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# THE IMPACT OF KOMBI-TAXIS ON PUBLIC TRANSPORT

A Thesis presented to the

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UNIVERSITY OF CAPE TOWN

In partial fulfillment of the requirements  
for the degree of Master of Science in Engineering

by

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## SYNOPSIS

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This thesis attempts to quantify the impact of kombi-taxis on the conventional modes of public transport, in particular the bus, in the Cape Town Metropolitan Area. The impact is quantified in terms of the resultant modal shift of commuters from the buses, trains, cars and walking, in favour of the kombi-taxi.

The approach adopted involved a study of the kombi-taxi and bus operations and characteristics on the different kombi-taxi routes in the study area. Five representative routes were selected for a detailed study, involving an Observation survey and an Interview survey directed at the bus and kombi-taxi users on these routes. On a further 66 routes, a bus-taxi modal split survey was conducted.

The findings of the study show that the majority of present kombi-taxi users are former bus users. Conservatively, an estimated 30.6% of all the daily bus passenger trips have been lost to the kombi-taxi. The effect on trains has not been insignificant with an estimated 4.4% of all commuter train trips having been converted to kombi-taxi trips.

## DECLARATION

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I, Abdul Muhaimien Bassier, hereby declare that this thesis is my own work and that it has not been submitted for a degree at another University.

Signed by candidate

October 1989

## ACKNOWLEDGEMENTS

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The nature of this study necessitated the co-operation and assistance of a number of people to whom I am deeply indebted. I therefore wish to express my sincerest appreciation to the following people :

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5. The bus and taxi users who were interviewed, for the sacrifice of their valuable time.

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# Chapter 1

## Introduction

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## CHAPTER 1

**INTRODUCTION**

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The White Paper on National Transport Policy, tabled in Parliament on 30th January 1987, added tremendous impetus to the development of the kombi-taxi industry in South Africa. For it was this Paper, which almost overnight changed the 8 passenger kombi-taxi into the present 15 passenger taxi. The resultant increased profitability of operating this mode of public transport, prompted more operators to enter the kombi-taxi market. To many commuters, who were either captive users, or generally dissatisfied with the level of service offered by conventional public transport modes, this novel way of public transport, offering a higher level of service, became a very attractive alternative. To the conventional bus operators on the other hand, it meant greater competition.] The kombi-taxi had already, since its introduction in 1978, been operating in competition with the monopolised bus services. But, now more than ever, it appears that the increasing level of competition which the kombi-taxi is presenting, is destined to change the urban public transport scene in a manner not anticipated.

**Motivation for the Study**

Since the promulgation of the Road Transportation Act in 1977, there has been a decline in the number of bus trips as well as a drop in passengers on many of the routes serviced by conventional public transport. The train commuter service also experienced a decline in usage. This is evident on the national and local levels (refer to Chapter 4). It is not known whether these decrements are due to the emergence of the

kombi-taxi service, and if so, to what verifiable extent this is the case. Although a number of studies have already been undertaken on the subject of kombi-taxis, none of these deal specifically with this aspect of kombi-taxis. Also, most of these studies were conducted prior to the publication of the 1986 White Paper after which the most significant growth in the number of kombi-taxis occurred. The lack of knowledge on this aspect of kombi-taxis has to a large extent motivated the undertaking of this study.

### Objectives of the Study

The objectives of the study are as follows.

1. To quantify the impact of the kombi-taxis on conventional public transport modes, in terms of the resultant modal shift from these modes to the kombi-taxis.
2. To investigate the factors which influenced the shift in the modal share.

### Scope of the Study

Previous studies on aspects of kombi-taxi operations have pointed out that the perception, and modus operandi of the kombi-taxi differ from city to city (HHO, 1982). In fact, in many regards the kombi-taxi industry in Cape Town seems to be regarded as an anomaly. An example of this is the fare structure; whereas in other cities the taxi fares are generally higher than the competing bus cash fares, in Cape Town the taxi fares are normally lower. It is because of this anomalous situation which exists in Cape Town that it was decided to confine the study to this area,

more specifically, to the Metropolitan Transport Planning Area.

The kombi-taxi, used as a public transport mode, has an effect not only on competing transport modes, but also on the safety of the road system, the environment, the infrastructure of towns and cities, and many other facets of community life. This thesis however, will only look at the effect of kombi-taxis on the alternative transport modes in terms of the shifts in passenger modal shares.

#### The Kombi-taxi defined

The kombi-taxi, also locally referred to as the minibus or black taxi, is a kombi/minibus type vehicle having the capacity to carry between 10 and 16 passengers and operating as a shared taxi. Its modus operandi is markedly different from the ordinary sedan taxi which operates on a tripmeter and is hired by an individual for a specific trip. The kombi-taxi operates without a meter, the fares being fixed according to the particular route, and operates on demand, i.e. not on a fixed schedule. Passengers board and alight anywhere along the route and especially at bus stops and termini. In many ways therefore, its operation is identical to that of a bus but with a reduced capacity. In many other countries where similar services occur, the vehicle is referred to, amongst other names, as a jitney, jeepney, and dolmus. Often the kombi-taxi is classified as a type of paratransit, offering a level of service in between that which is offered by the private car and that offered by the bus/train (regular transit).

### Terminology

In this thesis the term kombi-taxi is used synonymously with the term taxi to refer to the shared taxi of the minibus type vehicle described above. When reference is made to the metered sedan taxi, the term sedan taxi is used.

The use of racial terminology such as "black", "coloured", "white" and "non-white" could not be avoided. These terms are used, firstly because they are current terminology categorising people in the South African context, and secondly, part of the aim of the study is to investigate the influence of commuters' socio-economic characteristics on their modal choice. In this regard the racial terminology provided a convenient way of distinguishing one group from the other. The term "non-white" is used in a generic sense, denoting all people of colour. "Black" is exclusively used to refer to the African population.

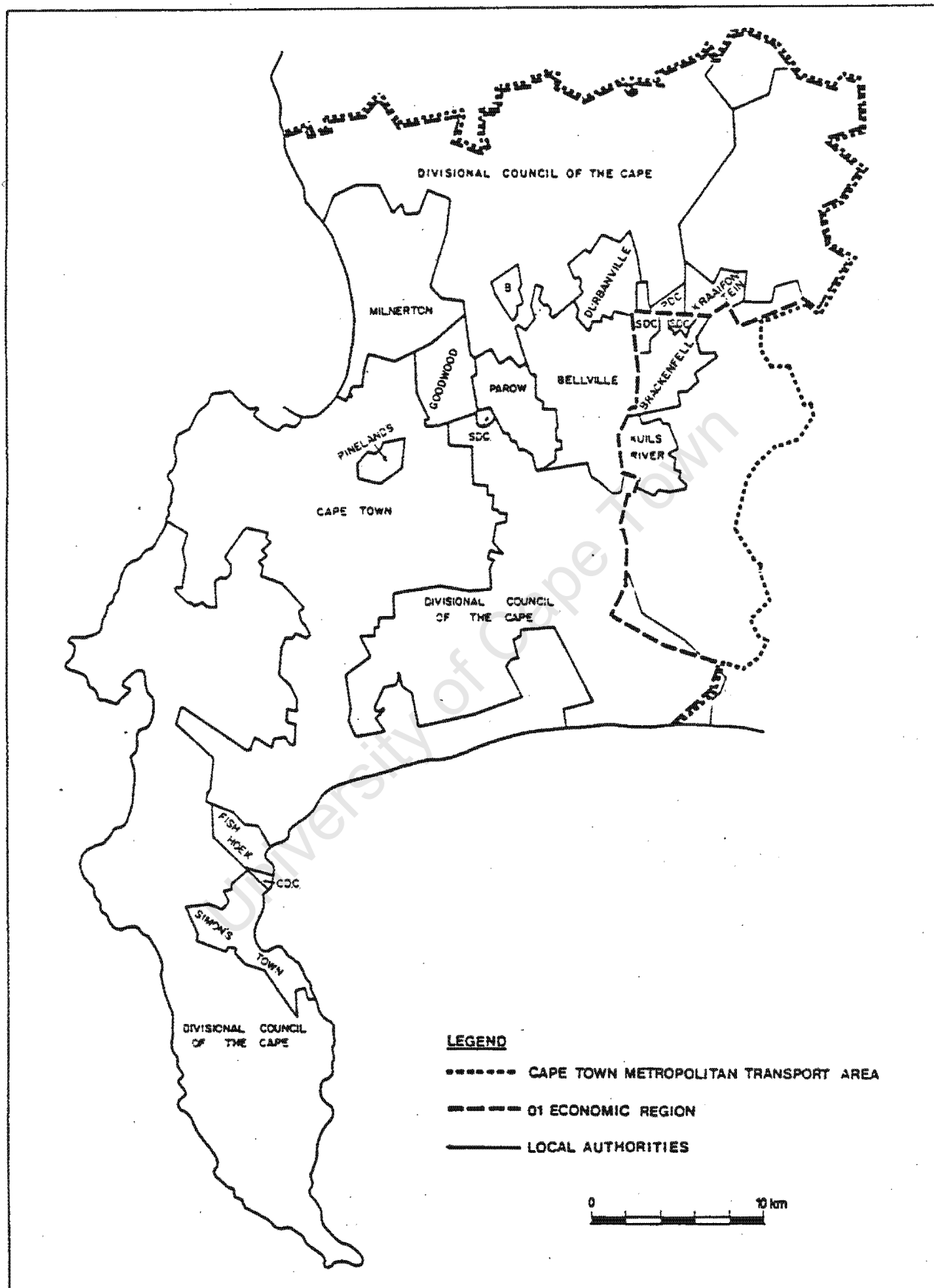


Figure 1A

# CAPE TOWN METROPOLITAN TRANSPORT AREA



# Chapter 2

## Overview of Literature

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## CHAPTER 2

OVERVIEW OF LITERATURE

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A literature survey, on the aspects of kombi-taxi operations in South Africa, was conducted at the beginning of the study to determine the extent to which research had already been undertaken. This chapter gives an overview of some of the more important and relevant studies and highlights its main features. A more comprehensive list of references is presented in the bibliography.

Although a number of studies have already been conducted in South Africa on the subject of the kombi-taxi, none of them dealt specifically with the effect which kombi-taxis have had on other conventional modes of public transport. Some of these studies however, have made postulations with regard to the effect that the introduction of the kombi-taxis may have on public transport, for example the Commissions of Inquiries which dealt with the subject of public transport.

A further observation on these previous studies is that most of them were conducted prior to the publication of the 1986 White Paper on Public Transport which recommended that the maximum passenger carrying capacity of the kombi-taxi should be increased from 8 passengers to 15 passengers including the driver. It should be borne in mind that the most significant growth in the taxi industry only occurred after 1986 giving rise to many "new problems" as well as eliminating some of the "old problems" associated with the taxi industry.

Below is a review of some of the previous studies conducted in South Africa which have relevance to this thesis.

1. Report of the Driessen Committee of Inquiry into Urban Transport Facilities in the Republic (1974).

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The most relevant point coming from this report is the fact that at that time already a distinction was drawn between the modus operandis of so-called White taxis and that of Non-White taxis. It points out that "Non-White taxis provide both line-haul and city distribution services in urban areas, and fares can be kept at reasonable levels on account of the relatively high occupancy of the vehicles. [In fact, Non-White taxis operate to a large extent as jitneys, i.e. small-size buses which follow a fixed route and are hailed by passengers. This means however, that they often contribute to traffic problems along busy bus routes.]"

It goes on to recommend that "Explicit recognition to taxi services in the preparation of transport plans." and that "The expansion of taxi services must be regarded as a necessary adjunct to the development of more adequate public transport services, especially distribution services, in the major urban centres..."

The concept of a shared taxi was therefore given recognition as an acceptable mode of public transport during the early 1970's already and it was a concept which the Committee felt should be encouraged.

This Report was followed by a White Paper in 1975 and Bill in 1976. One year later in 1977, the Urban Transport Act was promulgated. This Act was the first major breakthrough in the development of the present day kombi-taxi industry for it allowed the use of kombi-type vehicles to be used as taxis with a maximum capacity of 9 passengers including the driver instead of the previous maximum of 5.

2. The Role and Function of Black Taxis in Urban Transportation with Special reference to Soweto and Johannesburg - by K.O.Luk MSc(Eng) Thesis (Wits,1980)

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As far as can be ascertained, this thesis by Luk is one of the first documented studies dealing specifically with the functioning of the Black Taxi, as it was then called.

To obtain passenger and trip characteristics, Luk made use of a structured, self-administered questionnaire. These questionnaires, containing 15 questions were given to the taxi drivers to pass on to their regular passengers. Only 22 of these forms were adequately completed for analysis together with a further 8 questionnaires which Luk himself administered. In total, the 30 completed questionnaires represented 0.57% of all the taxi passengers in the study area. His small sample size and the way in which the questionnaires were administered is one of the weaknesses of his study. From his survey data he concluded that the main reasons for passengers using the taxi are convenience (30%), speed (20%), comfort (17%) and 13% indicated that the taxi was their usual mode of transport.

**3. A Report on the Operation and Regulation of Black Taxis in Metropolitan Areas - prepared for the Southern African Black Taxi Association (SABTA) by Hawkins, Hawkins & Osborn, Consulting Engineers (1982)**

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This study was the first National kombi-taxi study of its kind to be published in South Africa. The goal of the study was to propose measures that will improve the efficiency and effectiveness of black taxi services nationwide for operators, patrons and controlling authorities alike. Unique to this study is the comparative presentation of the operational and regulatory characteristics of the black/kombi taxis in the 5 major metropolitan areas in South Africa. An estimate is given of the number of legal and illegal (pirate) taxi in each of the areas. The role that SABTA and its member associations could play in the future management of taxi services nationwide, has been highlighted in terms of

- a) Liaising with controlling authorities;
- b) Legislation and regulation changes;
- c) Rank Organisation and discipline
- d) Regulation of taxi fares
- e) Education and Welfare Activities

Some of the observations, conclusions and recommendations made are as follows :

1. The scale, scope and characteristics of the black taxi operation vary for each metropolitan area.

2. The need for research to be undertaken to develop a model for predicting the demand for black taxis in the various African townships, has been identified.

3. As part of the free enterprise system, the role of the taxi industry in providing significant self-

employment opportunities, and its stimulation of the growing black entrepreneurial spirit, is emphasized.

4. The black taxi is providing a service to the public who are exercising their freedom of choice by preferring to avoid the constraints of the alternative mass transport system.

5. To overcome the problem of the many unlicensed taxis, the need to harmonise the number and type of road carrier permits to meet the demand and mode of operation, is stressed.

4. The Final Report of the Welgemoed Commission of Enquiry into Bus Passenger Transportation in the Republic of South Africa. (1984)

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One of the terms of reference to this Commission in 1981 was "To enquire into, report and make recommendations regarding the effect of taxis on the bus industry and the laying down of guidelines in this regard."

Amongst the findings, the following are worthy of note.

Although the ordinary metered taxi has little or no effect on the bus industry, it is the unauthorised kombi-type taxi which is a particularly strong competitor as regards the existing bus services. It also found that a considerable number of the unauthorised kombi-type taxis compete to the detriment of both the authorised taxi and the bus service and that stricter control should be exercised not only over them, but also over the illegal practices of the authorised taxis. It acknowledges however, that the excessive taxi activity is symptomatic of shortcomings

in the service offered by other modes and that bus services can do much to combat the problem by rendering better quality services.

It then goes on to make some recommendations. Certainly the most important recommendation, as far as the taxi industry is concerned, is that "the present legalised eight-passenger vehicles that may be used as taxis, should be phased out over a period of four years." This meant that kombi type vehicles should not be allowed to continue their operation as taxis.

As could be expected, this caused an uproar not only in the taxi industry, but also from various sectors of the transport planning profession. At that stage it was estimated that more than 20 000 legal and approximately 25 000 illegal kombi-type taxis were already in operation.

None of the recommendations concerning the taxis were taken further than this report since no subsequent White paper was published on the subject.

##### **5. The Kombi-Taxi, An Alternative Mode of Transport - by D.Kokernot, MSc(Geography) Thesis (UCT, 1984)**

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This study by Kokernot was the first in-depth kombi-taxi study which focussed specifically on the situation in the Cape Town area. After examining the underlying forces which generate the need for intermediate transport the different cities of the world, the situation in South Africa is looked at. The regulations and bylaws pertaining to taxis are described as well as the license and permit requirements for the taxi drivers and vehicles.

A most significant contribution made by this study towards the understanding of kombi-taxi user characteristics and attitudes, was achieved through the survey conducted amongst the users and operators at two major transport interchanges, (Wynberg and Mowbray) in the Metropolitan Area. A total of 52 taxi operators (12%) were interviewed mainly at the ranks or sometimes at the operator's place of residence. The survey conducted amongst the passengers however, seems to be less comprehensive since no sample size has been indicated. Some of the important results from these surveys are :

1. Most of the drivers interviewed (88%) were paid weekly or biweekly, on a commission basis, receiving 25 to 35 percent of the daily fares collected.
2. More than half of the taxi users are regular users.
3. The main reasons given by taxi users for using the taxi in preference to the bus were because it is quicker (two fifths), cheaper (one sixth) and more convenient (one sixth). Comfort, reliability and efficiency were mentioned as reasons.

The analysis of the bus and taxi fares showed that the taxi fares are generally cheaper than the bus cash fare but more expensive than the subsidised clipcard fare. A detailed list of the number of registered taxis (sedan and kombi) in the Metropolitan Area is given, making it an excellent reference source.

**6. The Demand for Combi-Taxi Services - by E.Oosthuizen, MSc(Eng) Thesis (Pretoria, 1986)**

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This study is based on surveys which were carried out during 1984 in Rustenberg by the NITRR at the CSIR. Oosthuizen developed a demand model for short(<10 km), medium(10-35 km) and long(>35km) journeys. These individual choice models could be used to predict the modal split between buses and kombi-taxis given certain socio-economic characteristics of the users as well as the quality of the service provided by the competing modes. Variables which had the greatest influence on modal choice were found to be difference in cost, total travel time and the the income of passengers. Details of these models are further examined later on in this thesis. He concluded that the typical users of kombi-taxis are the younger, higher educated men and women with higher incomes. He also found that the users of kombi-taxis are choosers as opposed to the bus users who are generally captive commuters. How representative this study area is of the South African situation, is questionable due to the fact that no trains are considered as an alternative public transport mode. Trains are certainly the most prevalent mode of public transport for the masses in this country.

**7. The Future Role of the Jitney in South Africa - by J.C.Vorster, MSc(Eng) Thesis, (Stellenbosch, 1986)**

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This study by Vorster is the only study to date in which the characteristics of the kombi-taxi are compared in great detail with that of the bus services. In particular, it makes a very comprehensive financial and economic comparison of the two modes. The study concludes that both financially and economically the jitney is only cheaper and more efficient than the bus

over short distances (less than 4 or 5 km) and for low passenger volumes (less than 1000 passengers/day/route).

It also briefly discusses the effect of kombi-taxi services on the bus industry, mostly quoting and commenting on articles and relevant sections of reports. Although some 1981 DOT modal split figures on some of the transportation corridors across the country are quoted in the thesis, no attempt has been made to estimate what percentage of passengers the bus service has lost to the kombi-taxi service on a National or even local level. The report of the Welgemoed Commission is also very extensively discussed.

**8. Combi-taxi feeder services in Cape Town : A Report on Field Observations - M J Freeman (NITRR, CSIR : Technical Report RT/54, December 1986)**

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This is a 44 page report on the observations of kombi-taxi operations in Cape Town. It is based on the monitoring surveys conducted by Freeman, with the help of the Survey Team of the Cape Town Metropolitan Transport Planning Branch. These observations were conducted at 6 railway stations during the AM, PM and off-peak periods in the Cape Town Metropolitan Area over a period of a week in August 1986. Kombi-taxi trip characteristics, passenger volumes and waiting times, as well as the extent of overloading, were also recorded. Especially useful to our study is the number of legal/registered and illegal taxis operating from each of the 6 railway stations, which has also been included in the report. Unfortunately for us, no details were recorded for the bus movements. Also absent from the report is a figure for the total number of registered kombi-taxis in the study area as well as the number of routes on which taxis operated at the

time. In fact, the railway stations surveyed are but 6 of at least 13 stations from which kombi-taxis operated.

The passenger volumes carried by kombi-taxi were found to be substantial and the mode should therefore be recognised as an important element in the Cape Town public transport system. It was also found that the fares charged by the kombi-taxi in Cape Town were cheaper than the bus cash fares but more expensive than the subsidised clipcard fare.

**9. Short Distance Commuting and the use of combi-taxis in Cape Town - M J Freeman (NITRR, CSIR : Technical Report RT/86, August 1987)**

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This report, the final one in a series of three, covers the findings of a survey which was conducted amongst 151 black and 150 coloured commuters in the Cape Town area during September 1985 to obtain information about their travel patterns and attitudes towards local bus and kombi-taxi services. All the interviews were conducted at businesses in 6 employment areas geographically well spread over the study area.

Three aspects of the bus and taxi services were addressed in the survey, namely journey characteristics, costs, and quality of service. The results show that of all the respondents, 77% used the bus and/or train to get to work, whilst only 6% used the kombi-taxi on any part of the work trip. It also shows that 58% of all the respondents had had experience of travelling by kombi-taxi. The analysis of the attitudinal data, which is presented separately for the black and coloured population groups, does not attempt to draw any distinction between the attitudes

of the respondents who have used kombi-taxis and those who have not.

#### Concluding Remark

Although all these studies were completed prior to 1987, their comprehensive descriptions of the regulations pertaining to the issuing of permits, are all still valid except for the fact that after January 1987, the maximum carrying capacity for these taxis were increased from 8 to 15 passengers. This thesis will therefore not deal in detail with this aspect of the regulation but will focus mainly on the proposed changes in the regulation, i.e. the deregulation measures proposed in the White Paper and their relevance to the taxi industry.

# Chapter 3

## The Introduction of Shared Taxis

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## CHAPTER 3

# THE INTRODUCTION OF SHARED TAXIS

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### Historical Overview

Looking at the kombi-taxi industry of today, the growth which it has experienced over such a short period of time, is phenomenal. What distinguishes this alternative mode of public transport from the conventional metered sedan taxi; apart from its increased carrying capacity, is the fact that it operates as a shared taxi, that is, instead of one person hiring the taxi and paying the metered fare, the driver of the taxi charges a fixed fare to every passenger who now shares the taxi with a few other passengers, very much like on a bus. Since the fare charged per person is therefore much less, it becomes an economically viable mode of public transport to those formally unable to engage the services of a metered taxi. Also the taxi owner benefits from this arrangement since he certainly is not losing out on a particular trip; and the collective fare per trip is equivalent if not more than the same metered trip.

But how and why did this concept of a shared taxi in Cape Town originate? In our investigation of the matter, some of the elderly taxi owners and drivers, including the owner who is believed to have been the first taxi owner to have offered a shared-taxi service in Cape Town, were consulted. Since no other recorded evidence could be found, the events described below, sketching the roots of the shared-taxi concept, have to a large extent been provided by these taxi drivers and owners.

Conventional taxis have been a recognised public transport mode since the advent of the wheel, but the concept of a shared taxi is believed to have been first introduced in Cape Town more than 30 years ago through the initiative of an individual operator. In those days the bus services were provided by a number of privately-owned operators with very few buses operating in the Cape Flats or coloured areas. The only reliable means of transport which was available to the residents of these areas were the trains. However, the railway stations were not always located within walking distance of these residential areas. This prompted the need for some form of feeder service to the railway stations. In some areas such feeder services were provided by privately-owned buses. At that time the residents of "Koeksebos" were without such a feeder service to Ottery Station. Mr.S.Ganief of S.GANIEF TAXIS, had two taxi ranks at Ottery Station at the time. Metered taxis were an expensive mode of public transport for these low-earning people of Koeksebos and was regarded as a luxury only to be used on pay days or for weekend shopping trips. The demand for the services of the metered taxi amongst this socially and economically deprived community was therefore not very promising for these taxi owners, although they were able to survive on this low demand.

Bearing in mind the absence of a feeder bus service as well as the low demand for the conventional metered taxi, Mr.Ganief decided to try a new system of operation that would be of benefit to both the residents of the area as well as himself. He started to offer a low fixed fare service carrying a full load of 4 passengers on a trip at 6 pence per head instead of the metered fare of 25 pence on the same route. This reduced fare meant that many more people were now able to afford the regular use of a taxi as a means of public transport.

It took at least a month for the idea to catch on amongst the passengers, after which the service became so popular that many of the other taxi owners at this rank, who, at first were very critical of the idea, also began to offer such a service. In the trade, this shared-taxi concept became known as "ry met die kop".

When the housing scheme area in Steenberg was established in 1959, Mr. Ganief saw potential for a similar shared-taxi service to be introduced in that area. Although buses were operating on this route from Steenberg station to the scheme area, only three bus trips were made daily. He then decided to introduce a shared-taxi service on this route charging a fixed fare of 5 pence per person. Once the idea caught on and the service became popular, some of the other operators on this route also followed suit. Despite the fact that this type of taxi service proved to be very popular, none of the taxi operators on the other routes were interested in introducing this service on their routes.

It was exactly 10 years later in 1969, when the township of Parkwood was established that Mr. Ganief decided to try and introduce a shared-taxi service on this route between Parkwood and Wynberg railway station with 3 taxis. At that time many taxis (metered) were already operating from the Southern side of the station where the official ranks are located. Initially no buses were operating on this route; it was only in 1972 that a bus service was introduced.

Mr. Ganief's attempt to initiate a shared-taxi service on this route was met with great opposition from the other taxi operators who were content with their metered taxi business but who obviously were not concerned about the plight of the residents of Parkwood who had no means of affordable public transport to the station. Many threats, which never materialised, were made by these operators against Mr. Ganief, which he

reported to the local police. Why these operators were dissatisfied with Mr.Ganief's shared-taxi service is hard to understand since this was a new route which did not interfere at all with their business since Mr.Ganief operated from the eastern side of the station on a vacant piece of land.

It wasn't long before the service gained popularity and to Mr.Ganief's surprise those very same operators who threatened him, then also started to offer a shared-taxi service on this route. Many of these operators later admitted to Mr.Ganief that "he had opened their eyes" to this new form of taxi business which by then had become very popular. Soon there were 8 taxis operating on this route charging a fare of 10 cents per person. Many Parkwood residents also used the taxi service to Southfield railway station.

It is only after the Parkwood shared-taxi service was established that this concept really gained acceptance amongst the taxi owner fraternity. However, when it came to the establishment of new routes, Mr.Ganief was always in the forefront. It is through his initiative that non-white taxis were first introduced at Simonstown, Fish Hoek, Muizenberg, Plumstead, Mutual, Southfield, Newlands, Lakeside, and more recently in Mitchells Plain and Mandalay. Although some of these ventures did not turn out to be as lucrative as he may have thought, the taxi industry of today must salute this man for his initiative. It is therefore not surprising that he has been nicknamed by many as "The Mayor of Taxis".

The shared-taxi business experienced a steady growth since 1970 with many new routes being established throughout the Peninsula. It should be noted that the taxis which operated as shared taxis were in fact contravening the authority of their public carrier permit. Despite this, the shared taxi operation was

recognised as such by the Driessen Committee of Inquiry into Urban Transport Facilities in 1974. In their report it was noted that "non-white taxis operate to a large extent as jitneys, i.e. small-size buses which follow a fixed route and are hailed by passengers" and went further to recommend that "explicit recognition should be given to taxi services in the preparation of transport plans" and that "the expansion of taxi services must be regarded as a necessary adjunct to the development of more adequate public transport services, especially distribution services, in the major urban centres." These recommendations which clearly encouraged the shared taxi type of services, were then translated into a White Paper in 1975 and then the Bill in 1976. One year later the Road Transportation Act (Act 74, of 1977) was enacted.

#### The Introduction of Kombi type taxis

This was the first major breakthrough for the shared taxi operator, for it allowed the kombi-type vehicle, carrying up to 8 passengers, to be used as taxis. The obvious result of this was that soon all the shared taxi owners traded in their sedan vehicles for kombi-type vehicles. By 1980, of the 597 registered taxis in the Cape Peninsula, 361 were operating as shared taxis of which most, if not all were kombi-taxis. These figures do not take account of the many illegal taxis which also entered the market.

In its quarterly news magazine Tollgate (Volume 11, No.2, 1983), The City Tramways, who operate the monopolised bus services in the Cape, featured a detailed report on the kombi-taxi situation at the time. Below are some extracts from this report.

"Bus operators throughout the country have been up in arms about the situation almost since abuse of the

provisions of the Act began to proliferate. For every legitimate permit holder who swapped his car for a kombi there are two or more pirates who run with no permit at all. These illegals operate how and when they like - most popularly just ahead of the scheduled bus services with the promise of delivering their passengers much closer to their destination - if not right at their doors.

The effect on the operations of the revenue dependent bus service is obvious. Stating it very simply, there are fewer passengers to support and the operator is eventually forced to spread his constantly increasing cost across fewer people."

The following cartoon, appearing on the cover of this issue of Tollgate, illustrates City Tramways' perception of the kombi-taxi at the time.

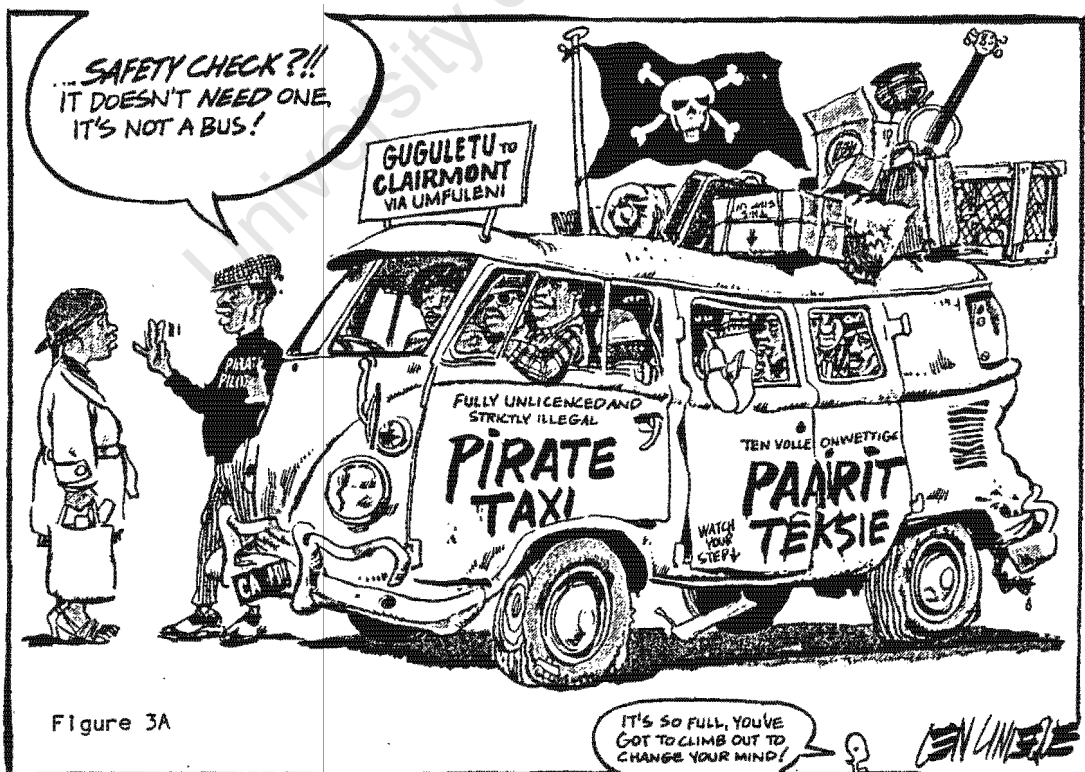


Figure 3A  
Vintage Lindeque demonstrates problem's duration: This cartoon, among the last executed by the late Len Lindeque, cartoonist of *Rapport* and brilliant political commentator, was commissioned by City Tramways in 1980 when boycotts of buses provided a shot in the arm for illegal operators.

It therefore seems that at the time there were more illegal than legal kombi-taxis on the road. This was so because of two reasons. Firstly, it was very difficult to obtain a Public Carrier Permit from the LRTB, and secondly, there were many advantages to operating an illegal taxi as opposed to a legal taxi because of the paradox which the legislation at the time produced. The legal kombi-taxi, was allowed to carry a maximum of 8 passengers, although the vehicle was designed to carry 10 passengers. If this legal taxi carries 10 passengers; and is stopped on the road by a traffic officer, it can be prosecuted for overloading. If however, this taxi had been an illegal taxi, and the traffic officer was unable to prove that it was operating as a taxi, then this taxi would have been allowed to continue its journey unimpeded.

As would be expected, the mighty bus companies were not going to take this threat by the competing kombi-taxis lying back. Their first strategy was an attempt to legally remove these "parasitic" (sic) kombi-taxis, from the public transport scene.

The Welgemoed Commission was appointed in 1981 to inquire into, and report on a number of aspects concerning bus passenger transportation in the Republic of South Africa. One of these aspects was *"the effect of taxis on the bus industry and the laying down of guidelines in this regard."* This Commission recommended in 1983 that the "taxis should be defined as motor vehicles carrying a maximum of four people" and that *"the present legalised eight passenger kombi-taxis should be phased out over a four-year period."* The draft Bill which followed was never debated in parliament, and was met with a barrage of criticism, particularly from the private sector.

The high-water mark in the regulation campaign against the taxis was probably reached in 1983 with the

promulgation of the Road Transportation Amendment Act (Act 8 of 1983), which compelled the courts to declare forfeit to the State any motor vehicle and goods involved in the undertaking of unauthorised road transportation of the third and each subsequent conviction of this offense.

In a report by the Competition Board, on the issue of Licensing of Taxis, it is reported that during the period 1982-1984 there was a drop of 2.6% per annum in the number of train passengers, while the number of bus passengers during the same period decreased by an average of 3.7% per annum. In the corresponding period the number of taxi passengers increased by an average of 20.8% per annum.

In Cape Town, City Tramways' General Manager remarked that "*If kombi-taxis continue creaming off profitable peak hour traffic and working the high density commuter routes, the entire viability of the public transport system will be undermined, possibly even destroyed.*" (Tollgate, Spring 1983). In 1985 Tramways reported a 23.3% drop in the number of bus passengers between 1976 and 1984 which they ascribed mainly to competing kombi-taxi services.

