

UNIVERSITY OF NAIROBI
DEPARTMENT OF SOCIOLOGY

M.A. PROJECT PAPER: CSO 698

**PATTERNS OF ACCESS TO TRANSPORTATION
SYSTEMS WITH PARTICULAR REFERENCE TO THE
PHYSICALLY DISABLED POOR IN NAIROBI**

By
ROBERTS S. MUTHINI
C/50/7822/2002`

SUPERVISOR
PROF. MAURI YAMBO

Research project in partial fulfillment of the Master's of Arts Degree in Sociology
(Rural Sociology and Community Development)

JOMO KENYATTA MEMORIAL



October, 2007

UNIVERSITY OF NAIROBI
EAST AFRICANA COLLECTION

UNIVERSITY SUPERVISOR

This project has been carried out under my supervision and submission is hereby made to the University for Examination with my approval as the University supervisor

Prof. Mauri Yambo

Signature

M. Yambo

Date

31/10/2007

DECLARATION

This project is my original work and has not been presented for any degree in any other university.

Roberts S. Muthini

Signature Roberts S. Muthini

Date 30th October 2007

DEDICATION

For Kiarie and Winnie and all those people who live with physical disabilities

ACKNOWLEDGEMENTS

I am grateful to all the respondents who shared their experiences during the course of this research. Thanks to Prof. Mauri Yambo for being patient with me as I wrote this paper from Kathmandu, Nepal. I am also greatly indebted to my friends Kiarie, Gladys, Louisa and Ndiege who in turns printed my work and forwarded to Prof. Yambo for marking. Special thanks to Kiarie for sending marked drafts via various courier services to me while in Kathmandu. Lastly, I thank God for the wisdom and perseverance to write this paper.

ABSTRACT

Transport plays an important and pervasive role in allowing people to effectively participate in the economic process. It improves people's mobility, which in turn confers the opportunity of high accessibility. Mobility is fundamental in breaking isolation and thus strengthens an individual's capital base. In order to contribute to economic and social development, it has to be reliable, efficient, affordable, and demand responsive.

This study was designed to understand the patterns of access to transport systems with particular reference to the disabled poor in Nairobi. A study sample of 76 was conveniently chosen by dividing Nairobi into three zones based on distance and fares paid from city center. Of the 76 study sample, 36 of them were a control group, intended to shed light on whether the disabled face the same problems as the able bodied. Out of the three zones identified, two study areas were chosen using the simple random method. As mentioned above, fifty percent of the respondents were disabled while the other half were able bodied.

The study is explained by Sen's entitlement theory which asserts that famines or starvation is not as a result of lack of food but rather, the lack of enough entitlement bundles which the poor can make their own for the exchange of other goods. Similarly, this study asserts that the poor do not face transport problems due to lack of adequate public transport systems but rather due to lack of enough means to exchange for transportation.

The study revealed that disabled people are more unlikely than the able bodied to receive any education and are more vulnerable to poverty. They also have least education and limited economic opportunities. They face more challenges than the able bodied in accessing transport systems including many other public services.

The study also revealed that majority of the poor people in Nairobi, Kenya do not have private means of transport and walk or rely on public transport means. The public transportation modes used include the matatu and bus. Perceptions of safety/comfort are largely as a result of respondents' experiences because some of the routes studied had either the bus or the matatu while others had a mixture of the two.

Findings show that transportation affects the poor but is not easy to measure the extent. This is because poverty, being multi-dimensional, has a myriad of causing and contributing factors.

In order to cater for the transportation needs of the disabled, it is necessary to adopt a holistic approach; in other words, a mix of strategies is important in this respect. For example, since walking emerged as a major method of travel, it would be necessary to create footpaths that are safe for use both day and night by the provision of security and lighting. This form of strategy would reduce on the reliance on motorized transportation, and would call for services, inter alia, schools, health and government offices to be developed within the areas that the poor reside.

Similarly, since inadequate transportation systems designs were found to affect the disabled in terms of physical accessibility, it would be necessary to do further research and come up with a modality of guiding such systems designs so that they are user friendly to the disabled users.

Economic condition is a determinant on whether the disabled can afford to pay for public transport facilities. As such, based on Sen's entitlement theory, increasing poor people's entitlements increases their choices, among them, transportation.

CONTENTS

List of Tables

Page
No.

1. Introduction	1
1.1 Background	1
1.2 Problem statement	3
1.3 Objective of the study	7
1.4 Scope and limitations of the study	7
2. Literature review	9
2.1 Trends in transport development and sociology	8
2.2 Transportation studies in the world	10
2.3 Transportation studies specific to Kenya	14
2.4 Theoretical framework	19
2.4.1 Sen's Entitlement Theory	19
2.4.2 Access to services approach	21
2.5 Research questions	23
3. Research methods	24
3.1 Site selection	24
3.2 Sampling design	24
3.2.1 Preliminary survey	24
3.2.2 Sampling zones	25
3.2.3 Selecting study units	27
3.3 Data collection techniques	28
3.3.1 Interview schedule	28
3.4 Data analysis	28
3.4.1 Descriptive Techniques	28
4. Salient background characteristics of respondents	29
4.1 Respondent's socio-economic background	29
4.1.1 Educational Background	29
4.1.2 Training background of both able-bodied poor & disabled poor	31

4.1.3 Types of income generation activities	32
4.1.4 Monthly income	33
4.2 Information on disabilities	34
4.2.1 Forms of disabilities	34
4.2.2 Types of walking aids used	35
5. Patterns of access to transport systems among the poor in Nairobi	38
5.1 Discussion on patterns of access & preferences for transport systems	38
5.1.1 Travel patterns and costs during week days & week ends	38
5.1.2 Details on ownership of private means of transport	39
5.1.3 Transportation preferences of the disabled poor	39
5.1.4 Different travel modes used & reasons behind the choices	41
5.1.5 Information on safety perceptions	43
5.2 Effects of transport systems	43
5.2.1 Distance from residential areas to places of work	43
5.2.2 Relationship between transportation and employment	45
5.2.2.1 Effects of transportation on respondents	45
5.3 Model transport systems for the poor and disabled	47
6. Summary, conclusions and recommendations	50
6.1 Summary of findings	50
6.2 Conclusions related to study objectives/ research questions	52
6.3 Recommendations	56
6.3.1 Improved access to services within places the poor live	56
6.3.2 Improved public transport system designs	56
6.3.3 Increased entitlements among the poor and the disabled	56
6.3.4 The traffic Act, Cap 403, Laws of Kenya	56
6.3.5 Further research	57
References	58
Appendix i	61
Appendix ii	62

LIST OF TABLES

	Page no.
Table 1: Study zones and areas established during a preliminary survey.....	26
Table 2: Sampling method	27
Table 3: Educational background among the able-bodied poor	30
Table 4: Education information among the disabled poor	30
Table 5: Training background for the able-bodied and disabled poor	32
Table 6: Income generation activities among the respondents	33
Table 7: Monthly Income among respondents	34
Table No. 8. Disability types	35
Table 9: Walking aids used by different disabled respondents	36
Table 10: Transportation costs details	39
Table 11: Preferred mode of transportation based on disability type	40
Table 12: Preferred mode of transportation among the disabled poor respondents	40
Table 13: Travel mode used & reasons behind choice of able-bodied poor	41
Table 14: Distribution of mode used & reasons behind choice of disabled poor	42
Table 15: Distribution of distance from residence to place of work for both able-bodied and the disabled	44
Table 16: Desegregation of distance from residence to place of work by disability type	45
Table 17: Disaggregation of the proportion of respondents affected by transportation and how they are affected	47

CHAPTER 1: INTRODUCTION

1.1 BACKGROUND

According to the government of Kenya [2003], 17 million or 56% Kenyans are poor. Majority of them reside in the rural areas while in urban areas, they reside in slum and peri-urban settlements. Poverty is multi-dimensional. The poor in Kenya are defined as those living on less than Kshs. 2,600.00 and 1,200 per month in urban and rural areas respectively [government of Kenya, 2001]. According to UNDP, the poor are those who live on less than \$1 a day. On qualitative terms, the poor are those who cannot afford to meet their basic needs such as food, education, shelter and health. This study analyses the relationships between patterns of access to transportation systems with a particular reference to the poor as defined above.

The fact that African communities were involved in long distance trade before the invasion of Africa by the colonial powers points to the importance of transport to any society regardless of its level of technology. The Trans-Saharan trade, for example, took place without the use of the automobile or the railway yet by the use of porters and pack animals such as the camel, traders across Africa were able to transport their merchandise to market centres. This argument is supported by Falola and Olanrewaju (1986:1) who assert that "in pre-colonial Nigeria, until the late nineteenth century, bush paths and rivers were the main forms of transport, used by porters, pack animals, and canoes. Contact with Europeans provided the impetus for transport development as we know it: Colonial administrators needed to be able to move about quickly, and the hinterlands lay waiting to be opened up to trade (sic)". This argument can be said to be true of many African countries, Kenya included.

Urbanization and increased population expansion in Nairobi has put pressure on the existing infrastructure. In other words, growth in infrastructure has not

matched that of the population. Just as in housing, communications, sewerage and water services, to mention but a few, public transportation is equally a major problem in urban areas of Kenya. Nairobi, being one of these urban areas, is faced with traffic congestion and inefficient conveyance systems. These systems are inefficient in terms of both quantity and quality. Inefficiency is seen as commuters queue for considerable time during peak hours as they wait for transport systems. Increased fares are a major challenge to most Nairobi commuters because these constitute a major fraction of their monthly budgets. While everyone bears the brunt of high fares, the poor, due to their nature, are affected more because majority of them cannot afford the fares charged. Equally disturbing is the fact that there is no transport system designed to cater for the problems for those with physical disabilities. The disabled commuters face the same transport problems as the rest of the population in Nairobi, and this makes their mobility even more difficult.

It is important to note that 75% of Nairobi residents do not own private cars, 50% use public transportation, while 24% walk (See Kapila, Manundu and Lamba, 1982; Osundwa, 1987; Gichaga, 1971; and Nairobi City Council, 1979). Most of the trips made by the commuters in Nairobi are for work, taking children to school and recreational activities.

In order to address problems emanating from the inadequacy of public transport, various modes of travel have emerged over time. According to Osundwa (1987:2), these different modes include the bus services (then Kenya Bus and Nyayo Bus Services), matatus, private cars, commuter trains and walking. Kapila, Manundu and Lamba (1982) add the bicycle and motor cycles (mopeds and scooters) to this list. Of these different modes, commuters are said to make decisions on the modal choice based on trip fare, level of income, safety and comfort (Osundwa 1987:1)

It is important to note that the different modes mentioned above differ in levels of safety and comfort. On attitudes and perceptions towards public transport, Kapila, Manundu and Lamba (1982:112) note, for example, that 72% of commuters in Nairobi find the Kenya Bus safest, followed by private cars 24%, matatu 2% and bicycle only 1%, respectively. These results might have been influenced by the fact that few Kenyans (only 27%) owned private cars by that time. This is in sharp contrast to urban cities in Nigeria in which private cars constitute an estimated 75% to 85% of all modes of travel (Falola and Olanrewaju, 1986:148).

