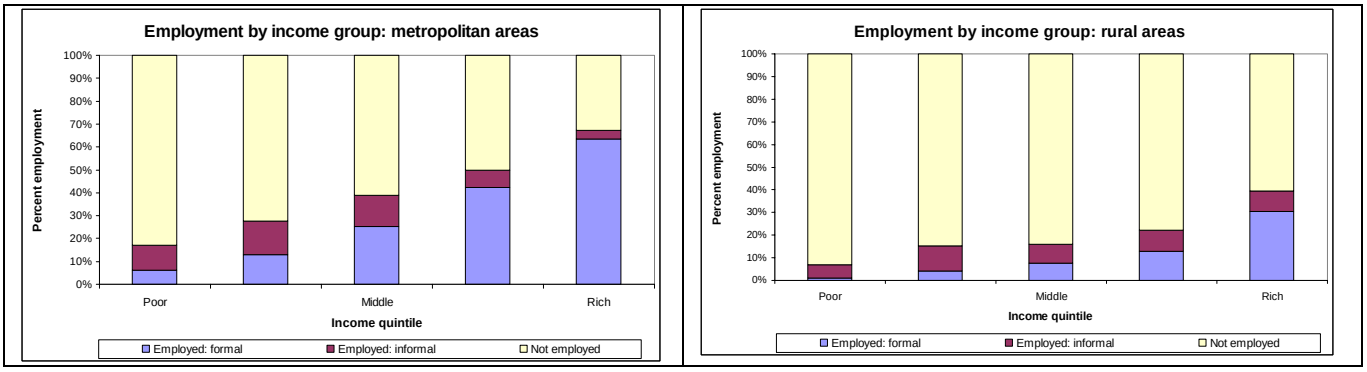






8. WHAT ABOUT THE JOURNEY TO WORK?

For many transport planning exercises the journey to work in the morning peak is a major focus, but the NHTS data shows that such a focus is mis-directed in a pro-poor planning environment. An examination of employment figures by income shows why. In the poor sector of the population, unemployment is a major social issue with unemployment amongst the poorest quintile at approximately 80% in the metro/urban areas. In the rural areas this rises to 93%. It is only amongst the richest quintiles of metro/urban areas that unemployment is less than 40%. Whilst congestion in the morning peak is an issue for those concerned with economic efficiency, it is evidently not a major priority issue for the poor.



10. DISCUSSION

10.1 Major themes

This paper has highlighted a wide range of transport issues of the poor, using the 2003 National Household Transport Survey. In this final section some themes which have emerged from the analysis work are highlighted, followed by a discussion of the need for further work both on this survey data and into the future.

The first major theme is that of difference between the rural and metro/urban poverty experiences. Whilst this is not entirely unexpected, the analysis highlights the need to treat the poorest metro/urban dwellers differently from the poorest rural dwellers.

Secondly, there is a theme of overall better accessibility for the urban poor than for the metropolitan poor. This is easy to explain, given the smaller urban footprint of the towns, and the importance of the walking trip to the poorest, but it raises interesting questions about future patterns of rural-urban migration. Given that there is better employment at present in urban centres, and there is certainly better accessibility, it must surely be possible that smaller urban centres may see higher inward migration than metropolitan centres in future.

The third theme has already been mentioned: the overarching importance to the poor of the walking trip. This neglected mode of transport has been highly under-represented in planning efforts, given its importance to those with least and walking infrastructure is not even mentioned in many planning documents despite the daily discomfort faced by those with no other options but to walk.

The fourth theme is an overall pattern of decreasing accessibility with decreasing income. This was particularly true in metropolitan areas, and calls for an integrated planning approach to public facilities especially, if it is to be redressed.

Finally the important role of the minibus taxi to the poor was clear throughout the analysis. As a vehicular mode it dominated in the poor sector. In fact, it is only in the richest quintiles that it does not dominate as the majority vehicular mode.

10.2 Further work

By necessity this paper, and the accompanying presentation, has given only a brief overview of the results of the analysis. As for further work, it would be useful to contrast the approach used, of discussing relative poverty through the use of income quintiles, by a more absolute measure, such as an income cut-off point, or by a measure such as informally housed households, in order to more directly assist in informal settlement planning. For local applications of pro-poor transport planning a fuller examination of origins and destinations, and data disaggregated by zones would be useful.