At a press conference on 27 February 1986, the South African Bus Operators Association (SABOA), announced that its members were considering moving into the taxi market, and competing with kombi-taxis. "*City Tramways ran minibuses in July 1986 in a pilot project in Crossroads, Khyalitsha and Nyanga. The pilot project was evidently successful as it was reported in November 1986 that City Tramways had introduced several hundred minibuses into the townships.*" (Race Relations Survey 1986)

Fortunately for the taxi industry, the National Transport Policy Study (NTPS), commissioned in 1982 by

the National Transport Commission, after an indepth study of the kombi-taxi situation, made a set of recommendations which were contrary to that made by the Welgemoed Commission with regard to the kombi-taxi industry. These recommendations were aimed at deregulating public transport with a view to encouraging private enterprise.

The NTPS investigation was completed on 31 March 1986 and resulted in the publication of the White Paper on National Transport Policy in August 1986. Insofar as the taxi industry was concerned, this White Paper which was tabled in Parliament on 30 January 1987, made the recommendation that "vehicles designed to carry up to 15 passengers plus the driver be allowed to operate as taxis." This recommendation was approved and the LRTBs we requested "to issue public permits for taxi service vehicles with a carrying capacity of up to a maximum of 15 persons on merit, provided that technical requirements relating to roadworthiness and safety are adhered to." Note that prior to this a maximum of 8 passengers were allowed. The result was that many of the taxi operators adapted their 10 seater vehicles to 14 seater vehicles by rearranging or adding more seats. They then, after obtaining a vehicles fitness certificate for their increased carrying capacity, applied to the LRTB to ammend their operating permit to legally carry the increased number of passengers.

Other deregulatory measures contained in the White Paper which affected the taxi industry were that the permit was to be replaced by an "Operating Authority" which is to be issued by the Regional Services Council. The government's view was that these operating authorities should be issued only if the applicant can subscribe to the following conditions :

"1. Tendering of proof that a certificate of fitness has been obtained for each vehicle.

2. An undertaking must be given that only drivers with a professional driving permit will be employed.

3. Proof should be provided that adequate insurance cover for passengers has been obtained."

The recommendation that "the granting of an Operating Authority shall not be conditional to the applicant proving that there is a need for the service", was also accepted by the government. Therefore, if an applicant qualifies in terms of the 3 conditions above, then he has to be granted an Operating Authority irrespective of whether the need for the service exist. However, these deregulatory measures, except for the first one (increased carrying capacity - which was immediately implemented), would only be implemented at a later stage once all the administrative technicalities had been sorted out. At that time the Minister of Transport indicated that by 1991 all the approved deregulatory measures contained in the White Paper would be implemented.

In response to the White Paper recommendations, City Tramways commented - "That seems like a recipe for chaos especially as taxis tend to concentrate on creaming passengers off peak hour bus routes and then disappear in the off-peak hours." (Tollgate, Spring 1987)

This White Paper was followed by the Transport Deregulation Bill in 1988 which made provisions for the "deregulation of road transportation in the Republic by way of the repeal, in stages, of the Road Transportation Act, 1977, in respect of the transportation of goods and the transportation of persons, respectively, with effect from dates to be determined by the Minister of Transport Affairs." It also stated that after the repeal of the relevant

provisions of the Road Transportation Act, 1977, the transportation of goods will be regulated in terms of the proposed Road Traffic Act, and transportation of persons in terms of both the Road Traffic Act and the proposed Passenger Transport Act. The Road Traffic Act was promulgated on 31 March 1989 and although the Passenger Transport Bill has already been drafted, the taxi industry awaits the promulgation of this Act, with trepidation in some circles, while for many others, it is awaited with eagerness. The aims and purposes of this Act have been stated as follows :

- a) to ensure the provision of safe and reliable passenger transport services;
- b) to optimise user choice and need satisfaction subject to considerations of affordability;
- c) to provide passenger transport in an economically efficient manner;
- d) to promote the use of public transport;
- e) to promote open financial accountability for the payment of passenger transport subsidies;
- f) to further private initiative and effective competition;
- g) to encourage small business development;
- h) to devolve decision-making regarding passenger transport to the lowest possible level of government;
- i) to simplify regulations to enable them to be effectively enforced;
- j) to reduce administrative costs and unnecessary government intervention;
- k) to assist regional development;
- l) to co-ordinate passenger transport in Southern Africa.

Of special interest to the bus operators, is the proposed creation of "protected routes" defined as "a route on which a subsidised road passenger service is protected from competition by buses". In terms of the draft bill only bus operators would be welcome to apply

for "protected route authorisation" and not kombi-taxis.

Many have expressed concern at the possible consequences the deregulation measures would have on the taxi industry. This concern is motivated by the fact that these regulatory measures would make taxi permits or "operating authorities" much more freely available; the result of which will be a sudden surge of new taxi operators onto the market, developing into a chaotic and potentially explosive situation. One could understand the unhappiness amongst some of the present taxi operators who battled for many years to obtain their ranks/permits, some even paying as much as R10000 for theirs; now suddenly every "Dick, Tom and Harry" would easily be able to obtain a permit without even having to prove that a need for the service exists. But worst of all, these new comers, as well as the operators from other areas, would now be allowed to operate from "their" ranks and on "their" routes which means more competition and less profits.

The proponents of the principle of free market enterprise maintain that although initially some chaos and oversupply is to be expected, the "market mechanism" of supply and demand would soon straighten out this problem. An essential component on the deregulatory measures is the accompanying emphasis for safety and quality control. This is to be provided for through the Road Transport Quality System (RTQS). In terms of the provisions for the RTQS, the following controls will be strictly implemented :

1. Driver Fitness
2. Vehicle fitness
3. Operator fitness

Applied to kombi-taxis, it would mean that the following changes would be necessitated :

1. In addition to the ordinary driver's licence, all kombi-taxi drivers would have to obtain a Professional Driving Permit (PrDP) renewable every 24 months.
2. Maximum driving and minimum resting time limits would apply for drivers.
3. Instead of the Certificate of Fitness (COF) which had to be renewed every 6 months, a Road Worthy Certificate (RWC) for each vehicle has to be obtained every 12 months.
4. Whereas permits were issued for specific routes/operating radii, this would be replaced by an operator card (for identification) with authority no longer restricted to a route or operating radius.

To successfully implement this system, the present law enforcement resources on the road would be hopelessly inadequate. To assist in this regard a sophisticated computerised on-line databank system, costing R18 million is reported to be on the drawing boards and it is hoped to have it operational by March 1990.  
(Argus, 22/7/89)

## FROM TRAMS TO KOMBI TAXIS - HISTORY REPEATING ITSELF ?

Coates, in his book "*Track and Trackless*", describes in some detail the period when buses were first introduced at the time when trams and trains were the only means of public transport in Cape Town.

The impact which the buses then had on the established tram services, is remarkably similar in character to the impact which the present day kombi taxis are having on the present bus service. The very same accusations which the present bus operators are now levelling at the kombi taxi industry, were then directed at the privately owned and operated motor buses, and by the very same tramway company. It is therefore worthwhile to briefly examine this history.

### First Buses Introduced

Before 1911, the public transport scene in Cape Town was dominated by the trams, operated by the City Tramways Company, and the state funded railway services. It was when Cape Town started to tar its streets in 1909 that the Tramway Company thought the time had come to try out a few buses. Their fleet of 3 Leyland buses which arrived on 18th December 1911 were not to be used on any of the local routes but only for excursion trips. The first to compete with City Tramways was A.Overton, who obtained a licence in August 1914.

When the Cape Town City Council asked the City Tramways in 1921 to provide transport for the newly-developed areas of Maitland, Plumstead and parts of the Cape Flats, they refused, regarding these services as unpayable propositions. It was therefore in the absence

of co-operation from the Tramway Company, that the Lansdowne and District Civic Association appealed to the Peninsula Pleasures Limited, a private bus company, to run a motor bus service between Philippi and Claremont Stations via Lansdowne. On the 1 June 1922, this company decided to put one of its vehicles on this route. In December of that same year, the City Tramways was persuaded by the Municipality to run a bus to Mouille Point. This was followed in July 1923 by a bus service to Fresnaye (above Sea Point). One year later the total number of buses plying for hire had increased to 28. This obviously resulted in competition between the privately-owned buses and the trams and buses operated by the Tramway Company.

Coates writes - "At certain times of the day these newcomers caused acute congestion at the traditional tram stops when they stopped to steal away tram passengers. The operators were no longer confining themselves to areas which lacked transport but began to pirate those areas already served by the tramways and railways. This competition led to other nuisances. A municipal regulation had to be passed to forbid conductors or any other persons to call out, tout or otherwise importune any person to engage a seat in their bus."

#### Problems with Privately-owned buses

These privately-owned buses were claimed to have been unsatisfactory from many points of view, e.g.

a) Their coachwork was often home-made.

b) The chassis were seldom designed for passenger vehicles and were incapable of carrying the load the owner anticipated.

c) There was no insurance cover for passengers in case of accident.

d) There was no obligation upon the owner to maintain a regular service.

e) The intending passenger had no idea of what the fare would be except that it would probably be less than the trams.

f) These buses carried as many passengers as they could and left the unprofitable rush-hour traffic to the trams.

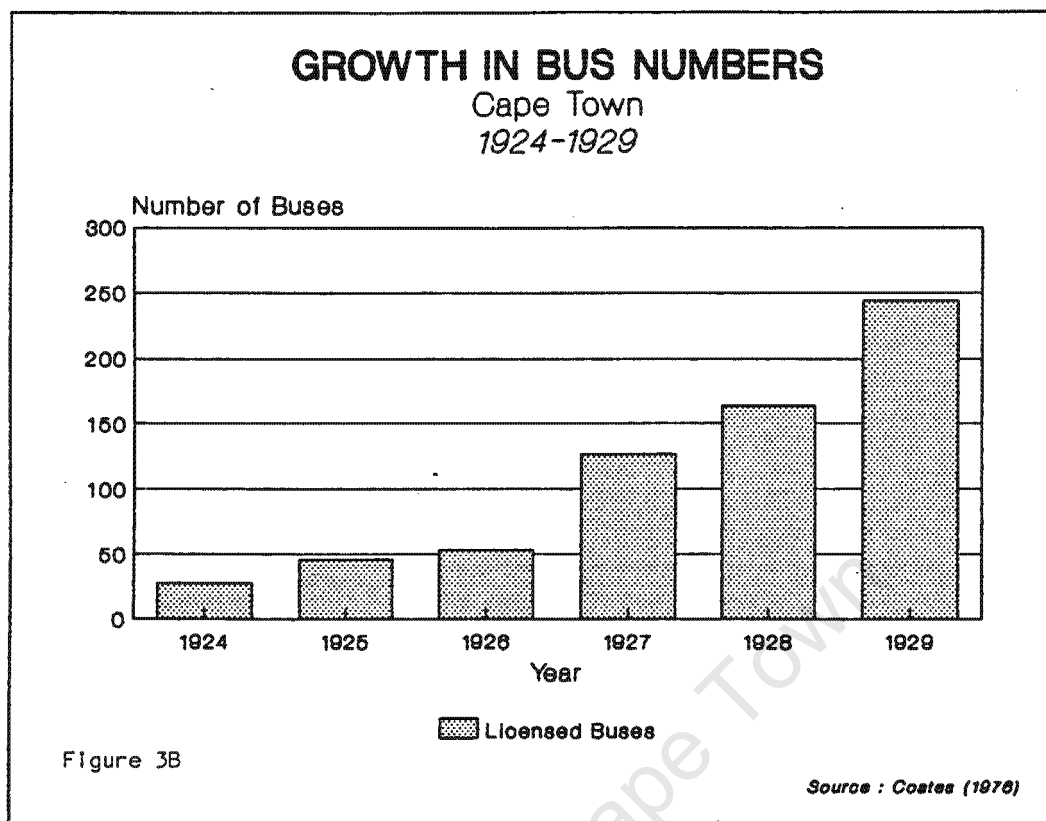
g) Although large profits accrued from each bus, enough to encourage still more people to enter the field, money was seldom put aside for depreciation or major repairs.

To their credit however, some of the private buses opened up formerly inaccessible areas such as lower Mowbray, Crawford and the Claremont flats.

#### Tramway Company's Unwillingness to provide Bus Services

In retrospect, Tramways' refusal to operate a bus service to the Cape Flats and Lansdowne, was unwise for it was these very routes which spawned the host of owner-driven buses which, within four years nearly drove the Tramway Company out of business.

As far as the Tramway Company was concerned, bus competition took a serious turn in 1927. Over a period of 5 years, the number of licensed buses in Cape Town grew from 28 in 1924 to 244 in 1929, as illustrated by the graph below.



One could not really quibble over bus services to outlying places, even though they did compete with the existing operators on the main routes. The danger lay with those buses which ran in direct competition with the tramways and railways and which charged lower fares than the trams.

From Wynberg to Camps Bay the "bus war" was then in full swing. Rival buses would bear down on waiting passengers at high speeds and cutting in was the order of the day. Accidents were so frequent that even the tried and trusted Tramway Company could not get insurance cover at a reasonable rate. In competing with the buses, trams were at a special disadvantage on the miles of single track out to Wynberg and on certain central routes. To compensate for their slow speed, rock-bottom fares had to be charged to attract passengers. Penny stages on the trams were introduced but while the number of passengers increased, the revenue declined.

Now the Tramway Company, which had given up trying to make a profit, concentrated all its efforts on driving its competitors into liquidation. Unbeatable tram fares and floods of buses were its chief weapons. It disguised its buses in all sorts of colours to make the public think it was boarding one of the cheaper 'pirate' buses. Unfortunately however, the result was that it competed with its own trams, the revenue from which dropped rapidly. Further competition for the City Tramway Company's trams was provided in July 1928 when the Camps Bay Tramway Company drastically reduced its tram service in favour of buses. The result was that between 1925/26 and 1930/31, Cape Town Tramways' trams lost 37% of its passengers.

The Tramway Company protested that this competition was unfair. While it had to pay statutory wages, contribute heavily towards road maintenance and pay part of its profits to the City Council, its competitors got off without paying anything. The buses were not required to adhere to a time-table like the trams, there was no published scale of fares and no fixed routes. An owner might try running on one route on one day and somewhere else the next. Youths, women and coloured people were employed as drivers and conductors on 'pirate' buses at greatly reduced wages. Rush-hour traffic was left entirely to the tramways and railways which had to keep an uneconomically large fleet of trams and trains to deal with it.

#### Action Taken by the Authorities

That Cape Town's public transport chaos had become farcical was apparent to the City Fathers who appointed a Traffic Advisory Board. In July 1927 new regulations were drawn up and passed by the Council. Free-lance bus operators took great exception to these, particularly those relating to keeping to a published time-table,

but a petition on the subject received no recognition. The Tramway Company was jubilant, until it discovered that the Council had exceeded its authority by attempting to restrict motor buses. The Administrator would only approve the regulation after a special Ordinance had been passed two years later.

#### Bus Operators' Associations

The chief effect of these first sluggish attempts to remedy the matter was the consolidation of the individual operators into associations. Most important of these was the Amalgamated Omnibus Operators' Association, better known as the Triangle Association, established in 1928. Most of its members were single operators who ran their bus with the assistance of relatives. Each operator retained his identity in the Association but displayed the Association's triangle on his buses and kept to a mutually agreed time-table. Fines were levied on any member who deviated from it. The Association's main function was to provide a bargaining body to deal with the controlling authorities.

Triangle's organizing of about 50 independent bus operators in the Southern Suburbs and on the Cape Flats made Tramway's task still more difficult.

Following Camps Bay's example, it was resolved that trams between Mowbray and Wynberg would only run at busy periods in the day from 1st November 1928. At all other times City Tramway's buses would run. The remaining tram service beyond Mowbray was further reduced to two trams each way daily with none on Sundays from May 1929.

### Road Traffic Ordinance of 1929

At last the Road Traffic Ordinance of 1929 came into force on 1st January 1930. The Cape Town Municipality's first action was to alleviate some of Adderley Street's bus congestion by requiring buses for the northern suburbs to terminate in Castle Street alongside the Parade. Next, municipal bus inspectors were appointed to ensure that buses ran according to a time-table compiled by the Traffic Control Department. Despite these measures the Council was still afraid to refuse new licenses at a time when this action was really needed.

### Effect of bus competition on the Railways

Not only was the trams' patronage affected by the bus competition, but also the railways. In fact on 17th April 1929 the train service from Sea Point to Monument Station in Adderley Street was brought to an end. Shortly after, the South African Railways was threatening to close the Simon's Town and Cape Flats lines as well. Also due to increasing bus competition, the privately-owned Milnerton railway closed for regular traffic on 31st July 1930.

In place of the Sea Point railway came the Road Car Company whose buses commenced about July 1929. It planned a regular and reliable bus service between Cape Town and Sea Point. Existing buses and trams were not easily driven off the route and the Road Car Company struggled on until the establishment of yet another bus company on this route.

### Commission of Inquiry

Throughout 1929 a Government commission of enquiry into road motor competition, prompted by losses in railway passenger and goods traffic, collected evidence in all parts of the country. Its report strongly urged the establishment of a central Transportation Board, with Local Boards of three members each in the major urban centres, which would issue Motor Carrier Certificates to all forms of commercial road transport. Local Boards were to get wide powers of discretion but appeal would be made to the central Board, then to the Supreme Court. The Motor Carrier Transportation Act based on the report was passed by Parliament in 1930 and certificates were required from the beginning of 1931.

### Improved Bus Service

On 17th February 1930 V.A.Hughes began business, styling his bus service the 'Cape Town Motor Omnibus Company (Pty) Limited'. He had come out from London where he had gained considerable experience in passenger transport operation. His buses were the most comfortable yet seen in Cape Town and from the outset would only take European passengers, and, lest there be any misunderstanding, all his buses displayed a large 'E'. He soon drove off the Road Car Company. His buses proved a serious rival for the Tramway Company for many of the usual objections could not be levelled against him. From April 1930 he began week-end services to Camps Bay in the place of the trams which had just ceased to run - the last tram ran on 16th February 1930.

### City Tramway's New Management

When control of the Cape Electric Tramways was transferred from London to Cape Town at the end of May 1930, the new Board of Directors' first major action was to initiate a campaign to come to terms with its competitors. Chief among these were Hughes' Cape Town Motor Omnibus Company which operated chiefly on the Sea Point route. In August 1930 the City Tramways and Hughes agreed to a uniform scale of fares and the Municipal Traffic Control Committee undertook not to issue any further bus licenses for the Sea Point route. Very soon Hughes and Cape Electric Tramways were discussing the possibility of establishing a new company which would take over motor bus interests of the City Tramways, the Camps Bay Bus Service and Hughes's Motor Omnibus Company. In terms of this discussion the City Tramways Company would have the major financial interest, while Hughes would be General Manager at 1 000 pounds per annum. After a month of negotiation, the Tramways withdrew. It was uncertain about the future of buses on the Sea Point route once the Local Transportation Board began issuing certificates in 1931. In January 1931 certificates were issued to every bus operator already on the road and only new applicants were refused. Negotiations with Hughes resumed. On 10th March 1931 Cape Electric Trams resolved to buy 51% of the Cape Town Motor Omnibus Company's subscribed capital at par plus the balance of the shares for a further 2 000 pounds. Hughes and his partner were retained to operate the Company. The City Tramways' 20 motor buses running on the Sea Point route were transferred to the Motor Omnibus Company and the Camps Bay Bus Service joined on 1st April with 15 buses.

The City Tramways's remaining 41 buses were running to Wynberg at a loss but Cape Electric Tramways found this useful for writing off against tax and offsetting the

reviving prosperity of City Tramways' tramway service. The tramways' sudden renaissance after 1931 is perhaps the most interesting feature of Cape Town's tramway history.

### The August "Massacre"

In 1931 the Local Transportation Board announced the cancellation of all bus certificates on routes from Cape Town to Wynberg and the Northern Suburbs. This was a great shock to everyone. When the various owners were given new certificates in August 1931 most of them found that their routes were restricted to run from their nearest suburban railway station. Many got no certificates at all. Only 80 out of the 123 buses on the Southern Suburbs routes received certificates and the great majority of these were allocated to members of the Triangle Association which had been especially registered as a company for this purpose. The new routes chosen by the Transportation Board did not follow natural traffic flows and consequently received no support from the public. Buses from Kensington to Maitland Station carried only 40 adults and two children all day on 1st August. The route from Paradise Estate, Claremont, to Newlands carried no passengers in the morning rush hour and took only 10s in fares the whole day. Worst of all was the Milnerton to Salt River Station bus which only carried four passengers all day. The few remaining through-services to Cape Town were so crowded that people almost fought to board. City Tramways' certificates were drastically cut like all the rest. Further cancellations were made the following October.

Up to the August bus 'massacre' the Tramway Company had been running only one tram in the morning and evening between Mowbray and Wynberg, merely to preserve its rights under the *Southern Suburbs Tramway Act*. It could

now profitably run trams along the main road as the few buses which remained were obliged to adhere strictly to a time-table or lose their certificates. Trams were exempted from the Transportation Boards' authority and could therefore run as often as the City Council would allow. They were of a modern design which proved very popular with the public. The Tramway Company's action antagonised the local Transportation Board which, as a direct consequence, withdrew all the City Tramways' remaining bus certificates on this route at the end of 1931.

On 14th January the Tramway Company extended the full tram service to Wynberg once more. During the financial year 1931/32 the number of tramway passengers increased by 4 416 470 or 20% over the previous year. Even with penny stages all the lines were making a profit, barring the Hanover Street and Kloof Street lines where bus competition could not be beaten.

The bus war and certificates changed the Southern Suburbs Company like the fairy godmother changed Cinderella. Previously, the company had run only the original rickety single-truck trams; now, it put on its new single-deckers which were run as fast as the single-track would allow. Penny fares were, of course, an important factor in the trams' favour.

### The Trackless Tram

But as suddenly as it had begun, the spell of prosperity waned. It was the trackless tram which would be the company's hope for the future. The bus war took a new turn. On 1st October 1931 a new company was formed to operate on the Southern Suburbs bus routes. This was Peninsula Transport Company (Pty) Limited, an amalgamation of two bus companies. Both had been members of the Triangle Association which was beginning

to break up and was to end in liquidation. To establish a good fleet of buses, Peninsula Transport obtained the financial backing of the Texas Company and the Atlantic Refining Company.

#### New Road Transport Plan

The local Transportation Board's plan for road transport began to emerge in 1932. It wanted to create 'spheres of influence' and to do this all the certificates in an area would be granted to one operator whom they considered capable of dealing with the traffic. Peninsula Transport was given the Southern Suburbs routes, while the City Tramways obtained sole rights on the lower main road to Observatory. The other principal operators were former Triangle Association members, namely the Pasvolsky Family's Golden Arrow Bus Service, Northern Transport and Southern Transports. Peninsula Transport was ably run and soon began to affect the tram service to Wynberg. The Tramway Company tried to harass it by employing private detectives to travel in its buses. If there was a deviation from the time-table or schedule of fares it would be taken to Court. This was the Tramway Company's only means of attack. It paid its staff regulation wages, insured passengers and did everything that was expected.

The local Transportation Board went further by suggesting that trams beyond Mowbray be withdrawn entirely, fares could be increased by both parties, and a joint time-table could be run as far as Mowbray. The Tramways were at first unwilling to co-operate but eventually they entered an agreement whereby trams would be discontinued beyond Mowbray and the profits on the whole route pooled and divided according to mutually agreed percentages. The arrangement worked very well. The City Tramways Company eventually purchased the assets of Peninsula Transport in August

1934 when the Tramway Company's announcement of trackless trams threatened to revive the old bus war.

Competition on the trams lingered on the Hanover Street and Kloof Street routes. After lengthy negotiations, the City Tramways acquired in June 1932 the five bus certificates issued for Kloof Street. It then gradually reduced the bus service and increased the fares. The Hanover Street certificates were also eventually purchased by the Tramway Company in January 1933. By 1934, Cape Electric Tramways through its subsidiaries (chiefly the City Tramways Company) had acquired a complete monopoly of road transport in the Peninsula as far as Wynberg. Of the remaining independent companies, Northern Transport was purchased in 1936, Southern Transports in 1948, and finally to everyone's surprise, Cape Electric Tramways was taken over by Golden Arrow Bus Services in 1956.

### Conclusion & Discussion

Historical events indicate that the rivalry that existed between trams and buses and subsequently between buses and kombi-taxis appears to be basically similar. The following points illustrate the fact that history seems to be repeating itself.

1. Buses services at the time and shared taxi services of today, originally emerged as a result of the absence of conventional public transport mode on certain routes, especially in the newly developed townships. They were therefore providing a much needed service which the tram/bus operators were either unable, or unwilling to provide.

2. The bus and taxi services, once introduced, soon became popular resulting in many new operators entering this market. The growth trends of the number of

licensed buses between 1924-1929, and that of the kombi-taxis between 1983-1988, appear to be identical as illustrated by the Graphs 3-A and 4-A.

3. The very same accusations made by the tramway companies (including City Tramways) against the operation of the buses, have all now been repeated by the bus company, City Tramways, (the same company who operated the trams in the 1920's), against the operation of present kombi-taxi services. Some of the more common accusations include the causing of congestion at tram/bus stops, touting for passengers, "stealing away" tram/bus passengers, and the poor conditions of these vehicles. The frequent accidents also seem to be recurring.

4. Many buses at that time also operated in direct competition with the trams while charging a lower fare. Kombi-taxis also operate in direct competition with the buses and often have a lower fare structure.

5. The measures adopted by the tram companies to combat the competition by buses, are similar to present bus company's strategy to address the problem of competing kombi-taxis. These measures were : (a) to lower their fares, and (b) to acquire many buses/kombi-taxis of their own to compete with the other bus/taxi operators. These strategies did not succeed then, and do not seem to be succeeding now either.

6. As a result of the bus competition, the trams lost 37% of their passengers between 1925 and 1931. City Tramways reported a decrease of 23.3% in their bus passenger trips over the period 1976-1983.

7. The increasing regulatory measures which, threatening the individual bus operators in 1928, resulted in the formation of Triangle Association, comprising mainly individual bus operators. The main function of

this association was to provide a bargaining body to deal with the controlling authorities. Similarly, the South African Black Taxi Association (SABTA), and many other local taxi associations were formed after the appointment of the Welgemoed Commission of Inquiry into Bus Passenger Transportation.

Where the present kombi-taxi situation differs from the historical events, is the point at which legislation was passed. The legislation of the 1930's resulted in the formation of the Local Road Transportation Board (LRTB). The LRTB, with its wide powers of discretion, applied further regulatory measures which ultimately created a milieu for the emergence of a bus transport monopoly.

On the other hand, the legislation proposed in the recent 1987 White Paper, is aimed at deregulation; a move towards privatisation of urban public transport. The success of this approach hinges on the effectiveness of the "market mechanism" when applied to public transport. Therefore, should the proposed deregulatory measures be fully implemented, it is hoped that the forces of supply and demand will ultimately bring order to the potentially chaotic situation which will arise with a sudden influx of new taxi operators onto the market.

To summarise, we saw that minimum regulation led to competition between the trams and the buses and between established companies and new entrepreneurs exploiting a profitable venture. This resulted in a chaotic public transport situation which made control difficult. In terms of its historical experience the monopolised bus company fears that without regulations the same state of chaos which existed in the public transport system of the 1920's, might again prevail. Perceived by the

public transport user, the monopoly of one transport company is regarded as oppressive and exploitative with the user being subjected to an entrapped situation of bus fare escalations without alternative means of transport. The kombi-taxi provides such an alternative especially when these taxis refused to comply with increases in fares negotiated by the bus company with the LRTB.

The emergence of the kombi-taxi and the commuter support it currently enjoys, is ample proof that the need for such a service exists, a service which the bus operators are unable to provide.

With deregulation, the emergence of a merging monopoly of kombi-taxis is minimised, nevertheless monopoly should be guarded against in the interest of providing a relatively cheap public transport service.

# Chapter 4

## Growth Patterns

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## CHAPTER 4

# GROWTH PATTERNS ]

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In order to consider what impact the kombi-taxi may have had on public transport, it is necessary to first establish how this industry grew over the years. Associated with the growth in the taxi industry, are also many other factors that either had an influence on this growth, or were influenced by it. In this chapter these growth trends are presented.

### Taxi Industry

The shared taxi industry which started some 40 years ago, only really gained momentum after 1977 when the Road Transportation Act (Act No.74 of 1977) was promulgated allowing taxis to carry up to eight passengers. This paved the way for the introduction of kombi-type vehicles which had a seating capacity of 10 passengers.

Records of the growth in taxi numbers have not been kept by the authorities concerned. Even today, no official record is being kept of the number of taxis in the Metropolitan Transport Area. The only form of monitoring is done by the Metropolitan Transport Planning Branch of the Cape Town City Council who, since 1986 have monitored the evening peak period movements of all kombi-taxis (legal and illegal) on most of the routes in the study area. Only the inter-township routes were not included in these surveys. From these surveys it is possible to trace the growth in kombi-taxi activity in the study area since 1986. The table below summarises the results of the 1986, 1987 and 1988 surveys showing the number of routes monitored, the total number of passenger trips recorded

(arrivals and departures), the number of different taxis (identified by the numerical portion of the vehicle's number plate) and the number of illegal taxis (identified by the absence of a rank number on the taxi) observed. (Appendix A contains a summary of the survey results on each of the 77 routes)

Table 4.1 : MTP Kombi-taxi Survey Results

	1986	1987	1988
Number of routes	48	69	77
Total Passenger Departures	12 444	27 767	37 864
Total Passenger Arrivals	1 770	4 775	6 239
Total Passenger Trips	14 214	32 542	44 103
Total Number of Taxis	596	1,105	1317
Illegal Taxis (%)	19%	14%	5%

Note that because the 1986 survey only monitored the volumes over a 90 minute period, the passenger trip volumes above should not be compared with the 1987 and 1988 volumes which were recorded over a 150 minute period. The number of taxis indicated in the table has been obtained with the aid of a computer sorting procedure of all the recorded vehicle number plate numbers. In 1987, an additional 21 new routes were included in the survey and 2 of the 1986 routes were discontinued. In 1988, 9 new routes were added to the survey and another 1 route was discontinued.

The only source for establishing the actual number of legal taxis operating in the study area, is the records of the Local Transportation Board which keeps copies of the permits issued. However as soon as the period of

the permit expires, it (the copy of the permit) gets discarded. Therefore, although one would be able to determine the number of permits that are valid at any present time, no record is kept of permits that have expired. One would therefore have to refer to other studies that were undertaken in the past and use this as a source.

Four such references were found to help determine the growth pattern of the taxi industry in the study area, as illustrated by the table below.

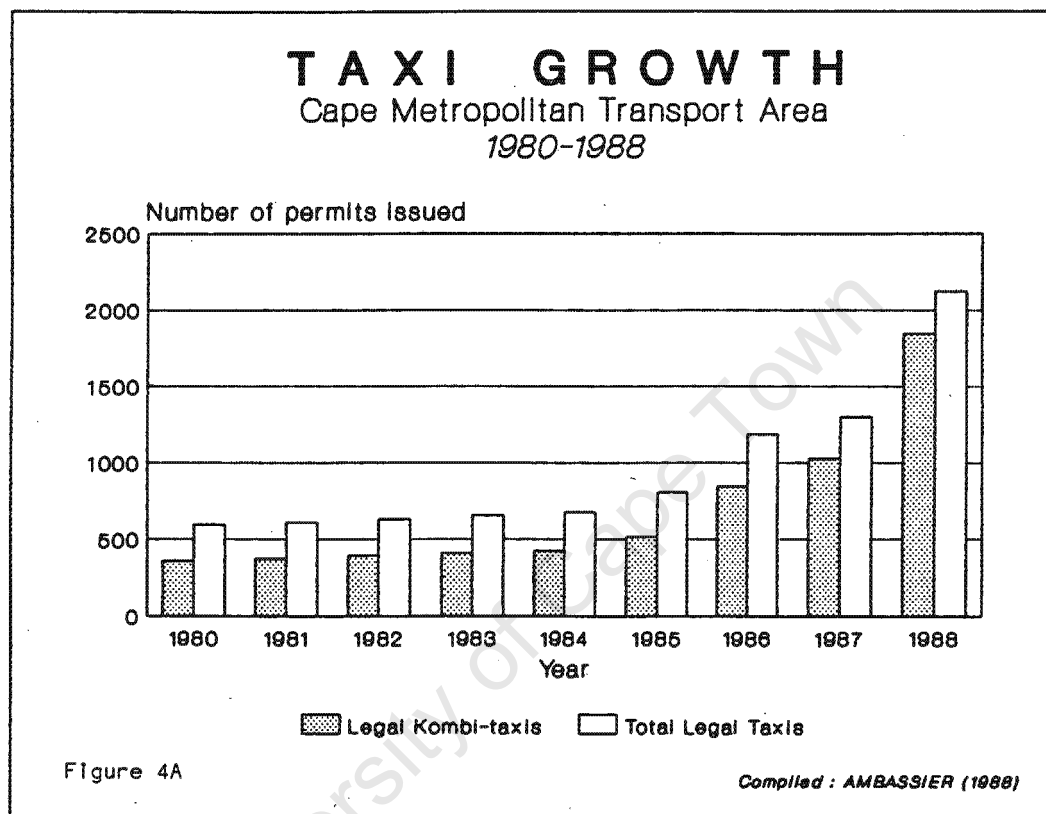
Table 4.2 : Growth in the number of taxis (with sources)

Date	Number of Shared Taxis	Total Number of Taxis	Source
Sept 1980	361	597	Stroud(1981)
June 1984	428	679	Kokenot(1984)
June 1985	514	809	NTPS(1985)
Oct 1986	849	1185	MTP(1987)
Feb 1987	1028	1303	LRTB(1988)
May 1988	1846	2125	LRTB(1988)

Appendix D contains a detailed list of the number of permits issued in each ranking location in the study area.

Note from the table above that the term shared taxi instead of kombi-taxi was used. This is so because not all the shared taxis were kombi-taxis, especially in the late 1970s and even early 1980s. In fact, prior to 1978, all shared taxis were sedan vehicles, while a few kombi vehicles also operated as illegal taxis. It was only after 1977 that these vehicles were gradually being replaced by the kombi type vehicles. It would

appear that by 1982 most of the sedan type vehicles operating as shared taxis had been replaced by kombi-type vehicles.