It is against that background that public transportation has operated in Nairobi, Kenya. On 3rd October 2003, the government of Kenya published Legal Notice No. 161 stipulating changes in the way public transportation would operate. The main purpose of the regulations was to save lives, restore sanity in the highways and create comfort to public transport users. These regulations have not been without impacts on patterns of access among the public transport users. As such, questions on how these regulations have affected the users arise. Users of public transportation vary in many ways. These include levels of income, education, gender, age and differences from physical capability. Citing these differences then, public transport planning becomes a very complicated discipline, if it has to cater for all the differences mentioned. But in order to overcome public transportation problems, it would be important to consider all users of the conveyance systems. It is important for this study then to understand the impacts public transportation has on its users, especially the disadvantaged population.

1.2 PROBLEM STATEMENT

De Boer (1986) argues that transport sociology is probably one of the most remarkable of sociological sub-disciplines not studied in depth. This is because while it is a complicated field, it is not well developed. This does not, however, downplay the importance of transportation since it is concerned with daily life and

brings together the various other sub-disciplines such as education, the family, organization and industry, among others. It clearly demonstrates that humans do not live in social structures but also exist in time and space. Various studies have therefore emerged to explain this phenomenon of transportation.

In Kenya and specifically in Nairobi for example, most of the transportation studies done in the 1970's seem to have been commissioned by the Nairobi City Council (NCC) (See Nairobi City Council, 1975; Buchanan, 1979; and Gichaga, 1971). The main concern of these studies was to address issues of transport systems, efficiency and traffic congestion in the city centre. Gichaga (1971:1) points out that before this period, transportation studies were mainly focused on highways with very little being done on the transportation systems. However, in the 1980's and 1990's, there was a shift in interest with more studies being done on the specific modes of transport, people's perceptions and attitudes on safety and comfort, factors determining modal choice and even the spatial dimensions of freight transportation (See Kapila, Manundu and Lamba, 1982; Osundwa, 1987; and Okuku, 1998).

While this is the case, it seems that no studies have been carried out in Nairobi specifically examining the relationships between transportation and the disadvantaged. The study by Kapila, Manundu and Lamba (1982) examined, *inter alia*, safety and the role of matatus among the existing modes of transport; while Osundwa (1987) examined factors influencing modal choice. Both these studies were based on the general population and findings cannot therefore be attributed to any sub-group. For example, based on these studies, conclusions cannot be made that the disabled found the KBS mode of transport the safest, or matatus more risky, because they do not share the same physical characteristics with the general population. Similarly, conclusions based on these studies cannot be made to the effect that the disabled only consider trip fare, safety and comfort when making decisions on modal choice, because they have specific physical challenges. These studies treated the population in a homogenous way, not

taking into account, for example, issues concerning accessibility. To the disabled commuter, while fare, comfort and safety are important, accessibility to a conveyance system bears consideration.

In her study of *choice of commuting modes in an urban sector*, Osundwa's study population at Kibera/ Woodley area in Nairobi was largely drawn from the upper and middle-income earners. This is because her study sample was based on households that lived in the Ayany Estate (house numbers formed her sampling frame). This means that the poor in the slum areas were not included in the study. Thus findings from the study would be biased if generalized to cover the whole population.

If the poor were included in the study, the results on comfort and safety while making decisions on modal choice would have been affected. For example, matatus in most cases carried both seated and standing passengers (This information is from the researcher's experience). The standing passengers in matatus (not KBS or other bus) always paid less than the seated ones and this leads to the question of whether the standing passenger really considered comfort or the lower fare charged. Since standing in a matatu and paying less was one way some of the poor would travel, questions arise on what method that group now uses to access transport with the introduction of the "no standing in matatu/bus" regulation (see Government of Kenya, 2003c).

Also, Kapila, Manundu and Lamba's study (1982) is currently outdated in some aspects. While only 2% of matatu users found it safe, the majority of those interviewed complained of undisciplined conductors and reckless driving among the drivers. The situation is likely to have changed with the introduction of the new transport regulations (see Government of Kenya, 2003c). Another study on the same might generate different results. According to a government press release (see Daily Nation, June 29th 2004 pg.40) matatu accidents have reduced from 980 cases in June 2003 to 212 cases in June 2004, equivalent to a 78.3%

decrease; and accidents involving urban buses from 259 cases to 19 cases during the same period. However, while these laudable results dwell on safety, they do not show how public transportation has improved and become more accessible to its users, including the poor and the handicapped.

While it is quite noticeable that most of the disabled people use wheel chairs and walking aids, bus and matatu designs do not have any provisions designed for them. The designs are not user-friendly and lack ramps for easy access by the disabled. This group of people has to compete for the same transportation systems with able-bodied people and rely on them for help in order to climb and alight from buses and matatus respectively. The Kenyan Disability Act No. 14 of 2003 section 23 says that a proprietor of a public service vehicle shall adapt it to suit persons with disabilities in such a manner as may be specified by the council. Part 2 sections 3 (1) of the same act that establishes the 'council' named above has not been implemented and consequently no specifications have been passed either as law or by-laws governing the public transportation of people with disability (this information has been obtained from the Association for the Physically Disabled of Kenya (APDK) national office, Waiyaki Way, Nairobi). Similarly, the Kenyan Traffic Act, Chapter 403 of the Laws of Kenya, has no provision for the public transportation of people with disability (Laws of Kenya, 1988). It is against this background that this study is, at least in part, warranted.

The focus of this transportation study, with specific reference to the poor and the handicapped, is consistent with one of the millennium development goals, namely to 'eradicate extreme poverty and hunger' (OECD, 2001:17). According to Oxfam (1995:2) "no combination of war or natural disaster inflicts suffering or destroys human potential on the scale of the 'silent emergency' of poverty. Today, one in four of the world people live in absolute want, unable to meet their basic needs". And according to the Government of Kenya (2003a:xvii), "the number of people living in poverty is estimated to have risen from 11 million or 48% of the population in 1990 to 17 million or 56% of the population in 2001. The

major challenge facing the Kenyan government is to restore economic growth, generate employment opportunities to absorb the large army of the unemployed, particularly the youth, and reduce poverty levels”.

The importance of this study is that it is aimed at introducing new knowledge on the Kenyan development front and suggesting further policy areas under which the government, donors and other development organizations can expand on programmes aimed at combating poverty among the poor.

1.3. OBJECTIVE OF THE STUDY

The main objective of this study is to analyze the patterns and effects of access to transportation systems among the handicapped in Nairobi. In the process, it aims to provide a policy framework for transportation issues related to the handicapped. The specific research objectives are:

- (1) To find out the extent to which the physically disabled have access to transportation systems in Nairobi, Kenya.
- (2) To investigate ways in which transportation systems affect the poor and the handicapped in Nairobi.
- (3) To find out what model transportation systems could be adopted to offer solutions specific to the problems of the handicapped in Nairobi.

1.4 SCOPE AND LIMITATIONS OF THE STUDY

This study is limited to Nairobi province. Data was collected from the disabled poor at Kikuyu, Ruai, Umoja, Zimmerman, Mukuru and Kibera. The study focused on poverty and transportation in Nairobi over the last five years.

KEY WORDS

The disabled

For the purpose of this study, the physically disabled are those by the virtue of their physical condition do not function normally like able bodied people. This includes those with both upper and lower limb disability, the blind and the deaf. Specific description might include lack of hand(s), arm(s), leg(s), foot/feet, inability to see or hear

The poor

The physically disabled poor in this study are those by the virtue of their economic conditions cannot afford basic living standard i.e. education, health, adequate housing and other important services that are necessary for a decent living. This study considers those living on less than Kshs. 2,600 and Kshs. 1,200 in both urban and rural areas as poor. This is the definition used by the government of Kenya (see Government of Kenya: 2003)

The disabled poor

These are the people who have both descriptions as described under the subheading the disabled and poor above. In other words, these people have physical disabilities and cannot afford basic living standards such as housing, health and education.

Patterns

This defines the different methods that are used for transportation

Access

Defines both the physical ability to use a mode of transport and the ability to afford or acquire a service by having the means of exchange, or by enabling policy framework like in the case of social services

Effects

The negative outcome of using or for not using a transportation system

Transport system

The type of transportation means e.g. train, bus, matatu, airplane, car etc.

Study area coverage

This study shall be limited to Nairobi province.

CHAPTER 2: LITERATURE REVIEW

The literature review in this study was discussed under the following topics: Trends in transport development and sociology, transport studies carried out globally in general, transport studies specific to Kenya and theoretical framework by adopting Sen's entitlement theory and access to public services approach.

2.1. TRENDS IN TRANSPORT DEVELOPMENT AND SOCIOLOGY

De Boer (1986:7) explains that in Dutch, the term transport sociology was probably first used by Groeman, not earlier than 1959. Since 1972, it has been taught as a subject for transport planning students at Delft Technological University. He points out that the same situation is found in English and French writings, in which aspects of the "sociology of the street" or sociology of the motor car are discussed (De Boer, 1986:7). He further argues that In America, the subject of traffic did not appear before 1975. German literature provides a mass of titles. In 1959, for example, Claessens wrote "*Soziologie des Strassenverkehrs*" (*Sociology of Road Traffic*) to provide an outline of traffic sociology. Another Germany, Hoettler, collected German literature and in 1975 concluded that there was no clearly defined sociological specialization in transport (De Boer, 1986:8).

Grant (1977:46 - 51) describes transport planning in Britain between the years 1947 and 1974. He breaks down this period into three phases: first phase, 1947-1957; second phase, 1958-1967 and third phase, 1968-1974. He notes that during the first phase, development plans were directed towards controlling future land use patterns and improving the urban stock of residential, commercial and industrial facilities. Proposals for road improvement were restricted. He points out that during the second phase (1958 – 1967) there was a remarkable increase in the use of cars. Transport planning was included in national development plans. The government introduced traffic control measures such as car safety tests and speed limits while transport facilities were coordinated. The

proportion of passenger and ton mile on the roads both doubled during this phase.

In the third phase, the 1968 Transport Act implemented the proposals of public transport and traffic. It marked the beginning of a new period of transport policy in Britain. At this point, the British government policy was to encourage the improvement of public transport facilities. Community participation in transport planning increased (Grant, 1977:49-51).