This analysis has only touched upon the issue of gender and transport. Grieco and Turner have also worked for some years in the field of gender, poverty and transport and have made some findings which suggest that to ignore the role of gender in poverty is a mistake (1997). In particular the women in households are more likely to be involved in trip chaining. A typical trip chain for a woman would be to accompany children to school, visit shop/s and perhaps an institution such as a bank, then visit a relative, then head for home. Similarly, a woman is more likely to combine a trip to work with a visiting or shopping trip. Given the complexity of women's travel behaviour, and that trip chaining has not been addressed directly by the NHTS, it is possible that the NHTS may be under-reporting female travel, and mis-representing their behaviour.

Another behaviour which is predominantly female is travel within constraints. As women are most often the care-givers in a family unit their travel is often dependent on finding a replacement care-giver, or on taking the child or relative on their journey. The implications of this are two-fold, firstly any delays to a woman's journey have knock-on consequences in terms of lost time for a series of people; secondly a woman is more frequently burdened by carrying young children. Thus long journey times, and journey distances, are a particular burden to the female.

Finally, and particularly in the rural context, women and girls are most frequently head-loading goods from shops, field and market. This feature of life is generally not subject to survey, and the NHTS is no exception, although an examination of the shopping trip would imply head-loading or carriage.

In conclusion, then, a gender-based analysis by income and purpose could identify some interesting issues, and better inform planning efforts. Future NHTSs could consider this as a further avenue of data collection although, admittedly, this would add complexity to an already very comprehensive data collection exercise.

10.3 Conclusions: towards a more pro-poor transport planning effort

The mainstream poverty literature largely ignores the transport-poverty link, and transport issues do not generally feature in high level policy statements. Nonetheless, there are a group of academics who would argue that transport can contribute positively to poverty reduction, and that it deserves more attention than has been traditionally the case. Gannon and Liu of the World Bank recognized this in their discussion paper "Poverty and Transport" (1997). More recently the World Bank have compiled "Cities on the move: A World Bank urban transport strategy review (2002)" which links "urban and transport sector strategies with a strong poverty focus". The work of Vasconcellos has also been important, particularly at raising issues of inequity in the transport systems of developing countries (2001).

The South African government has set the prerogative for a poverty reduction, and the NHTS has enabled an analysis of transport problems associated with poverty. Given this work some tentative conclusions can be drawn about what a pro-poor transport planning approach would include.

9. TOWARDS PRO-POOR TRANSPORT PLANNING

There is the need for a two-pronged approach to transport planning in South Africa: firstly 'economic' transport planning, which addresses the needs of what Thabo Mbeki refers to as the 'First' economy. This would concern itself with increasing the efficiency of the working population, either through addressing work trip congestion, or business users of the transport network, or with issues of freight. The beneficiaries of such planning would be the higher income, employed population who have car ownership rates closer to a 'developed' UK/ US rate, and, economists would argue, the economy as a whole would ultimately benefit.

Then there is transport planning for the so-called 'Second economy'. This sector are underemployed, or employed informally in the main. The policies in this sector need to be:

- enabling of upliftment: with a focus on access to education, job-seeking and job-creation;
- ensuring adequate basic needs support with reasonable access to medical help, social welfare, and food; and also on
- social support networks, which the NHTS has demonstrated to be a major trip purpose amongst the poor. These informal networks are necessary to offset the economic hardships faced by those with little income.

The social and economic transport planning of a developing country have different intentions and so will inevitably be in conflict, but for too long the economic style planning imported from the US/UK has dominated and a redress of emphasis is required if South Africa is to deliver on its pro-poor policy agenda.

At a practical level pro-poor transport planning would:

- Provide safe, secure, direct, well maintained walk and walk/cycle paths, and road-crossing facilities, especially to schools.
- Improve bus routing between informal areas and key services
- Partner with education authorities with respect to schools locations, not only in rural areas but also in metros
- Partner with police and national government with respect to the regulation and enforcement of improved safety standards for taxi vehicles and taxi driving
- Invest in the upgrading of taxi terminal facilities

Data collection and analysis efforts such as those initiated by the NHTS can only contribute positively to the required new directions in South African transport planning.

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For the UN Millennium Development Goals: http://www.un.org/millenniumgoals/

All websites accessed 8 March 2006.