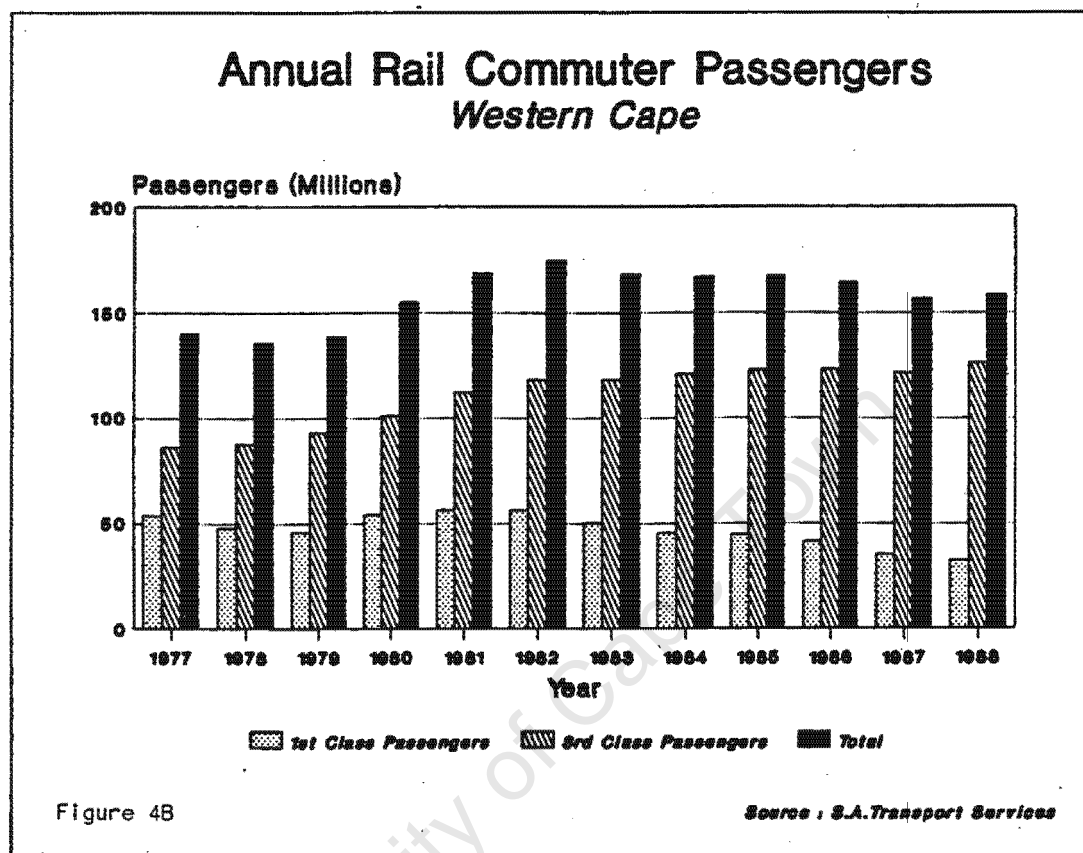


To consider the impact these taxis may have had on other modes of public transport, one has to consider other factors which may have had an influence on, or for that matter, been influenced by this mode of public transport, either directly or indirectly. Let us, however, first consider the growth pattern of the other public transport modes.

### Train Commuters

Looking at the growth of the number of train commuters over the years, it is noted that after 1982 there was a gradual decrease in the total number of commuters using

the train in South Africa, as illustrated by the chart below.



Although this was a national trend, the situation in the Western Cape was somewhat different in that it experienced a gradual increase in the number of 3rd class passengers, but a sharp drop in the number of 1st class passengers.

Nationally, SATS attribute the general drop in passengers to unfavourable economic circumstances, unemployment and competition from kombi-taxis (SATS, 1987a). Locally, however, SATS does not see the kombi-taxis as operating in competition with them claiming that they (SATS) concentrate on moving the masses which, they argue, the taxis are obviously unable to do. The sharp drop in the number of 1st class

passengers they attribute to the increased usage of private transport as well as the shift of 1st class passengers to third class, hence the accompanying increase in the number of 3rd class passengers (Lotz, 1988).

Despite the claim by SATS that they have been unaffected by the kombi-taxi services, one cannot help but suspect that the kombi-taxis may have had some influence on the initial decrease after 1977 and then again after 1982. It will be shown later that to some extent the kombi-taxis did have an effect on the train commuter numbers.

### Bus Commuters

The main bus operator in the study area is City Tramways Ltd. Figures indicating the growth in bus passenger numbers over the years, have been most difficult to come by due to the reluctance of City Tramways to provide any information in this regard for reasons of "confidentiality" (sic). It was therefore necessary to use other studies as the only sources. The only study that proved to be helpful in this regard was the bus monitoring surveys undertaken by the Metropolitan Transport Planning branch of the Cape Town City Council. Two of these surveys were used to gain some insight into the growth of the bus passenger numbers in the study area.

### First Study (by MTP)

In the one study, trip characteristics were recorded in 1982 and then repeated in 1987 on a number of bus routes in our study area. Of interest here is the number of daily trips which were recorded on each of these routes. Although a total of 177 routes were surveyed in 1987, only 124 of these were surveyed in

1982. Of the 124 routes, 5 routes were not surveyed in 1987 either due to changes to the route or the route being discontinued. Therefore, details of only 119 routes were adequate for analyses. Of these, 81 (68%) showed a drop in the number of scheduled bus trips, 9 (8%) showed no change, and 29 (24%) showed an increase in the number of scheduled trips. The table below shows the results in greater detail.

Table 4.3 : Changes in the number of bus trips

Percentage Change		Number of Routes (%)
Decreases	80 - 99%	1 (1%)
	60 - 79%	6 (5%)
	40 - 59%	19 (16%)
	20 - 39%	33 (28%)
	1 - 19%	22 (18%)
No change	0%	9 (8%)
Increases	1 - 19%	11 (9%)
	20 - 39%	5 (4%)
	40 - 59%	3 (2.5%)
	60 - 79%	2 (2%)
	80 - 99%	3 (2.5%)
	>=100%	5 (4%)
Total		119 (100%)

Of the 29 routes that showed an increase in the number of bus trips, it is only on seven of these routes that kombi-taxis presently operate. The table below shows the percentage increases on these routes.

Table 4.4 : Increases in bus trips on routes where taxi also operate

Route	Increase	Age of taxi service
1. Nyanga - Mowbray	7%	2yrs
2. Bellville - Kraaifontein	14%	7yrs
3. Bellville - Glenhaven	15%	3yrs
4. Wynberg - Hout Bay	26%	5yrs
5. Ocean View - Fish Hoek	30%	16yrs
6. Nyanga - Bellville	56%	16yrs
7. Wynberg - Hanover Park	74%	15yrs

Please refer to Appendix A for a more detailed account of the particulars on each of the 177 routes surveyed. Also indicated in this appendix are the bus routes on which taxis operate.

#### Second Study (by MTP)

The other study also involved bus monitoring surveys which were undertaken in 1983 and then repeated in 1987. In this study however, bus movements were recorded on more than 300 road segments during the morning and evening 2.5 hour peak periods. Details such as the number of trips and the number of passengers were recorded for the bus movements in both directions of traffic flow.

Unfortunately, of all the different road segments surveyed, only the data of 161 segments could be used to draw accurate comparisons between the 1983 and 1987 figures. Note should be taken that the 1987 surveys were conducted between February and April, a period soon after the announcement of the important White Paper on Public Transport (Aug 1986). It was during this time, and more towards the middle of that year that the taxi industry experienced phenomenal growth, as illustrated by Graph 4-A.

The results of this survey show that between 1983 and 1987 there has been an overall drop of 9.4% observed bus trips and a 2.5% drop in the observed number of passengers. However, on exactly half of these segments an increase in the number of observed passenger trips were noted. The greatest decrease was observed in Mitchells Plain on the A.Z.Berman segment between Eighth Avenue and Tafelsig. The number of scheduled bus trips dropped by 82 (83%) and the number of passengers by 2088 (89%). The greatest increase was observed on Wetton Road between Main Road and Lansdowne Road. Here the number of scheduled bus trips increased by 42 (263%) and the number of passengers by 1800 (2093%). The table below summarises the results of this survey.

Table 4.5 : Changes in the number of bus passengers

Percentage Change		No. of Road Segments (%)	
Decreases	80 - 99%	3	(2%)
	60 - 79%	8	(5%)
	40 - 59%	18	(11%)
	20 - 39%	27	(17%)
	1 - 19%	25	(15.5%)
Increases	1 - 19%	17	(15.5%)
	20 - 39%	17	(15.5%)
	40 - 59%	11	(7%)
	60 - 79%	6	(4%)
	80 - 99%	5	(3%)
	>=100%	24	(15%)
Total		161	(100%)

Interesting to note is the fact that many of the routes which have experienced decreases in the number of passengers, are also routes on which kombi-taxis are operating. However, many of the routes on which taxis do not operate, have also been experiencing decreases in bus passenger numbers, suggesting that the taxi is not the only cause of this phenomenon. Later (Chapter

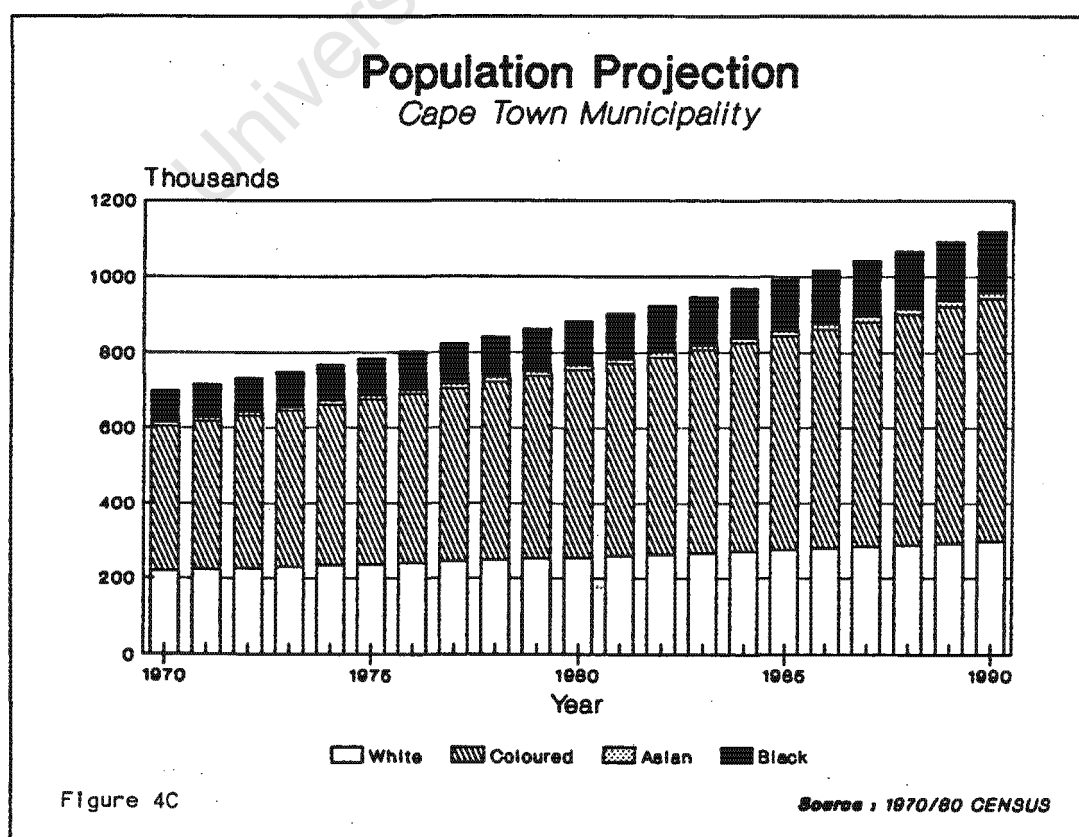
7), it will be shown to what extent the taxis were responsible for this decrease in bus passenger numbers.

### Other Growth Trends

Apart from the growth trends of the other public transport modes, the following growth trends have also been investigated in order to perceive the growth of the kombi-taxi industry from a more holistic perspective.

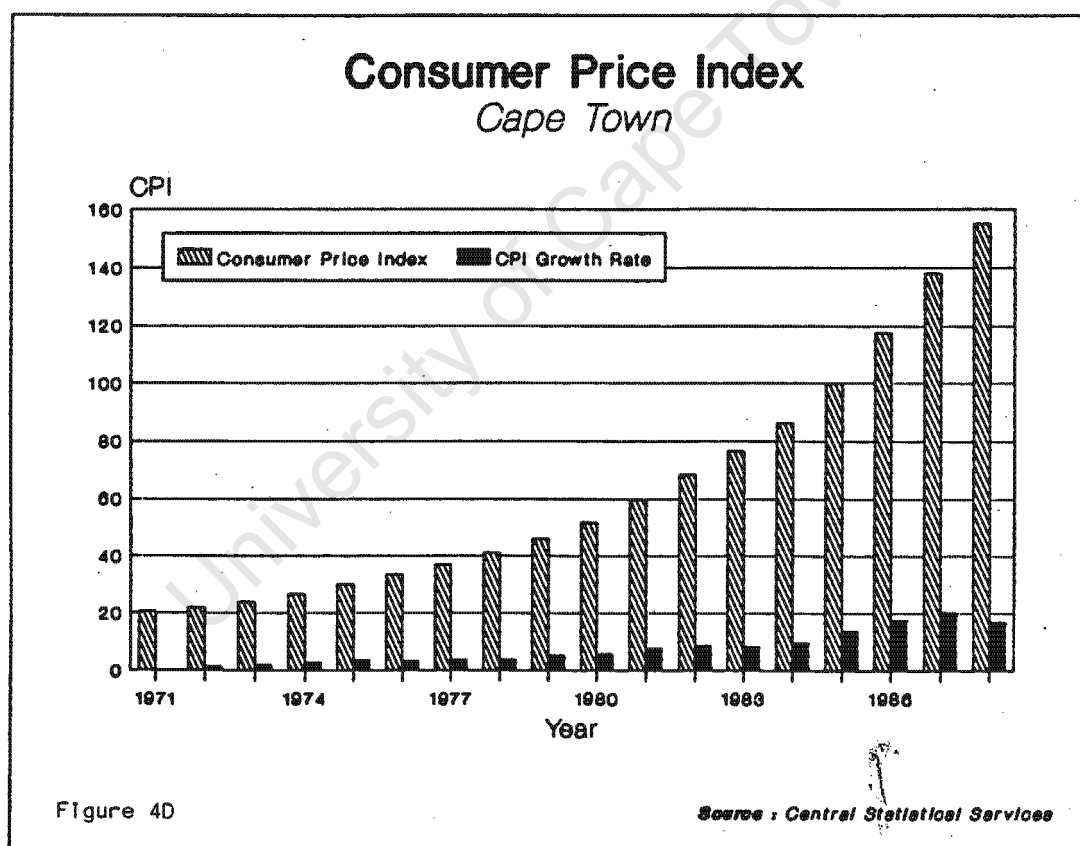
#### 1. Population

The rate at which the population is increasing is often ignored when analysing the other growth trends. The chart below shows the projected population growth using the 1970 and 1980 census as a reference data base. Note that the total growth rate is relatively constant.



## 2. Consumer Price Index

The consumer index is an indicator of the general cost of living. Although it is represented as an index, its growth trend is of interest for the purpose of this study. Below is a chart showing the growth trend of the Consumer Price Index for the Cape Town area.

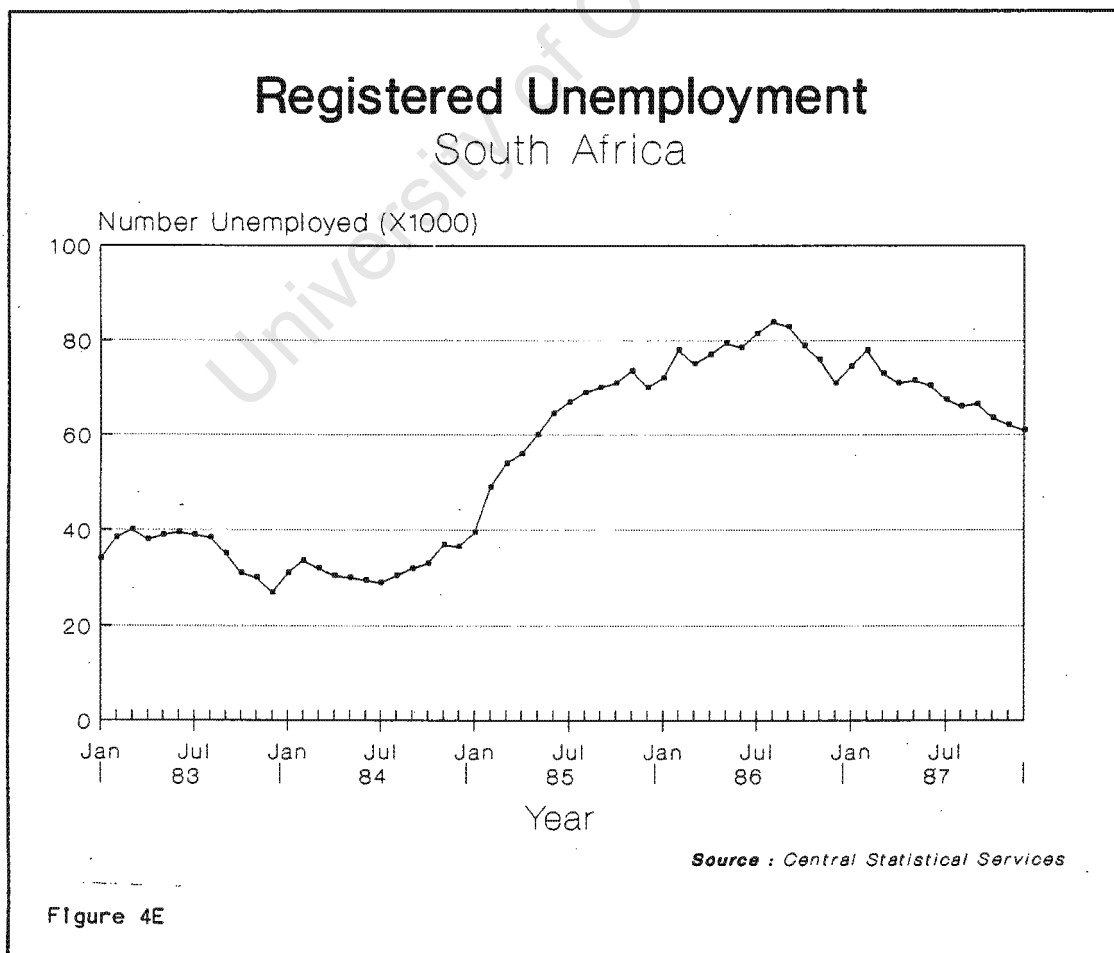


Note that the trend does not follow a linear function. This implies that in recent years, say from 1984, we

have experienced a steady increase in the RATE at which the cost of living has been increasing, as illustrated by the chart above.

### 3. Unemployment

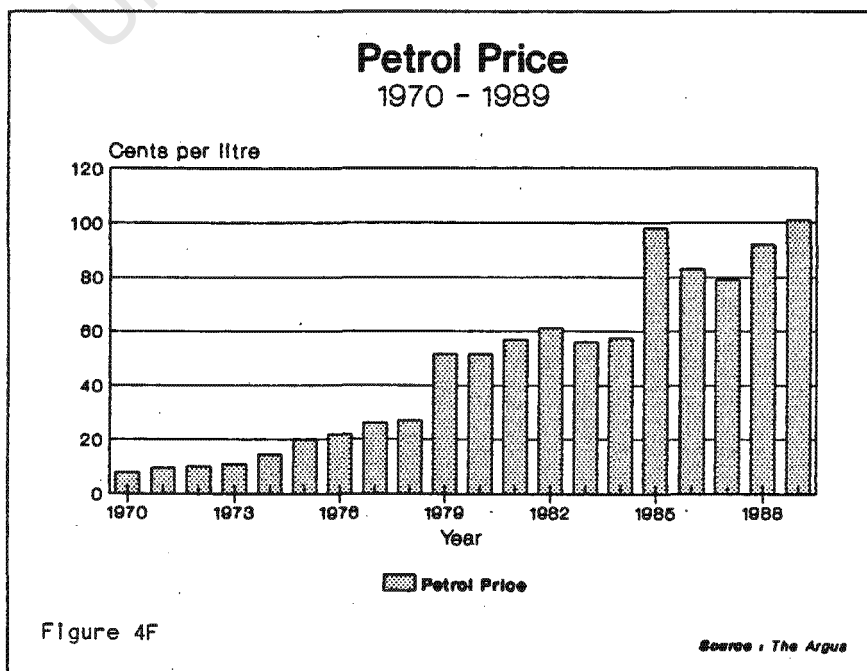
Unemployment is symptomatic of the state of the economy at any particular time. The SATS ascribes the decline in train passenger numbers mainly to the poor economic climate. (SATS, 1987a). Having already looked at the cost of living trends, we will now look at the unemployment trend. Below is a chart describing the unemployment trend in South Africa since 1983..



Note that the White Paper on Public Transport was published in 1986, at exactly the same time when the unemployment levels reached its peak. It was soon after the publication of this White Paper, which increased the carrying capacity of kombi-taxis from 8 to 15 passengers (excluding the driver), that the kombi-taxi industry really snowballed. Note from the unemployment graph that after this period the unemployment levels steadily dropped again. Along with the sudden growth in the taxi industry after 1986, many job opportunities were created. It would therefore appear that this may have contributed to alleviating the unemployment crisis at the time.

#### 4. Petrol Price

An important factor in determining the modal choice of a commuter, is the cost of using a particular mode of transport. The cost of fuel to a large extent determines the cost of travelling by any transport mode. In the chart below, we show how the cost of fuel has increased over the years since 1970.



Note the sudden increase in 1985 and then the drop again in 1986. It was during this relative trough in the petrol price trend (1986-1988) that the taxi industry experienced the most expeditious growth. Although the petrol price may not have had an influence on the modal shift from bus/train to the taxi, an increase in petrol may have resulted in some private transport users moving to taxis. The incidence of this shift has been quantified in Chapter 7.

### Conclusions

One cannot but assume that the related socio-economic factors, as discussed above, had a definite influence on communal preference for kombi-taxis as opposed to the conventional modes of public transport. What is clearly evident from our discussion, is that kombi-taxi services contributed to the decline in unemployment during the period when unemployment was at its peak. It provided an alternative means of employment and thus income for a section of the population.

Also to be considered is that with the bus boycotts of the 1970/80s, shared taxis (legal and illegal) were used as an alternative means of public transport. In terms of communal reckoning, the existing public transport system, buses and trains, were perceived to be state owned. The bus boycotts had a strong politicised hidden agenda. From those involved in its organisation, it was aimed at developing a political awareness (Davids, 1989).

It is difficult, however, to assess the extent which communal political action had on the growth of the kombi-taxi industry. Such an assessment would only be possible through intensive interviewing of people directly involved in the bus boycotts of the 1970/80s.

It would however appear that with these bus boycotts, members of the community with entrepreneurial skills utilised the community's objection to bus increases by providing alternative means of public transport to satisfy communal needs.

University of Cape Town

# Chapter 5

## Research Methodology

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## CHAPTER 5

# RESEARCH METHODOLOGY

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### Approach to Primary Objective

In terms of the objectives of the study, the primary aim was to evaluate the impact of the kombi-taxis on public transport in so far as the demand for the conventional public transport modes had shifted as a direct result of the introduction of kombi-taxi services. Two approaches to this problem were considered.

#### 1. First Approach

The first approach was to consult with the conventional public transport operators, namely that of the buses and trains, with the view to analysing the information which they might have at their disposal. The advantage of this approach was that the bus and train services in the study area are operated by single companies - in the case of the bus services, City Tramways Ltd., and in the case of the train services state-run South African Railways (SAR). Unfortunately, no success was achieved in adopting this approach. City Tramways, although having records of the information required for this study, was unwilling to share the information for reasons of "confidentiality". The SAR on the other hand, although very helpful and cooperative, had not kept very detailed records of train commuter usage. This approach having failed, the second approach was adopted.

## 2. Second Approach

In order to evaluate the extent of the shift in demand for buses and trains brought about by the introduction of kombi-taxi services, establishing usage trends (Chapter 3) for these modes over the years, would be helpful but not adequate. The trend will not be able to indicate the shift which resulted directly from the kombi-taxi services, but as the result of a number of factors of which the taxis may only be one.

It was therefore decided to look at all the routes in the study area on which taxis operate. The idea was that if the number of daily kombi-taxi passenger trips conducted on each of these routes could be established, it would be possible to determine the potential loss in the number of passengers by the alternative transport modes which could directly be attributed to the kombi-taxi services. Note that the people who are presently using the taxi may have used either private or public transport before they started to use the taxi. Therefore, in order to determine the potential loss of passengers on each of the alternative modes, it would be necessary to establish which mode the kombi-taxi users have used prior to moving to taxis. The only reliable way in which this information could be gathered would be to enquire directly from the kombi-taxi users for this information. Although the determination of the peak-period kombi-taxi passenger volumes on all the taxi routes in the study area was possible with the available manpower at our disposal, detailed monitoring of kombi-taxi activity as well as interviewing passengers was unfeasible given the available manpower and finance. Routes therefore had to be selected to represent all the routes in the study area based on a number of criteria of which the level of competition between the bus and taxi on a particular route was the most important. With the detailed information that would be collected on each of these

representative routes, as well as the basic information collected on all the other routes in the study area, a reasonable estimate could be made on the shift in passenger demand from the buses, trains and private transport, directly attributable to the presence of kombi-taxi services in the study area.

### Approach to Second Objective

The second objective of the study is the determination of the reasons for commuters' modal choice as well as some of their attitudes towards the public transport services, in particular that of the kombi-taxis. A survey, conducted amongst the bus and taxi users on the representative routes, was used to gather this information. The questionnaire which was administered during the interviews contained all the relevant questions pertaining to the two main objectives.

### Conclusion

The approach adopted to address the two main objectives of the study, was the following.

1. Selecting kombi-taxi routes to represent all the routes in the study area.
2. Monitoring in detail the taxi and bus movements on these routes.
3. Conducting an interview survey amongst the bus and taxi users on these representative routes.
4. Conducting a survey of the bus-taxi modal split characteristics on the routes at all the major transport interchanges in the study area.

The flow diagram below outlines the approach adopted.

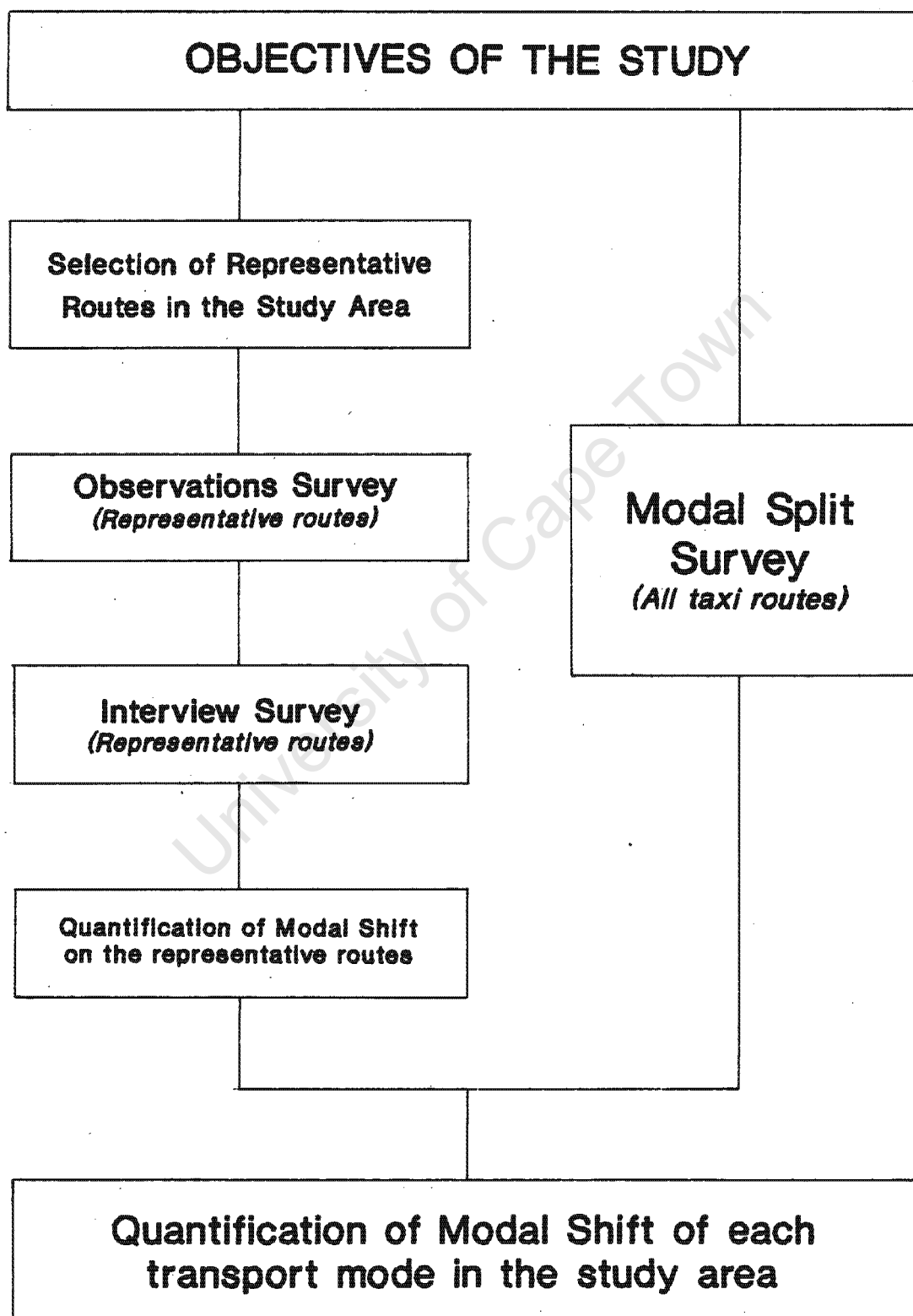


Figure 5A

## SELECTION OF REPRESENTATIVE ROUTES

### Selection Criteria

In the Cape Town Metropolitan Area, kombi-taxis operate on more than 100 established routes, mainly conveying black and coloured people on their journey to and from work. As was pointed out earlier, it would have been unfeasible in terms of the available manpower and the cost that would be incurred, to investigate the conditions on all of these routes. Representative routes were therefore selected for detailed study. Since it was clearly indicated by the SAR that the kombi-taxis have had little or no impact on their commuter train patronage, it was decided to base the criteria for selecting the representative routes mainly on the impact on the bus patronage. This impact, i.e. the shift in the bus modal share, is indicated by the level of competition which presently exists between the buses and the kombi-taxis. This level of competition on a particular route can be represented by the bus-taxi modal split on the route. Therefore, the main criteria for selecting the representative routes were based on the level of competition (modal split) that existed between buses and taxis on the routes. The following levels of competition between buses and taxis were considered.

1. Kombi-taxis dominating
2. Fierce competition (50/50)
3. Buses dominating

Previous studies have shown the modal share of the kombi-taxi to be a function of route distance (Oosthuisen 1986, Voster 1986, etc). Since the distances of the routes in our study area vary

considerably, it was decided to use route distance as a second criterion.

The following passenger characteristics were also considered as criteria.

1. Population groups : On many of the routes in the study area the bus and taxi services are exclusively patronised by one race group. One would therefore have to consider this fact so as to select representative routes which consider so-called single race as well as multi-racial routes.

2. Socio-economic consideration : Because of the geographical location of many of the routes, the socio-economic standing of passengers varies from route to route. Although this characteristic may be a function of the race criteria, this is not necessarily the case and was therefore considered separately.

#### Selection procedure

Ideally, these representative routes should have been selected after the situation at all the routes in the Metropolitan area had been investigated. This would have been too labour intensive and time consuming. It was, therefore, decided to consult a few experienced people in the field who had first hand knowledge of the situation on these routes. In particular, two parties were very helpful in this regard, namely the survey team of the Metropolitan Transport Planning Department at the City Council who were responsible for the collection of the data for the annual kombi-taxi survey, and Inspector Davies of the Taxi Division of the Traffic Department in Cape Town. Others that were also consulted at the time were many of the Bus Company inspectors at the various termini for they were in a very good position to indicate the routes on which they

have been experiencing competition from the kombi-taxis and consequently on which routes they have experienced the greatest drop in the number of passengers in recent years.

All of the suggested routes were investigated and after careful consideration of the selection criteria the following 5 routes were selected, each for the particular characteristics which are indicated below.

**Route 1 : Retreat Station - Scheme Area & Lavender Hill**

**Characteristics :** Kombi-taxis dominating  
Short route  
Lower income group  
Feeder service  
Coloureds only

**Route 2 : City - Mowbray**

**Characteristics :** Buses dominate  
Medium distance  
All income groups  
Feeder & O-D service  
All races (mostly non-whites)

**Route 3 : Mowbray - Langa**

**Characteristics :** Kombi-taxis dominate  
Medium distance  
Lower income group  
Feeder & O-D service  
Blacks only

**Route 4 : City - Atlantis**

**Characteristics :** Fierce competition  
Longest taxi route  
Middle income group  
Line-haul service  
Coloureds only

**Route 5 : City - Sea Point**

Characteristics : Fierce competition  
 Medium distance  
 All income groups  
 Feeder & O-D service  
 All races (40% whites)

Note that on certain routes the type of service rendered is both of the feeder type as well as O-D type, eg. on the Langa to Mowbray route where many passengers boarding at Langa, work in Mowbray while some also work in say the City who then use a train, bus or another taxi to town.

## **OBSERVATION SURVEY**

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This survey was the first stage of the detailed study undertaken on each of the representative routes. The primary objective of this survey was to monitor and record the taxi and bus vehicular and passenger movements on these routes.