Falola and Olanrewaju (1986) argue that pre-colonial Africa until the late nineteenth century relied on bush paths and rivers used by porters, pack animals and canoes. The arrival of Europeans in Africa provided the impetus for transportation development because they needed to exploit Africa for raw materials. According to Hawkins (1962), such efforts to explore Africa led to the construction of the Kenya-Uganda Railways beginning in 1896 and reaching Kisumu in 1901 and later Jinja in Uganda in 1928.

2.2 TRANSPORTATION STUDIES IN THE WORLD

Falola and Olanrewaju (1986) examine road traffic and passenger movement in Nigeria. They note that there were transport problems in nearly all Nigerian metropolitan areas. The problems, including the effect of urban transport on economic and social life, have reduced nearly all discussions of the nature of transport in Nigeria's urban areas to analysis of existing and emerging problems and difficulties (Falola and Olanrewaju, 1986; 139). They discuss urbanism in relation to transportation, the relationship between urban land use and urban transport. Transportation modes and types are then related to traffic congestion problems. In Nigeria, the concern with urban route networks organization since independence has been with reorganizing the networks to reduce traffic problems. They note that there are three major modes of transportation in Nigerian towns viz, private cars, taxis and buses. Private cars are used by the

rich while the poor use buses and taxis. The major problem is that there are no organized bus services and as such the poor are always constrained of transportation. Private cars in Nigeria constitute an estimated 75% to 85% of all modes of travel in most of the cities.

This study concludes by pointing out that there are problems associated with the physical arrangement of each city, including the transportation network and the land use situation. There are problems consequent upon individual decisions such as choice of mode of transport. They note that the constructed bypasses only created a temporary solution to congestion. They support this view by citing the example of Ile-Ife and Ibadan, where lateral urban expansions have engulfed the by-passes within a short time of their construction. They recommend three phases of planning to counter traffic congestion problems. These are: first, better maintenance and more attention to road construction; secondly, any projected land use schemes should be analyzed in light of their probable impact on transportation systems; and, lastly, there must be an increasing consciousness of the value of articulating local and national goals in making transportation decisions. As in the case of many transportation studies such as we shall see, this study was focused on the efficiency of transport systems and the easing of traffic congestion which was seen to be of prime importance at that time. However, it does not address issues to do with the users of the transport systems.

Banister (1995) writes to present precise relationships between transport investments and urban development, with specific reference to the United States of America and Europe. He argues that transport has a major impact on the spatial and economic development of cities and regions (Banister, 1995:1). The levels of traffic in the urban area were directly related to land use. Cities are changing with the movement of people and businesses out of the city centre, increased suburbanization and the desire for lower residential and job densities (Banister, 1995:2). The exodus from cities is related partly to lack of affordable

housing in the city centres. In the west, the evidence suggests that the addition of new road links results in increased traffic, making the environment more polluted and increasing mobility problems for those without access to a car (Banister, 1995:2). In many cities there has been a strong realization that more urban road construction has led to increased levels of congestion. This has led to setting up institutions to control the flow of cars into the central business districts. Transport investment in urban railway is seen as a main instrument in shaping city structure and in promoting economic development. A generally better matching of transport facilities with mixed land use and careful urban designs have resulted in an improved local environment, based on public transport, the bicycle and walking (Banister, 1995:3). On the regional scale, transport was found to affect local transport, employment and the local economy. For example, the Heathrow airport employs about 40,000 people directly and nearly 100,000 people indirectly (Banister, 1995:3). However, the links between transport and urban development are not well known, even in a physical sense (Banister, 1995:4).

Falcocchio and Cantilli (1974) wrote on transportation problems faced by the disadvantaged. The disadvantaged included the poor, the aged, children and the handicapped (Falcocchio and Cantilli, 1974:, xix). This analysis was done in relation to the automobile-oriented society. The concern was to highlight areas of lost rights, privileges, freedom of mobility or choice among the transport modes. They described the functional scope of transportation networks as economic growth, land use service and development, modal balance and equitable opportunity for mobility opportunity to all persons (Falcocchio and Cantilli, 1974: 17). They noted that the problems of crime, employment, substandard housing and discrimination while they are not directly related to transportation, can indeed be reduced or increased somewhat by the manner in which transportation development are directed (Falcocchio and Cantilli, 1974: 21). Falcocchio and Cantilli (1974:21) noted that much research, no doubt, was still needed to convert the goals related to social problems into transportation requirements. Falcocchio and Cantilli (1974:35), say that in many urban areas the almost universal

dependency on the automobile for personal transportation has shut the poor out of opportunities and has been a major factor in the rapid decline of public transit patronage in the USA.

According to Falcochio and Cantilli (1974: 36 - 37), a study of "the travel habits of model cities among residents in central Brooklyn, New York", provides some insights into the travel characteristics of the poor for the basic daily functions of working, shopping, health and recreation. The study found out that the travel desires of the poor were not any different from those of the well to do public. They also note that the extent to which transportation contribute to shortage in employment is not known. The poor are constrained in their mobility both by their economic predicament and the physical characteristics of the transit system. They found that the poor travel less because they have no money to spend, they were further constrained in that they reside in areas that required multiple fares to ride on the transit system, although they exhibited the same travel patterns with non-poor, this was a reflection more of the land use service characteristics of the transit system than on choice of work destinations, trips made on the average involve a longer travel time than the non poor, the poor travelled to less distant places than non-poor when trips were made for shopping and health reasons, and the poor had a reduced choice of opportunities for shopping, health care, recreation, or jobs (Falcochio and Cantilli, 1974: 36).

Falcochio and Cantilli (1974) shed some light on the effects of transportation on the disadvantaged. They show that transportation in the USA has a relationship with and affects the problems of crime, employment and housing although the extent has not been determined. The poor travel less and are constrained in their mobility both by their economic predicament and the physical characteristics of the transit system. From this review, questions arise as to the relationship between transport in relation to unemployment, crime and housing in Nairobi. Lastly, while there are many factors in Nairobi that may perpetuate disadvantage such as health and education, the question is how transport planning could be

used as an integral part or tool to fight disadvantage among the poor and the disabled; or, how can goals related to social problems be converted into transportation requirements?

2.3 TRANSPORTATION STUDIES SPECIFIC TO KENYA

In his study, Gichaga (1971) was concerned with the efficiency of transportation systems in Nairobi. His findings were that the Kenya Bus Service (KBS) was inadequate in both quantity and quality. He noted that early transportation studies were mainly concerned with highways with very little consideration for public transport systems (Gichaga, 1971:1). He pointed out that increasing demand for road space by private vehicles in particular, and demand for better transport systems in general, led to a widespread recognition of the need for public transportation planning. Consequent to the realization that public transportation plays a major role in transport systems in urban areas there has evolved great interest in public transport planning (Gichaga, 1971:1). A lot of effort has therefore been put into the field of public transport with a view of improving existing systems and planning for future systems which would effectively meet the ever increasing demand for public transport. He pointed out that public transportation included a variety of systems such as buses, trains and ship (Gichaga, 1971:1).

Buchanan (1975), in a study commissioned by the Nairobi City Council, sought to develop a transportation modeling package of a suitable size to run on the NCC computer, which would be capable of monitoring changes in the transport modes within the total city area and their effects on traffic within the central area. True to Gichaga's statement, transport planning at this time focused basically on the efficiency of transport systems. Similarly, the NCC at this particular time (1975) was concerned with traffic management, with no consideration of transport users at all.

A Nairobi City Council report of 1979 focused on changes in traffic volumes and patterns of movement, improvement of traffic management, reducing traffic congestion in the industrial area, improvement of travel conditions for pedestrians and cyclists, provision for the efficient movement of freight and goods and improving the environment and amenities of the city of Nairobi. Among its findings were that congestion in Nairobi rose from the rise in demand for public transport, failure of transport facilities to meet this demand, failure to implement an effective parking policy and to generally enforce traffic regulations adequately, lack of financial resources and the absence of coordination in transport issues (Nairobi City Council, 1979:20). However, this study also does not address issues concerning the people being transported.

Kapila, Manundu and Lamba (1982) analyzed the main policy issues pertaining to the role of matatus as part of the transport systems in metro - Nairobi. This study addressed the issues pertaining to the provision of efficient, safe, and adequate public transport in Nairobi. It focused on the role of matatus and investigates means of continuing their financial viability while improving upon their service characteristics. Some important findings were that 50% of Nairobi residents used public means of transport, 24% walked and only 27% owned personal means of transport. The majority of trips taken were related to work, taking children to school and recreational purposes (Kapila, Manundu and Lamba, 1982:3). Areas that needed improvement were the roadworthiness of matatu vehicles, overloading, the quality of driving and the financial liability of matatu operators in cases of accidents (Kapila, Manundu and Lamba, 1982:21).

Another principal objective of the study was to suggest policy issues in vehicle-driver licensing; vehicle design; matatu operator access to credit finance; the regulation of matatu routes and terminals; matatu vehicle and passenger insurance; and a proposal on the dieselization of matatus. Other objectives were the estimation of matatu profitability, socio-economic characteristics of matatu

operators, users of matatu and other modes of transport, and obtaining views and opinions of Nairobi commuters on policy issues.

Findings on attitudes and perceptions (regarding safety) showed that Kenya Bus Service was considered the safest by 72% of respondents; private car, by 24%; matatu, by 2%; and bicycle, by 1% (Kapila, Manundu and Lamba, 1982:112). While this was very comprehensive, it does not bring out the effects and impacts matatus have on their users. It does not address issues of access by the various sub-groups in the population; for example, the handicapped, the aged, children and the poor. The information contained in this study as regards some aspects of the matatu is now outdated, since new regulations have been put in place. The number of allowed passengers has been reduced from 18 to 14, speed governors and safety belts have been fitted, only qualified drivers and conductors have been licensed and are required to wear uniforms, while matatus have been designated permanent routes (Government of Kenya (2003d). As such, a new study on matatus would definitely give new findings.

Osundwa (1987), in her study, "choice of commuting modes in urban sector", was concerned with factors that influence commuters in choosing one mode of transport over the other. She explored the Kenya Bus Service, government buses (Nyayo Bus Service), matatu, commuter trains and walking (Osundwa, 1987:2). She analyzed commuter travel decisions in relation to socio-economic characteristics and attributes of the transport modes. Her findings were that trip fare, income, safety, comfort and the availability of the mode are in general the most important determinants of the probability that a commuter would choose one mode over the other (Osundwa 1987:1). Personal attributes like age, gender and education were found to have no significant importance in the choice of transport mode. She found out that income elasticity of demand for transport was positive and consistently less than unity (Osundwa 1987:1). This study, while addressing issues of modal choice, did not consider the factors that influence choices specifically by the handicapped or the poor. If ranked in order of

importance, the poor for example might consider trip fare while comfort might not be a very important determining factor to them. While age was found not to be a determining factor (in 1987) in mode choice, the situation is much different now (2004) since the young (school and college going youth) seem to prefer the colorful and music blaring matatus fitted with DVD systems. On the other hand, the aged do not seem to enjoy such noisy matatus.