APPENDIX: Dataset selection

This appendix describes in more detail the selection of the datasets for the analyses described above. The NHTS gathered income data in thirteen bands, shown in Table 1. Data was also collected of respondents who replied 'don't know'; refused, or did not specify for the income question. The absolute numbers of respondents in each income category was collected, and a cumulative percentage number of respondents calculated. This was compared with an ideal cumulative percentage for each income band, which varied by area due to differences in the size of the non-responses. The actual cumulative percentage which most closely correlated with the idealized cumulative percentage was chosen as the cut off point for each income group. (One adjustment was made to the metropolitan cut off point due to a very small data subset, as a result of this method.) The resulting subset sizes, in percentage terms are shown in the table below, according to income band. It can be seen that while the 'poor' quintile for metropolitan and rural areas correlated with a R0-R200 band of income, the equivalent for an urban area was R0-R500. Overall, however, the rural income quintiles typically had lower absolute incomes than for metropolitan and urban areas.

Income range	Metropolitan	Urban	Rural
R 0			
R1-R200	15.0		12.2
R201-R500		20.0	19.9
R501-R1000	15.4	20.5	34.9
R1001-R1500			12.3
R1501-R2000	19.8	18.5	
R2001-R3000			
R3001-R4500		16.5	
R4501-R6000	23.6		
R6001-R8000			
R8001-R10000			
R10001-R16000			
R16001-R30000			
R30000 or more	16.6	18.3	19.3
Non-respondents	9.6	6.1	1.4
TOTAL	100.0	100.0	100.0

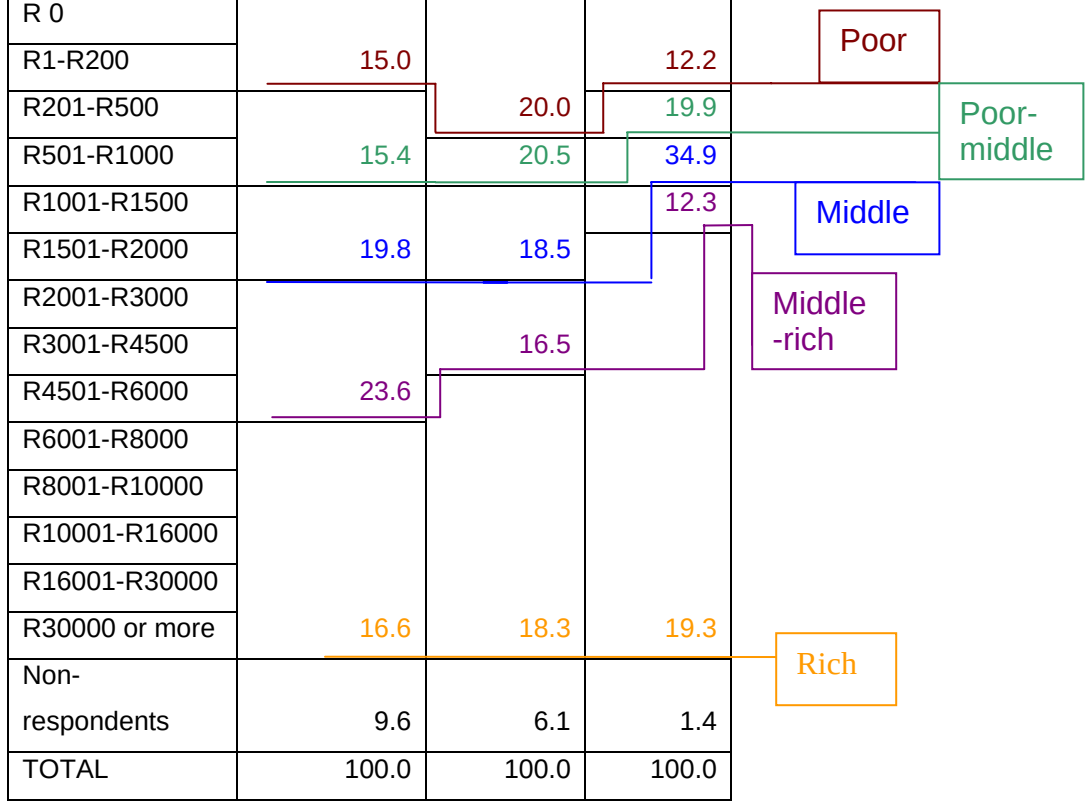

Table 1: Size in percentage of data subsets by area and income band