In the efforts to gather as much information as possible with the available resources, the following data were recorded :

1. The number of taxi and bus vehicle departures/arrivals.

**Taxis** : The time and the vehicle's rank number (displayed on the front door or roof of the vehicle) were recorded on arrival or departure. This enabled the observer to determine (a) the number of legal, pirate and illegal taxis operating

on the route, (b) the number of trips each taxi had made during each monitoring period, and (c) the presence of each taxi during the different monitoring periods, i.e. to determine how regularly they operate on the route.

**Buses :** The time of each arrival/departure as well as the type of bus (single or double decker) were recorded.

Note that the bus and taxi movements were recorded simultaneously at termini points or major boarding/alighting points along the routes.

2. The number of taxi and bus passenger departures/arrivals.

Here the arrival/departure times as well as the sex and race of the bus and taxi passengers were recorded.

3. The number of bus and taxi passengers waiting to board the bus or taxi, i.e. queue length or waiting times.

Here the number of passengers, their sex and race, standing in the queue waiting for the bus or taxi, were monitored and recorded at 1 minute intervals. Since this data was recorded simultaneously for the bus and taxi passengers, it was possible to accurately compare waiting times for the two modes, unlike the method used in many previous studies which relied entirely on the interview surveys to obtain this information. This queue monitoring information could then be used to corroborate the waiting times that respondents indicated during the interview survey.

The monitoring of the bus and taxi passenger volumes were also recorded simultaneously on each route so as to obtain accurate modal split characteristics. On all 5 representative routes, the monitoring data above were recorded on different days of the week during the following periods :

1. Morning (AM) Peak : 06h00 - 09h00
2. Evening (PM) Peak : 15h30 - 18h30
3. Off Peak : 10h00 - 14h00

An effort was also made to obtain some historical facts about the taxi operation on these routes, especially with the well established routes.

#### Administration

Since the bus and taxi monitoring had to be done simultaneously on each route, it required at least 4 enumerators to carry out the survey. The services of three undergraduate students were employed, and together with the author completed the survey over a 2 week period. Although the assistants were thoroughly briefed before the survey, the constant presence of the author during the execution of the survey, helped tremendously to resolve any problems experienced by the assistants as well as to maintain a high degree of accuracy in the recording of the data.

All the information was recorded on purpose-designed record sheets, copies of which have been enclosed in Appendix B.

## INTERVIEW SURVEY

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### Goals

*The goals of the survey were*

- a) To obtain data that would facilitate the quantification of the impact of the kombi-taxis on other modes of transport, in terms of the shift of passengers from these modes to the kombi-taxi.
- b) To gather user characteristic data in order to gain some insight into the conditions surrounding and influencing the modal choice of its users.
- c) To determine to what extent the characteristics of each route influence the patronage of the bus and taxi services.

### Objectives

*The objectives of the survey were three-fold, viz.*

1. To establish what mode of transport the kombi-taxi users had used prior to switching to taxis; and for how long they have been using kombi-taxis.
2. To obtain socio-economic, attitudinal, and trip characteristics of the bus and taxi users.
3. To gather the above information on each of the representative routes.

## The Questionnaires

The first step in the designing of the survey was to establish the survey sample size. Although a 10% random sample is generally regarded as acceptable for the study population of about 1000 per mode per route (representative routes), a minimum sample size of 50 randomly selected passengers for each mode (bus and taxi passengers) on each of the 5 representative routes, was endeavoured.

The next step was to decide on the survey method and instrument. Considering the nature and quantity of the information required from the survey as well as the socio-economic characteristics of the respondents, it was decided to opt for a personal interview method of survey using an interviewer-administered questionnaire instead of a self-administered type of questionnaire. This partially eliminated the problem of paying very careful attention to the phrasing of the questions on the questionnaire.

Having already defined our objectives, the next step was to draw up the questionnaire. The one constraint imposed on the questionnaire was that it should take the interviewer between 2-4 minutes to complete the questionnaire. This was necessary because most of the respondents were to be interviewed during the morning or evening peak period whilst they were either waiting for, or alighting from, the bus or taxi.

Although most of the information required from both the bus and taxi users were similar, it was felt that for administration purposes, a separate questionnaire be drawn up for each of these modes.

The first objective of the survey was addressed in Question 16 of the taxi passenger questionnaire. It asked the respondent to indicate the mode he/she had

previously used before moving to the use of taxis on this particular route. Please refer to Appendix C for copies of the questionnaires.

The following usage patterns were addressed in the questionnaire

1. The respondent's experience with using the bus or taxi (Question 9).
2. The days of the week on which the respondents use the bus or taxi (Question 10).
3. The period during the day during which the respondent used the bus or taxi (Question 11).
4. The alternative transport mode used by the respondent (Question 12).

The following trip characteristics were addressed in the questionnaire :

1. The number of modes as well as the modes used for the journey to or from work (Question 13).
2. The respondent's average waiting time for the particular mode (Question 14).
3. The distances from the bus and taxi alighting points to the desired destination. (Question 15)

The following attitudinal questions were addressed in the questionnaires :

1. The respondent's main reason(s), in order of importance, for using that particular mode (bus or taxi) (Question 17).
2. Whether the respondent had any complaints about the service which is offered by that particular mode (Question 18).

3. Whether the respondent would continue to use that particular mode should the fares of the alternative mode (bus/taxi) be much cheaper (Question 19)
4. For the bus users, whether they had ever used a taxi on that particular route, and if so, on how many occasions and for what reason (Question 16 - bus passengers only).
5. For bus users, whether the respondent paid the cash fare or the subsidised clipcard fare. (Question 24)

The following socio-economic/personal characteristics were addressed in the questionnaire :

1. The respondent's sex. (Question 6)
2. The respondent's race. (Question 7)
3. The respondent's age group. (Question 8)
4. The respondent's access to/ownership of, a car. (Question 20)
5. The area in which the respondent resides. (Question 21)
6. The area in which the respondent is employed. (Question 22).
7. The occupation of the respondent. (Question 23)

The end result was a questionnaire for bus passengers containing 3 observation characteristics (Questions 6 - 8) and 15 questions, and a taxi user questionnaire containing 3 observation characteristics but with 14 questions. The main difference between the bus and taxi questionnaires is with question number 16 which asks the taxi user the mode he/she used prior to using the taxis, whereas the bus user was asked whether they had ever used a taxi on that particular route. Also on the bus questionnaire, one additional question (Question 24) was added which referred to the type of fare payment.

## ADMINISTRATION

### Pilot Study

Before embarking on the formal interview survey, a pilot survey was conducted by the author to establish any difficulties that may be experienced by the assistant interviewers. This pilot survey involved interviewing at least two randomly selected bus and two taxi users on each of the 5 representative routes in order to observe any peculiarities on the different routes.

Although the pilot survey did not result in any changes being made to the layout or phrasing of the questionnaires, it nonetheless proved useful in that unusual or unexpected responses were carefully noted in order to point out to the assistant interviewers how to handle these on the questionnaire.

To assist with the interviews, the services of two undergraduate students were engaged. These assistants were very carefully briefed about the survey purpose and the methodology of conducting the interviews. Fortunately, the author and the two assistants always worked as a team whilst the interviews were conducted, enabling the assistants to consult with the author immediately after anything unusual happened during an interview.

On the Langa-Mowbray route, communication problems were experienced due to the language medium of the respondents being Xhosa and the interviewers' inability to speak the language. To overcome this problem, the services of a resident of Langa, who at the time was a post-graduate student at UWC, was engaged to administer the bus and taxi questionnaires on this route.

An advantage was the fact that the interviewers were members of the non-white population group. The initial problem of communication was easily resolved. This led to the development of an easy rapport between the interviewer and interviewee which greatly facilitated the soliciting of responses in an uninhibited manner.

Depending on the operating conditions on each route, the interviews were conducted during the morning, evening and off-peak periods under the following circumstances :

1. While people were waiting to board the bus or taxi.
2. Immediately after people alighted from the taxi.
3. On board the taxi.

On each of the routes, respondents were randomly selected from the group of bus and taxi passengers.

Although an attempt was made to interview bus passengers on board the bus, the interviewers found it difficult to write down the responses while the bus was in motion. However, this was possible on the taxi because of the smoother ride. On many occasions however, bus passengers were interviewed on the bus before it departed from the terminus.

#### The City-Atlantis Route

On this route the bus passengers were all interviewed at the Golden Acre Bus terminus during the evening peak period while they were waiting to board the bus. The taxi passengers were also interviewed during the evening peak at the rank in Strand Street whilst they were waiting for the taxi to depart, and in Atlantis when passengers alighted from the taxi along the route.

### The City-Mowbray Route

On the City-Mowbray route the bus passengers were interviewed during the morning and evening peak periods either at the Golden Acre Bus terminus or the Mowbray bus terminus whilst they were waiting to board the bus. The taxi passengers were mostly interviewed on board the taxi (with the co-operation of the taxi drivers) during the morning and evening peak periods. Some taxi passengers were also interviewed during the morning peak at the taxi ranks in Strand Street and at Mowbray.

### The Sea Point Route

On this route, bus passengers were interviewed either at the Golden Acre bus terminus or the bus stop in Strand Street next to the Cape Sun Hotel, while they were waiting to board the bus during the morning and evening peaks. The taxi passengers were all interviewed during the morning peak either whilst they were waiting to board the taxi at the rank in Strand Street, or on-board the taxi. Some taxi passengers were also interviewed at the bus stop in Strand Street during the evening peak. This bus stop is the main alighting point for the white taxi users on this route.

### The Langa-Mowbray Route

On this route the bus passengers were interviewed during the morning and evening peak periods at the terminus in Langa. The taxi passengers were interviewed at the ranks in Langa and Mowbray during the morning and evening peak periods.

### The Retreat Route

On this route, the taxi passengers were interviewed at the main alighting points during the evening peak. This allowed the interviewer to know exactly on which of the three destination points each respondent alighted, allowing separate analysis of the questionnaires on each of these sub-routes. The bus users on this route were interviewed on board the bus before it departed from the terminus area.

## MODAL SPLIT SURVEY

This survey involved the monitoring of bus and taxi vehicular and passenger volumes departing from or arriving at all the major transport interchanges in the study area. The main purpose of this survey was to determine the bus-taxi modal split, i.e. the level of competition on all of the taxi routes in the study area. The information that this survey provides forms an important component in the procedure used to quantify the impact of taxis on the other modes of transport, in particular the buses.

The following observations were recorded at all the transport interchanges in the study area from which taxis operate during the evening peak period (15h30-18h30).

1. The departure/arrival times of all buses and taxis.
2. The rank number of the taxis and the destination of the buses.
3. The number of passengers carried with each departure/arrival.
4. The taxi and bus (cash and clipcard) on each route.

5. The year in which the taxi service was first started on each route.
6. The distance of each route.
7. The existence of a direct/indirect train service on the route.

### Administration

Given the fact that there were about 70 routes in the study area which had to be covered by this survey, the amount of work involved was enormous. In fact, had it not been for the services of the very experienced survey team of the Cape Metropolitan Transport Planning branch, this survey would have had to be either abandoned, or conducted with far less detail.

Since the team of traffic observers were very experienced with this type of survey, briefing was held to the minimum by virtue of the fact that what had to be observed and recorded were within the ambit of their normal daily experiences. The survey was completed over a 7 day period (excluding Fridays & weekends) from 28/11/88 - 07/12/88 by the 12 Traffic Observers who constituted the survey team. The author was able to be present at all times during the survey operation and therefore was in a position to advise and direct with regard to any problems which were encountered by the observers. The survey information was recorded on the same record sheets that were used in our detailed study of the 5 representative routes.

# Chapter 6

## Survey Results

University of Cape Town

## CHAPTER 6

# SURVEY RESULTS

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This chapter presents a summary of the two surveys conducted on the 5 representative routes. For the observation survey, the results of each route are dealt with separately whereas with the Interview Survey, the results of all 5 routes have been summarised together and presented as such. Note however that a detailed analysis on each of the 5 routes, have been presented in Appendices E-I.

To facilitate convenient and efficient cross-referencing of the survey data, use was made of a computer database program. All the data collected during the surveys, were therefore captured on disk before the analysis were undertaken.

## OBSERVATION SURVEY RESULTS

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The observations recorded during this survey, varied significantly from route to route. The results of each of the 5 routes are presented separately below. Note that the traffic counts were taken over a 11 day period from 23/08/88 - 03/09/88. On all the routes the observation periods were as follow :

Morning (AM) Peak : 06h00 - 09h00  
Evening (PM) Peak : 15h30 - 18h30  
Off Peak : 10h00 - 14h00

1. RETREAT - LAVENDER HILL & RETREAT SCHEME ROUTE

Route Characteristics

This route exists between the Retreat Railway Station and the coloured townships of Lavender Hill and the Retreat Scheme area. The three destinations which are served by the taxi service, are within 4 km of the station. These destinations are as follows (refer to Figure 6a) :

- a) The taxi rank in Sonata Street
- b) The Scheme area of Retreat
- c) The Lavender Hill Township (Northern side)



The only alternative means of public transport on these routes is the bus operated by the City Tramways. Destinations (a) and (c) above are served by the Lavender Hill bus and destination (b) by the Cradock

bus. The Cradock bus operates only during the evening peak, making a total of 4 trips per day with a frequency of approximately 30 minutes. This bus operates more or less on the same route as the taxi. The Lavender Hill bus offers a more frequent service than the Cradock bus and serves a greater area in Lavender Hill than does the taxi. The other Lavender Hill bus, called the Sea Winds bus, serves the Southern area of Lavender Hill, an area not served by the taxis from Retreat Station.

#### Socio-economic characteristics

The taxis on this route serve essentially the residents of Lavender Hill and the Scheme area of Retreat. Lavender Hill, according to the 1980 Census, is the most densely populated residential area in the Greater Cape Town region with a population of about 16000. Many of the residents are former District Six inhabitants who were coercively removed from their area of residence in 1973 as a result of the Group Areas Act. We are therefore looking at a socially & economically deprived community who still carry the scars of their forced removal. The majority of the economically active are employed as skilled or semi-skilled workers in employment centres not in close proximity to their area of residence.

#### Characteristics of Kombi taxi Operation

The kombi taxi service provided on this route serves the residents of Lavender Hill and Retreat Scheme area as a feeder service mainly for the train at Retreat Station. The morning peak is therefore to the station and the evening peak from the Station. Although some contra flow of passengers was observed, it is really very insignificant (5% of the main flow). Since the

taxi service serves mainly a feeder purpose, the off-peak activity is not as busy as the peak periods, carrying only a third of the average AM or PM peak passengers.

At the time of the survey the taxi ranks at Retreat station were situated in the parking-cum-terminus area opposite the station (Western side). However, at that time the new terminus area in front of the station, which has facilities for buses and taxis, was in the completion stage of construction. The bus terminus and taxi ranks are situated within metres of one another. The location of the two modes of public transport could therefore not have any influence on the modal choice of its passengers. The old terminus area has no shelter whatsoever although the new terminus area has provided for shelters.

Note that, operating from this Western side of the station, another destination is served by these taxis, viz. Pollsmoor Prison. On the Eastern side of the station, another group of taxis operate, serving mainly the residents of Retreat staying along Retreat Road and in the area between Retreat Road and Concert Boulevard. They operate between the station and 12th Avenue in Retreat. These routes were not considered as part of the Retreat representative route although survey data have been taken on these routes as well.

According to the records of the Local Road Transportation Board (25/04/88), a total of 54 permits have been issued for the Retreat ranks. This includes the ranks on both sides of the Railway station. However, our observations indicate that only 12 taxis operate on the Eastern side and 38 on the Western side of the station.

On the five different occasions during which the 3 hour peak and one 4 hour off-peak periods of kombi taxi

operations were monitored on this route, a total of 38 different taxis were observed. Only 24 of these were observed to operate during each of the five observation periods. The table below is a summary of taxi and bus counts on this route. Note that all the counts were taken at Retreat Station.

Table 6.1 : Summary of Taxi and Bus counts (Retreat)

DAY Loc.	PEAK	TAXIS			BUSES		TOTAL
		Taxis	Trips	Pass	Trips	Pass	
Thur Station	a.m. arr.	34	263	3219 92%	11	270 8%	3 489 100%
Thur Station	p.m. dep.	32	155	2142 84%	13	397 16%	2 539 100%
Mon Station	a.m. arr.	34	260	3364 92%	9	288 8%	3 652 100%
Fri Station	a.m. arr.	33	280	3656 92%	12	323 8%	3 979 100%
Thur Station	off dep.	16	23	313 81%	6	73 19%	386 100%
	off arr.	23	36	245 82%	6	53 18%	298 100%

We therefore see that the evening peak taxi passenger volume is only about two thirds that of the morning peak volume; the Friday morning peak volume is about 14% more than the average weekday morning volume; and the off-peak volume is only 17% that of the morning volume. In terms of the taxi-bus modal split, the taxi share is greater in the morning peak (92%) than in the evening or off-peak (81-84%).

Because of the short distance of this route the difference between the bus and taxi travel time is not very significant. The taxi takes between 4 and 6 minutes to travel the distance whereas the bus takes

about 10 minutes. However, the greatest time saving for the taxi user occurs with the waiting times for departures. Taxi users do not have to wait very long (1-3 minutes) for the taxi to depart, unlike the bus passengers who may have to wait up to 20 minutes.

More females than males use the bus and taxi on this route, constituting 55% and 53% of all the taxi and bus users respectively.

A general observation made on this route was that many of the taxis were early model vehicles. Many, however, were of the VW Kombi type with a maximum carrying capacity of only 12 passengers. The taxi operation on this route is very well organised, despite the fact that no full-time taxi regulator is employed at the rank. The co-operation between drivers to ensure a smooth and efficient taxi operation is an excellent example of self-regulation.



Figure 6B : The Retreat Station Taxi Rank

## 2. CITY - SEA POINT ROUTE

### Route Characteristics

This route exists between the Central Cape Town and Sea Point. The route is essentially along the main roads of Strand Street, Somerset Road, Main Road and/or Beach Road. Although the main service is only between the City and Sea Point, some taxis offer a service as far as Camps Bay as well. Please refer to the map below showing the layout of the route.

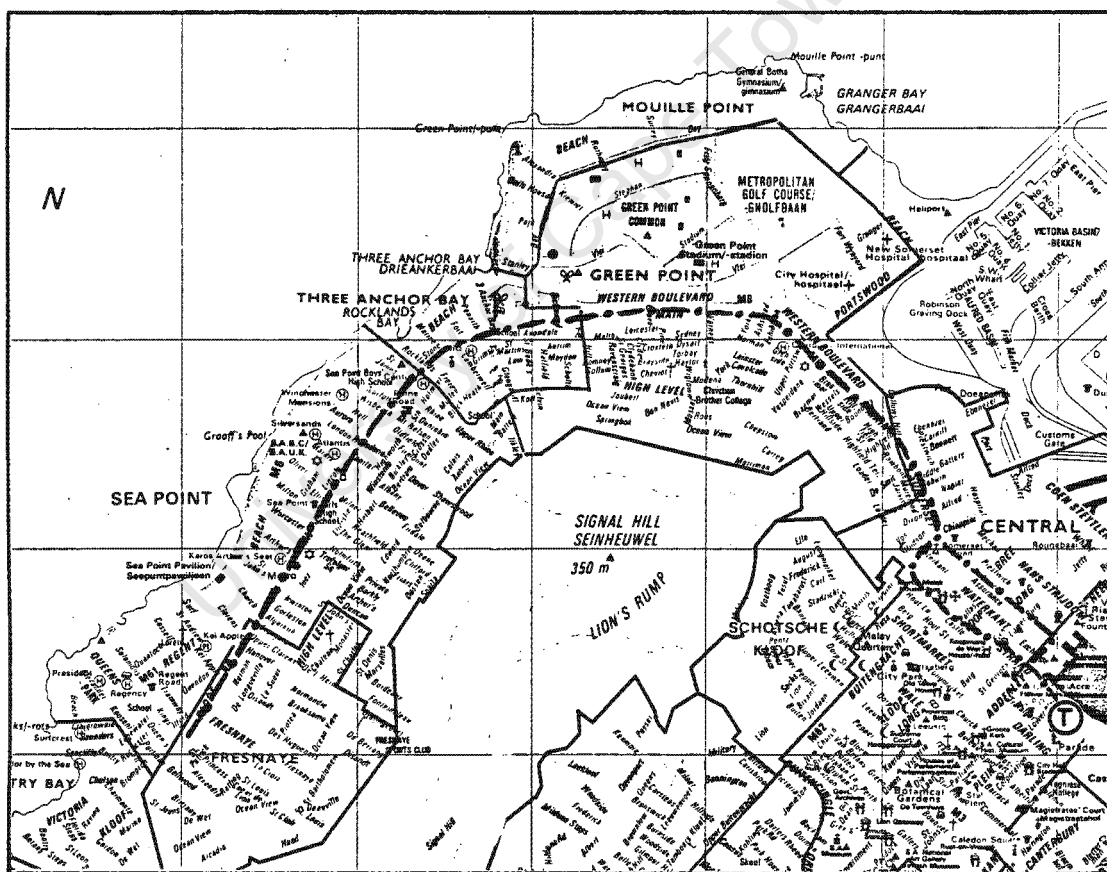


Figure 6C : Map of City - Sea Point route

The only alternative means of public transport on these routes is the bus operated by City Tramways. Two routes are serviced by the buses to Sea Point, viz. along the Main Road, and secondly via Mouille Point. Although the

taxis sometimes cover the Mouille Point route (via Somerset Hospital), it is not a very regular service operating mainly during the off peak periods. It is not because there is no demand for the service on this route, but because of the greater demand on the direct Sea Point route during the peak periods, the Mouille Point route is generally not served by the taxis during the peak periods. The bus operates on a 5 minute frequency during the peak periods and during the off peak period on a frequency of 20 minutes. The taxis operate on the route that is covered by the bus, and in addition, along Beach Road.

#### Socio-economic characteristics

The bus and taxi on this route serve three groups of commuters, viz. the residents of Sea Point (and Camps Bay), the people who are employed in Sea Point, and the people who commute to Sea Point for recreational purposes, especially over weekends and holiday periods. The first group are mainly white, middle income earners working in the City. The second group are mostly coloured and black low to middle income earners employed in businesses or residences in the Sea Point and Camps Bay area. The third group are primarily low income earners who do not own or have access to private transport.

#### Characteristics of Kombi taxi Operation

This is one of the few routes in the study area that has a very significant contra flow of passengers, both during the peaks as well as the off-peaks. It is also one of only 2 routes in the study area on which members of all races regularly use the same taxi service. The morning peak is from the City to Sea Point constituting mainly the commuters who are employed in Sea Point. The

morning contra flow, which is between 40-50% of the main flow, is constituted by the residents of Sea Point who work in the City as well as the people who work night-shift in the area. The evening peak is therefore in the reverse direction from Sea Point to the City and carries 30% less passengers than during the morning 3 hour peak period. The off peak patronage of the taxi service is significant on this route, carrying about 60% of the passengers that would be carried on an average peak period.

At the time of the survey the taxi ranks in the City for this route were situated on the station side of Strand Street in front of the bus terminus. This ranking area is shared between the Sea Point and Mowbray taxis. Although the location of these ranks was very convenient for the users who approach the taxis from the station, it was less convenient for people coming from the opposite side of the road. This was because, to safely cross this busy road, they had to use the pedestrian crossing situated some distance from the rank. The diagram below shows the layout of the area.

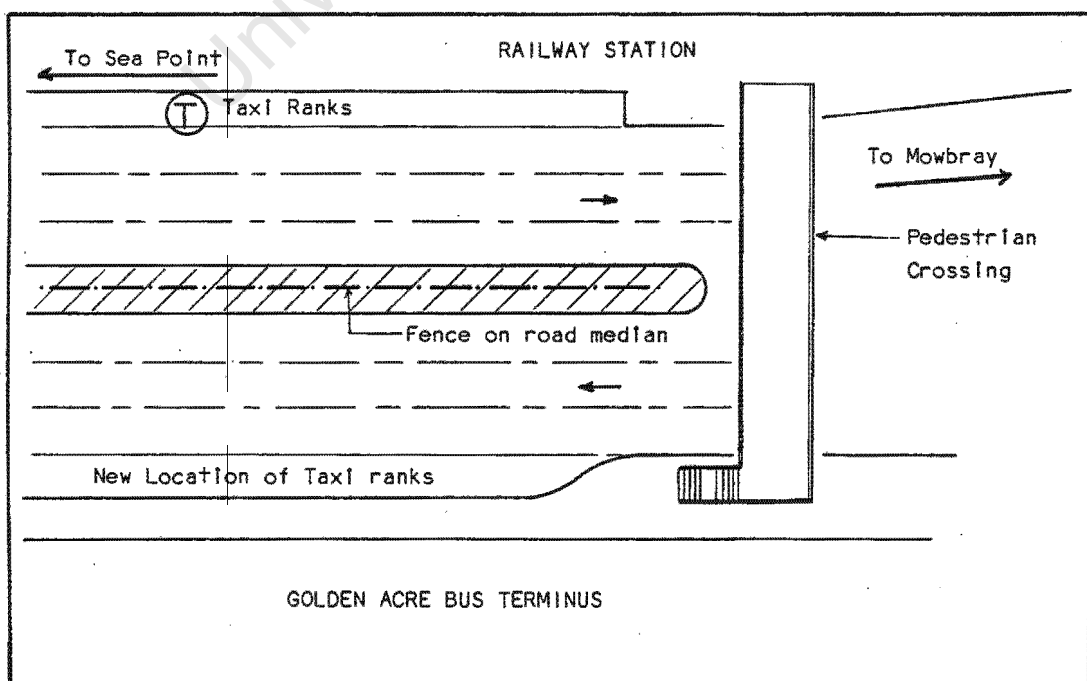


Figure 6D : Strand Street (City) taxi rank

A fence, preventing pedestrians from crossing Strand Street directly opposite the taxi ranks, was erected after it was found that too many people were crossing the road to catch a taxi, creating an unsafe situation. According to the taxi operators, the erection of this fence discouraged people from the opposite side of the road to use the taxi service. It was shortly after the survey that the ranks were moved to the opposite side of Strand Street next to the Golden Acre bus terminus. This was the result of months of negotiations between the taxi operators and the traffic authorities.

According to the records of the Local Road Transportation Board (25/04/88), a total of 19 and 26 permits have been issued for the Cape Town (Railway Station) and Central Area, respectively. However, our observations indicated that only 32 taxis were operating on this route. However, a total of 36 taxis use the rank, the remaining taxis operating on the Mowbray route. In fact, it is the same 36 taxis that operate on the Sea Point and Mowbray routes - the operator himself or the regulator at the rank decides which of the 36 taxis should operate on each of the two routes, depending on the demand. The regulator is someone employed by the taxi drivers to ensure that order is at all times maintained at the rank and that the taxi operation runs smoothly. All the taxis that were observed to be regularly operating on this route, are legal.

On the five different occasions during which the 3 hour peak and one 4 hour off-peak period of kombi taxi operations were monitored on this route, a total of 61 different taxis were observed. Only 10 of these were observed to operate during each of the four AM and PM peak observation periods. Of these, only 2 taxis were observed to have been operating during all 5 observation periods (including the off peak period). The table below is a summary of taxi and bus counts on

this route. Note that all the counts were taken at the rank in Strand Street as well as at the bus stop near to the Cape Sun hotel, the spot where most of the white taxi passengers board.

Table 6.2 : Summary of Taxi and Bus counts (Sea Point route)

DAY Loc.	PEAK	TAXIS			BUSES		TOTAL
		Taxis	Trips	Pass	Trips	Pass	
Mon Station	a.m. dep.	33	93	1307 54%	22	1123 46%	2 430 100%
Mon Station	p.m. dep. arr	28	45 35	502 45% 457	21	616 55%	1 118 100%
Fri Station	a.m. dep.	31	64	599 47%	22	688 53%	1 287 100%
Tues Station	off arr.	12	22	287			
Tues Station	off dep.	14	19	244 42%		343 58%	587 100%
Mon Station	a.m. dep.	32	94	1293 57%	23	1005 43%	2 313 100%

In terms of the taxi-bus modal split, the taxi share (54-57%) seems to be marginally greater in the morning peak (main direction of flow) while in the evening and off-peak (contra flow) the bus share seems to have the slight edge (55-58%). It is therefore clear that the competition between the buses and taxis on this route is very fierce indeed.

The travel time of the bus on this route is between 20 and 25 minutes whereas the taxi takes 10-15 minutes to travel this route.

In order to establish the number of whites who are using the bus and especially the taxi service,

population group counts were included in the monitoring during two of the peak observation periods. The results are illustrated in the table directly below.

Table 6.3 : Number of whites using the bus and taxi (Sea Point route)

Day	TAXI PASSENGERS		BUS PASSENGERS	
	All	Whites (%)	All	Whites (%)
Mon	502	209 (42%)	616	410 (67%)
Fri	599	216 (36%)	688	505 (73%)

Of all the whites who are using the taxi service 91% board the taxis at the bus stop next to the Cape Sun Hotel in Strand Street. In fact, in both observation periods a total of exactly 191 whites boarded the taxis at this location, suggesting that it may be the same people of this population group who regularly use the taxi service. The bus figures include both the Sea Point and Mouille Point passenger departures. On average, 63% of all the bus passengers on this route use the direct Sea Point bus whilst the remaining 37% use the Mouille Point bus.

During these observation periods, 39% and 49% of all the evening peak taxi passengers boarded the taxis at the Cape Sun bus stop in Strand Street whereas this was the case with only 16% (on both occasions) of the bus passengers.

The taxi users on this route are mostly females constituting 64% of the taxi users.

In the morning peak period, waiting queues of up to 80 passengers were recorded between 07h00 and 08h40 at the taxi rank. This route is generally regarded as one of the more respectable routes in the study area due to

its low incidence of overloading and reckless driving, as well as the better condition of the vehicles.

### 3. CITY - ATLANTIS ROUTE

#### Route Characteristics

This route exists between Central Cape Town and the town of Atlantis. The route is 48km long making it the longest taxi route in the study area. From Cape Town, two routes lead to Atlantis, viz. the R27 and R307.

The only alternative mode of public transport on this route is the bus operated by City Tramways. Two main routes are used by the buses, viz. an express route via the freeway/Marine Drive (R27), and the other along Voortrekker Road, Koeberg Rd, through Killarney/Blouberg (M5).

At the time of the survey, the bus operated on a 5-10 minute frequency during the peak periods in the direction of the main flow (a 20 minute frequency for the contra flow), and during the off peak periods operated on a 1 hour frequency.

#### Socio-economic characteristics

The bus and taxi on this route serve two groups of commuters, viz. the daily commuters who travel to work either in Atlantis or Cape Town, and secondly the weekend commuters comprising the Friday & Saturday shoppers, and visitors who spend the weekend in Atlantis or Cape Town. This accounts for the many Sunday afternoon trips on this route. The commuters on

this route are all coloured males and females who are middle to low income earners.

### Characteristics of Kombi taxi & Bus Operations

The morning peak is from Atlantis to Cape Town constituting mainly the commuters coming to work in the City. Since there is no definite alighting point for the morning peak taxi passengers, no arrivals were recorded during the morning peak period. However, the departures during the evening peak period were recorded. The evening peak is therefore in the reverse direction from Cape Town to Atlantis. The total number of taxi departures during the off peak is approximately equal to the number of departures during a single 3 hour PM peak period.

The taxi rank in the City for this route is situated on the station side of Strand Street opposite the Castle. This rank area is used exclusively by the Atlantis taxis and has ranking space for 19 taxis. The location of the taxi rank, although some 200 metres from the bus terminus, is situated the same distance from the station exit/entrance as the bus terminus. No shelter is however provided for commuters at the taxi rank.

According to the records of the Local Road Transportation Board (25/04/88), a total of 35 permits, each with an operating radius greater than 30km, have been issued to operators based in Atlantis. However, our observations indicated that a total of 51 different taxis were operating on this route.

On three of the four different occasions during which the 3 hour peak, and one Saturday peak period of kombi taxi operations were monitored on this route, a total of 51 different taxis were observed. Only 13 of these were observed to operate during each of the three

observation periods. Saturday seems to be the peak day of the week since 43 of the 51 taxis were observed to have been operating on this day over a 5.5 hour period (10h00-15h30). The table below is a summary of taxi and bus counts on this route.

Table 6.4 : Summary of Taxi and Bus counts (Atlantis route)

DAY Loc.	PEAK	TAXIS			BUSES		TOTAL
		Taxis	Trips	Pass	Trips	Pass	
Tues City	p.m. dep.	16	16	220 39%	9	348 61%	568 100%
Fri City	p.m. dep.	38	44	629 64%	8	347 36%	976 100%
Sat City	mid dep.	43	88	1265 69%	16	557 31%	1 822 100%
Tues City	off. dep.	14	14	196 60%	6	133 40%	329 100%

From these observations we see that on weekdays (Mon-Thur) the modal split is in favour of the bus (61%) during the evening peak, whilst during the off-peak and Friday evening peak, the taxi share is 60-64%. The taxi share is even more over weekends (69%) when more shopping trips and casual trips are undertaken.

Because of the relatively long distance of this route, the difference in the travel times of the bus and the taxi is very significant. The bus takes about 80 minutes and the taxi 45 minutes to travel the distance.

The bus service on this route is also patronised by whites who alight at Killarney. They were therefore not included in our passenger counts. It is also realised that some passengers board the bus along the route - this was also not taken account of since the number of

passengers is not very significant and could easily be compensated for by those (non-white) passengers alighting along the way.

The bus and taxi users on this route are mostly females, constituting 62% of all the taxi users, and 59% of all the bus users.

A further interesting observation made on this route is the fact that, after the morning peak, many of the taxi drivers park their vehicles at the City rank in Strand Street, waiting for the evening peak period. Here the presence of the regulator is important to record the arrival times of the taxis in order to schedule the departures. The presence of the regulator at the rank also ensures that no overloading takes place. On this route too, one is impressed with the organisation of the taxi operation and the code of conduct to which the drivers subscribe.

#### **4. LANGA-MOWBRAY ROUTE**

##### Route Characteristics

This route exists between the black township of Langa and the Mowbray interchange. The kombi taxis use a different route from that of the buses. The bus route which goes via Athlone is 9km long whereas the taxi route going via Settlers Way is 7.8 km. Please refer to the map below for a detailed exposition of the route layout.