Aduwo (1990) revisited the study of matatus previously done by Kapila, Manundu, Lamba (1982). He examined the matatu sector's role, efficiency and quality of service, and looked into its potential for employment and income generation. He also looked into the issue of modal choice. However, this study did not say anything that Kapila, Manundu and Lamba (1982) had not said; neither did he add any value to Osundwa's work (1986) on modal choice.

Okuku (1998) wrote on the *spatial dynamics of freight transportation in the city of Nairobi*. He was concerned with the distribution of freight within Nairobi's transport system, and examined the spatial systems of flow of goods and the factors that affected such flow. He set to establish how goods were freighted to the various demand points within Nairobi, and to find out how products within an urban societal setting were moved and distributed to the different consumption areas. He specifically examined the role of roads in transportation; the relationship between the socio-economic status of residential areas and freight volume demand, between road density and freight volume distribution, and between population density and freight volume distribution; and the major problems of freight transport within Nairobi. His findings were that roads played a very important role and hence there was a crucial need to harness the potentiality of the roads. He recommended comprehensive research with regard to all aspects of transport in Nairobi (freight, non-motorized, passenger and emergency needs). He recommended additional dual-carriage roads to be constructed to speed up the movement of goods.

In summary, most of the transportation studies done in Kenya and specifically in Nairobi in the 1970's seem to have been commissioned by the NCC. The main concern was to address issues of transport system efficiency and traffic congestion in the city centre. However, in the 1980's and 1990's, there was a shift in interest with more studies being done on the specific modes of transport, people's perceptions and attitudes on safety and comfort, factors determining modal choice and even the spatial dimensions of freight transportation.

However, no studies seem to have been done in Nairobi specifically examining the relationship between transportation and the disadvantaged. Studies by Kapila, Manundu and Lamba (1982) examined safety among the existing mode of transport while Osundwa (1987) examined factors influencing modal choice. Both these studies were based on the general population and findings cannot therefore be generalized to any sub-group. For example, it cannot be said that the disabled found the KBS mode the safest neither do they only consider trip fare, safety and comfort when making decisions on modal choice. The studies treated the population as if it had homogenous characteristics and did not take into account, for example, issues to do with physical access.

To the disabled commuter, access to a conveyance is of prime importance. In fact, Osundwa's choice of study population at Kibera/ Woodley area only included the upper and middle income earners because her sampling was based on the estate that had numbered houses. If the poor had been included, the results on comfort while deciding on modal choice might have been affected. This is because standing passengers in matatus always paid less than the seated ones and actually this is what led to overloading in matatus (this information is from the researcher's experience). Since standing in a matatu and paying less was one way the poor made travel affordable, questions arise as to the method they will now use to access transport, given the "no standing in matatu/bus rule". Also, Kapila, Manundu and Lamba's study (1982:112) is currently outdated in some aspects of matatu. While only 2% of matatu users

found it safe, the majority of those interviewed also complained of undisciplined crew with reckless driving. The situation is likely to have changed with the introduction of the new transport regulations (see government of Kenya Legal Notice no. 161).

2.4 THEORETICAL FRAMEWORK

The foregoing study has been explained by the 'access to services approach' to spotlight how the poor access public and private services. This has been developed from Sen's entitlement theory in which he argues that hunger is a function of failed entitlements. That is, when one's bundles of entitlement cannot be exchanged to buy enough food, one is exposed to hunger. This research is premised on the view that the urban poor do not face transportation problems due to the unavailability of services but due to inadequate entitlement bundles which they can exchange for services, lack of command over services, or failed entitlements. Failed entitlements are due to, *inter alia*, bureaucratic hurdles, incomprehensible rules and regulations and difficulties in accessing necessary information (Narayan 2000:83).

2.4.1 Sen's Entitlement Theory

The entitlement approach is an analysis of hunger that sees famine as arising not from a lack of food but from a lack of command over food. Sen argues that during famines, the major concern has always been the availability of food. He says that the availability of food in the marketplace is no consolation when one has no means of acquiring it and that, to understand hunger, we must look at people's entitlements; that is, what commodity bundles (including food) they can make their own (Sen, 1987:3). The entitlement approach to hunger concentrates on the determination of command over commodities, including food.

Sen sees famines as the result of entitlement failures. He further asserts that the entitlement of a person stands for the set of different alternative commodity bundles that the person can acquire through the use of various legal channels of acquirement open to someone in his/her position. He says that in a market economy, the entitlement set of a person is determined by his/her original bundle of ownership (what is called his/her "endowment") and various alternative bundles he/she can acquire starting from each initial endowment, through the use of production and trading. He further asserts that a person will starve if his/her entitlement set does not include any commodity bundle with adequate amount of food. A person is reduced to starvation if some change either in his/her endowment (such as alienation of land or loss of labor power due to ill health, fall in wages, rise in food prices, loss of employment, or drop in the price of the goods he produces and sells) occurs making it difficult for him/her to acquire any commodity bundle with enough food.

Sen further says that if a person fails to secure employment, then that means of acquiring food fails. He notes that the failure of a government to provide unemployment insurance leads to a person's failure to secure a means of subsistence. His analysis points out two aspects of action needed to combat hunger, namely, a better functioning economic system to provide people with regular means of income; and, secondly, providing economic support to vulnerable people when they fail to get that support from the regular economy itself. He concludes by noting that importance should be attached to providing functioning economic mechanisms that provide means of entitlement to the population and at the same time providing public security measures that can be used to guarantee entitlements to those vulnerable to fluctuation and inability in earning income and acquiring economic power (Sen, 1987:7-8).

This study views transportation as an entitlement and a right to every group of persons regardless of their social status. Some reviewed literature (see Falcochio, 1973) has concluded that the travel needs of the poor and the

disabled are not any different from those of the rich. Entitlement failure with regard to transportation should be seen as way in which the poor and the disabled face disadvantage and lost opportunities to explore their potential. This concern of failed entitlements can be further explored by examining access patterns to public services among the poor; hence the use of the “access to public service approach” to explain some of the reasons the poor continue to have transportation difficulties.

2.4.2 Access to Services Approach

The World Bank, over time, has recommended domestic reforms such as land reform and the removal of biases in access to some essential services (Sandbrook, 1982:8). While the basic needs approach has been criticized for being inadequate in addressing development issues, it has shed some important insights on the nature of needs and the problem of access to public services. It highlights some of the basic needs, namely, minimum levels of private consumption of food, clothing and shelter, and access to certain essential public services, such as water, sanitation, public transport and health and educational facilities (Sandbrook, 1982:8). Sandbrook further says that one of the principles that must underlie the basic needs approach is the provision of equitable access to expanded and reformed public services. He argues that the availability to the poor of appropriate education and clean water, environmental sanitation and adequate public transport is clearly an end in itself: it can also make a substantial contribution to augmenting the productivity of poor people and to promoting their fuller participation in society. He calls upon the states in underdeveloped countries to intervene in order to remove class biases in access to public services and redistribute income and probably assets from powerful social classes to those whose economic and political power is currently insubstantial (Sandbrook, 1982:14).

According to Narayan (2000:11), "Socioeconomic mobility is not a universal experience, but varies tremendously across social groups and individuals. Emphasizing aggregate prosperity diverts attention from the variability of access to resources experienced by different individuals and social groups. Almost two decades ago Amartya Sen (1981) addressed this issue in the context of persistent starvation in the midst of plentiful food stocks, noting that different people employ different means to gain access and control over food". Aggregate prosperity, for example, is when a country's focus is on growth in GNP/GDP without regard to how individual citizens access services (Sen 1984, 1999 in Narayan 2000:11). During a participatory poverty assessment (PPA) by the World Bank in 2000, the poor identified, *inter alia*, access to government services as one of the contributory factors to their conditions. They particularly pointed out bureaucratic hurdles, incomprehensible rules and regulations, the need for documents to which they do not have access, and difficulties in accessing necessary information (Narayan, 2000:83).

Narayan (2000:276) points out that the lack of, *inter alia*; basic infrastructure - particularly roads, transportation, and water - is seen as a defining characteristic of poverty. Roads and transportation both increase physical and social connectedness and increase prices obtained from crops and products. Roads, even roads next to the village, are seen as expanding people's options, increasing their negotiation power, and increasing their access to markets and services.

This study adopts the access to public services approach to explain the patterns and impacts of access to transportation systems by the poor and the disabled in Nairobi. It is notable that the majority poor people's mode of transport is walking. This is not because there are no other transport modes existing, but rather the access that this poor group has to such transport modes. To re-echo Sen's explanation of hunger and famines, the poor lack enough 'entitlement bundles' which to exchange for public transport, considerably affecting their mobility. Due

to the physical nature of walking and the dangers associated with it, considering insecurity prevalence in Nairobi, the poor are limited in their choices in terms of shopping, schools, recreation and access to other important services. As such, their access to services is limited to the areas located within their residential areas. This leads to overcrowding in schools, health facilities and other service points within the areas that the poor reside. In some cases, the poor will actually do without services they are legally entitled to due to lack of access to transport. For example, expectant mothers, the sick, the disabled, the aged and children are confined to the distances that they can walk to access health and education facilities. Women and girls in particular, due to their gender, are vulnerable to rape and may be restricted in their movement to avoid exposure and being victims. These aspects affect the poor and the disabled people's rights to movement and access to essential services including employment.

2.5 RESEARCH QUESTIONS

Through out this study, the following specific research questions, generated from the literature review and problem statement, shall be addressed.

- (1) To what extent do the physically disabled poor have access to transportation systems in Nairobi?
- (2) In what ways do the existing transportation systems affect the physically disabled poor in Nairobi?
- (3) What model transportation systems could be adopted to offer solutions specific to the problems of the physically disabled poor in Nairobi.

CHAPTER 3: RESEARCH METHODS

This chapter explains the research methods that were used for this study. This is captured under the following sub headings namely; site selection, preliminary survey, sampling zones, selecting study units, data collection techniques, interview schedule and data analysis.

3.1 SITE SELECTION

The study was carried out within Nairobi province. Nairobi province was purposively selected for this study due to the presence of a large urban poor population in the slum areas. The study area was further sampled according to its slum and peri-urban settlement areas based on distance and fares charged from the Nairobi Central Business District (NCBD).

3.2 SAMPLING DESIGN

3.2.1 Preliminary Survey

A preliminary survey was carried out in relation to fares and distance from the NCBD in order to determine similarities and differences between the slum and peri-urban settlements in Nairobi. This was aimed at sampling Nairobi into study zones that bear similar characteristics in order to capture the heterogeneity of the physically disabled poor in the different slum and peri-urban settlements. During the survey, three major zones were identified; Zones A, B and C. The fares are Kshs 50 (except Kiserian where it is Kshs. 60), 40, and 30 for Zones A, B and C, respectively.

3.2.2 Sampling Zones

In order to capture variations in the use of particular transport modes in Nairobi during the study, Nairobi was divided into three zones identified in 3.2.1 namely; A, B, and C. This, the researcher suggests, is a function, *inter alia*, of respondents' incomes and the distances between, on the one hand, the place of residence and, on the other, the usual place(s) of work, leisure and/or learning. Two study areas were chosen using the simple random method from each of the said zones thus summing up to six study areas as shown in the table below. Simple random sampling relies on chance alone and ensures that every possible combination of cases has equal chances of being selected for the study.

Table 1: Study zones and areas established during a preliminary survey

	NAME OF SLUM/ PERI-URBAN SETTLEMENT	PEAK FARES KSHS.	OFF PEAK FARES KSHS	ZONE NUMBER	RANDOMLY SELECTED STUDY AREAS
1.	Kiserian	60	50	A	KIKUYU and RUI
2.	Athi river	50	50		
3.	Kayole	50	30		
4.	Bulbul	50	40		
5.	Ngong	50	40		
6.	Kahawa West	50	30		
7.	Ruai	50	50		
8.	Njiru	50	50		
9.	Saika	50	50		
10.	Kikuyu	50	40		
11.	Mlolongo	40	30	B	UMOJA and ZIMMERMAN
12.	Dandora	40	30		
13.	Kawangware	40	20		
14.	Githurai	40	30		
15.	Zimmerman	40	30		
16.	Umoja	40	20		
17.	Kinoo	40	30		
18.	Ruaka	40	30		
19.	Riruta	40	20		
20.	Ongta Rongai	40	30		
21.	Embakasi	40	30		
22.	Eastleigh	30	20	C	MUKURU and KIBERA
23.	Kibera	30	20		
24.	Kangemi	30	30		
25.	Korogocho	30	20		
26.	Baba Dogo	30	20		
27.	Mathare	30	20		
28.	Huruma	30	20		
29.	Uthiru	30	20		
30.	Banana	35	30		
31.	Gachie	35	30		
32.	Wangige	30	20		
33.	Kariobangi	30	20		
34.	Mukuru	30	20		

Source: Data obtained during the researcher's preliminary survey.

3.2.3 Selecting study units

The population of interest for the proposed study included the physically disabled poor in the three zones identified. The specific unit of study in the population was the individual physically disabled poor. The study sample included 36 physically disabled poor respondents. A control group of 36 able bodied poor was included in the study, to help the study to establish whether the disabled poor faced the same transportation challenges as the able bodied poor. The respondents were selected as detailed in the table below:

Table 2: Sampling method

STUDY UNIT	METHOD OF SELECTION	TOTAL NO. OF RESPONDENTS
The able bodied poor (control group)	The study units in this group were chosen using the convenient method of sampling.	36
The physically disabled poor	The disabled poor were chosen by the convenient method of sampling.	36
TOTAL		72

3.3 DATA COLLECTION TECHNIQUES

Data was collected through formal interviews and through observation.

3.3.1 Interview Schedule

The interview schedule was the main data collection instrument. An interview schedule is a set of questions that is administered face-to-face to respondents by the researcher. For this particular study, the researcher was assisted by both a research assistant and a guide familiar with the study areas.

3.4 DATA ANALYSIS

Both qualitative and quantitative data was generated during the study. Descriptive data analysis techniques were used for the purpose of data description and analysis.

3.4.1 Descriptive Techniques

After coding the collected data by the use of spread sheet, descriptive techniques were used for data analysis. These techniques were used to summarize information and helped in describing patterns and drawing conclusions. According to Baker (1994:378), descriptive statistics refer to simple statistical methods that do not support or falsely a relationship between variables but only help in describing the data. There are three distinct types of displaying distributions (a) Tabulation (b) Graphs (c) Maps. Tabulations were used for displaying the distribution of scores/entry by means of summary tables.

CHAPTER 4: SALIENT BACKGROUND CHARACTERISTICS OF RESPONDENTS

This chapter gives an analysis of the background information of respondents. It uses data gathered from 76 respondents from among randomly selected slum and peri-urban settlements. The data are presented in the form of tables following a narrative interpretation. The data have been analyzed based into two categories of the respondents' i.e. able bodied poor and disabled poor. The chapter ends with a summary of the major findings.

4.1 RESPONDENT'S SOCIO-ECONOMIC BACKGROUND

4.1.1 Educational background

Among the able-bodied poor, all of the interviewed respondents had gone to school, with an average 10.34 years of study. This translates to form two according to the Kenyan education system. A further 8.3% had completed 13 to 16 years of education, 44.5% nine to twelve, and 41.6% had completed five to eight years. Only 5.6 % had less than five years of education (table 1).

However, there was a sharp contrast in education among the disabled respondents as compared to the able bodied poor. For example, 38.9% of the disabled respondents had no education at all, while 13.9% had a range of 1 – 4 year of education, 19.4% had 5 – 8 years while 27.8% had a range of 9 – 12 years of education [See table 2]. This shows that the able-bodied poor had a higher level of education. For example, 8.3% of able-bodied poor had attained 12 to 16 years of education while none of the disabled respondents had attained the same level of education.

The contrast in educational status between the able-bodied poor and the disabled poor may reveal that the disabled poor are more vulnerable to poverty and their accessibility to economic opportunities and other basic services would

be lesser than that of able bodied people. The disabled poor are constrained by minimal mobility which could be a partial contributing factor to their low educational status.

Table 3: Educational background among the able-bodied poor

No. of years spend in education among the able-bodied poor	Frequency distribution	Percentage distribution
1 - 4	2	5.6
5 - 8	15	41.6
9 - 12	16	44.5
13 - 16	3	8.3
Total	36	100

Source: Field data

Table 4: Education information among the physically disabled poor

No. of years spend in education among the disabled poor	Frequency distribution	percentage distribution
0	14	38.9
1 - 4	5	13.9
5 - 8	7	19.4
9 - 12	10	27.8
Total	36	100

Source: Field data

4.1.2 Training background of both able-bodied poor and the disabled poor

Regarding training among the able-bodied poor, 63.9% of the total respondents were found to have had no training at all while the remaining 36.1% had training either in computer packages, catering, motor mechanics, hair dressing, clearing and forwarding, tailoring, accounting and counseling. The training level was however found to be short certificate courses.

On the other hand, among the disabled poor, the proportion of the untrained was much higher (88.9%) while those who had received some training was as low as (11.1%). This reveals that though the poor had limited training opportunities, the disabled poor are less likely to receive any training at all. An argument can be made to the effect that this is partly due to the lower educational qualifications among the disabled which might make it difficult for them to qualify for certain trainings. Compared with able-bodied poor, the disabled poor are also more likely not to have access to economic and other self development opportunities such as education.

Table 5: Training background for the able-bodied and disabled poor

Types of training	Able-bodied poor		Disabled poor	
	Frequency distribution	Percentage distribution	Frequency distribution	Percentage distribution
Computer software	1	2.7	0	0
Motor mechanics	4	11.2	0	0
Hair dressing	2	5.6	1	2.7
Tailoring	3	8.3	2	5.6
Clearing and forwarding	1	2.7	0	0
Accounts	1	2.7	1	2.7
Counseling	1	2.7	0	0
No training	23	63.9	32	88.9
Total	36	100	36	100

Source: Field data

4.1.3 Types of income generating activities

Among the able-bodied poor, 31% engaged in casual employment as manual laborers in factories and construction sites. The rest engaged in shoe shining (11%), maize roasting (14%), and vegetable vending (22%) and hawking (22%).

In the case of the disabled poor, the majority of them (61%) engaged in shoe shining, 33% in hawking, 6% selling vegetables while none of them engaged in casual employment and maize roasting.

From these data, an argument can be made to the effect that the disabled are less mobile than able-bodied people and thus engage in occupations that do not require a lot of mobility such as shoe shine. Similarly, the disabled do not engage in heavy manual work such as working in factories and construction sites as the able-bodied poor. This means that the able-bodied poor have more income

generating choices than the poor thus making the later more susceptible to poverty and limited access to other opportunities.

Table 6: Income generation activities among the respondents

	Type of occupation	Able-bodied		Disabled	
		Frequency	percentage	Frequency	percentage
1.	Shoe shine	4	11	22	61
2.	Maize roasting	5	14	0	0
3.	Selling vegetables	8	22	2	6
4.	Hawking	8	22	12	33
5.	Casual employment	11	31	0	0
Total		36	100	36	100

Source: Field data

4.1.4 Monthly income

Data regarding income among the able-bodied poor show that majority of the respondents (61.1%) earned less than 3,000 Kenyan shillings a month. The poor in Kenya are defined as those living on less than Ksh.2,600 and 1,200 per month in urban and rural areas respectively (Government of Kenya, 2001). These data shows consistency with this definition which qualifies the respondents as poor based on the said poverty definition.

The same is applicable among the disabled respondents although they displayed more poverty levels than the former. The majority of the disabled (75%) had earnings below Ksh.3, 000.00 per month. None of the disabled poor respondents had an income more than Ksh.5 000.00. This can be attributed to the fact that the disabled had less income generating choices than the poor due to their limited mobility and physical capability as shown in types of income generating activities displayed in table 4.

Table 7: Monthly Income among respondents

Range in Kshs	Able-bodied poor		Disabled poor	
	Frequency	Percentage	Frequency	Percentage
0 – 1000	10	27.8	13	36.1
1001 – 2000	9	25	10	27.8
2001 – 3000	3	8.3	4	11.1
3001 – 4000	7	19.4	7	19.4
4001 – 5000	4	11.1	2	5.6
5001 – 6000	1	2.8	0	0
6001 – 7000	2	5.6	0	0
	36	100	36	100

Source: Field data

4.2 INFORMATION ON DISABILITIES

This section gives information about different kinds of disabilities and the types of aids used for walking/moving among the poor disabled respondents.

4.2.1. Forms of disabilities

Out of 36 disabled poor respondents, 75% had lower limb disability, 16.7% had both lower and upper limb disabilities and 8.3% were blind. From the research findings, it can be noted that the blind formed the smallest proportion of the respondents (8.3%). This might imply that the blind had the least mobility and had the most difficulties in accessing transport systems.

WOMEN KENYATTA MEMORIAL
LIBRARY

Table No. 8. Disability types

No.	Type of disability	No. of cases	Percentage
1.	Legs and feet handicap	27	75
2.	Legs and arms disability	6	16.7
3.	Blind	3	8.3
Total			100

Source: Field data

4.2.2 Types of walking aids used

Findings were that 41.7% of the poor disabled respondents used wheel chairs. Another 22.1% of the respondents used crutches while 5.5% used jaipur foot. Lastly, 5.5% of the poor disabled respondents did not use any walking aids at all. Those who used wheel chairs complained that it was difficult to access transport systems since they were not designed to accommodate wheelchairs. The disabled poor respondents said that it was difficult to access transport systems given that they have to compete for the same systems with the able-bodied people.