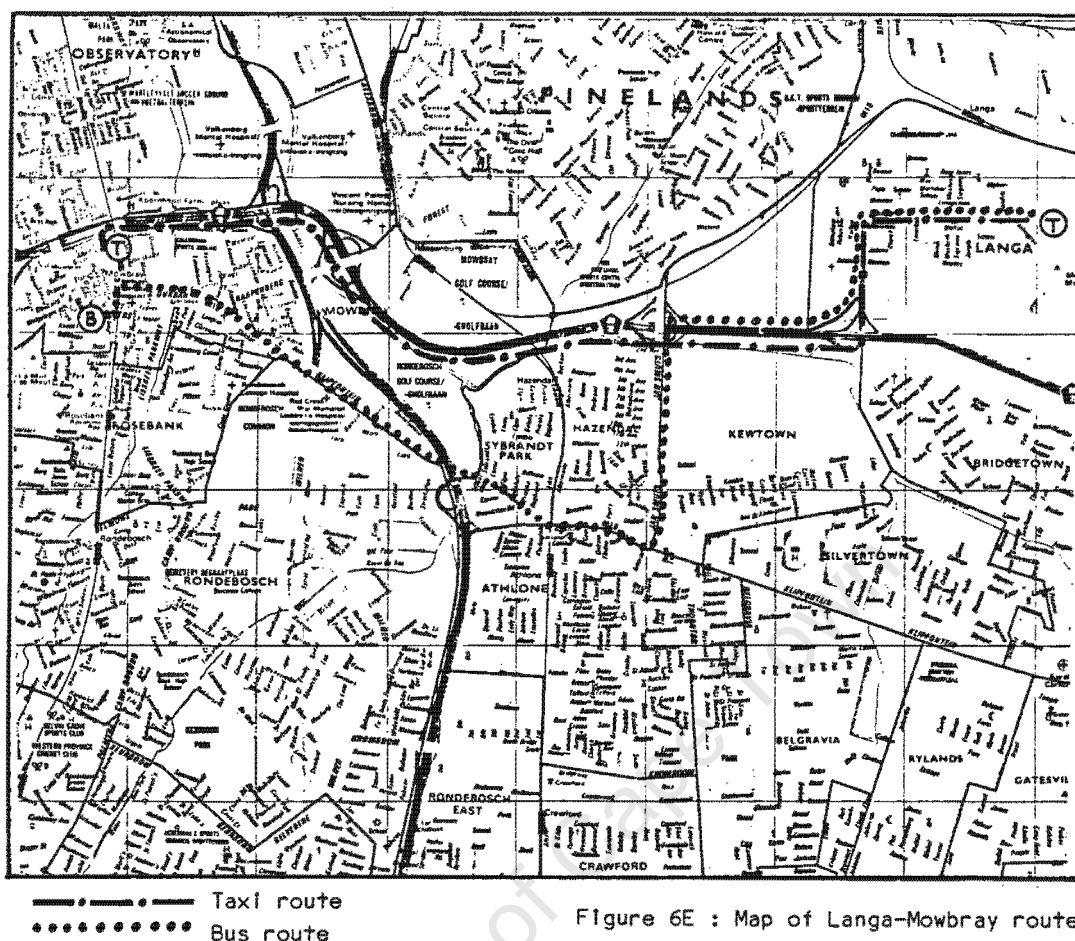


Figure 6E : Map of Langa-Mowbray route

The public transport service on this route is almost exclusively patronised by the residents of Langa who are all black. Three forms of public transport are available from Langa to Mowbray, viz. bus, rail and kombi taxi. The train service from Langa to Mowbray goes via Salt River which tends to be very time consuming. Had a direct line existed from Langa to Mowbray, the rail would certainly been the dominant mode of public transport on this route.

#### Socio-economic characteristics

Langa is situated about 13 km East of Cape Town's CBD making it the nearest black township to the City centre. Adjacent to it is the Epping Industrial area and about 3 km south is the Ndabeni Industrial area.

Covering an area of 30.5 square kilometres, it has a population of about 34 000 people of which 76% are male and only 24% are female. The average household size is 4.8 people of which only 2.73 are economically active. The greater part of the population are aged between 20 and 50 years of age. The average income is very low since most are unskilled workers. Given these socio-economic characteristics, it would be expected that the majority of the commuters would use the most economical/cheapest means of public transport available to them. However, it will be shown later that this certainly is not the case at the present moment.

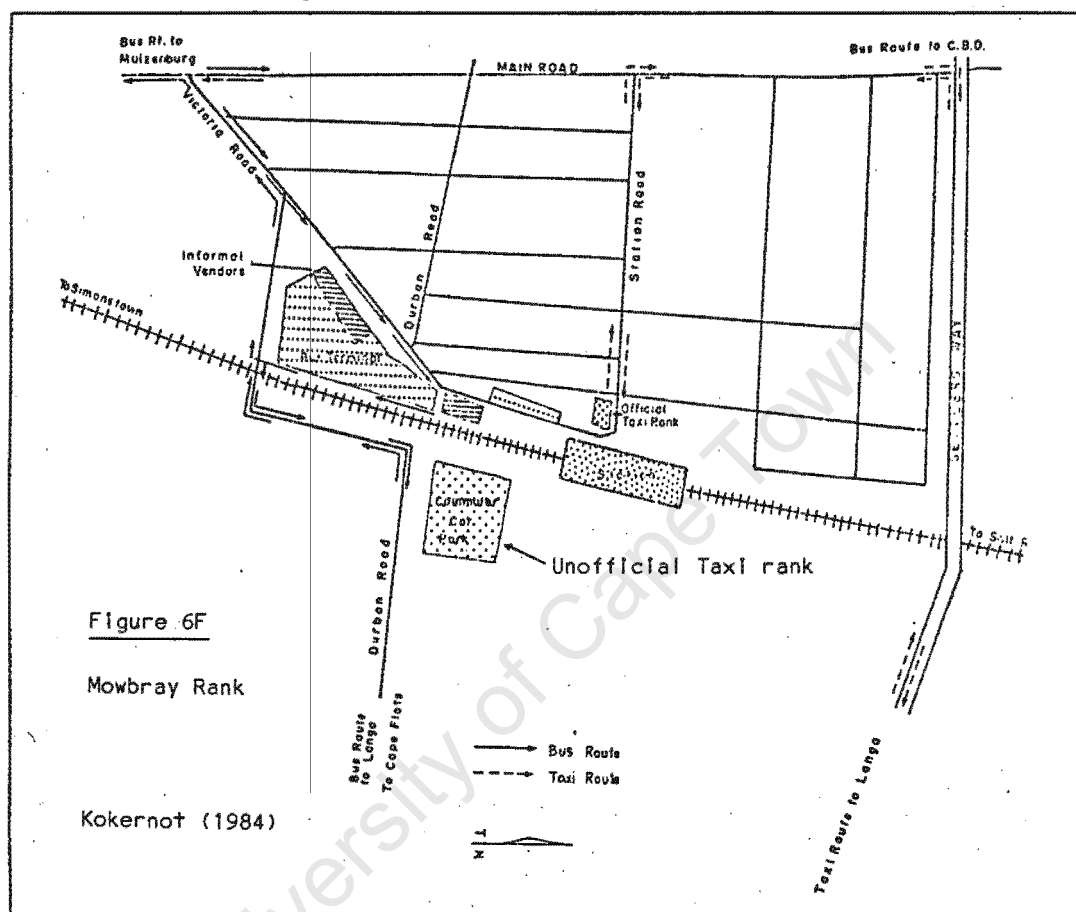
#### Characteristics of Kombi taxi Operation

The kombi taxi service provided on this route serves the residents of Langa mostly as a home or work base trip function. The morning peak is therefore from Langa to Mowbray and the evening peak from Mowbray to Langa. Although some contra flow of passengers exists, it is relatively insignificant.

At Langa, the taxi rank is situated in Washington Street, in close proximity to the Mowbray-bound bus boarding point. This location is also the central destination point for all the other intertownship taxis. The physical conditions at the rank and bus terminus area are very poor. The area is unsurfaced and the drainage inadequate.

The taxi rank area in Mowbray (for taxis serving the Langa area), is situated on the Southern side of the railway line immediately in front of the entrance/exit to the station. Here there is ranking space for 10 vehicles. However, as can be seen from the diagram below (Figure 6d), it is a bit removed from the bus terminus. Because of the location of this rank area, taxis use the N2 freeway instead of the Durban

Road/Klipfontein Road route used by the buses. This route (N2) is also quicker, avoiding the many traffic signals and congestion on the alternative route.



For many years this taxi service to Langa was the only taxi service of its kind which operated from the Mowbray Terminus area. It is only as recently as 1986 that taxi services to other destinations were introduced. However, the Langa ranks have not been affected by these new taxis services, operated from the eastern side of the railway line.

According to the records of the Local Road Transportation Board (25/04/88), only 11 permits have been issued for the Mowbray rank and 23 for the Langa rank (excluding the inter-township permits). A total of 34 taxis are therefore legally entitled to operate on

this route. Our observations have shown that all the taxis operating on this route are legal taxis.

On the three different occasions during which the 3 hour peak period of kombi taxi operations was monitored on this route, a total of 41 different taxis were observed. Only 21 of these operated during each of the three peak periods. When departures were monitored, 25-26 taxis were observed over the peak period. However, when arrivals were monitored at the Mowbray Station on one morning peak period, a total of 32 taxis were operating on this route. The table below is a summary of taxi and bus counts on this route.

Table 6.5 : Summary of Taxi and Bus counts (Langa route)

DAY Loc.	PEAK	TAXIS			BUSES		TOTAL
		Taxis	Trips	Pass	Trips	Pass	
Wed Langa	a.m. dep.	25	71	989 93%	5	70 7%	1 059 100%
Wed Mowbray	p.m. dep.	26	73	1019 96%	5	37 4%	1 056 100%
Fri Mowbray	a.m. arr.	32	86	1198 92%	7	105 8%	1 303 100%

From these results we see that more people use the bus in the morning than in the evening. This is why the modal share of the taxi is slightly less in the morning (92-93%) whilst in the evening it is 96%. On Friday a 21% increase in taxi, and a 50% increase in bus passengers were observed. Whilst the off-peak taxi passenger volumes were recorded to be up to twice that of the AM or PM peak, the bus service was very poorly supported during this period.

The difference in the travel times of the bus and taxi on this route is significant due to the fact that the

taxi travels along a more direct route. The taxi takes about 10-15 minutes whereas the bus takes about 35 minutes to cover the distance on this route.

Although the sex split amongst the taxi users is fairly even, with 52-55% females, the bus users are mostly males constituting 66% of all bus users.

No full-time taxi regulator is employed at the rank. Despite this, the operations at the rank seem to work smoothly and taxi users form very orderly waiting queues themselves (see photograph below). These queues were observed to be more than 18 passengers long during a normal weekday PM peak.



Figure 6G : Taxi rank at Mowbray (Langa route)

## 5. CITY - MOWBRAY ROUTE

### Route Characteristics

This route exists between Central Cape Town and the Mowbray transport interchange. The route is essentially

along the Main Road (Victoria Road), although many taxis use the Eastern Boulevard (N2) on their return journey during peak periods. Along the Main Road from Town to Mowbray, the areas of Woodstock, Salt River and Observatory are situated. Residents commuting to or from these areas are also provided for by the taxi service on this route.

The alternative modes of public transport on these routes are the buses, operated by City Tramways, and the trains. Two routes are serviced by the buses from the City to Mowbray, viz. along the Main Road (Victoria Rd), and secondly via the Lower Main Road (Albert Road). The taxis on this route seldom (only during off peaks) cover the Lower Main Road route. The taxis on the City-Kensington route operate along the Lower Main Road. Many other taxis from outside areas, carrying passengers to the City, also travel along these Main Roads picking up passengers along the way, something which they are not allowed to do in terms of the conditions of their permit.

At the time of the survey, the bus operated on a 5 minute frequency (sometimes offering two buses every 5 minutes) during the peak periods and during the off peak periods operated on a frequency of 10 minutes. The trains on this line operate on a frequency of 3-5 minutes during peak periods.

#### Socio-economic characteristics

The bus and taxi on this route serve two groups of commuters, viz. the residents of areas which are located along this route, who travel to the City or Mowbray, and secondly the people who change modes at Mowbray either from bus, train or taxi, and who work either in one of the areas along this route or in the City. Socio-economically these two groups fall in the

same category, viz. members of all races who are middle to low income earners.

### Characteristics of Kombi taxi Operation

Note that scheduled observations were conducted at the departure points and not along the routes, although unscheduled observations were carried out along the route by sitting in the taxis. The count figures should be regarded as conservative since no account was taken of the many passenger trips along this route, especially those trips undertaken by taxis from outside the area.

At the time of the survey this route, apart from the City - Sea Point route, was the only other route in the study area on which members of all races regularly used the same taxi service. The morning peak is from Mowbray to the City constituting mainly the commuters transferring at Mowbray on their journey to work. The contra flow constitutes about 28% of the main flow. The evening peak is therefore in the reverse direction from the City to Mowbray and carries 18% less passengers than during the morning 3 hour peak period. The off peak patronage of the taxi service is significant on this route, carrying about 65% of the passengers carried during an average (AM or PM) peak period.

At the time of the survey the taxi ranks in the City for this route were situated on the station side of Strand Street in front of the bus terminus. As mentioned earlier, this rank area is shared between the Mowbray and Sea Point taxis.

Our observations indicate that a total of 62 different taxis were operating on this route. Also mentioned earlier is the fact that the same 36 taxis that operate on the Sea Point, also operate on the Mowbray route.

Therefore the remaining 26 taxis (although not illegal) operate with permits which were issued for ranks other than the City. Note that all the taxi operators who were issued with permits for the Mowbray rank, operate on the Mowbray-Langa route.

On the six different occasions during which the four 3 hour peaks, one 4 hour off-peak, and one Saturday peak periods of kombi taxi operations were monitored on this route, a total of 62 different taxis were observed. Only 5 of these were observed to operate during each of the four AM/PM observation periods. Of these, only 3 taxis were operating during all 6 observation periods. The table below is a summary of taxi and bus counts on this route.

Table 6.6 : Summary of Taxi and Bus counts (Mowbray route)

DAY Loc.	PEAK	TAXIS			BUSES		TOTAL
		Taxis	Trips	Pass	Trips	Pass	
Mon City	p.m. dep.	18	32	442 35%	21	813 65%	1 255 100%
Fri City	p.m. dep.	26	57	819 40%	26	1226 60%	2 045 100%
Tues Mowbray	a.m. dep.	21	41	538 27%	34	1427 73%	1 965 100%
Fri Mowbray	a.m. dep.	30	45	574 27%	42	1536 73%	2 110 100%
Tues City	off dep.	16	25	319 26%	30	888 74%	1 207 100%
Sat City	a.m. dep.	31	55	742 29%	39	1778 71%	2 520 100%

The results show clearly that the bus is still the predominant mode on this route. It also shows the Friday bus and taxi passenger volumes to be

significantly more than that of the normal week day, 85% and 51% more for the taxi and bus passengers respectively. The off-peak volumes seem to be more or less equal to the AM or PM volumes. Even on a Saturday, when many shopping trips are conducted, the bus maintains its modal share advantage over the taxi.

The travel time by bus on this route is between 25 and 35 minutes during the peak periods, and by taxi between 20 and 25 minutes. During the off-peak however, the travel time by bus is about 15-20 minutes, and by taxi about 15 minutes. However, with a full load, the taxi may travel along the freeway which reduces the travel time to about 6-10 minutes.

On this route too, the females constitute the majority of both the bus and taxi users; 70% of the taxi, and 65% of the bus users are females.

Since the City taxi rank of this route is shared with the taxis of the Sea Point route, the same taxi regulator is in service at the rank overseeing both routes. At the Mowbray rank (eastern side of the station) the service of another taxi regulator is employed. During the evening peak, waiting queues of up to 47 passengers were observed between 17h00 and 17h20 at the City rank.

## INTERVIEW SURVEY RESULTS

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All the data collected during this survey, i.e. the questionnaire responses, were analysed with the aid of a database program which facilitated convenient and efficient cross-referencing.

### Survey Sample

A total of 306 bus and 323 kombi-taxi users were interviewed on the 5 representative routes. The table below show how many respondents there were on each route.

Note that the following abbreviations are used for the 5 representative routes.

C-A : City - Atlantis

C-M : City - Mowbray

C-S : City - Sea Point

L-M : Langa - Mowbray

R-L : Retreat Station - Lavender Hill & Scheme Area

Table 6.7 : Number of Respondents on each route

	C-A	C-M	C-S	L-M	R-L	Total
Bus Respondents	53	70	102	31	50	306
Taxi Respondents	61	53	80	48	81	323

Of the 629 respondents interviewed, 387 (61.5%) were females and 242 (38.5%) were males. As far as the respondents race classifications are concerned, 118 (19%) were black, 434 (69%) coloured, and 77 (12%) white.

### Previous Mode

One of the main objectives of the survey was to determine which mode the present taxi users have used prior to moving to taxis. This would allow us to quantify the impact of the taxis on buses in terms of the resultant modal shift. Question number 16 of the kombi-taxi questionnaire, addressed this issue by asking the taxi user which mode of transport he/she had used prior to using taxis. The table below shows the number of users (% on each route) having used the various previous modes.

Table 6.8 : Previous Modes Percentages on each route

Previous Mode	C-A	C-M	C-S	L-M	R-L	Total
Bus	77	64	88	25	43	61
Train	0	30	0	44	0	11
Bus/Train	0	0	0	17	0	2
Car	10	6	10	14	16	12
Taxi	10	0	2	0	26	9
Walk	0	0	0	0	15	4
Other	3	0	0	0	0	1
Total	100%	100%	100%	100%	100%	100%

Note that where the taxi has been indicated as a previous mode, the users have always used the taxi on that particular route. The 3% "other" on the C-A route, refer to respondents who indicated that they have either used company transport, or belonged to a lift club prior to switching to taxis. In a later analysis, this 3% is regarded as private transport (car).

On the routes which have zero incidence of the train as a previous mode, no train service exists. The

total/average values are therefore not truly representative of the previous mode characteristics on all the routes.

The table above illustrates that the level of impact on the various modes varies from route to route. The factors influencing this variation are looked at in greater detail when each route will be analysed individually (Chapter 7).

### Experience

Linked to the previous mode characteristics, is the experience of the respondents on each of the routes, i.e. for how long the respondents have been using the kombi-taxi. This would allow us to determine over what period of time each of the previous modes have been losing passengers. The table below show the taxi respondents' experience on each of the routes.

Table 6.9 : Taxi Respondents' Experience on each route

Experience (yrs)	C-A	C-M	C-S	L-M	R-L	Total
Less or = 1	30	50	61	15	25	37
>1 to 2	11	50	39	19	11	26
>2 to 3	17	-	-	35	11	11
>3 to 4	7	-	-	8	7	4
>4 to 5	10	-	-	13	11	7
>5 to 6	7	-	-	6	-	2
>6 to 7	2	-	-	2	7	2
>7 to 8	3	-	-	2	3	2
>8 to 9	5	-	-	-	3	2
>9 to 10	8	-	-	-	10	4
>10 to 16	-	-	-	-	12	3
Total	100%	100%	100%	100%	100%	100%

Note that the two routes C-M and C-S have only been in operation since 1987. For a more detailed analysis of the respondents' experience for each mode, as well as



On average, the bus users seem to be more regular users of their mode than do the taxi users, having 85% of the respondents using the bus on 5 or more days of the week.

Another aspect of the respondents' frequency of use is the period of the day they use their mode. The table below compares this aspect of the bus and taxi user's usage patterns.

Table 6.12 : Usage Period of Bus & Taxi Respondents

Period	C-A	C-M	C-S	L-M	R-L	Total
AM Only (Taxi)	2	25	6	2	2	7
(%) (Bus)	0	4	6	22	4	6
PM Only (Taxi)	10	4	0	13	5	6
(%) (Bus)	2	7	13	10	18	10
Both (Taxi)	89	72	94	85	93	88
(%) (Bus)	98	89	81	68	78	84
Total	100%	100%	100%	100%	100%	100%

From this table it can be concluded that, on average, more taxi users seem to use their mode during both peaks than do the bus users.

#### Waiting Times

The table below compares the average waiting times indicated by the bus and taxi respondents on the different routes. Once more, for a more detailed analysis on any specific route, the reader is referred to Appendices E-I.

Table 6.13 : Average Waiting Times (in minutes)

Mode	C-A	C-M	C-S	L-M	R-L	Total
Bus	18.2	13.0	16.7	15.2	7.9	14.5
Taxi	16.1	6.8	4.3	4.2	3.6	6.8

### Walking Times/Distances

It has always been claimed that one of the advantages of the taxi is that it drops its passengers closer to their destination than does the bus. The table below compares the responses of bus and taxi users to this question. Note that respondents were asked to indicate the time it took them to walk from where their mode drops them, to their destination, as well as the time it would take them had they used the alternative (bus/taxi) mode on the same route. The difference in walking times (bus time - taxi time) for each respondent has been calculated, and the average values have been presented in this table.

Table 6.14 : Average Difference in Walking Times (in minutes)

Respondents	C-A	C-M	C-S	L-M	R-L	Total
Bus	2.79	1.69	1.10	6.00	-2.54	1.43
Taxi	1.07	0.34	-0.43	1.35	-0.92	0.12

The table above therefore indicates the average time that taxi respondents gain, and bus respondents would gain on their walk to their destination, by using the taxi instead of the bus on the different routes. A negative value indicates that on average the walk from the bus is quicker than that from the taxi.

### Bus User Attitudes

Bus respondents on each route were asked whether they had ever used a taxi on that route in order to establish whether the reason for their modal choice is based on experience of both modes or not. The table below show how many of the bus respondents had experience of using a taxi on the different routes.

Table 6.15 : Percentage of Bus Respondents who had used a taxi on their route

	C-A	C-M	C-S	L-M	R-L	Total
% of Respondents	94	57	67	77	80	73

Of the 73% of bus respondents who had used the taxi on their route, 64% had used the taxi on more than 10 occasions. The main reason for them having used the taxi instead of the bus was that their buses were late or that they had missed the bus.

### Reason for Using Taxis

Taxi respondents were asked to state the most important reasons for them using the taxi in preference to the alternative modes of transport on their route. Of the 494 responses to this question, three main reasons were indicated. The table below indicates the variation of these reasons on the 5 routes.

Table 6.16 : Taxi respondents' reasons for using the kombi-taxi in preference to the alternative modes

Reason	C-A	C-M	C-S	L-M	R-L	Total
Quicker	52	65	49	60	49	54
Cheaper	17	13	26	26	21	21
Convenient	26	19	20	3	27	20
Other	5	3	5	11	3	5
Total	100%	100%	100%	100%	100%	100%

For details of the "other" reasons on any of the routes, the reader is referred to Appendices E-I.

#### Reason for Using Buses

The bus respondents were asked to state the most important reasons for them using the bus in preference to the alternative modes on their route. From the 306 bus users interviewed, a total of 420 responses were received. The table below summarises these responses.

Table 6.17 : Bus respondents' reasons for using the bus in preference to the alternative modes

Reason	C-A	C-M	C-S	L-M	R-L	Total
Clipcard	41	19	15	32	2	22
Less Overcrowding	5	27	25	23	25	21
Cheaper	39	7	7	30	0	17
Convenient	0	18	20	1	38	15
Safer (Accidents)	7	11	11	0	10	8
Comfortable	0	3	2	0	9	2
Other	8	15	20	14	16	15
Total	100%	100%	100%	100%	100%	100%

Interesting to note from this table is the incidence of the clipcard being quoted as a reason for using the bus

on the 5 routes. This variation may be attributed to the degree of clipcard subsidisation on the route as illustrated by the table below.

Table 6.18 : Level of Clipcard Subsidisation the routes

Fare per Trip	C-A	C-M	C-S	L-M	R-L
Cash Fare	369c	55c	80c	60c	40c
Clipcard Fare	155c	44c	64c	59c	40c
% Subsidisation	58%	20%	20%	1.7%	0

Note that on the Retreat route the clipcard fare is the same as the cash fare. This is so because at the time of the survey, the cash fare had been reduced in a desperate attempt to improve the bus modal share which was seriously diminishing due to fierce competition from the taxis.

When the clipcard is indicated as a reason, it could mean the convenience of it or the subsidisation benefit of it.

Although many of the respondents, when asked to state the main reason for their modal choice, do not indicate the lower cost as a reason, when asked whether they would switch mode should the fare of the alternative mode become much cheaper than their existing mode, the response indicated that more people base their modal choice purely on economic reasons than may have been perceived from Table 6.17 above. The table below show the percentage of the bus and taxi respondents who stated that they would probably change to the mode which offers a much lower fare structure.

Table 6.19 : Percentage Respondents basing their modal choice purely on economic reasons

	C-A	C-M	C-S	L-M	R-L	Total
Bus Respondents	71	16	26	79	18	35
Taxi Respondents	23	9	18	33	23	21

Interesting to note is the 21% of taxi users in this table which coincides with the 21% of taxi respondents in Table 6.16 who indicated the cheaper fares as a reason for them using the taxi. However, significantly more bus respondents base their modal choice mainly on economic reasons than the 17% indicated in Table 6.17.

### Complaints

Taxi and bus respondents were asked whether they had any complaints about the bus or taxi service on their route. The bus respondents seem to have more complaints about the service offered by their mode than did the taxi respondents, as illustrated by the table below.

Table 6.20 : Percentage of Respondents having no complaints

	C-A	C-M	C-S	L-M	R-L	Total
Bus Respondents	36	61	49	32	82	53
Taxi Respondents	56	79	68	38	60	61

Although the nature of the complaints were varied, the most common complaints are listed in the two tables below.

From the 143 (47%) bus respondents who had complaints about the bus service on their route, a total of 209 responses were received.

Table 6.21 : Bus Respondents' Complaints

Complaint	C-A	C-M	C-S	L-M	R-L	Total
Bus not on time	49	37	37	46	50	42
Too few buses	2	11	24	36	12	19
Reckless driving	5	9	5	3	13	5
Rude Drivers	0	9	7	0	0	4
Dirty Buses	2	3	7	0	0	4
Overcrowding	4	8	0	0	0	2
Smoking	0	6	3	0	0	2
Other	38	17	17	15	25	22
Total	100%	100%	100%	100%	100%	100%

From the 126 (39%) taxi respondents who had complaints about the taxi service on their route, a total of 194 responses were received.

Table 6.22 : Taxi Respondents' Complaints

Complaint	C-A	C-M	C-S	L-M	R-L	Total
Overcrowding	15	65	37	41	43	38
Reckless Driving	32	14	40	23	29	29
Rude Drivers	24	7	14	33	14	22
Other	29	14	9	3	14	11
Total	100%	100%	100%	100%	100%	100%

For details of the "Other" bus and taxi complaints on specific routes, the reader is again referred to Appendices E-I.

To establish the degree of modal choice of the taxi and bus users, respondents were asked to indicate whether they possessed a car or had access to a car. The results showed that generally the car ownership amongst

the bus users were higher than amongst the taxi users, as illustrated by the table below.

Table 6.23 : Percentage Car Owners amongst Taxi and Bus Respondents

Respondents	C-A	C-M	C-S	L-M	R-L	Total
Bus	47	46	39	29	36	41
Taxi	36	26	45	21	27	32

### Summary of Interview Survey Results

It is clear from the results of the survey that each of the 5 selected routes has its own characteristics which makes it different to the others. This was to be expected since these routes were selected to represent the whole spectrum of routes in the study area in as many ways as possible.

In terms of the objectives of the interview survey, i.e. to obtain the previous mode and associated characteristics of the taxi users and to obtain attitudinal tendencies of the bus and taxi users, the following conclusions can be derived from the results presented above.

1. Previous mode characteristics vary significantly from route to route depending on a number of factors of which the existence of a train service on the route is the most important.
2. The bus users seem to be more regular users of their mode than does the taxi users. Whereas 85% of bus users use their mode on 5 or more days of the week, this is the case with only 79% of taxi users.
3. The average waiting time of bus users is 14.5 minutes whilst that of taxi users is 6.8 minutes.

4. Although the average difference in walking times (from the bus/taxi to the destination) is in favour of the taxi, on 2 of the 5 routes respondents indicated that on average the bus drops them closer to their destination than does the taxi.

5. Of all the bus respondents, 71% had experience with travelling by taxi. In fact, of this 71%, 64% had used the taxi on more than 10 occasions in the past.

6. The three main reasons cited by taxi respondents for them choosing to use the taxi in preference to the alternative modes, are, in order of importance, because its quicker (54%), cheaper (21%) and more convenient (20%).

7. Bus respondents cited the following main reasons for preferring to use the bus, viz. the clipcard (22%), less overcrowding (21%), cheaper (17%) and convenience (15%).

8. Fewer taxi respondents than bus respondents had any complaints about the service their mode is offering. Whereas 61% of taxi respondents had no complaints, this was the case with 53% on bus respondents. The most common complaint of bus users is that the buses are not time. Taxi users mostly complained about the overcrowding and reckless driving.

9. Car ownership amongst bus respondents (41%) was higher than that of the taxi respondents (32%).

10. More bus respondents base their modal choice primarily on economic grounds than do the taxi respondents - 36% of the bus respondents and only 21% of the taxi respondents indicated that they would change to the mode that charges the lower fare.

## MODAL SPLIT SURVEY RESULTS

Since the taxi services on all the routes operate from or to a transport interchange, this survey was conducted at all the major transport interchanges from which taxis operate. A total of 15 interchanges were covered by the survey of which 10 were major interchanges. At these interchanges, all the bus and taxi departures were recorded over the 3 hour evening peak period (15h30-18h30). The table below summarises the results on each of the 15 interchanges showing the total bus and taxi passenger departures for the routes on which taxis operate.

Table 6.24 : Total Passenger Departures

Interchange Station	No. of Routes	TOTAL PASSENGER DEPARTURES	
		Taxi (%)	Bus (%)
Athlone	7	2589 (80)	667 (20)
Bellville	7	3196 (53)	2810 (47)
City	7	2103 (49)	2999 (51)
*Claremont	5	1326 (42)	1866 (58)
Elsies River	6	4004 (79)	1093 (21)
Fish Hoek	1	621 (61)	405 (39)
Lansdowne	1	830 (92)	75 (8)
Lentegeur	1	397 (66)	205 (34)
Town Centre (M/P)	7	7042 (72)	2774 (28)
Mowbray	7	3503 (49)	3595 (51)
Mutual	1	253 (100)	0 (0)
Parow	4	2781 (92)	249 (8)
Retreat	2	2923 (88)	407 (12)
Steenberg	1	1470 (100)	0 (0)
Wynberg	10	6951 (70)	3027 (30)
Total	67	40789 (67%)	20172 (33%)

\* On this route the observers arrived late and the departures were only recorded from 16h20-18h30.

Note also that the 7 routes indicated for the Mowbray interchange, include the Mowbray-City route which is also covered on the City interchange. Therefore only 66 different routes were covered by the survey.

A problem experienced during the survey was that on some of the taxi routes, the bus only passes the taxi destination on its way to another destination, e.g. on the Wynberg-Parkwood route, the bus passengers use the Grassy Park (Busy Corner) bus which passes Parkwood. It was therefore difficult to accurately determine the number of bus passengers alighting at the destination. In these cases the bus driver on the route was consulted in order to estimate the number of passengers who normally alight at the destination in question.

#### Route Distances

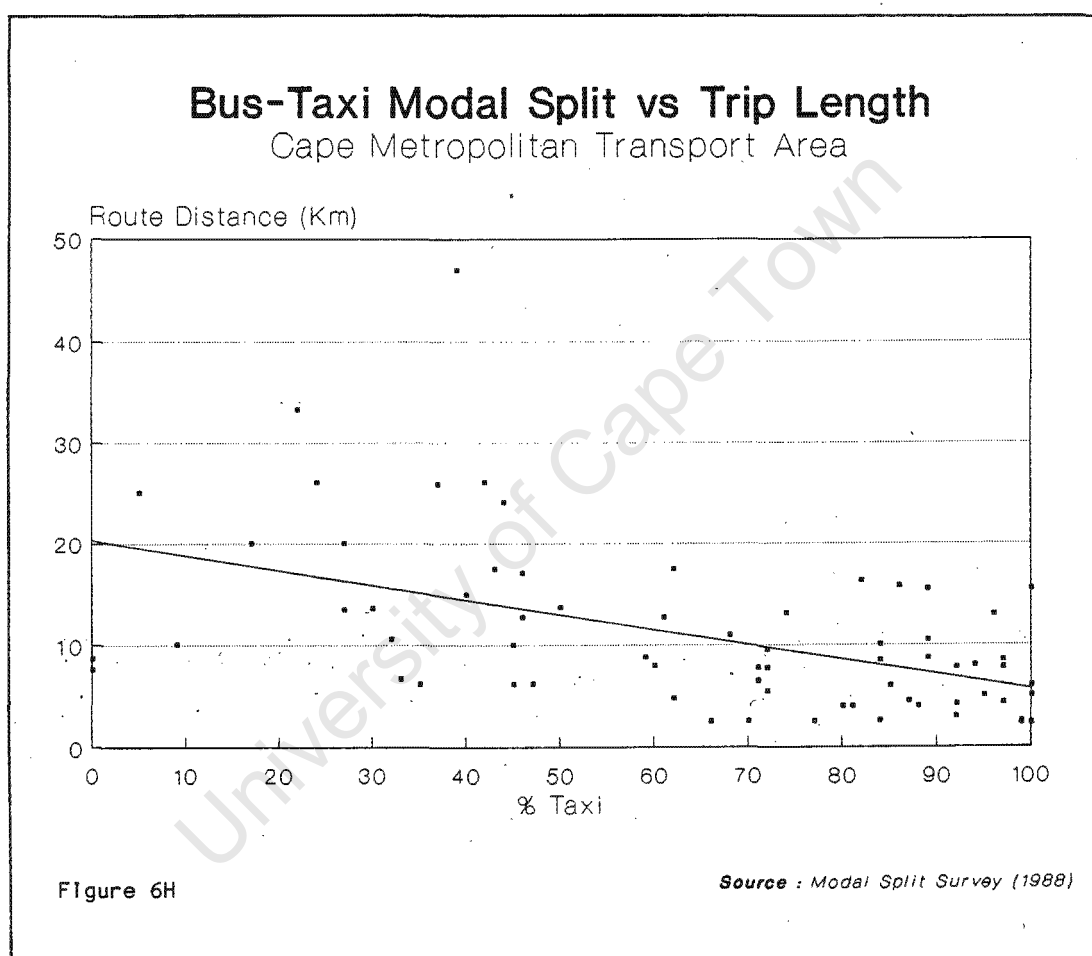
The route lengths of the 71 routes considered in the study area varied between 2.3 km and 47 km. Oosthuizen, in developing demand models for the taxi services drew distinction between 3 route categories, viz short (less than 10 km), medium (10-35km) and long (>35km) distance routes (Oosthuizen, 1986). The table below shows the number of routes in our study area that could be classified into each of these categories.