Table 9: Walking aids used by different categories of disabled respondents

Type of disability	Type of walking aids used	Frequency	Percentage
Legs and arm handicap	crutches	2	5.5
Legs and arm handicap	Wheel chair	4	11.1
Legs and feet handicap	Crutches	6	16.7
Legs and feet handicap	Wheel chairs	11	30.6
Legs and feet handicap	Jaipur foot	2	5.5
Legs and feet handicap	Walking stick	6	16.7
Blind	Walking sticks	3	8.3
Legs and feet disability	none	2	5.5
Total		36	100

Source: Field data

Summary

The background information from respondents has shed some light on educational and income levels, types of disabilities, training and types of income generating occupations among the respondents. Educational background reveals that the able-bodied poor have a higher level of education than the disabled poor. An explanation for this may be partly because the disabled are constrained in terms of mobility and access to schools is more difficult than the able bodied. Similarly, the disabled, due to their physical conditions are more likely to be affected by poverty hence the inability to afford education.

The majority (61.1%) of the respondents had a monthly income of less than Kshs. 3,000. This is in line with the government's definition of the poor; as those earning less than Kshs. 2600 per month in urban areas. Findings show that the disabled earned less than the able bodied. The reason behind this might partly be because the able bodied are more physically able to perform various manual duties thus giving them wider choices than the disabled who can only perform

limited jobs. This might also be because the disabled had lower educational status and thus unable to compete for jobs with the able bodied, who had slightly higher levels of education. Findings also show that the disabled are not a homogenous group and their heterogeneity extend to the types of disabilities. Those with leg and feet disabilities for example, had more opportunities for income generation than say the blind and those with both upper limb and lower limb disabilities.

Training information reveals that just like in the cases regarding education and occupation above, the able bodied had more training opportunities than the disabled. It can also be urged this is partly because of their low level of education, poverty and their physical conditions that constrain their mobility.

CHAPTER 5: PATTERNS OF ACCESS TO TRANSPORT SYSTEMS AMONG THE DISABLED POOR IN NAIROBI

The main objective of this chapter is to give an analysis of the patterns of access to transport systems among the physically disabled poor in Nairobi. It examines travel patterns, costs, ownership of private means of transportation, transportation preferences, perceptions on safety and effects of transport systems. It ends with a summary of the entire chapter.

5.1 DISCUSSION ON PATTERNS OF ACCESS AND PREFERENCES FOR TRANSPORT SYSTEMS

5.1.1 Travel patterns and costs during week days and week ends

Transport details show that there is no difference in cost between week day and week end travel among the poor. The average fare paid per respondent during both weekday and weekend is Kshs. 23.75, one way. This is below the fare charged within the three study zones identified during the preliminary survey in which fares paid were Kshs 30, 40 and 50 for zones A, B and C respectively. These fares are based on passengers boarding a vehicle from their designated bus parks and are usually fixed throughout the day. However, some vehicles take short cuts and do not start at the designated bus parks. They negotiate with passengers and are usually cheaper. This shows that fares paid are dependent on where one boards a vehicle. Thus, it can be argued that the poor have different patterns of access to transportation though the disabled faced the challenge of physical accessibility to such systems.

Table 10 Transportation costs details

Fare in Kshs.	No. of respondents	Percentage
0 - 29	56	77.7
30 - 59	9	12.5
60 - 89	5	6.9
90 - 119	2	2.7
Total	72	100

Source: Field data

5.1.2 Details on ownership of private means of transport

Among the interviewed able-bodied poor, only 5.6% (2 out of 36) were found to have private means of transport, in the form of a bicycle. Among the disabled poor, 33.33 % (12) of respondents had tricycles which had been donated to them by the Association for Physically Disabled of Kenya [APDK]. This shows that most of the poor cannot afford reliable private means of transportation and have to rely on public means of transportation or walking. Also, it further shows that the disabled poor have slimmest chances of owning any form of private means of transportation unless it is in the form of a donation.

5.1.3 Transportation preferences of the disabled poor

From table 9, it can be deduced that there are differences in transportation preferences among the disabled. For instance, among those with leg and foot disabilities, 25% preferred matatu, 11.1% preferred wheel chair, 11.1% liked bus, and 19.4% liked all modes, while 8.3% did not prefer any mode. From the above findings, it can be argued that transportation preferences are extremely complex and differ from person to person despite their physical situation. This might partly be due to the fact that respondents might be influenced by the modes of transport that are available to them. For example, some routes have the 14

seater matatu van, others the mini bus, and yet others buses; while some have a mix of them all. Based on this, respondents from different locations will have different experiences in transportation.

Table 11: Preferred mode of transportation based on disability type

Type of disability	Preferred Transportation Mode	Frequency	Percentage
Legs and arm disability	None	4	11.1
Legs and arm disability	Matatu	2	5.6
Legs and feet disability	Wheel chair	4	11.1
Legs and feet disability	Matatu	9	25
Legs and feet disability	Bus	4	11.1
Legs and feet disability	All	7	19.4
Legs and feet disability	None	3	8.3
Blind	None	2	5.6
Blind	Matatu	1	2.8
Total		36	100

Source: Field data

Table 12: Preferred mode of transportation among the disabled poor respondents

Preferred Mode of Transport	Frequency	Percentage
Matatu	12	33.3
Wheel Chair	4	11.1
Bus	4	11.1
All	7	19.4
none	9	25
total	36	100

Source: Field data

5.1.4 Different travel modes used and reasons behind the choices

Table 13: Travel mode used and reasons behind the choice among the able-bodied poor

Mode	Frequency	% of mode users	Reason for using the specific mode by the able bodied poor
walking	24	66.7	<ul style="list-style-type: none"> • Distance from residence and places of work is short • There is no expense incurred • It is safe to walk than board a bus or matatu
Matatu	11	30.3	<ul style="list-style-type: none"> • Matatus are flexible and do not operate based on time • Matatus are always available in most routes • They are faster and negotiate traffic jams easily • They are cheaper off peak hours and at times fares can be negotiated with the conductor
Bicycle	1	3	<ul style="list-style-type: none"> • A bicycle is affordable and easy to maintain • It can use routes which no vehicles can

Source: Field data

Table 14: Distribution of mode used and reasons behind choice among the disabled poor

Type of disability	Transportation	Frequency	Percentage	Reasons for modal choice
Legs and feet handicap	walking	14	38.8	Destination is near residence and it is also economical
	Matatu	5	13.8	Matatus are low hence easy to climb and are available most of the time
	Tricycle	8	22.2	Respondents said tricycles were provided by NGOs and are also convenient.
Legs and arms disability	walking	1	2.8	Destination is near residence and it is also economical
	Matatu	1	2.8	Matatus are low hence easy to climb and are available most of the time
	Tricycle	4	11.1	Respondents said tricycles were provided by NGOs and are also convenient.
Blind	walking	2	5.6	They walk because it is difficult for them to access a matatu or bus when they are on their own. It is also economical for them.
	Matatu	1	2.8	It is easy to travel in a matatu when they are accompanied by a guide
	Tricycle	0	0	

Source: Field data

5.1.5 Information on safety perceptions

Safety here is based on the probability that a transport mode will operate with minimal accidents, whether fatal or slight. Findings were that the matatus were perceived to be the safest by 36% of the able-bodied poor, followed by the Kenya Bus with 26%, and the private car by 15% of the respondents. Others were walking 8.5%, train 6%, taxi 2%, bicycle 4% and none of them 2%. The percentages tell us that safety is very relative, and varies from individual to individual.

5.2 EFFECTS OF TRANSPORT SYSTEMS

5.2.1 Distance from residential areas to places of work

Table twelve shows that 83% and 74% of disabled and able-bodied poor respondents, respectively, lived within a radius of less than 4 kilometers. Seventeen percent of the disabled respondents live within a distance of between 4 kilometers and 12 kilometers, while 26% of the able-bodied live between distances of 4 kilometers and 22 km. The difference between the disabled and able-bodied peoples distance from their residential areas to places of work can be attributed to the fact that able-bodied poor are more mobile than the disabled poor (because they can walk longer distances). This can also be explained by arguing that more able-bodied poor are more likely than the disabled to earn more income hence can afford means of public transport whether fully or partially and therefore can afford to live places far from their work places.

Table 14 shows that among the disabled, the blind and those with foot and arm disabilities lived nearest to their place of work and their residences (100% residing within a distance of less than 4 kilometers). It also shows that those with feet and leg disability lived within a radius of 12 kilometers from their residences and place of work. This can be explained by that the blind are more

restricted to movements and may need help from others for guidance while those with feet and arm find it a challenge to rely on themselves for daily chores. As a result, these two groups of people would more likely than other groups to work nearer their homes. Among those with leg and feet disability, 58% live within a distance of less than 4km while the rest (42%) live within a distance between 4 kilometers and 12 kilometers. This may be due to the fact that leg/feet disability might not be severe enough as to hinder someone from traveling. Also, these group of people are more independent and do not have to rely on other people when they perform their daily chores. Since they are also capable of performing duties, they are also likely to earn more income than the blind and those with leg/feet disabilities thus making it possible for them to live further from their working places.

Table 15: Distribution of distance from residence to place of work for both able-bodied and the disabled

Distance (Kilometers)	Frequency (Able-bodied)	Percentage	Frequency [disabled poor]	Percentage
0 – 2	23	63	25	69
2 – 4	4	11	5	14
4 – 6	5	14	2	5.6
6 – 8	1	2.8	2	5.6
8 – 10	-	-	1	2.8
10 – 12	-	-	1	2.8
12 – 14	-	-	-	-
14 – 16	2	5.6	-	-
16 – 18	-	-	-	-
18 – 20	-	-	-	-
20 – 22	1	2.8	-	-
Total	36	100	36	100

Source: Field data

Table 16: Distance from residence to place of work disaggregated by disability type

Distance in Kilometers	Legs & arm disability (frequency)	Legs & arm disability (%)	Legs & feet disability (frequency)	Legs & feet disability (%)	Blind (frequency)	Blind (%)
0 – 1.9	5	14	18	50	2	5.6
2 – 3.9	1	2.8	3	8	1	2.8
4 – 5.9	0	0	2	5.6	-	-
6 – 7.9	0	0	2	5.6	-	-
8 – 9.9	0	0	1	2.8	-	-
10 – 11.9	0	0	1	2.8	-	-
Total	6	16.8	27	75	3	8.4

Source: Field data

5.2.2 Relationship between transportation and employment

5.2.2.1 Effects of transportation on respondents

Findings show that transportation affects and influences people's choices. For example, 94% of the able-bodied respondents said they were affected by transportation when it comes to employment. They said searching for jobs involves traveling from one place to another and can be costly to people who have to rely on public transport systems. It limits the number of places they could visit to seek employment. Also, they said it is both risky and tiring for those who have employment far from their areas of residences if they have to rely on walking to and fro their places of work.