Table 6.25 : Route Distances

Distance (km)	No. of Routes (%)	
Short (<10km)	38	54%
Medium (10-35km)	32	45%
Long (>35km)	1	1%
Total	71	100%

A significant 46% of the routes are therefore not short distance routes.

A trend was noticed between the bus-taxi modal split and the route length, as illustrated by the graph below.



### Bus and Taxi Fares

The taxi and bus fares (cash and clipcard) were recorded on each of the routes. The results show that only on 3% of the routes the bus cash fare was cheaper than the taxi fare. The table below shows the percentage difference (the percentage by which the taxi

fare is cheaper than the bus fare) between the taxi and bus cash fares on these routes.

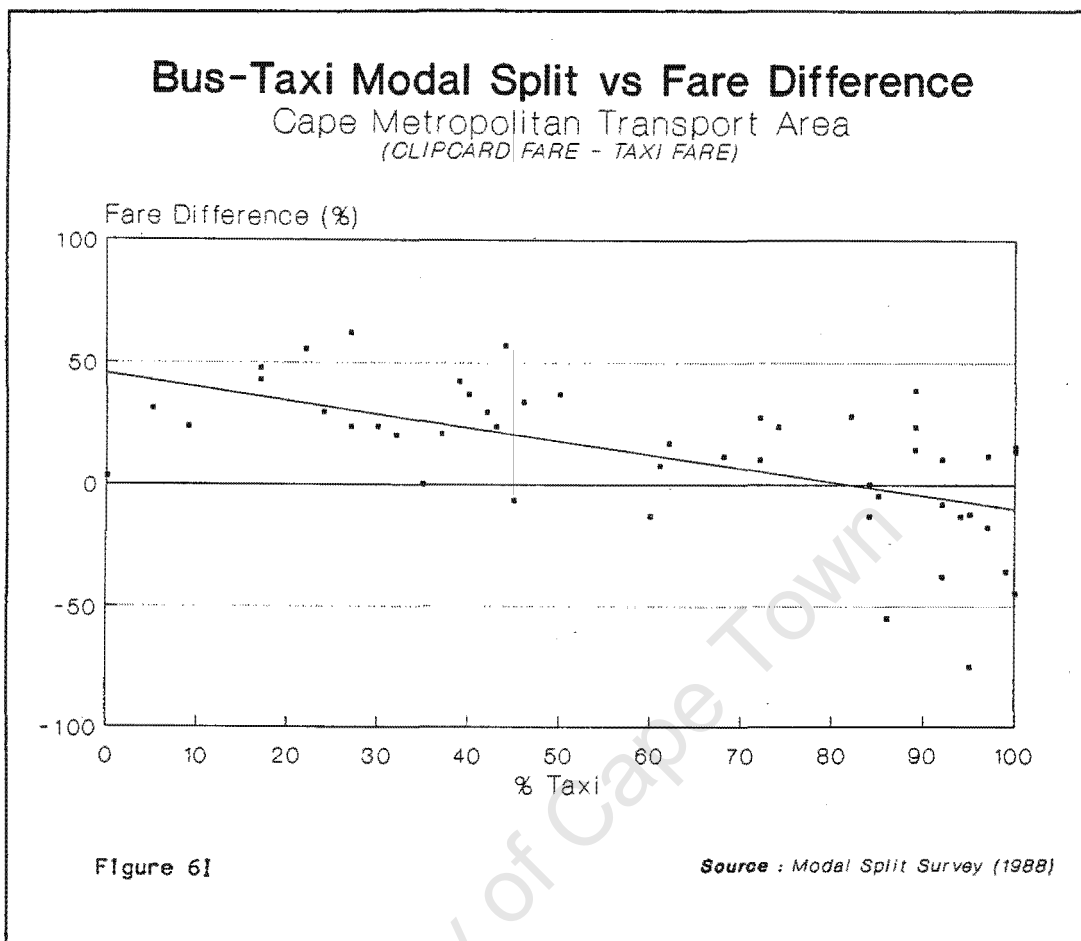
Table 6.26 : Differences in Bus and Taxi fares (All routes)

Percentage Difference	No. of Routes (%)
< 0	3
0	8
1 - 20	40
20 - 40	43
> 40	6
Total	100%

On average, the taxi fare was 19.6% cheaper than the bus cash fare.

When comparing the taxi fare with the subsidised clipcard fare of the bus, we see that on the 50 routes which offer a clipcard facility, the clipcard fare is on average 7.66% cheaper than the taxi fare. However, on 28% of these routes, the taxi fare was still cheaper than the clipcard fare. On 6% of the routes there was no difference in the fare and on the remaining 64% of the routes, the clipcard fare was between 1% and 62% cheaper than the taxi fare.

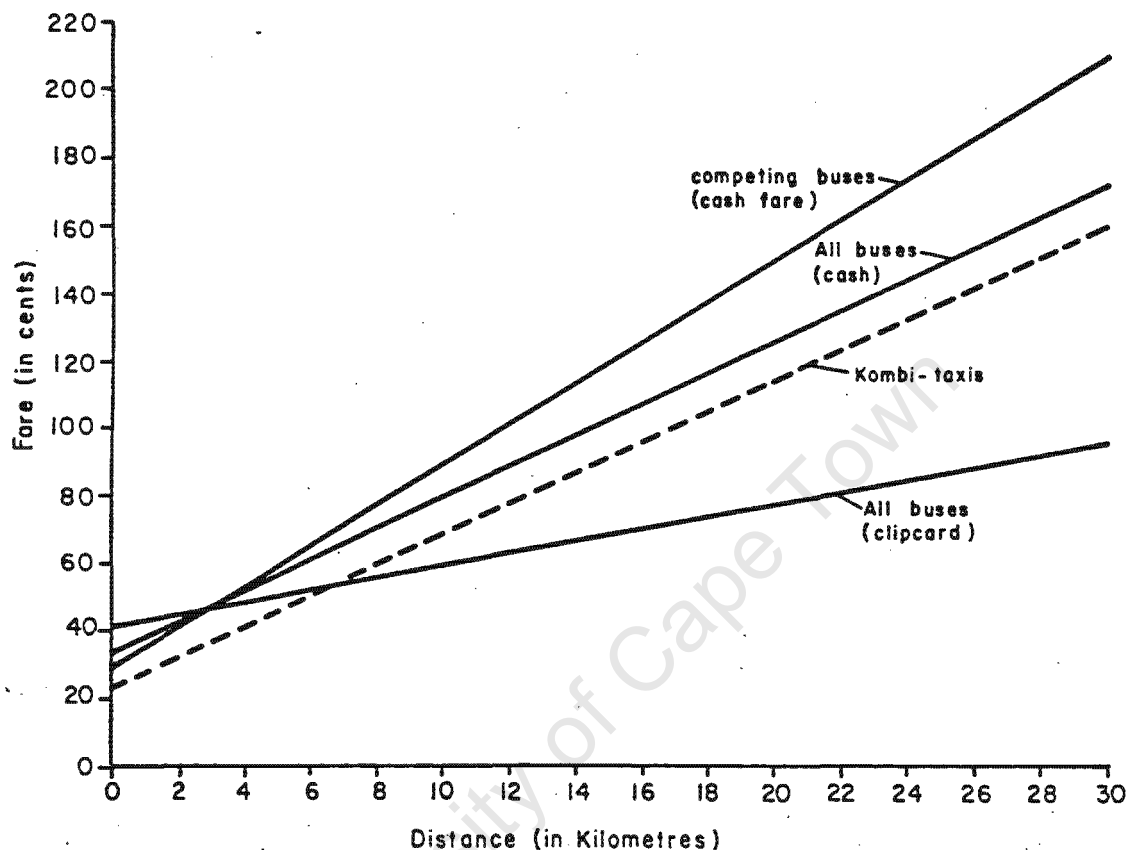
A trend was identified between the difference in the taxi and bus clipcard fare, and the bus-taxi modal split characteristics, as illustrated by the graph below.



Pressenger (1986), in his 1987 Kombi-taxi Survey report, presented an analysis of the taxi and bus (cash and clipcard) fares as a function of the route lengths. The bus fares for the routes on which taxis operate were considered separately from all the bus fares. The results of his analysis are presented in the graph on the next page.

The report noted that the fare functions were quite different from those identified in the 1986 Kombi-taxi Survey. In the 1986 survey, the cash fares on bus services were generally higher than the kombi-taxi fares, but where there was kombi-taxi competition the bus fares tended to be lower. The 1987 survey results show that the fares on bus services that compete with taxis are considerably higher than the fares on

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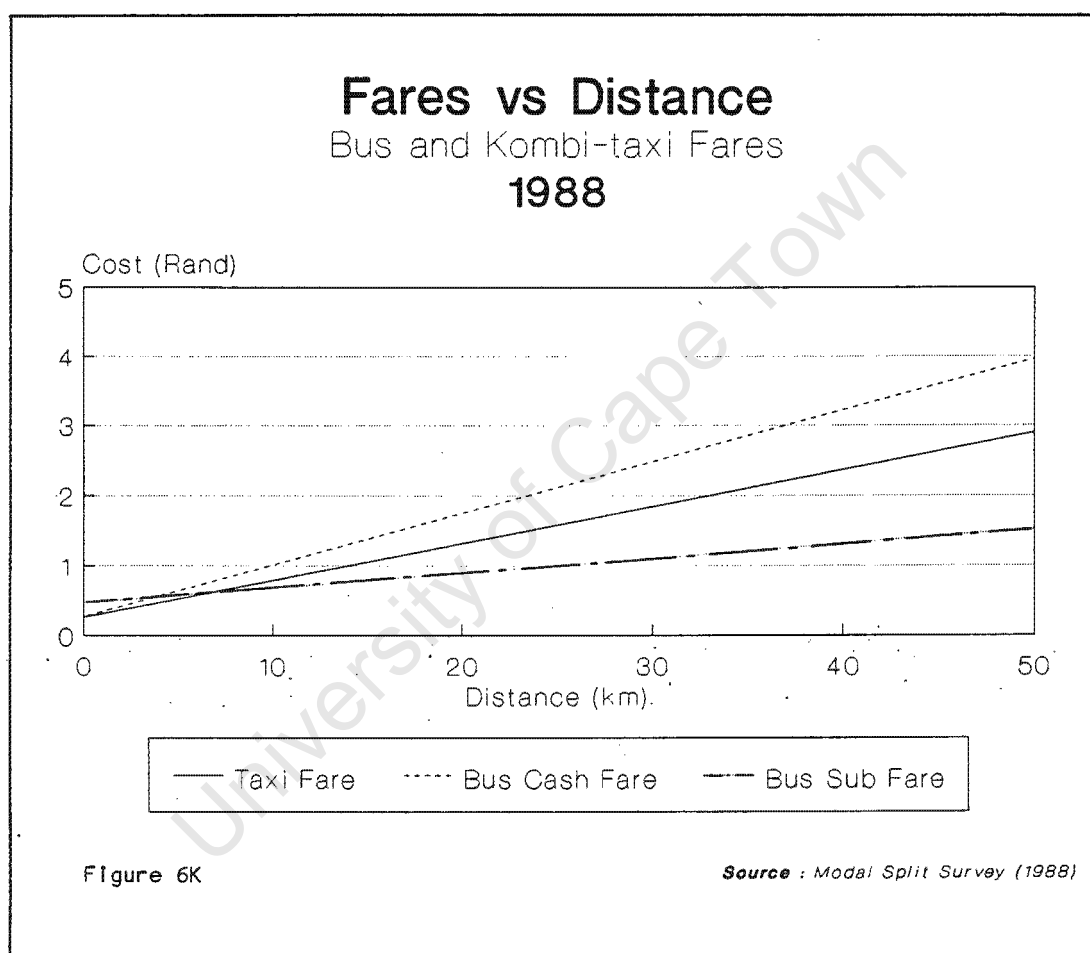


RESULTS OF REGRESSION ANALYSES

FARE CATEGORY	CONSTANT	X-COEFF.	R <sup>2</sup>
Kombi-taxi/minibuses	0.235	0.0452	75.3%
Buses competing with taxis	0.294	0.0599	70.9%
All buses (clipcard)	0.404	0.0177	63.6%
All buses (cash)	0.334	0.0462	87.6%

Figure 6J : MTP Graph of route distance vs. taxi and bus fares

services where there is no competition. It was also apparent that kombi-taxi fare levels were generally lower than subsidised clipcard bus fares at distances less than 6.5 kilometres. Our 1988 survey results seem to indicate a very similar trend as that observed in 1987. The graph below illustrates the results (1988).



If it can be assumed that the fare structure of a transport mode somehow reflects the operating cost of that mode, then the above results seem to be in conflict with the findings of a study done by Voster(1984). In this study by Voster, a very comprehensive financial and economic comparative analysis of bus and kombi-taxi (jitney) services was conducted. The results showed that on routes which

carry more than 500 daily passengers, bus operations were more cost effective than kombi-taxi operations, regardless of the trip length. Note however that a kombi-taxi vehicle capacity of 10 was used in the analysis.

What our results suggest is that, without the subsidisation of the bus fares, kombi-taxis would seem to be more cost effective and would therefore present a far more potent competitor for the buses.

#### Route Ages

An effort was made to establish how long each of the taxi routes in the survey was in service. Of interest here is to see over what period the impact of the taxis on the different routes were realised. Also, from this we would be able to see how many new routes were established in the study area after the promulgation of taxi legislation. The table below show the ages of 66 routes in the study area as at 1988.

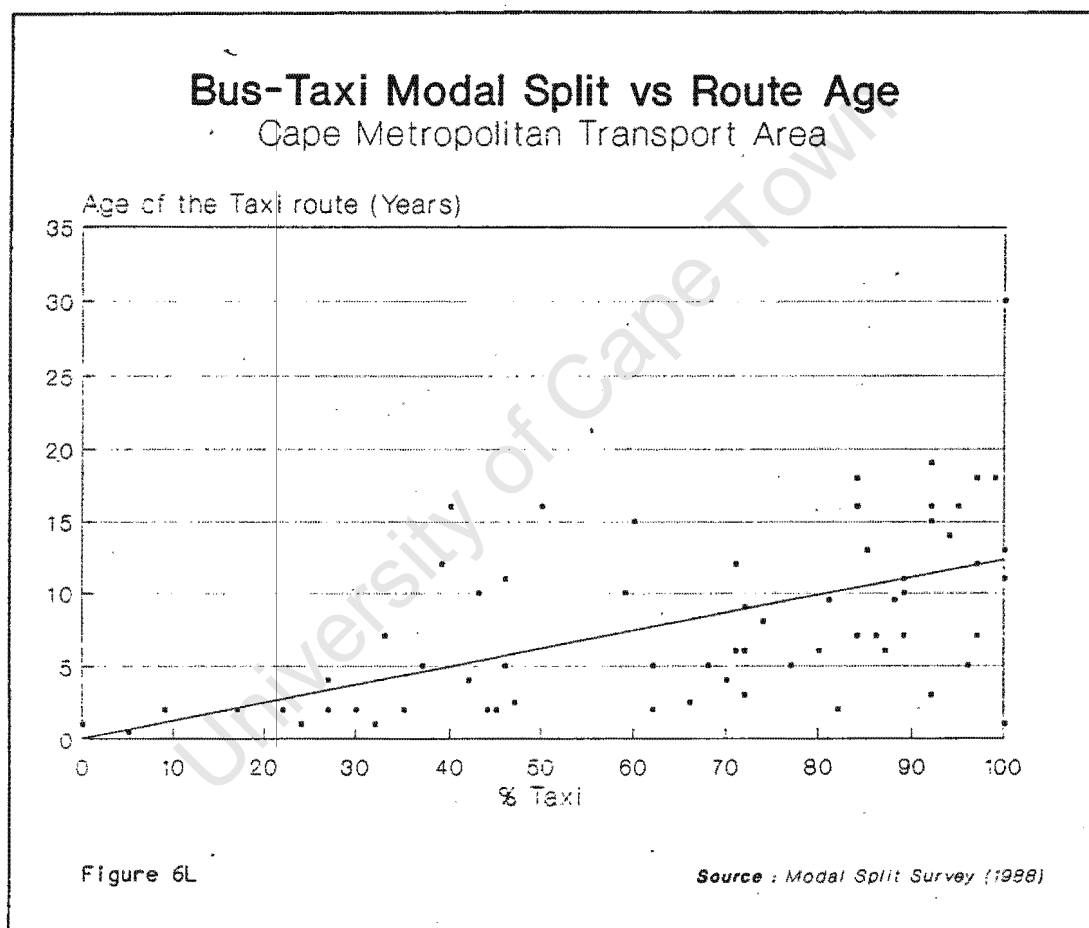
Table 6.27 : Ages of Taxi routes

Age (at 1988)	No. of Routes (%)	
0 to 2 yrs	17	26%
3 to 10 yrs	28	42%
11 to 30 yrs	21	32%
Total	66	100%

We can therefore deduce that 32% of the routes already existed prior to the promulgation of the Road Transport Act (Act No.74 of 1977) which increased the legal maximum number of passengers to be carried by a taxi vehicle, from 4 to 8 passengers. After this, but before 1986, 42% of the present number of routes were

established. Over the past two years, since the White Paper on Public Transport in 1986, 26% of the routes came into being.

A trend, although not a very good one, seems to exist between bus-taxi modal split characteristics and the age of the taxi route, as illustrated by the graph below.



For further details on each route, the reader is referred to Appendix J which contains the modal split data recorded on each of the routes, including the taxi and bus fares (cash and clipcard) as well as the history (the number of years that the taxi service has operating on the route) of the route.

## CONCLUSIONS

From these results, the following conclusions are made about the characteristics of the taxi and bus operations on the 71 taxi routes considered in the study area.

1. The routes on which taxis operate show an average taxi-bus modal split of 67/33 in favour of the taxi, i.e. 67% of all bus and taxi passenger trips are conducted by taxi.
2. The taxi routes in the study area, are not all short distance (<10km) routes, in fact only 54% of the routes are short distance routes. Medium distance routes (10-35km) account for 45% of the routes whilst only 1 route is a long distance route (47km).
3. Taxi fares are on average 19.6% cheaper than the bus cash fares. However, the subsidised clipcard fare of the bus is on average 7.66% cheaper than the taxi fare.
4. The taxi services on 68% of the present routes were established after the promulgation of the Road Transport Act of 1977 whilst the remaining 32% were already in service before this time.
5. The following trends were observed with regard to the bus-taxi modal split characteristics.
  - a) The taxi modal share decreases with increasing route distance.
  - b) The greater the difference between the bus clipcard fare and the taxi fare, the greater the taxi modal share.

c) The taxi modal share also increases with the age of the taxi route, i.e. how long the route has been in service.

University of Cape Town

# Chapter 7

## Impact Quantification

University of Cape Town

## CHAPTER 7

**QUANTIFICATION OF THE  
IMPACT**

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The impact of kombi-taxis on the other modes of transport is to be quantified in terms of the resultant modal shift from these modes to the taxi. In order to estimate the modal shift that has occurred in the study area, it is necessary to first quantify this shift on the 5 representative routes.

In this chapter, this shift in the modal share of passengers trips is determined on each of the five representative routes, after which the impact on each of the conventional transport modes are determined for the whole study area.

Procedure

Below is a description of the procedure used for the calculation of the impact on each of the 5 representative routes.

As described in Chapter 5 (Research Methodology), the approach adopted to calculate the modal shift from the conventional transport modes to the kombi-taxi, is again illustrated with the aid of the flow diagram on the following page.

From this flow diagram it is noted that the data recorded on the Observation and Interview Surveys were used to calculate the modal shift of passenger trips on the 5 representative routes; and then to estimate the impact on the whole study area, the data recorded on the Modal Split Survey were also incorporated.

## Flow Diagram

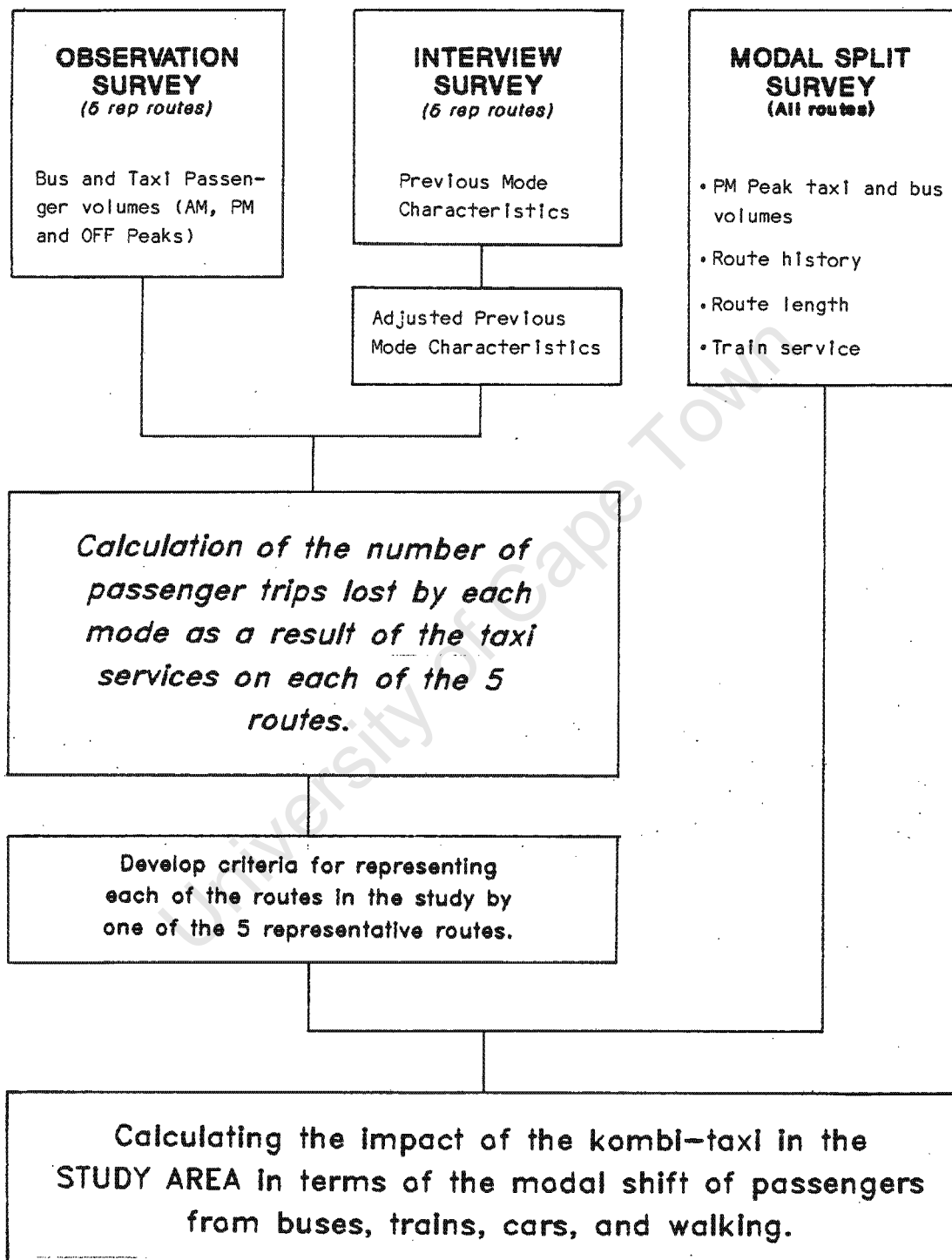


Figure 7A : Flow diagram of Impact Quantification procedure

## DETERMINING THE MODAL SHIFT ON THE 5 REPRESENTATIVE ROUTES

The following survey information was used :

1. The taxi and bus passenger volumes recorded on each route. (Observation Survey - Tables 6.1 - 6.6)
2. The previous mode characteristics of the taxi respondents on each route. (Interview Survey - Table 6.8)

### Previous Mode Adjustments

From our previous mode characteristics (Table 6.8), it is noted that one of five transport modes were indicated by respondents, namely the bus, train, car, taxi, and walk. On the routes where the taxi had been indicated as a previous mode, it implies that these respondents have always used the taxi on these routes. In the impact calculations which are based on these previous mode characteristics, special account has to be taken of this. Had the taxi service not been operating on these routes, these commuters would have had to use the conventional transport modes. It was therefore necessary to adjust the previous mode figures for the routes on which the taxi was indicated as one of the previous modes. These taxi responses were distributed proportionally among the alternative modes on these routes. To illustrate the adjustment procedure, the Retreat route is used as an example. The following previous mode characteristics (from Table 6.8) were recorded on this (Retreat) route.

Table 7.1 : Example of Previous Mode Adjustments (Retreat route)

Previous Mode	N	Taxi Share	Adjusted N	%
Bus	35	+12	47	58.03
Car	13	+ 5	18	22.22
Walk	12	+ 4	16	19.75
Taxi	21	-	-	-
Total	81	21	81	100%

In the table above, the 21 responses indicating the taxi as a previous mode, were distributed proportionally among the bus (35/60), the car (13/60) and walk (12/60) to obtain the taxi share figures (e.g. bus :  $35/60 * 21 = 12$ ). By adding the figures in the first two columns of Table 7.1, we obtain the adjusted previous mode value for each mode on this route.

Another adjustment was necessary on the Langa-Mowbray route where many respondents indicated "bus/train" as a previous mode (Table 6.8). To simplify the impact calculations, the number of bus/train respondents were divided proportionally among the bus and train modes.

The result of these adjustments, is a set of previous mode characteristics, as shown by the table below.

Table 7.2 : Adjusted Previous Mode Characteristics

Previous Mode	C-A	C-M	C-S	L-M	R-L
Bus	52 (85.25%)	34 (64.15%)	72 (90.00%)	15 (31.25%)	47 (58.03%)
Car	9 (14.75%)	3 ( 5.66%)	8 (10.00%)	7 (14.58%)	18 (22.22%)
Train	-	16 (30.19%)	-	26 (54.17%)	-
Walk	-	-	-	-	16 (19.75%)
Total	61 (100%)	53 (100%)	80 (100%)	48 (100%)	81 (100%)

From this table, it is noted that on the Mowbray route for example, 34 out of the 53 taxi users (64.15%) formerly used the bus, 3 (5.66%) used the car, and 16 (30.19%) used the train.

From the results of the Observation Survey (Chapter 6), the total number of taxi passenger trips recorded for the day is calculated for each route. The previous mode factors (percentages) calculated for each route in Table 7.2 above, are then multiplied with the taxi passenger volumes on each route to obtain the number of passenger trips previously (prior to kombi-taxis) conducted by each of the previous modes. This would then represent the number of passenger trips which have shifted from these conventional modes to the taxi, i.e. the number of trips lost by each mode as a result of the kombi-taxi. The Mowbray route is again used as an example to illustrate this procedure.

From Table 6.6 and the other results obtained from the observation survey, we note that on a typical weekday, the following number of taxi and bus passenger trips were conducted during each of the peak periods on this route.

Table 7.3 : Total Bus and Taxi Passenger trips conducted on the Mowbray-City route

Peak Period	Taxi	Bus
AM Peak (3 hour)	538	1427
AM Peak (Contra)	42	334
PM Peak (3 hour)	442	813
PM Peak (Contra)	124	138
OFF Peak	319	888
OFF Peak (Contra)		
Daily Total	1465	3600

Note from this table that the contra flow for the off-peak period has not been included; during the observation survey, the observers were unable to record this information on this particular route. The daily totals in this table are therefore conservative. The daily bus and taxi passenger volumes recorded on all five routes, should also be considered as conservative, for the following reasons :

1. The peak period observations were recorded from 06h00-09h00 for the AM peak, 15h30-18h30 for the PM peak, and 10h00-14h00 for the off peak period. The traffic volumes over the periods between the AM peak and the off-peak (09h00-10h00) and the period between the off-peak and the PM peak (14h00-15h30), were therefore not recorded.

2. The traffic volumes for the period before the AM peak period (before 06h00) and after the PM peak (after 18h30) were also not recorded.

For each of the 5 representative routes, the total daily taxi and bus passenger volumes were calculated in this manner. Appendix N contains details of these calculations. The table below summarises these results.

Table 7.4 : Total Daily Taxi and Bus passenger trips on each representative route

Route	Taxi	Bus
City - Atlantis	709	832
City - Mowbray	1465	3600
City - Sea Point	4556	4595
Langa - Mowbray	4804	157
Retreat - L/Hill	6629	925

From this table, and from the previous mode factors given in Table 7.2, the daily number of bus and taxi passenger trips lost by each mode as a result of the taxi, are determined.

### 1. Impact on Buses (5 Representative routes)

Using the City-Mowbray route again as an example; from Table 7.2, it is noted that 34/53 or 64.15% of the taxi users previously used the bus on this route. The number of daily taxi passenger trips that were previously bus trips are therefore computed as  $1465 * 64.15\% = 940$ . It can therefore be postulated that in the absence of the taxi service on this route, a total of 4540 ( $940+3600$ ) bus passenger trips would have been conducted. The impact of the kombi-taxi on this route is therefore computed as a 20.7% ( $940/4540$ ) daily loss in bus passenger trips as a direct result of the kombi-taxi service.

Similarly, the drop in number of bus passengers on the other 4 routes is computed. The results are summarised in the table below.

Table 7.5 : Impact on Buses (5 Representative routes)

Route	Former Bus Trips	% Loss
City - Atlantis	$709 * 85.25\% = 604$	42.0%
City - Mowbray	$1465 * 64.15\% = 940$	20.7%
City - Sea Point	$4556 * 90.00\% = 4100$	47.2%
Langa - Mowbray	$4804 * 31.25\% = 1501$	90.5%
Retreat - L/Hill	$6629 * 58.03\% = 3847$	80.6%

From this table it is observed that the greatest impact on the buses has occurred on the Langa-Mowbray route where 90.5% of the 1658 ( $1501+157$ ) daily bus passenger trips had been converted to taxi trips.

## 2. Impact on Trains (5 Representative routes)

Using the same procedure that was used to calculate the impact on the buses, the impact on the trains is also calculated on each of the representative routes. However, since no train passenger trips were recorded during the observation survey, the statistics showing the number of train passengers boarding and alighting at each station, recorded by SAR (South African Railways), were used to estimate the train passenger trips on these routes.

A train service operates on only two of the 5 representative routes. On the City-Mowbray route, a "direct" train service operates, i.e. the two stations are on the same rail line. Train commuters on the Langa-Mowbray route however, first have to travel to Salt River where they board a train on the other line, to reach their destination. This we refer to as an "indirect" train service.

### a) City-Mowbray Route

From the available SAR statistics, it is estimated that approximately 2000 train passenger trips are conducted on this route during each of the AM and PM peak periods, and a further 1500 passenger trips during the off peak period. An estimated total of 5500 train passenger trips are therefore conducted daily on this route. It must immediately be pointed out that this is a conservative estimate since these volumes have been recorded at the 2 stations for commuters boarding or alighting the trains. It therefore includes the commuters who board or alight at the Salt River junction, or at any station along the route.

From Table 7.2 it has been determined that 16/53 or 30.19% of the taxi passengers on this route are previous train users. A total of 1465 daily taxi passenger trips have been recorded on this route (Table 7.4). The daily number of train passenger trips that have been converted to taxi trips, is therefore equal to  $1465 * 30.19\% = 442$  trips. Had the taxi service not been operating on this route, an estimated total of 5942 (5500 + 442) daily train passenger trips would have been conducted on this route. The 442 train trips that have been converted to taxi trips, therefore constitute an estimated 7.4% drop in daily train passenger trips on this route.

b) Langa-Mowbray route

Because the trains service on this route is of an "indirect" nature, it is even more difficult to determine from the available SAR statistics, the number of train passengers trips conducted on this route. The fact that all the commuters on this route are black, and mostly travel on the third class trains, assisted in determining an estimate for the number of train passenger trips conducted on this route. The SAR statistics show that during the AM 3 hour peak period, although 2980 passenger board the trains at Langa on the Salt River line, only 300 non-white passengers alight at Mowbray station. These 300 alightings, include also the commuters who have boarded the trains at any station along this route. However, it will be assumed that a maximum of 300 AM peak passengers travel by train from Langa to Mowbray. For the 3 hour PM peak period, the SAR statistics show that 306 non-white passengers board the trains at Mowbray, travelling towards Salt River. Here too, it will be assume that during the PM peak period, a maximum of 306 passenger travel by train on this route. A further 1203 passengers board/alight at Mowbray on trains travelling

in the direction of Cape Town, during the off-peak period. Therefore, a maximum of 1809 daily passenger trips are conducted by train on this route.

From Table 7.2 we note that 26 (54.17%) of the 48 taxi passengers interviewed on this route, indicated the train as their previous mode. We also note from Table 7.4 that 4804 daily taxi passenger trips are conducted on this route. The number of daily train passenger trips which have been converted to taxi trips is therefore equal to  $4804 * 54.17\% = 2602$ . Hence, it can be estimated that, in the absence of a taxi service, a daily total of 4411 (2062+1809) train passenger trips would have been conducted on this route. The 2602 taxi trips which were previous trains trips, therefore represent an estimated 59% drop in the number of train trips on this route.

### 3. Impact on Private Transport (5 Representative routes)

Using the previous mode characteristics in Table 7.2, and the number of daily taxi passenger trips conducted on each of the 5 representative routes (Table 7.4), the number of private transport trips which have been converted to taxi trips, is calculated for each route. Using the City-Mowbray route as an example again, we see from Table 7.2 that only 3 (5.66%) of the 53 taxi users interviewed, indicated the car as their previous mode. Since 1465 taxi passenger trips are conducted daily on this route (Table 7.4), the number of private transport trips that have been converted to taxi trips, is equal to 83 ( $1465 * 5.66\%$ ). Due to the fact that the observation survey did not include the monitoring of the number of car trips conducted on these routes, the percentage drop in the number of private car trips can therefore not be estimated.

The results, showing the number of private car passenger trips lost on each route, is summarised in the table below.

Table 7.6 : Private transport - Daily Passenger trips lost (5 representative routes)

Route	Former Car Trips
City - Atlantis	709 * 14.75% = 105
City - Mowbray	1465 * 5.66% = 83
City - Sea Point	4556 * 10.00% = 456
Langa - Mowbray	4804 * 14.58% = 701
Retreat - L/Hill	6629 * 22.22% = 1473

#### 4. Impact on Walking Trips

Of the representative routes, on only one did taxi respondents indicate that they walked the route prior to using taxis. On this route (Retreat to Lavender Hill), 16 (19.75%) of the 81 taxi users interviewed indicated walking as a previous mode (Table 7.2). Since 6629 taxi passengers trips are conducted daily on this route (Table 7.4), the number of walking trips which have been converted to taxi trips amounts to 1309. Again, since the number of walking trips were not recorded during the observation survey, the percentage drop in the number of walking trips cannot be estimated.

#### SUMMARY OF IMPACT RESULTS ON THE 5 REPRESENTATIVE ROUTES

The table below summarises the impact quantification results on each of the 5 representative routes.

Table 7.7 : Number of Daily Passenger Trips Lost by each transport mode on each route

Route	Bus	Train	Car	Walk	Total
City - Atlantis	604	-	105	-	709
City - Mowbray	940	442	83	-	1465
City - Sea Point	4100	-	456	-	4556
Langa - Mowbray	1501	2602	701	-	4804
Retreat - L/Hill	3847	-	1473	1309	6629

Having quantified the impact on each of the representative routes, it is now possible to estimate the impact of the kombi-taxi on all the routes in the study area.

#### QUANTIFICATION OF THE IMPACT OF KOMBI-TAXIS ON THE ALTERNATIVE MODES IN THE STUDY AREA

If the previous mode characteristics on all the routes in the study had been known, it would have been possible to quantify the impact on all the routes in the same way that the impact was calculated for the 5 representative routes above. However, the only information available on all the routes in the study area, is the information recorded during the Modal Split survey.

The following method was therefore adopted to estimate the impact of the kombi-taxi on each route, and hence the study area. The previous mode characteristics of each route in the study area had to be represented by the previous mode characteristics of one of the 5 routes above. From Table 7.2, we see that the previous mode characteristics vary significantly from route to route. Calculating mean values to represent the previous mode characteristics for each mode would

therefore not produce acceptable estimates. It was therefore necessary to analyse the characteristics on each of the 5 representative routes in order to determine the factors which influenced the previous mode characteristics.

The adjusted previous mode characteristics, presented in Table 7.2 above, are reproduced below, having expressed the previous modes values as percentages on each route.

Table 7.8 : Adjusted Previous Mode Characteristics (expressed in percentages)

Prev. Mode	Atlantis	Mowbray	S/Point	Langa	Retreat
Bus	85.25%	64.15%	90.00%	31.25%	58.03%
Train	-	30.19%	-	54.17%	-
Car	14.75%	5.66%	10.00%	14.58%	22.22%
Walk	-	-	-	-	19.75%
Total	100%	100%	100%	100%	100%

The following factors were then considered for each of the above routes.

Table 7.9 : Characteristics on Representative routes

Route Characteristics	C-A	C-M	C-S	L-M	R-L
M/Split (PM 3hr) % Taxi Passengers	39	35	53	97	84
Route Distance (km)	46	7	7	9	3.5
Route History (yrs)	10	2	2	12	16
Train Service	None	Direct	None	Indirect	None

By studying the two tables above, and by having first hand knowledge of the route and passenger characteristics on these routes, the following criteria were used to identify the routes in the study area which are represented by the 5 routes in so far as its previous mode characteristics are concerned.

#### First Criterion : Presence of a Train service

The first criterion used was the presence or absence of a train service on the route. It can be seen from the tables above, that the previous mode characteristics of the routes which offer a train service, are very different from the routes on which no train service is offered.

We went further to distinguish between routes on which a direct train service exists, and routes on which an indirect train service operates. Notice from the tables above that the impact of taxis on trains have been significantly greater on routes where an indirect train service exists. This is understandable since the less convenient a train service on a route, the more attractive the option of the taxi becomes. By an indirect train service is meant that commuters on such a route have to transfer at least once to a train on a different line to reach their destination, e.g. from Langa to Mowbray. One would therefore find on a route like City-Mowbray, where a direct train service operates, the impact of taxis to be less than on the Langa-Mowbray route.

#### Second Criterion : Length of the Route

The second criterion used to classify the taxi routes was the length of the route. From the tables above, we

note that with the very short route (Retreat Station - Lavender Hill) an additional previous mode was found to be present, viz. WALKING. This distinguishes the previous mode characteristics of walking distance routes from the longer routes which are not within walking distance. Note also that the very long City-Atlantis route, also shows different previous mode characteristics. Three categories have therefore been identified using the route length criterion, viz. short, medium, and long distance routes.

Note from the tables above that no relation was observed between the bus/taxi modal split characteristics and the previous mode characteristics.

The history of the route, i.e. the number of years the taxi service has been in operation on a particular route, has been taken into account, although not directly. Routes which have a long history, show an increased prevalence of the TAXI as a previous mode. This has been taken account of in Table 7.2 by the proportional distribution of the TAXI share amongst the alternative modes on that route.

#### Route Categories

From the above criteria, the following parameters were used to categorise all the routes in the study area with regard to its previous mode characteristics. Note that the 5 categories, named according to the representative routes, have previous mode characteristics identical to that used in Table 7.2.

Table 7.10 : Representative route Criteria

Route Characteristics	Category
1. Indirect Train service	Langa-Mowbray
2. Direct Train Service	Mowbray-City
3. Route Distance ( $\leq 4$ km)	Retreat-L/H
( $>4$ & $<20$ km)	Sea Point - City
( $\geq 20$ km)	Atlantis-City

It should be emphasised that the criteria used here are solely for the purpose of identifying the PREVIOUS MODE characteristics. A different set of criteria would therefore apply for representing another route characteristic, e.g. the level of competition may be identified using the modal split characteristic as a criterion.

Using the above parameters, the routes were all classified into one of the 5 categories. Appendix M contains a list showing the classification of each of the 71 routes in the study area. The table below summarises this information.

Table 7.11 : Number of routes in each route category

Category	No. of routes
Langa-Mowbray	14 (20%)
Mowbray-City	10 (14%)
Retreat-L/Hill	9 (13%)
S/Point-City	33 (46%)
City-Atlantis	5 (7%)
Total	71 (100%)

After the routes had been classified, the number of peak period (3hour PM) passengers that have been lost

to each mode on the routes in the study area, were determined. Very important to note here is the fact that the impact determined in this manner, is an estimate which is only as good as the extent to which the categorised routes are truly represented by the 5 representative routes. Appendix M contains the 3 hour PM Peak Period passenger losses suffered by each mode and for each route in the study area. From this table the total impact on each mode for all 71 routes in the study area, is estimated for the 3 hour PM peak period.

Table 7.12 : Total Number of passenger trips lost from each mode during the 3 hour PM Peak period

Mode	PM Peak Loss
Bus	36 846
Train	5 472
Car	6 416
Walk	1 940
Total	50 674

The impact of the kombi-taxi on each of the conventional transport modes in the study area, will now be considered separately.

### 1. IMPACT ON BUSES IN THE STUDY AREA

From Table 7.12, it is noted that the total number of daily 3 hour PM Peak former bus trips on all of the 71 routes in the study area, amounted to 36 846. For this same period, the total bus passenger trips on the 71 routes, amounted to 24 837 (Appendix M). This implies that on these 71 routes, the bus company has lost 58% of its passengers trips to the taxis during the 3 hour PM peak period alone.

When considering all the bus routes in the study area, the bus company claims that at the time of the survey, the total number of bus passenger trips undertaken on an average working day in the study area, was 293 000.

To determine the total number of daily passengers trips lost on each route, the morning and off peak passenger volumes have to be added to the PM peak volumes. An attempt was made to investigate the existence of a relationship between the off-peak passenger volumes and the evening peak volumes or any other recorded characteristic on each route. Unfortunately no such relationship could be found to exist. To obtain an estimate for the full day passenger volumes on all the routes, the results of the 12 hour Bus and Kombi-taxi monitoring survey, conducted in 1988 by the Cape Metropolitan Transport Planning unit, were used to calculate the off-peak and AM period ratios. This monitoring survey recorded the 12 hour bus and taxi passenger and vehicle volumes on the major road segments in the study area. The total number of bus and taxi passengers for all the segments were used to calculate these ratios. The table below shows how these ratios were determined.

Table 7.13 : Peak Period Ratios from MTP 12 hour Bus Survey (25 stations)

Period	Total no. of Passengers	
AM Period (2.5 hr)	98008	37.9%
Off Peak	75581	29.2%
PM Period (2.5 hr)	85068	32.9%
Full day	258656	100%

AM Period : 06h00 - 08h30

PM Period : 16h00 - 18h30

Off-Peak : 08h30 - 16h00

Note that the Modal Split Survey monitored the PM peak over a 3 hour period, instead of the 2.5 hour period used by the MTP surveys. For the purpose of estimating the full day volumes, the additional half hour volumes were deducted from our 3 hour volumes. Using the MTP 12 hour kombi-taxi analysis, the ratios for the off peak, AM period and the full day were calculated. Below is the table showing where these ratios were derived from.

Table 7.14 : Peak Period Ratios from  
MTP 12 hour Taxi Survey  
(27 stations)

Period	Total no. of Passengers	
AM (2.5 hr)	51024	29.9%
Off Peak	73952	43.3%
PM (2.5 hr)	45781	26.8%
Full day	170757	100%

Full day volumes = 3.73 \* PM Period (2.5 hr)

The total number of kombi-taxi passenger trips recorded by our survey for the 2.5 hour PM Peak period was 47 652 (Appendix M). The difference in our total figure and that of the 12 hour survey, may be due to the fact that our survey did not include all the intertownship trips, but more likely because the 12 hour survey may have recorded a single trip more than once due to the consecutive location of their station points. The totals for the bus passengers recorded in our survey would obviously be grossly underestimated due to the fact that we only recorded the departures from the termini where taxis operate. However, despite the fact that bus passenger trips too may have been recorded more than once, the total number of full day passengers recorded by the 12 hour survey, is still only 88% of the total of 293 000 given by the bus company at the time of the survey. Assuming that the figure by the bus

company is accurate, the following comparisons can be computed.

Using the ratios above, the following total volumes have been calculated for a typical working day.

Table 7.15 : 12 Hour Bus and Taxi Passenger Trips for the study area

	Total Passenger Trips	
	Bus	Kombi Taxi
AM Period	111 047	53 164
PM Period	96 397	47 652 **
Off-Peak	85 556	76 990
Full Day	* 293 000	177 806

\* Source : City Tranways

\*\* Modal Split Survey

From Appendix M we see that, of the 47 652 PM peak (2.5 hr) taxi passengers, 34 600 have been estimated to have used the bus as a previous mode. Using the above ratios, the impact of the taxi on the bus in the study area can be quantified as follows.

Table 7.16 : Bus Passenger Trips Lost in Study Area (12 hour period)

	Total Bus Pass Trips	Total Ex-Bus Taxi Pass Trips
AM Period	111 047	38 602 (25.8%)
PM Period	96 397	34 600 (26.4%)
Off-Peak	85 556	55 902 (39.5%)
Full Day	* 293 000	129 104 (30.6%)

\* Percentage loss =  $129104 / (293000 + 129104) = 30.6\%$

From this table we see that the bus company has lost an estimated 30.6% of all its daily passenger trips as a

loss has occurred over the off peak period which shows a 39.5% loss in bus trips.

### IMPACT ON TRAINS IN THE STUDY AREA

The two categories considered here were the routes on which direct and indirect train services.

#### 1. Direct Competition

Of the 71 routes considered in the survey area, only 10 (14%) routes fell into this category, represented by the City-Mowbray route. A total of 5218 kombi-taxi passenger trips were recorded on these routes for the 2.5 hour PM peak period. Using the PM Peak - Full day ratio (1:3.73) determined earlier, it amounts to an estimated 19 470 taxi passenger trips per day. Given that 30.19% of these trips were previously train trips, the loss suffered by the trains on these 10 routes is estimated at 5878 passenger trips per day.

#### 2. Indirect Competition

In this category, represented by the Langa-Mowbray route, there are 14 (20%) routes in the study. The passenger volumes recorded on these routes show that a total daily number of 6602 taxi passenger trips are conducted during the 2.5 hour PM peak period. Again using the 3.73 ratio, we obtain an estimate of 24 634 taxi passenger trips for the full day.

Given that 54.17% of kombi-taxi users previously used the train on these routes, it implies that an estimated daily total of 13 344 train passenger trips have been lost as a direct result of the taxi on these routes.

### Total Impact on Trains in the Study Area

The total number of daily train passenger trips therefore lost as a result of the kombi-taxi, is estimated at 19 222. Given that an estimated 417 391 commuter train passenger trips are conducted on a normal working day in the study area, it represents a conservative total loss of 4.4%.

### IMPACT ON CARS IN THE STUDY AREA

On the 71 routes considered in the survey area, a total of 47 652 taxi passenger trips were conducted during the 2.5 hour PM peak period on a typical working day. From the previous mode characteristics categorisation analysis carried out earlier, we estimated a total of 6047 car passenger trips that have been lost during the 2.5 hour PM peak period. Translated into a full day volume, it amounts to 22 563 car passenger trips that have been lost to the taxi on an average working day in the study area. Using the NTPS estimate of 350 000 private transport trips being conducted during the peak period in the study area, it amounts to a 1.73% drop in the number of private car trips.

### IMPACT ON WALKING IN THE STUDY AREA

The routes on which walking was considered as a previous mode were represented by the Retreat-Lavender Hill route. Of the 71 routes in the study area, only 9 routes fall into this category. On these 9 routes a total of 9384 taxi passenger trips were recorded during the 2.5 hour PM Peak period. Given that 19.75% of taxi users previously walked the distance on these routes, it is estimated that 1853 walking passenger trips have

been converted to taxi trips for the 2.5 hour PM peak. Translated into full day volumes, it amounts to an estimated 6915 daily trips.

### CONCLUSION

As was originally suspected, the most significant impact which the kombi-taxi has had on the alternative modes, is on the buses. Our conservative estimate of a 30.6% loss in bus passengers trips, directly attributable to the kombi-taxi services in the study area, is believed to be a reasonably reliable estimate. It is expected to be more than the estimates given by the bus company for at least one reason, viz. that their estimate could not have taken account of the many trips made by taxi passengers who have always used the taxi on a route, that is, the new passengers to a route who decide to use the taxi instead of the bus. A proportion of these passengers should surely be regarded as a loss to the bus company since, had the taxi service not been existent on that route, these passengers would have used the bus.

Two figures have been given by the bus company showing the drop in passenger trips they have experienced since 1978. The first report states that "To illustrate the decline in passenger numbers in respect of two of our most important bus subsidiaries, namely City Tramways and P E Tramways, it can be revealed that between 1976 and 1984 there was a 23.3% decrease that can be attributed mainly to taxi operations." (City Tramways, 1985)

The second report (Argus, 1989) states that "City Tramways had a 9.3% drop in its passenger load during the same period (1983-1988) and the company partly ascribes this to the estimated 10 000 independent

*minibus trips competing against 800 peak-hour bus rides."*

From these two reports, it is calculated that between 1976 and 1988, there was an effective decrease of 30.4% in the number of bus passenger trips carried by City Tramways.

It would appear that our estimate of 30.6% and the calculated City Tramways estimate of 30.4%, are similar. However, the major difference in the two estimates is that our estimate of 30.6%, is the estimated decrease in the number of bus passenger trips which has come about as a direct result of the competing kombi-taxi services. The City Tramways estimate is the general drop in the number of bus passenger trips.

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The photograph below typifies the impact of the kombi-taxi on buses on the City - Sea Point route. Notice how these commuters prefer waiting for the taxi, despite the fact that the bus arrived before the taxi.



Figure 7B

# Chapter 8

## Summary of Findings

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## CHAPTER 8

**SUMMARY OF FINDINGS**

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Based on the work carried out during the course of this study, the important findings about the kombi-taxi services and its effect on the conventional transport modes in the Cape Metropolitan Transport Area (Greater Cape Town), are presented below.

1. Although the kombi-taxi industry has only really developed over the last decade, the concept of a shared taxi was initiated more than 30 years ago as a result of the absence of feeder bus services on certain routes.
2. The characteristics of kombi-taxi operations and its resultant effect on the conventional transport modes, vary from route to route.
3. Generally, taxi users are mostly former bus users (68%); the train and private transport account for only 14% and 11% of former users, respectively. On some of the established taxi routes, many taxi users have used no other mode than the taxi- they account for 5% of all taxi users. On the very short routes (<4km) i.e. that are within reasonable walking distance, many taxi users have previously walked. Because there are only 9 such routes, this group constitute 2% of all taxi users.
4. Taxi users are fairly regular users of their mode; about 80% of all taxi users use the taxi on 5 or more days of the week for both the morning and evening trips.
5. Kombi-taxis are used in preference to alternative modes, because they are quicker (54%), cheaper (21%) and more convenient (20%). The bus on the other hand is

preferred by its users because of the clipcard facility (22%), less overcrowding (21%), cheaper (17%) and convenience (15%).

6. On routes where buses and taxis operate in competition, the total taxi-bus modal split is in favour of the taxi (67/33).

7. Not all the routes in the study area are short distance routes. In fact, only 54% of the routes are short distance (<10km), 45% are medium distance (10-35km), and 1 route a long distance route.

8. A trend was observed to exist between route distance and bus-taxi modal split. The bus modal share is favoured with increasing route distance.

9. Taxi fares are generally lower than the bus cash fares but higher than the bus clipcard fare. However, on the shorter routes (<6.7km) the taxi fare is also lower than the bus clipcard fare.

10. A trend was also noticed to exist between the taxi route age and the bus-taxi modal split. The older the route, the greater the taxi share.

11. The most significant impact of the kombi-taxi has been on the conventional bus services. To date, an estimated 129 104 daily bus passenger trips have been converted to kombi-taxi trips. This represents a 30.6% loss in the number of bus passenger trips.

12. The most significant impact of the kombi-taxi on the bus has occurred during the off-peak period which shows a 39.5% drop in passenger trips, whereas the AM and PM peak periods show a drop of 25.8% and 26.4% respectively.

13. As for the impact on train services, an estimated 19 222 daily train passenger trips have been converted to kombi-taxi trips. This represents a loss of 4.4% in commuter train trips in the study area which can be attributed directly to kombi-taxi services.

14. An estimated 22 563 daily private transport passenger trips have been converted to kombi-taxi trips. This represents an estimated 1.73% drop in private transport trips.

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# Chapter 9

## Conclusions and Recommendations

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## CHAPTER 9

**CONCLUSIONS AND  
RECOMMENDATIONS**

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From the findings presented in the previous chapter, it would appear that, should the kombi-taxi industry be allowed to expand with deregulation, it could constitute a more acceptable mode of transport for commuters. This could be attributed to the fact that in instances where competition already exists between the kombi-taxis and other modes of public transport, there appears to be a preference for kombi-taxis. We have already seen that, although there is no appreciable difference in time of reaching final destinations after disembarking from either mode of transport (bus or taxi), it is nevertheless perceived that taxis in this regard presents a saving in time.

The time saving actually occurs on the route itself with the taxi being less subjected to compulsory stopping for the embarkment and disembarkment of passengers. Putting this more clearly, it takes a taxi a considerably lesser time to cover the same distance as the bus. One of the advantages of the kombi-taxi is its flexibility in selection of routes. The buses are constrained to travel along routes which are prescribed, irrespective of whether it is filled to capacity or not. Taxis on the other hand could select shorter routes in instances where they are filled to capacity.

From the findings above, it is clear that there is a shift towards the use of kombi-taxis in preference to the bus. This preference is attributed to the user's perception of time saved. Time saved is an important consideration for lower income groupings by virtue of the fact that time spent in wage accumulation places

constraints on time for domestic responsibilities and recreation.

This also explains why there is so much constancy in the use of kombi-taxis as the preferred mode of public transport. This factor is possibly also governed by the fact that kombi-taxis present a cheaper mode of transport needing no pre-investment as in the case of bus clipcards. This is an added advantage to the casual worker who might not have the means of investing in bus fares on a 2 week basis.

It is the author's opinion that there would be a greater shift from buses to kombi-taxis should the clipcard facility be withdrawn or if the transport subsidy should be extended to include kombi-taxi services. This opinion is postulated on the basis of the findings in which the greater number of respondents indicated that their preference for bus transport is influenced by the clipcard facility.

Another important factor which would influence the shift from buses to taxis is the willingness of taxi operators to undertake short as well as longer distance routes, providing therefore an alternative means of public transport to commuters irrespective of the distance to be travelled. Longer distance routes particularly, present the possibility of a greater reduction in time spent to and from places of employment.

The current tendency which exists when the bus-taxi modal split favours the bus on the longer distance routes, is directly attributable to subsidisation which is currently the vogue on these routes. Should subsidisation be extended to cover taxi transport as well, a definite shift from buses to taxis will occur.

An interesting observation is the relationship between bus-taxi modal split and the age of a taxi route. It is noticed that where taxi routes have existed for a long time, the modal share favours the taxi. This tendency seems to be confirmed where buses and taxis operate in competition, irrespective of whether taxis were late arrivals on such routes. An indication, that with time, taxis will become the preferred mode of transport.

The off-peak bus-taxi modal split, in terms of its findings, tends to favour the taxi. From our findings, the most significant impact of the kombi-taxi on the buses, occurred during the off-peak period (08h30-16h00).

Although, in terms of mass transport, a taxi cannot in reality compete with the train as a mode of transport, it is nevertheless observable from our study that there has been a shift in favour of the kombi-taxi. Percentage wise, this shift of approximately 4%, seems to be insignificant, but nevertheless represents a daily loss of approximately 20 000 passenger trips.

Similarly, the kombi-taxi has also resulted in a shift away from private transport. A factor attributed directly to the kombi-taxi presenting a cheaper and more convenient mode of transport. It could also be postulated that a shift from private transport to kombi-taxis, will assist in diminishing traffic congestion.

The fact that this study found that in instances, taxis provide a cheaper mode of transport, indicates that the use of taxis is not here regarded as a class status symbol. Previous studies in other regions tend to indicate that there is a relationship between class and taxi users. This perception probably emerged from the fact that a better quality and type of vehicle were used as taxis. Then too, in these regions, the taxi

fare is generally much more than the bus fares. However, in this study area a poorer type of vehicle was originally used as a shared taxi, and the fares were cheaper than that of the bus. It is our experience, from travelling on these taxis, that class differences are not a factor currently considered by taxi users. However, the perception that many bus users have about the taxi, is that it is regarded as a less "respectable" transport mode than the bus. This perception is especially common among bus users who have never used a taxi.

From these conclusions and findings it would appear that in a legal situation that would not favour any mode of transport, taxi transport might ultimately become the preferred mode of public transport by commuters. It is not, however, the opinion that taxis would be able to totally replace buses as was the case between the trams and the buses in the 1940/50's. However, the future role of buses needs to be redefined. In this regard it is suggested that buses concentrate on longer and more direct routes. Such a role would not only lead to bus transport being less time consuming for commuters and more economical for operators, but will also satisfy the ever existing need for mass road transport.

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# Appendix A

**Changes in the number of scheduled bus trips  
conducted on 119 routes in the Study  
Area between 1982 and 1987**

***MTP Bus Monitoring Survey (1982/87)***

MTP BUS MONITORING SURVEY RESULTS  
1982/1987

REF	FROM	TO	RL82	RL87	TRIPS82	TRIPS87	DIFF	%DIFF
34	Guguletu	Claremont	18.8	18.8	58	10	-48	-83
57	Langa	Mowbray	9.1	9.1	202	44	-158	-78
64	Manenberg	Claremont	13.5	13.5	218	61	-157	-72
65	Manenberg	Claremont	13.5	13.5	218	61	-157	-72
83	City	Metro (Paarden Eiland)	9.5	9.5	28	8	-20	-71
36	Heideveld	Claremont	16.8	16.8	103	38	-65	-63
95	University Est.	City	4.5	4.5	29	11	-18	-62
16	Crossroads	Claremont	15.8	15.8	101	41	-60	-59
152	Hanover Park	Lansdowne	2.8	2.8	74	32	-42	-57
38	Heideveld	Mowbray	11.3	11.3	142	63	-79	-56
177	Noordhoek	Fish Hoek	10.3	10.3	17	8	-9	-53
90	Thorton	Mowbray	7.9	7.9	53	26	-27	-51
86	Steenberg	Retreat	10.6	10.6	117	57	-60	-51
14	Netreg	Elsies River	10.1	10.1	179	93	-86	-48
102	Diep River	City	16.3	16.3	212	111	-101	-48
10	Bonteheuwel	City (Fw)	18.5	18.5	23	12	-11	-48
28	Mowbray	Epping (Vanguard)	21.2	21.2	33	17	-16	-48
59	Langa	Mutual	9	7.4	32	17	-15	-47
93	Bellville	Tygerberg Hospital	12.8	12.8	26	14	-12	-46
76	Newlands	Mowbray	5.8	5.8	47	26	-21	-45
13	City	Camps Bay	15.2	15.2	14	8	-6	-43
5	Sacks Circle	Bellville	7	7	26	15	-11	-42
79	Observatory	Mowbray	5	7.7	64	37	-27	-42
63	Lansdowne	Mowbray	9.4	9.4	119	69	-50	-42
7	Bridgetown	Mowbray	8.1	8.1	191	112	-79	-41
70	Lotus River	Retreat	7	7	10	6	-4	-40
42	Hanover Park	Mowbray (Hei)	12.1	12.1	119	74	-45	-38
22	De Nova	Bellville	18.2	18.2	29	18	-11	-38
66	Manenberg	City (Fw)	21.4	21.4	19	12	-7	-37
9	Bonteheuwel	Mowbray	14.3	14.3	181	117	-64	-35
82	Elsies River	Tygerberg Hos.	15.9	15.9	97	63	-34	-35
101	Wynberg	Claremont (Wetton)	10.6	10.6	87	57	-30	-34
88	Bellville	Sarepta	12.5	12.5	116	76	-40	-34
54	Killarney	City	16.6	17.3	202	136	-66	-33
12	City	Brighton Est.	12.9	12.9	38	26	-12	-32
97	Walmer Est.	City	3.9	3.9	108	74	-34	-31
17	Crawford	Mowbray	5.3	5.3	52	36	-16	-31
173	Retreat	Tej Factory	11.6	11.6	16	11	-5	-31
32	Maitland	City	13.2	13.2	207	142	-65	-31
49	Hanover park	Tygerberg Hos.	26.8	26	13	9	-4	-31
50	Hanover Park	Bellville	28	28	13	9	-4	-31
33	Fresnaye	City	5.5	5.5	103	72	-31	-30
11	Bonteheuwel	Mutual	11.2	11.2	64	45	-19	-30
100	Busy Corner	Wynberg	7.9	7.9	160	114	-46	-29
8	Bridgetown	City (Fw)	15.7	15.7	17	12	-5	-29
25	Hanover Park	Epping Market	18.7	18.7	38	27	-11	-29
1	City	Bakoven	14.9	14.2	114	82	-32	-28
144	Hanover Park	Maitland	18.6	18.6	11	8	-3	-27
37	Nyanga	Claremont	18.8	18.8	106	77	-29	-27
69	Lotus River	Muizenberg	11.5	11.5	8	6	-2	-25
31	Mowbray	Elsies River	21.2	21.2	82	62	-20	-24
147	City	Kloof Street	3.4	3.4	94	72	-22	-23

REF	FROM	TO	RL82	RL87	TRIPS82	TRIPS87	DIFF	XDIFF
60	Langa	N'dabeni	9	9	13	10	-3	-23
164	Busy Corner	Claremont	11.2	11.2	13	10	-3	-23
99	Wynberg	Westlake	18.7	18.7	40	31	-9	-23
20	Station Deck	East Pier	7.9	4.6	46	36	-10	-22
92	Elsies River	Bellville (Tygerberg)	12.5	12.5	24	19	-5	-21
81	Oranjezicht	City	3.8	3.8	70	56	-14	-20
161	Hanover Park	City	15.7	15.7	94	75	-19	-20
77	Parow	Elsies River	10.2	10.2	80	66	-14	-18
2	Bellville	City	20.6	20.6	80	66	-14	-18
84	Lotus River	Plumstead	8	8	90	75	-15	-17
172	Hanover Park	Plessey	18	18	6	5	-1	-17
39	Heideveld	City (Fw)	19.4	19.4	12	10	-2	-17
41	Lansport	Claremont	6.5	6.9	41	35	-6	-15
47	Busy Corner	Hanover Park	11.3	11.3	41	35	-6	-15
167	Zeekoeivlei	Plumstead	7.6	7.6	7	6	-1	-14
56	Lotus River	Wynberg	8.1	8.1	140	121	-19	-14
61	Lavender Hill	Retreat	3.4	3.4	70	61	-9	-13
67	Matroosfontein	Elsies River	6.7	6.7	93	81	-12	-13
91	Nyanga	Tygerberg	13.1	13.1	47	41	-6	-13
103	Claremont	Rondebosch	6	6	47	42	-5	-11
80	City	Ocean View	6.5	6.5	60	54	-6	-10
72	Nyanga	Elsies River	13.2	13.2	60	54	-6	-10
48	Lotus River	Hanover Park	8.9	8.9	27	25	-2	-7
160	Hanover Park	Mowbray	9.4	9.4	95	88	-7	-7
55	Bellville	Elsies (K.Breme)	11	11	27	25	-2	-7
4	Mowbray	Bellville	21.4	21.4	43	40	-3	-7
96	Vredehoek	City	2.3	2.3	62	58	-4	-6
52	Bowbray	Kirstenbosch	8.1	8.1	36	34	-2	-6
40	Hanover Park	Claremont	6.5	6.5	130	124	-6	-5
68	Molteno	City	4.4	4.4	6	6	0	0
175	Maitland	Epping Market	5.5	5.6	3	3	0	0
18	Wynberg	Constantia	9.4	9.4	24	24	0	0
35	Hanover Park	Mowbray (MV)	9.8	9.8	31	31	0	0
58	Nyanga	Langa	11.1	11.1	105	105	0	0
29	City	Epping Market	12.7	12.7	6	6	0	0
166	Hanover Park	Metro	22.2	22.2	2	2	0	0
145	Killarney	City (Fw)	22.3	22.3	12	12	0	0
78	Nyanga	Mutual	24.9	24.9	20	20	0	0
24	Devils Peak	City	2.4	2.4	57	60	3	5
73	Nyanga	Mowbray	14.7	14.7	83	89	6	7
165	Retreat	Constantia	9.1	9.1	12	13	1	8
74	Plumstead	Wynberg	6	6	39	44	5	13
15	Goodwood	Caabridge Hotel	19.4	19.4	38	43	5	13
85	Panorama	Parow Station	10.1	10.1	22	25	3	14
23	Kraafontein	Bellville	11.6	11.6	37	42	5	14
143	Milnerton	City	13.6	13.6	7	8	1	14
6	Glenhaven	Bellville	4.5	4.5	27	31	4	15
30	City	Ndabeni	12.7	12.7	6	7	1	17
51	Hanover Park	Elsies River	19.8	19.8	27	32	5	19
53	Kloofnek	City	4.2	4.2	56	68	12	21
44	Wynberg	Hout Bay Harbour	23.9	23.9	39	49	10	26
75	Wynberg	Claremont (Rosmead)	5.4	5.4	45	57	12	27
21	Durbanville	Bellville	10.8	10.8	70	89	19	27
176	Ocean View	Fish Hoek	11.2	11.2	33	43	10	30
62	Lansdowne	Mowbray (Taronga)	10.7	10.7	15	21	6	40
45	City	Hout Bay Harbour	25.4	25.4	12	18	6	50

REF	FROM	TO	RL82	RL87	TRIPS82	TRIPS87	DIFF	%DIFF
71	Nyanga	Bellville	14.1	14.1	78	122	44	56
43	Hanover Park	Killarney	2.6	2.6	20	33	13	65
46	Hanover Park	Wynberg	7.5	7.5	43	75	32	74
87	Housing Est.	Retreat	2.5	2.5	15	27	12	80
26	Eversdal	Bellville	12.5	11.8	31	57	26	84
98	Welgemoed	Bellville	8.5	8.5	9	17	8	89
153	Killarney	Elsies River	19.3	19.3	3	7	4	133
3	Bellville	City (Fw)	26.7	26.7	10	26	16	160
148	Retreat	Hanover Park	17.7	17.7	2	12	10	500
170	Busy Corner	Diep River	6.2	6.2	3	37	34	1133
171	Lotus River	Diep River	8.9	8.9	1	32	31	3100

COLUMN HEADING ABBREVIATIONS

REF	: Reference number
FROM	: Origin of route
TO	: Destination of route
RL82	: Route length (1982)
RL87	: Route length (1987)
TRIPS82	: Number of Scheduled bus trips (1982)
TRIPS87	: Number of Scheduled bus trips (1987)
DIFF	: Difference in the number of scheduled bus trips (TRIPS87 - TRIPS82)
%DIFF	: Percentage difference (100*DIFF/TRIPS82)

Hence : A positive DIFF value indicates an increase in scheduled bus trips, and a negative value indicates a decrease.