Eighty three percent of the able-bodied respondents said their choice of residence is partially determined by access to transport systems because other

factors such as security, water and sanitation and access to other essential services play a role too. Transportation also affected the able-bodied respondents in terms of choosing leisure activities (77%), choice of health facilities (77%), choice of shopping places (81%) and choice of places of worship (79%).

Among the disabled poor respondents, 96% said transportation affected them in search for employment. Though the disabled share the problems that able-bodied do, the former are more constrained due to their physical conditions. The amount of effect that transport has on the disabled people's employment opportunities also varies with regard to type of disability. For example, one who has minor limping has lesser constraints than one who is blind. Furthermore, the disabled could also need help from others for accessing the transportation systems, of course to varying degrees.

An overwhelming 92% of the disabled respondents affirmed that their choice of residence is partly affected by transportation systems. Similarly, transport affected choices of leisure (86%), schools (98%), health facilities (92%), market centers (96%) and places of worship (91%) of the disabled respondents. Making comparisons for every activity listed, the proportion of disabled who felt affected by the transport system was higher than the able-bodied. From these findings it is evident that the transportation system determined choices of disabled people's activities more often than the able-bodied.

Table 17: Disaggregation of the proportion of respondents affected by transportation and how they are affected

Activities	Proportion (percentage) of able-bodied affected by transportation systems (n=36)	Proportion (percentage) of disabled affected by transportation systems (n=36)
Search for employment	94	96
Choice of residence	83	92
Leisure	77	86
Choice of schools	77	98
Choice of health facilities	77	92
Choice of market centers	81	96
Choice of places of worship	79	91

Source: Field data

5.3 MODEL TRANSPORT SYSTEMS FOR THE PHYSICALLY DISABLED POOR

From the study findings as evidenced in tables 9, 10 and 11, it is clear that different groups of people have varying degree of access to different public transport systems. For example, 66.7% of the poor able-bodied walk while 22.2% of them use *matatus*. Among the disabled, 47.2% walk while another 19.4% use *matatus*. Also different people have different preferences when it comes to modal choices. There is also a difference in perceptions on safety.

These findings reveal that the disabled poor do not entirely rely on public transport system for their mobility. Since a lot of them walk to places or use wheel chairs, it is necessary that foot paths are developed and fitted with lighting,

resting stops on specific points and adequate security to ensure safety of the walking individuals.

Similarly, for those who use public transport, there should be a mix of solutions to transportation requirement for the physically disabled poor. During the study, all of the disabled poor respondents said that public transport systems should be designed to make them easily accessible. This can be achieved by the way transport systems are designed, for example, fitting entrance ramps on buses to make them easy to board, and provisions for putting wheel chairs. Support rails should also be fitted in order to aid the disabled once they board onto a transport system.

Summary

This chapter shows that respondents have different travel patterns. Findings on trip fares show that both the disabled poor and able bodied poor spent less than the actual fares charged in the different routs (see table 10). This is explained by the following points; firstly, they do not rely only on public transportation means or on any particular travel mode, secondly they may travel off peak when fares are cheaper, thirdly they may walk to their destinations. The disabled may use wheel chairs for transportation.

Findings also show that the majority of the poor do not own private means of transport. Those that had any private means owned a bicycle or a wheel chair. This means that the poor have to rely on other means of transportation; either public or walking.

The *matatu* was the most preferred mode of transport by at least over 30% of the respondents (see table 11). This was attributed to comfort, availability and flexibility of crew on fare.

Perceptions on safety show that the *matatu* was found to be safest among respondents followed by the bus. Here, it can be argued that matatus are more

common/ available than any other means of transport hence the likelihood of shaping respondents perceptions.

Findings regarding the distance between work and residential places show that at least 74% of respondents lived within a radius of less than 4 Kilometers (see table 15). However, the percentage was higher among the disabled (86%). This might be attributed to the fact that respondents lived closer to their homes so that they don't have to spend on public transportation. While this argument is applicable among the disabled, another reason for living closer to their residences might be attributed by the challenges they have in mobility especially accessing transport systems. But even within the disabled, the blind lived closest to their work places than those with leg/feet and lower/upper limb disabilities. This reveals that there are different mobility needs even within the disabled people.

Findings regarding effects of transportation on respondents show that transportation has some effects, though it's difficult to quantify those (see table 17). This is because there are other factors that affect people's lives. For example, while 83% of the respondents said they considered transportation when searching for residential dwellings, they said others factors such as security, water, and sanitation played a great role too. Similarly, while 96% said transportation affected their search for employment, it is hard to quantify the effect because other factors such as educational qualifications, technical skills, experience and the availability of jobs play a contributing role.

According to the research findings, there should be a mix of solutions in order to cater for the travel needs of the physically disabled poor. This may range from developing safe foot paths, adopting transport mode designs to be user friendly to the poor and even increasing poor people's entitlements (Sen's entitlement theory) to ensure that they can afford public transport systems.

CHAPTER 6: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This section provides a summary of key findings in relation to objectives established in this study concerning patterns of access to transport systems with particular reference to the physically disabled poor in Nairobi. Conclusions are drawn from the findings to explain how the physically disabled poor access transport systems. Relevant recommendations are drawn from conclusions and findings to provide methods of improving the lives of the physically disabled poor by increased entitlements and increased access to social services. This chapter is divided into three subheadings, *viz*, summary of findings, conclusions and recommendations to both policy and areas of further research.

6.1 SUMMARY OF FINDINGS

Research findings show that the disabled poor have different patterns of access to transportation systems, whether by the use of bus, matatu, walking or tricycle (see table 14). This is described in details at 6.2

Transport systems affect the disabled poor in various ways. Research findings reveal that it affects them when it comes to searching for employment, residential places, and places of worship, leisure activities and health facilities.

Findings reveal that there is need to adopt a mix of solutions in trying to solve problems related to transportation among the disabled poor. This ranges from improved transport mode designs to make them more accessible to the disabled, creating safe foot paths to cater for those who walk and use wheel chairs and providing opportunities that increase the disabled poor people's income so that they can afford to pay for transport systems.

Research findings showed that 69% and 63% of both disabled and able bodied respectively lived within a radius of less than 2 kilometers from their places of work and residential areas. This shows that they don't travel far and are limited to their mobility, revealing that they have much limited choices in life.

The mode of transport used by these groups of people is mostly walking (67.7% among the able bodied and 47.2% among the disabled). Walking has its challenges; no proper walking paths have been developed to cater for this, nor is it very safe to walk in Nairobi, especially at night.

A further 33.3% of the disabled use tricycles, but those cannot be used to travel long distances. Also, there is a lot of vehicular congestion that makes it very difficult for tricycle users to use roads. There is no provision for wheel chair users from the way roads are designed.

Research findings also show that most of the respondents do not usually travel far and usually rely on the services available within their surroundings. This shows that the physically disabled poor and the able bodied poor are limited to the places they can go thus are limited to their choices.

Similarly, research findings show that none of the disabled respondents preferred the bus as a mode of public transport. Buses entrance rumps are high from the ground, they have stair cases and very difficult to access by the disabled.

Sen's entitlement theory argues that hunger and starvation is not as a result of lack of food but rather the lack of enough entitlement bundles to exchange for food. From the same point of view, this research also argues that the poor and the disabled lack enough entitlement bundles to exchange for public

transportation resulting to limited mobility and few choices in life because walking and use of tricycles has its limitations.

While Cap 403, known as the traffic act, laws of Kenya, stipulates public transport guidelines, inter alia, and prescribes penalties for not complying with such guidelines, it does not give any guidelines as to how the special mobility needs of disabled commuters should be taken care of. This, I suggest, leaves the disabled commuter at the mercy of transport providers because there is lack of policy guidelines or laws protecting their right of movement without discrimination by means of public transport.

6.2 CONCLUSIONS RELATED TO STUDY OBJECTIVES/ RESEARCH QUESTIONS

- (i) The first objective of the study was 'to find out the extent to which the poor and the handicapped have access to transportation systems in Nairobi, Kenya'.

The study found that the disabled poor in Nairobi have different patterns and varying levels of access to transport systems. Findings reveal that the common methods of transportation used by the disabled poor are public transportation, walking and the use of the wheel chair. Among the public transport systems used are the matatu and bus, with most of them using the matatu, among the public transport systems.

An argument can be made that all the physically disabled poor have access to transportation to certain extent, whether by the use of public transportation, walking or wheel chair. However, there is a difference in the way they access these systems, depending on their economic conditions and physical conditions.

This means that those who cannot afford to pay for public transport systems; don't have a wheel chair, and their physical condition don't allow them to walk are the most affected by transportation and might be confined to their homes.

As in the study of Osundwa (1987) this study shows that access to transport systems is influenced by distance to be covered, the physical availability of a transport mode during travel time and the ownership of adequate means of exchange for the transportation systems based on one's entitlements. In addition to these, this research also found that physical accessibility determined by system design is an important factor to accessibility among the disabled poor.

As suggested by Sen's entitlement theory, access to public transportation – as in other goods and services – is dependent on the amount of entitlements bundles that one has to exchange for other services. Thus, majority of the poor do not walk or are not able to entirely rely on public transport due to inadequate means of transportation but rather they don't have enough resources to exchange for transportation.

The study also found out that there was a wide difference in access to transport systems between the able bodied poor and the disabled poor; and further differences to access to transport systems among the disabled people, depending on disability types. Disabled people with fewer disabilities such as foot disability only have a wider choice among the available transport modes than those with severe disabilities such as both foot and arm.

- ii) The second objective was 'to investigate ways in which transport systems had effects on the poor and the disabled in Nairobi'. The study found out that transportation had significant effects in their lives; For example,

respondents said that transportation affected them in search of employment, residential areas, schools, health facilities, places of worship and shopping.

This, they said, was because before they made decisions on these issues, they first ascertain that they could afford to pay for the fares charged if it involved public transportation. This is in regard to the distance between their residential places in relationship to the locations of the places of employment, health centers, schools, markets and other places that are important for them to visit.

If facilities are located in far places that respondents can't walk to or cannot afford to pay for public transport, they rely on the services within the places that they reside. If such services are not available within the places they reside, then they forgo such services. This has tremendous effect on their lives because they cannot fulfill their full potential.

However, it is difficult to measure the extent of such effects in quantitative terms. For example, while transportation affected poor people's choices in regard to choices of residential areas and employment, the same is also influenced by other factors such as security, adequate availability of water and sanitation while factors such as education, professional experience and availability of opportunities affect people's access to employment.

This finding agrees with a study by Falcocchio and Cantili (1974) who found out that 'transport has a relationship with and affects employment and housing although the extent has not been determined'. Likewise, this study revealed that the poor are constrained in their mobility both by their economic predicaments and the physical characteristics of the transport systems as found by Falcocchio and Cantili (1974).

- iii) The third objective attempted to 'find out what model transportation systems could be adopted to offer solutions specific to the problems of the poor and the handicapped in Nairobi'.

Findings from this research revealed that there is need for a holistic approach in solving transportation problems related to the physically disabled poor.

One of the strategies that can be used to offer solutions to transportation problems faced by the physically disabled is by promoting none motorized transportation systems. In essence, this would entail providing services within the areas that the poor live so that they walk and don't have to rely on public transportation. This would include building schools, health centers and providing government offices and other important social services in the areas that the poor live

The other method is by improving the design of public transport systems so that they are user friendly or accessible to the physically disabled users. This would ensure that those that can afford these systems can use them without the problems of design inadequacies.

The third strategy is by providing the physically disabled peoples with income generating opportunities or means of livelihood so that they can afford to pay for public transportation among other important social services.

6.3 RECOMMENDATIONS

6.3.1. Improved access to services within places the poor live

This study recommends that access to public services should be improved by providing such services within the areas that the poor live. Social services such as hospitals, schools and public offices could be built within the areas that the poor reside. In effect, this would reduce the need to rely on transport to access these services.

6.3.1 Improved public transport system designs

Designs of public transport systems such as the bus and *matatu* should be changed and adopted to suit the travel needs of the disabled. For example, buses should be designed to ensure easy access to wheel chair users. Similarly, bus parks should be designed to be user friendly to the disabled commuters.

6.3.3 Increased entitlements among the poor and the disabled

There should be programmes especially aimed at reducing poverty levels among the poor and the disabled people. One of the ways in which this can be done is by providing micro enterprise schemes and cheap and easy obtainable loans among the poor. Similarly, it would be equally important to provide capacity building opportunities such as training programmes among the poor.

6.3.4 The traffic Act, Cap 403, Laws of Kenya

I recommend that the government should amend the traffic act, introduce guidelines on the specifications regarding the design of public transport systems in order to cater for the needs of the disabled commuters. This act should also offer comprehensive guidelines regarding the rights of disabled commuters.

6.3.5 Further research

A research should be done to determine how public transport systems should be designed to accommodate the special mobility needs of the physically disabled.

REFERENCES

- Aduwo, I. Gibson (1990) The Role, Efficiency and Quality of Service of the Matatu Mode of Transport in Nairobi, Kenya. (MA Thesis), Department of Economics. Nairobi: University of Nairobi
- Bahemuka, Judith, Benjamin Nganda and Charles Nzioka, (1998) Poverty Revisited: Analysis and Strategies Towards Poverty Eradication In Kenya. Nairobi: Ruaraka Printing Press Limited.
- Banister, David (1995) Transport and urban Development. London: E and FN Spon.
- Button, Kenneth (1991) "Preface", pg.1, in David Banister, ed (1993) Transport, the Environment and Sustainable Development. Ipswich: The Ipswich Book Company.
- Buchanan, Colin (1975) Nairobi Central Area Study. Nairobi: Nairobi City Council
- De Boer, Enne (1986) Transport Sociology: Social Aspects of Transport planning. Oxford: Pergamon Press
- Falcochio, John C. and Edmund J Cantilli (1974) Transportation and the Disadvantaged. Toronto: D.C Heath and Company
- Falola, Toyin and S.A Olanrewaju (Eds) (1986) Transport systems in Nigeria. Syracuse: Syracuse University
- Fields, George (1980) Poverty, Inequality and Development. Cambridge: Cambridge University Press.

Gichaga, Francis (1971) Public Transport: An Inventory of Public Transport Base year network. Nairobi: Nairobi City Council

Government of Kenya (2003a) Economic Recovery Strategy for Wealth and Employment Creation 2003 - 2007. Nairobi: Government Printing Press.

Government of Kenya (1993) Laws of Kenya; The traffic Act Chapter 403. Nairobi: Government printing Press

Government of Kenya (2003b) Laws of Kenya; The Persons Disability Act No. 14. Nairobi: Government printing Press

Government of Kenya (2003c) Laws of Kenya; Legal Notice No. 161. Nairobi: Government Printers

Government of Kenya (2001) Poverty Reduction Strategy Paper for the Period 2001 – 2007. Nairobi: Government Printing Press.

Hawkins, E. K (1962) Roads and Road Transport in an underdeveloped country. London: Her Majesty's Stationery Office.

Karabayinga, Celestin (2003) Perceptions of Drought and their Impacts on Rural Development: A study of Kitui District, Kenya. (MA proposal), department of Sociology. Nairobi: University of Nairobi

Kapila, Sunita, Mutsembi Manundu, and Davinder Lamba (1982) The Matatu Mode of Public Transport in Metropolitan Nairobi. Nairobi: Mazingira institute

Nairobi City Council (1979) Transport Review Report No. 1. Nairobi: Nairobi city Council

Narayan, Deepa (2000) Voices of the Poor: Can anyone hear us. New York.
Oxford University press

Okuku, Titus O. (1998) The Spatial Dynamics of Freight Transportation In The City of Nairobi, Kenya. (MA Thesis), Department of Economics. Nairobi: University of Nairobi

Osundwa, Katherine C. (1987) Choice of Commuting Modes in Urban Sector: A case study of Nairobi city. (MA Thesis), Department of sociology. Nairobi: University of Nairobi

Sandbrook, Richard (1982) The Politics of Basic Needs: urban Aspects of Assaulting poverty in Africa. Nairobi: Heinemann

Sen, Amartya (1987) Research for Action: Hunger and Entitlements. Finland: Auranen, Forssa.

Organization for Economic Co-operation and Development (OECD) (2001) The DAC Guidelines: Poverty Reduction. Paris: OECD Publications.

Watkins, Kevin (1995) The Oxfam Poverty Report. Oxford: Oxfam.

INTRODUCTION TO THE RESPONDENT:

Dear respondent,

I am a Master of Arts in Sociology (Rural Sociology and Community Development) student at the University of Nairobi. I am carrying out a research study to establish the patterns and impacts of public transportation among the poor and the handicapped with a specific reference in Nairobi. Your location has been selected one of the sites for this study. The information that you provide in the course of this study shall be treated in confidence and solely for the purposes of this study. I would like to thank you in advance for your cooperation and contribution on the same.

Roberts Sila

INTERVIEW SCHEDULE

RESPONDENT'S DETAILS

Zone A B C

Name of settlement _____

Gender _____ Age _____

Category of respondent

Unemployed

Disabled

1. Did you go to school? Yes No . If yes, how many years of formal education have you completed? _____

2. Up to what level of primary or secondary education have you completed?

No education Form 3-4

STD 1-4 Form 5-6

STD 5-8 University

Form 1-2

3. Have you had any training? Yes No If yes, specify _____

4. What is your occupation? _____

5. What is your current monthly income from all sources in Kshs? _____

6. (a) How much do you spend on transportation per day?

(i) On weekdays Kshs _____

(ii) On weekends or holidays Kshs _____

(b) How much do you spend on transportation per month? Kshs _____

7. Do you have any private means of transport? If yes which one?

Saloon car

Pick up

Mini bus

Motor cycle, scooter, moped

Bicycle

Anything else I haven't mentioned? Specify _____

8. If you are unemployed, do you think transportation hinders you from searching for a job or starting a small business Yes No

How _____

9. What form of disability do you have? [Tick all relevant]

Blindness

Lower limb

Upper limb

Hearing

10. Do you use any of the following? [Tick all relevant]

Wheel chair

Crutches

Walking stick

Jaipur foot

Hearing aids

None of the above

Is there any other aid that I have not mentioned? Specify _____

11. If you answered yes to Q. 10, have the various transportation modes been designed to accommodate your special mobility needs?

Kenya Bus Yes No

Matatu Yes No

Train Yes No

Private car Yes No

Tricycle Yes No

12. Which features do you think should be included in the design of public transport systems to cater for your special mobility needs?

Entrance ramps

Support rails

Wheel chair area

Public address system

Any other feature[s] that I have not mentioned? Specify _____

13. Fill in the 2 tables below on travel details during weekdays and weekends.

TABLE A: WEEKDAY TRAVEL

Destination of trip	Distance in Kms from home to destination	Travel frequency per week	Travel frequency per month	Return fare per trip [Kshs]	Transport mode used [See list below]	Reason for using the mode
Place of wage employment						
Place of self employment						
Market centre						
Health center						
School						
Recreation center						
Place of worship						
Other [Specify]						

NOTE: Choose from the following listed transport modes

- [a] Kenya Bus
- [b] Matatu
- [c] Train
- [d] Private car
- [e] Taxi
- [f] Bicycle
- [g] Walking

TABLE B: WEEKEND TRAVEL

Destination of trip	Distance in Kms from home to destination	Travel frequency per week	Travel frequency per month	Return fare per trip [Kshs]	Transport mode used [see list below]	Reason for using the mode
Place of wage employment						
Place of self employment						
Market centre						
Health center						
School						
Recreation center						
Place of worship						
Other [Specify]						

NOTE: Choose from the following listed transport modes

- [a] Kenya Bus
- [b] Matatu
- [c] Train
- [d] Private car
- [e] Taxi
- [f] Bicycle
- [g] Walking

14. When do you make your trips mostly during both weekdays and weekends? Choose between peak and off-peak hours in the table provided below.

	WEEKDAYS		WEEKENDS	
	PEAK	OFF-PEAK	PEAK	OFF-PEAK
Place of wage employment				
Place of self employment				
Market center				
Health center				
School				
recreation				
Place of worship				
Other [specify]				

15. Have the existing transportation systems affected you or your family in any of the following ways?

ACTIVITY	YES	NO	HOW HAS IT AFFECTED YOU OR YOUR FAMILY?
Searching for employment			
Choosing a residential area			
Choosing a leisure activity			
Choice of school			
Choice of health facilities			
Choice of market centers			
Choice of place of worship			
Other [specify]			

16. [a] Which do you think is the safest way to travel in Nairobi? [Tick one]
- KBS bus
- Matatu

- Private car
- Motor cycle/ scooter/ moped
- Walking
- Train
- Taxi
- Any other I haven't mentioned?
specify _____

[b] Why do you think so? _____

17. [a] Which do you think is the most comfortable way to travel in Nairobi?

[Tick one]

- KBS bus
- Matatu
- Private car
- Motor cycle/ scooter/ moped
- Walking
- Train
- Taxi

Any other I haven't mentioned? specify _____

[b] Why do you say so?