# Appendix B

**Samples of the record sheets used  
for the Observation Survey**

University of Cape Town



# Queue Monitoring - Morning Peak TAXI PASSENGERS

Location

Route

Date

Weather

Observer

Comments

A/D	TIME			TOT
	6.00			
	6.01			
	6.02			
	6.03			
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A/D	TIME			TOT
	6.45			
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A/D	TIME			TOT
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A/D	TIME			TOT
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	8.59			





# Queue Monitoring - Evening Peak

## BUS PASSENGERS

Location

Route

Date

Weather

Observer

Comments

A/D	TIME			TOT
	3.30			
	3.31			
	3.32			
	3.33			
	3.34			
	3.35			
	3.36			
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A/D	TIME			TOT
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	5.44			

A/D	TIME			TOT
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# Appendix C

**Samples of the Bus and Taxi  
Passenger Questionnaires**

University of Cape Town





# Appendix D

**Number of Taxi Permits issued  
by the LRTB for each rank  
in the Study Area**

***April 1988***

University of Cape Town

## APPENDIX D

Below is a list showing the number of taxi (Public Road Carrier) permits issued at each of the rank locations in the study area. This information was extracted from the record files of the Local Transportation Board. Note that the numbering and the accompanying rank location description below, are consistent with that used by the LRTB. The number of sedan and kombi-taxi permits for each rank has been indicated separately.

Date : April 1988

No. Rank Location	Kombis	Sedans
1. Athlone	26	0
2. Belhar	37	0
3. Bellville : Charl Manlan St., Bellville Station, Suidstraat	19	22
4. Bellville : Guguletu	2	0
5. Bellville : Khyalitsha	25	0
6. Bellville : Langa, Nyanga, Guguletu, Crossroads	23	0
7. Bellville : Nyanga	8	0
8. Bishop Lavis	7	0
9. Bonteheuwel, Netreg	12	0
10. Cape Town (Indo Atlantic Centre)	2	0
11. Cape Town (Table Bay Docks)	1	0
12. Cape Town (Somerset Road)	1	0
13. Cape Town (Railway Station)	19	25
14. Cape Town Central Area	27	107
15. Claremont : Kenilworth Centre, Palmyra Road, Station Road	12	0
16. Claremont : Guguletu, Nyanga, Crossroads	23	0
17. Crossroads	15	0
18. D F Malan Airport	0	13
19. Diep River	1	0
20. Durbanville	16	1
21. Edgemead	0	1
22. Elsies River : The Range, Eureka Estate, Matroosfontein	70	0

23. Fish Hoek : Kommetjie, Ocean View	22	3
24. Gardens	0	7
25. Goodwood : Epping	2	1
26. Grassy Park : Busy Corner, Buck Road	51	0
27. Guguletu	19	1
28. Guguletu, Khyalitsha	14	4
29. Guguletu, Nyanga	3	10
30. Guguletu, Nyanga, Crossroads	2	0
31. Hanover Park	31	0
32. Hazeldene	1	0
33. Heathfield	2	0
34. Heideveld : Surwell Post Office	13	0
35. Hout Bay	16	0
36. Khyalitsha, Nyanga	61	6
37. Killarney	6	0
38. Langa	23	0
39. Langa, Guguletu	17	1
40. Langa, Khayelitsha	100	1
41. Langa, Nyanga	11	1
42. Langa, Nyanga, Crossroads, Khayelitsha	2	0
43. Langa, Nyanga, Guguletu	38	6
44. Langa, Nyanga, Guguletu, Crossroads	103	11
45. Langa, Nyanga, Guguletu, Crossroads, Khayelitsha	159	5
46. Langa, Nyanga, Guguletu, Khayelitsha	167	8
47. Lansdowne	2	0
48. Lotus River	87	0
49. Maitland : Kensington	4	1
50. Mandalay	7	0
51. Manenberg : The Downs	12	0
52. Milnerton	4	3
53. Mitchells Plain : Colorado Park, Kapteinssklip, 7th Avenue	117	0
54. Modderdam Station	2	0
55. Montana	1	0
56. Mowbray	11	0
57. Muizenberg	1	0
58. Mutual	5	0
59. Nyanga	59	5
60. Observatory	10	10

61. Ottery	13	0
62. Ottery, Lotus River	8	0
63. Parkwood	29	0
64. Parow : Cravenby	12	2
65. Pinelands	4	0
66. Pinelands, Langa	3	0
67. Plumstead	3	0
68. Retreat	54	0
69. Rondebosch	1	4
70. Salt River	5	4
71. Sea Point	1	11
72. Simonstown	4	0
73. Steenberg	35	0
74. Stikland	3	0
75. Tableview	1	3
76. Thornton	0	1
77. Tiervlei : Uitsig	9	1
78. Tygerberg	23	0
79. Vasco	2	0
80. Woodstock	1	0
81. Wynberg	34	0
82. Wynberg, Guguletu, Nyanga, Crossroads	41	0
83. Bothasig	3	0
84. Nyanga, Claremont	1	0
85. Khayelitsha, Claremont	1	0
86. Khayelitsha, Mitchells Plain	4	0
87. Guguletu, Nyanga, Athlone, Mowbray	20	0
<b>Total</b>	<b>1846</b>	<b>279</b>

# Appendix E

## Interview Survey Results

***CITY - ATLANTIS ROUTE***

University of Cape Town

## APPENDIX E

## CITY - ATLANTIS

## INTERVIEW SURVEY RESULTS

On this route a total of 61 taxi and 53 bus passengers were interviewed for this survey. Of the 61 taxi passengers, 36 were interviewed at the rank in the City and the remaining 25 in Atlantis as they were alighting the taxi. All the bus passengers were interviewed at the bus boarding point in the Golden Acre bus terminus in the City.

## Personal Characteristics

Of the randomly selected people who were interviewed, 80% of the taxi and 72% of the bus users were aged between 20 and 40. Of all the bus users interviewed, 51% were female, whereas the with the taxi users 56% were female.

Most of the bus and taxi users that were interviewed were employed as office workers, shop assistants or artisans. However, some 10% of the taxi users were professional people whereas this was the case with only 2% of the bus users.

Car ownership amongst the bus users is greater than that of the taxi users as illustrated by the table below.

Table E-1 : Car Ownership

Mode	% Owing Cars
Taxi	36
Bus	47

### Frequency of Use

The table below illustrates the distribution of bus and taxi passengers' experience with their particular mode of transport. The taxi distribution is particularly important for this study since this would indicate the extent to which the bus company have been losing out.

Table E-2 : Experience Distribution

Experience (Years)	Bus Users %	Taxi Users %
<1	24	13
1	9	17
2	13	11
3	9	17
4	13	7
5	4	10
6	6	7
7	0	2
8	2	3
9	2	5
10	6	8
>10	13	0
Total	100%	100%

The users of buses seem to be more regular users of their mode than the taxi users. This is demonstrated by the fact that only 60% of the taxi users use the taxi on 5 or more days of the week whereas 89% of the bus users use the bus over this same period. Also, 98% of bus users use the bus during both the morning and evening peak trips whereas this is the case with only 88% of taxi users, as shown in the table below.

Table E-3 : Usage Periods

MODE	Peak Period (%)		
	AM Only	PM Only	Both
Bus	0	2	98
Taxi	2	10	88

### Trip Characteristics

Passengers were asked how long they waited on average for a bus or a taxi. The table below summarises the results.

Table E-4 : Waiting times (Bus &amp; Taxi Users)

Waiting Time (Minutes)	Bus Users	Taxi Users
	%	%
0	21	0
1	0	2
2	0	7
5	6	24
8	2	0
10	6	24
13	2	0
15	13	16
17	2	0
20	15	3
25	2	2
30	25	11
35	2	0
45	0	5
55	0	2
60	2	2
75	0	2
90	2	0
Total	100%	100%

When asked how long it took them to walk from where the bus or taxi drops them to their destination, respondents indicated times of between 0 and 30 minutes - the average walking time was 6.5 min for taxi users and 10 min for bus users; 67% of taxi users indicated that the taxi drops them exactly where the bus would drop them, 26% indicated that the walk from the taxi is between 1-25 minutes quicker than the walk from the bus, while 7% indicated that the walk from the bus would be 3-5 minutes quicker. With the bus users however, respondents indicated walking times of between 1 and 30 minutes - the average walking time was 10 minutes; 2% indicated that when using the bus the walk is 15 minutes quicker; 70% said that there was no difference in walking times; and 28% indicated that the walk would be quicker (3-15 minutes) when using a taxi.

Unlike the users of taxis, the bus users have the option of purchasing a subsidised clipcard as opposed to paying the unsubsidised cash fare. Particularly on this route, the degree of subsidisation is very significant (58%); whilst the cash fare was R3.69 per trip, the clipcard fare was R1.74 per trip (R17.40 for a 10 trip card). Of the 53 bus users interviewed, only 8% paid the cash fare whilst the remaining 92% made use of a clipcard.

#### Previous mode

One of the most important questions posed to the users of taxis, was what mode of transport they used before they started to use the taxi. The responses to this question would help to enable the quantification of the impact of taxis on the various modes of transport. The table below shows the responses. Note that no train service exists on this route.

Table E-5 : Previous Modes

Previous Mode	Responses (%)
Bus	47 (77%)
Car	8 (13%)
Taxi	6 (10%)
T O T A L	61 (100%)

Note that when taxi is indicated as a previous mode it means that these respondents have been using the taxi since they first moved to Atlantis.

#### Attitudes of Users

An important question asked to bus users was whether they had ever used a taxi on this route and if so for what reason. Of the 53 bus users interviewed, 94% responded that they have used a taxi on this route before. Of these bus users who have used a taxi before, 50% have used the service on 10 or more occasions. The main reasons for them having used the taxi was that no buses were available at the time, either due to having missed the bus or that the scheduled buses were late.

What then are the reasons for the users of buses and taxis to choose their particular mode of transport. This question was posed to the respondents by asking them to state what the most important reason was for them using the bus or taxi and then asking what the second most important reason was and so on. A similar procedure was used to establish if users had any complaints about their mode of transport. The tables below summarize the responses of the bus and taxi users.

Table E-6 : TAXI USERS - Reasons for using the taxi

	Reason			Total
	1	2	3	
Quicker	36	9	1	46 (53%)
Cheaper	10	5	0	15 (17%)
Convenient	15	6	2	23 (27%)
Closer to home	0	2	0	2 (2%)
More reliable	0	0	1	1 (1%)
<b>Total</b>	<b>61</b>	<b>22</b>	<b>4</b>	<b>87 (100%)</b>

Table E-7 : BUS USERS - Reason for using the bus

	Reason		Total
	1	2	
Clipcard	15	16	31 (41%)
Cheaper	25	5	30 (39%)
Less overcrowding	4	0	4 (5%)
Dont know	1	0	1 (1%)
Safer from accidents	5	0	5 (7%)
Operate earlier	1	0	1 (1%)
Enjoy longer ride	1	0	1 (4%)
Sleep better in bus	1	0	1 (1%)
Closer to home	0	1	1 (1%)
Dependable	0	1	1 (1%)
<b>Total</b>	<b>53</b>	<b>23</b>	<b>76 (100%)</b>

Note that with the bus users, those who indicated the clipcard as being one of the reasons for using the bus, it is not known whether it is referring to the convenience of the clipcard or the reduced cost associated with a clipcard.

When asked about whether they had any complaints about the bus or taxi services, the following were the responses as shown in the tables below.

Of the 61 taxi passengers interviewed, 44% had some complaint about the taxi service. These complaints are listed in the table below.

Table E-8 : TAXI USERS - Complaints

	Complaint		
	1	2	Total
Overcrowding	4	1	5 (15%)
Reckless driving	10	1	11 (32%)
Rude drivers	6	2	8 (24%)
Smoking	2	0	2 (6%)
Fares too high	1	0	1 (3%)
Taxi waits for full load	1	0	1 (3%)
Too few taxis in morning	1	0	1 (3%)
Too many ranks	1	0	1 (3%)
Wait long in the morning	1	0	1 (3%)
Overloading	1	0	1 (3%)
Loud music	0	1	1 (3%)
Taxi too slow without breaks	0	1	1 (3%)
Unroadworthy vehicles	0	1	1 (3%)
<b>Total</b>	<b>27</b>	<b>7</b>	<b>34 (100%)</b>

Note that 56% of the taxi users interviewed had no complaints at all about the taxis service on this route.

Of the 53 bus passengers interviewed, 64% had complaints about the bus service. The table below lists these complaints.

Table E-9 : BUS USERS - Complaints

Complaints	Responses		
	1	2	Total (%)
Buses not on time	21	1	22 (49%)
Dirty buses	1	0	1 (2%)
Poor condition of buses	1	0	1 (2%)
Fares too high	2	1	3 (7%)
Drive too long	1	0	1 (2%)
Poor services	1	1	2 (4%)
Not enough seats	2	0	2 (4%)
Bus breakdowns	2	2	4 (9%)
Wait too long	1	0	1 (2%)
Inconvenient	1	0	1 (2%)
Corrupt	1	0	1 (2%)
No shelters	0	1	1 (2%)
Reckless drivers	0	2	2 (4%)
Bus-stop too far apart	0	1	1 (2%)
Too few buses	0	1	1 (2%)
<b>Total</b>	<b>34</b>	<b>11</b>	<b>45 (100%)</b>

Note that 36% of the bus users had no complaints whatsoever about the bus service on this route.

To gauge the significance the difference in bus and taxi fares has on the modal choice of its users, one of the questions asked whether the user would move to the other mode should the alternative mode's fare become cheaper than the mode which they are presently using.

Of the all taxi users interviewed, 77% indicated that they would continue to use the taxi despite the fact that the bus may be cheaper. The remaining 23% indicated that they would move to using the buses if the bus fares were much cheaper than the taxi fares.

With the bus users who were interviewed, 71% indicated that they would stop using the bus and move to taxis if the taxi fare was much cheaper than that of the bus; the remaining 29% said that they would continue to use the bus.

It can therefore deduced that, of all the bus and taxi users interviewed on this route, 45% are users that base their modal choice purely on economic reasons, ie. they choose to use the mode with the lowest fare.

University of Cape Town

# Appendix F

## Interview Survey Results

***CITY - MOWBRAY ROUTE***

University of Cape Town

## APPENDIX F

## CITY - MOWBRAY

## INTERVIEW SURVEY RESULTS

On this route a total of 53 taxi and 70 bus passengers were interviewed for this survey.

## Personal Characteristics

As mentioned earlier, this is one of only two routes on which all population groups regularly use the same taxi service. The following number of people were interviewed from each population group on the taxis and the buses.

Table F-1 : Respondents' Population Groups

Mode	Black	Coloured	White	Total
Taxi	16	36	1	53
Bus	4	63	3	70

Of the randomly selected people who were interviewed, 74% of the taxi and 78% of the bus users were aged between 20 and 40. Of all the bus and taxi users interviewed, 72% were female.

Most of the bus and taxi users that were interviewed were employed as office workers or shop assistants. No apparent distinction is noticeable between the occupations of the taxis users *vis a vis* the bus users.

Car ownership amongst the bus users is significantly greater than that of the taxi users as illustrated by the table below.

Table F-2 : Car Ownership

Mode	% Owning Cars
Taxi	27
Bus	46

### Frequency of Use

The table below illustrates the distribution of bus and taxi passengers' experience with their particular mode of transport. The taxi distribution is particularly important for this study since this would indicate the extent to which the bus company have been losing out.

Table F-3 : Experience Distribution

Experience (Years)	Bus Users	Taxi Users
	%	%
<1	13	21
1	12	28
2	19	21
>2	56	0
Total	100%	100%

The users of buses seem to be more regular users of their mode than the taxi users. This is demonstrated by the fact that only 75% of the taxi users use the taxi on 5 or more days of the week whereas 85% of the bus users use the bus over this same period. Also, 89% of bus users use the bus during both the morning and evening peak trips whereas only 75% of bus users use it during both peaks, as shown in the table below.

Table F-4 : Usage Period

MODE	Peak Period (%)		
	AM Only	PM Only	Both
Bus	4	7	89
Taxi	21	4	75

### Trip Characteristics

Passengers were asked how long they waited on average for a bus or a taxi. The chart below summarises the results. Note that although the longest waiting time for the taxi users is 20 minutes, 96% waited between 0 and 10 minutes. The longest waiting time indicated by the bus users was 45 minutes with 79% waiting between 5 and 20 minutes for a bus.

Table F-5 : Waiting Times

Waiting Time (Minutes)	Bus Users	Taxi Users
	%	%
0 - 5	28	81
6 - 10	32	15
11 - 15	16	2
16 - 20	14	2
21 - 25	0	0
26 - 30	6	0
> 30	4	0
Total	100%	100%

When asked how long it took them to walk from where the bus or taxi drops them to their destination, respondents indicated times of between 0 and 20 minutes - the average walking time was 6 minutes; 74% of taxi users indicated that the taxi drops them exactly where the bus would drop them, 33% indicated that the walk from the taxi is between 1-15 minutes quicker than the walk from the bus, while 4% indicated that the walk

from the bus would be 10 minutes quicker. With the bus users however, respondents indicated walking times of between 1 and 45 minutes - the average walking time was 7 minutes; 2% indicated that when using the bus the walk is 10 minutes quicker; 84% said that there was no difference in walking times; and 14% indicated that the walk would be quicker (1-30 minutes) when using a taxi.

Unlike the users of taxis, the bus users have the option of purchasing a subsidised clipcard as opposed to paying the unsubsidised cash fare. Of the 70 bus users interviewed, 27% paid the cash fare whilst the remaining 73% made use of a clipcard.

### Previous mode

One of the most important questions posed to the users of taxis, was what mode of transport they used before they started to use the taxi. The responses to this question would help to enable the quantification of the impact of taxis on the various modes of transport. The table below shows the responses.

Table F-6 : Previous Mode Characteristics

Previous Mode	Responses (%)	
Bus	34	(64%)
Car	3	(6%)
Train	16	(30%)
<b>T O T A L</b>	<b>53</b>	<b>(100%)</b>

Note the significant number of train users who have moved to taxis.

### Attitudes of Users

An important question asked to bus users was whether they had ever used a taxi on this route and if so for what reason. Of the 70 bus users interviewed, 57% responded that they have used a taxi on this route

before. Of these bus users who have used a taxi before, 81% have used the service on 10 or more occasions. The main reasons for them having used the taxi was that no buses were available at the time, either due to having missed the bus or that the scheduled buses were late.

What then are the reasons for the users of buses and taxis to choose their particular mode of transport. This question was posed to the respondents by asking them to state what the most important reason was for them using the bus or taxi and then asking what the second most important reason was and so on. A similar procedure was used to establish if users had any complaints about their mode of transport. The tables below summarizes the reponses of the bus and taxi users.

Table F-7 : TAXI USERS - Reason for using the taxi

	Reason			Total
	1	2	3	
Quicker	43	5	0	48 (66%)
Cheaper	5	4	1	10 (14%)
Convenient	5	9	0	14 (19%)
Warmer	0	1	0	1 (1%)
Total	53	19	1	73 (100%)

Table F-8 : BUS USERS - Reason for using the bus

	Reason			Total	
	1	2	3		
Comfortable	3	0		3	(4%)
Clipcard	10	5	1	16	(19%)
Cheaper	6	0		6	(7%)
Convenient	12	3		15	(18%)
Less overcrowding	21	2		23	(27%)
No other transport	4	0		4	(5%)
Insured	1	0		1	(1%)
Safer from accidents	8	2		10	(12%)
Closer to home	1	0		1	(1%)
Safer from robbing	1	2		3	(4%)
Used to bus	1	0		1	(1%)
Dependable	1	0		1	(1%)
Free	1	0		1	(1%)
<b>Total</b>	<b>70</b>	<b>14</b>	<b>1</b>	<b>85</b>	<b>(100%)</b>

Note that with the bus users, those who indicated that the clipcard as being one of the reasons for using the bus, it is not known whether it is referring to the convenience of the clipcard or the reduced cost associated with a clipcard.

When asked about whether they had any complaints about the bus or taxi services, the following were the responses as shown in the tables below.

Table F-9 : TAXI USERS - Complaints

	Complaint		
	1	2	Total
Overcrowding	6	3	9 (64%)
Reckless driving	2	0	2 (14%)
Rude drivers	1	0	1 (7%)
Smoking	1	0	1 (7%)
Fares too high	1	0	1 (7%)
<b>Total</b>	<b>11</b>	<b>3</b>	<b>14 (100%)</b>

Note that 79% of the taxi users interviewed had no complaints at all about the taxis service on this route.

Table F-10 : BUS USERS - Complaints

Complaints	Responses			
	1	2	3	Total (%)
Buses not on time	12	1		13 (37%)
Rude drivers	2	1		3 (9%)
Dirty buses	1	0		1 (3%)
Poor service	2	0		2 (6%)
Too few buses	2	2		4 (11%)
Fares too high	1	0		1 (3%)
Reckless driving	3	0		3 (9%)
Smoking	1	1		2 (6%)
Overcrowding	2	0	1	3 (9%)
Wait too long	1	0		1 (3%)
Inconvenient	0	1		1 (3%)
Don't give change	0	1		1 (3%)
<b>Total</b>	<b>27</b>	<b>7</b>	<b>1</b>	<b>35 (100%)</b>

Of the 70 bus users interviewed, 43 (61%) had no complaints whatsoever about the bus service on this route.

To gauge the significance the difference in bus and taxi fares has on the modal choice of its users, one of the questions asked whether the user would move to the other mode should the alternative mode's fare become cheaper than the mode which they are presently using.

Of all the taxi users interviewed, 85% indicated that they would continue to use the taxi despite the fact that the bus may be cheaper. Of the remaining 15%, 6% were uncertain, and 9% indicated that they would move to using the buses if the bus fares were much cheaper than the taxi fares.

With the bus users who were interviewed, only 16% indicated that they would stop using the bus and move to taxis if the taxi fare was much cheaper than that of the bus; the remaining 84% said that they would continue to use the bus.

It can therefore deduced that, of all the bus and taxi users interviewed on this route, only 13% are users that base their modal choice purely on economic reasons, ie. they choose to use the mode with the lowest fare.

# Appendix G

## Interview Survey Results

***CITY - SEA POINT ROUTE***

University of Cape Town

## APPENDIX G

## CITY - SEA POINT ROUTE

## INTERVIEW SURVEY RESULTS

On this route a total of 80 taxi and 102 bus passengers were interviewed for this survey. Of the 102 bus users interviewed, 19 were on the Moulli Point bus route, and 83 were on the Sea Point route.

## Personal Characteristics

As mentioned earlier, this is one of only two routes on which all population groups regularly use the same taxi service. The following number of people were interviewed from each population group on the taxis and the buses.

Table G-1 : Respondents' Population Groups

Mode	Black	Coloured	White	Total
Taxi	11	52	17	80
Bus	8	38	56	102

Of the randomly selected people who were interviewed, 94% of the taxi and 84% of the bus users were aged between 20 and 40. Of all the bus and taxi users interviewed, 71% were female.

Most of the bus and taxi users that were interviewed were employed as office workers or shop assistants with very few professionals.

Car ownership amongst the taxi users is slightly greater than that of the bus users as illustrated by the table below.

Table G-2 : Car Ownership

Mode	Car Ownership (% interviewed)			
	Blacks	Coloureds	Whites	Total
Taxi	27	58	29	47
Bus	25	32	46	39

Note the big difference in ownership amongst the white and coloured taxi and bus users.

### Frequency of Use

The table below illustrates the distribution of bus and taxi passengers' experience with their particular mode of transport. The taxi distribution is particularly important for this study since this would indicate the extent to which the bus company have been losing out.

Table G-3 : Experience Distribution

Experience (Years)	Bus Users	Taxi Users
	%	%
< 1	31	32
1	12	29
2	12	39
> 2	45	0
Total	100%	100%

The users of buses seem to be more regular users of their mode than the taxi users. This is demonstrated by the fact that only 66% of the taxi users use the taxi on 5 or more days of the week whereas 86% of the bus users use the bus over this same period. However, 94% of taxi users use the taxi during both the morning and evening peak trips whereas only 81% of bus users use it during both peaks, as shown in the table below.

Table G-4 : Usage Period

MODE	Peak Period (%)		
	Morning	Evening	Both
Bus	6	13	81
Taxi	6	0	94

### Trip Characteristics

Passengers were asked how long they waited on average for a bus or a taxi. The chart below summarises the results. Note that although the longest waiting time for the taxi users is 15 minutes, 84% waited between 1 and 5 minutes. The longest waiting time indicated by the bus users was 60 minutes with 85% waiting between 10 and 25 minutes for a bus.

Table G-5 : Waiting Times

Waiting Time (Minutes)	Bus Users	Taxi Users
	%	%
0 - 5	14	85
6 - 10	20	11
11 - 15	26	4
16 - 20	18	0
21 - 25	9	0
26 - 30	11	0
> 30	2	0
Total	100%	100%

When asked how long it took them to walk from where the bus or taxi drops them to their destination, 67% of taxi users indicated that the taxi drops them exactly where the bus would drop them while the remaining 33%

indicated that the walk from the taxi would be between 1-4 minutes quicker than the walk from the bus. With the bus users however 14% indicated that when using the bus the walk 1-10 minutes quicker; 83% said that there was no difference in walking times; and only 3% indicated that the walk would be quicker when using a taxi.

Unlike the users of taxis, the bus users have the option of purchasing a subsidised clipcard as opposed to paying the unsubsidised cash fare. Of the 102 bus users interviewed, 57% paid the cash fare whilst the remaining 43% made use of a clipcard. Note however that this is the average figure, and when looking at each race, the following is observed :

Table G-6 : Method of Fare Payment

FARE	Blacks	Coloureds	Whites	Total
Cash	25	55	63	57
Clipcard	75	45	38	43
	100%	100%	100%	100%

From the above table the following trend is observed : Associated with increasing economic well being is the tendency to pay by cash fare as opposed to using a subsidised clipcard. Note that the cash fare at the time of the survey was 60c and the clipcard was R5.80 per ten trips (58c per trip). The taxi fare for the same trip was 50c.

#### Previous mode

One of the most important questions posed to the users of taxis, was what mode of transport they used before they started to use the taxi. The responses to this question would help to enable the quantification of the impact of taxis on the various modes of transport. The table below shows the responses.

Table G-7 : Previous Mode Characteristics

Previous Mode	Responses(%)			
	Black	Col	White	Total
Bus	91	83	100	88%
Car	9	13	0	10%
Taxi	0	4	0	3%
T O T A L	100	100	100	100%

Note that 3% of the taxi users interviewed indicated taxi as a previous mode, meaning that they have always been using the taxi on this particular route. This low incidence of taxi as a previous mode is to be expected on this route since it is a relatively new taxi route having only been introduced in early 1987. Also interesting to note from the above table is that all of the whites who are using taxis on this route, have been using the bus as a previous mode.

#### Attitudes of Users

An important question asked of bus users was whether they had ever used a taxi on this route and if so for what reason. Of the 102 bus users interviewed, 67% responded that they have used a taxi on this route before. Of these bus users who have used a taxi before, 65% have used the service on 10 or more occasions. The main reasons for them having used the taxi was that no buses were available at the time, either due to having missed the bus or that the scheduled buses were late.

What then are the reasons for the users of buses and taxis to choose their particular mode of transport. This question was posed to the respondents by asking them to state what the most important reason was for them using the bus or taxi and then asking what the second most important reason was and so on. A similar procedure was used to establish if users had any complaints about their mode of transport.

The tables below summarize the responses of the bus and taxi users.

Table G-8 : TAXI USERS - Reasons for using the taxi

	Reason				Total
	1	2	3	4	
Quicker	54	13	1	0	68 (49%)
Cheaper	10	19	7	0	36 (26%)
Convenient	14	10	4	0	28 (20%)
Cleaner	1	0	0	0	1 (.7%)
More frequent	0	1	1	0	2 ( 2%)
Pleasant	0	1	0	0	1 (.7%)
Less pollution	0	0	1	0	1 (.7%)
Friendlier	0	0	0	1	1 (.7%)
Support	0	0	0	1	1 (.7%)
<b>Total</b>	<b>79</b>	<b>44</b>	<b>14</b>	<b>2</b>	<b>139 (100%)</b>

Table G-9 : BUS USERS - Reasons for using the bus

	Reason			Total	
	1	2	3		
Comfortable	2	0		2	(2%)
Clipcard	13	5		18	(15%)
Cheaper	9	0		9	(7%)
Convenient	20	4	1	25	(20%)
Less overcrowding	27	3		30	(25%)
No taxis available	3	0		3	(2%)
No other transport	3	1		4	(3%)
Insured	2	0		2	(2%)
Safer from accidents	12	4		16	(13%)
Closer to home	6	0		6	(5%)
Don't know	2	0		2	(2%)
Don't like taxis	1	0		1	(.8%)
Quicker	1	0		1	(.8%)
Used to bus	1	0		1	(.8%)
Have lots of time	2	0		2	(2%)
Get refund from empl.	1	0		1	(.8%)
Whichever comes first	1	0		1	(.8%)
More regular	1	1		2	(2%)
Better socialising	0	0	1	1	(.8%)
Drops closer to work	1	0		1	(.8%)
<b>Total</b>	<b>102</b>	<b>18</b>	<b>2</b>	<b>122</b>	<b>(100%)</b>

Note that with the bus users, those who indicated that the clipcard as being one of the reasons for using the bus, it is not known whether it is referring to the convenience of the clipcard or the reduced cost associated with a clipcard.

When asked about whether they had any complaints about the bus or taxi services, the following were the responses as shown in the tables below.

Table G-10 : TAXI USERS - Complaints

	Complaint				Total
	1	2	3	4	
Overcrowding	10	2	1		13 (37%)
Reckless driving	13	2			15 (43%)
Rude drivers	3	2			5 (14%)
Poor state of taxi	0	1			1 (3%)
Loud music				1	1 (3%)
<b>Total</b>	<b>26</b>	<b>7</b>	<b>1</b>	<b>1</b>	<b>35 (100%)</b>

Note that 68% of the taxi users interviewed had no complaints at all about the taxis service on this route.

Table G-11 : BUS USERS - Complaints

Complaints	Responses			
	1	2	3	Total (%)
Buses not on time	27	2	1	30 (37%)
Rude drivers	4	2		6 (7%)
Dirty buses	5	1		6 (7%)
Poor service	1		1	2 (2%)
Too few buses	5	13	2	20 (24%)
Overpriced fares	3	2	1	6 (7%)
Reckless driving	2	1	1	4 (5%)
Smoking problem	2			2 (2%)
Unfriendly drivers	1			1 (1%)
Breakdowns	1			1 (1%)
Frequency reduced	1			1 (1%)
No surfboards		1		1 (1%)
Slow weekend service		1		1 (1%)
Uneducated drivers			1	1 (1%)
<b>Total</b>	<b>52</b>	<b>23</b>	<b>7</b>	<b>82 (100%)</b>

Of the 102 bus users interviewed, 50 (49%) had no complaints whatsoever about the bus service on this route.

To gauge the significance the difference in bus and taxi fares has on the modal choice of its users, one of the questions asked whether the user would move to the other mode should the alternative mode's fare become cheaper than the mode which they are presently using.

Of the all taxi users interviewed, 80% indicated that they would continue to use the taxi despite the fact that the bus may be cheaper. Of the remaining 20%, 2% were uncertain, and 18% indicated that they would move to using the buses if the bus fares were much cheaper than the taxi fares.

With the bus users who were interviewed, 27% indicated that they would stop using the bus and move to taxis if the taxi fare was much cheaper than that of the bus; 71% said that they would continue to use the bus and 2% were uncertain what they would do.

One can therefore conclude that of all the bus and taxi users interviewed on this route, 23% are users that base their modal choice purely on economic reasons, ie. they choose to use the mode with the lowest fare.

# Appendix H

## Interview Survey Results

***LANGA - MOWBRAY ROUTE***

University of Cape Town

## APPENDIX H

### LANGA-MOWBRAY ROUTE

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#### INTERVIEW SURVEY RESULTS

On this route a total of 48 taxi and 31 bus passengers were interviewed for this survey.

#### Personal Characteristics

Although the people who were interviewed were randomly selected, 90% of the bus and 95% of the taxi people were aged between 20 and 40. About 55% of all people interviewed were male although the roadside counts showed that 45-48% of all taxi users on this route were male.

The occupation of the bus and taxi users that were interviewed indicated that the majority of people are employed as domestic workers or cleaners.

Car ownership amongst the bus users is slightly greater than that of the taxi users. 29% of the bus users possess or have access to a car whilst this is the case with only 21% of taxi users.

#### Frequency of Use

The table below illustrates the distribution of bus and taxi passengers experience with their particular mode of transport. The taxi distribution is particularly important for this study since this would indicate the extent to which the bus company have been losing out.

Table H-1 : Experience Distribution

Experience (Years)	Bus Users %	Taxi Users %
< 1	3	8
1	3	8
2	16	21
3	22	31
4	19	8
5	3	15
6	3	4
7	6	2
8	0	2
9	0	0
10	13	0
> 10	9	0

The users of taxis seem to be more regular users of their mode than the bus users. This is demonstrated by the fact that 79% of the taxi users use the taxi on 5 days of the week whereas only 67% of the bus users use the bus on 5 or more days of the week. In addition, 85% of taxi users use the taxi during both the morning and evening peak trips whereas only 68% of bus users use it during both peaks, as shown in the table below.

Table H-2 : Usage Period

MODE	Peak Period (%)		
	Morning	Evening	Both
Bus	23	10	68
Taxi	2	13	85

### Trip Characteristics

Passengers were asked how long they waited on average for a bus or a taxi. The chart below summarises the results. Note that the waiting times of the taxi users

are all less than 10 minutes with 79% waiting between 3 and 5 minutes. The bus users on the other hand indicated that 78% wait between 10 and 25 minutes for a bus despite the fact that they are familiar with the schedule departure times for the buses.

Table H-3 : Waiting Times

Waiting Time (Minutes)	Bus Users %	Taxi Users %
0 - 5	13	90
6 - 10	30	5
11 - 15	23	0
16 - 20	16	0
21 - 25	10	0
26 - 30	3	0
> 30	3	0

When asked how long it took them to walk from where the bus or taxi drops them to their destination, only 3% of taxi users indicated that the bus would drop them closer to their destination than the taxi; 28% said that there was no difference in walking time and 69% indicated that the walking time is between 1 and 18 minutes less when using the taxi. With the bus users however 16% indicated that when using the bus the walk is up to 5 minutes quicker; 76% said that there was no difference in walking times; and only 16% indicated that the walk would be up to 10 minutes quicker when using a taxi.

Unlike the users of taxis, the bus users have the option of purchasing a subsidised clipcard as opposed to paying the unsubsidised cash fare. Of the 31 bus users interviewed, 21 (68%) make use of the clipcard whilst the remaining 32% of travel by paying the cash fare.

### Previous mode

One of the most important questions posed to the users of taxis, was what mode of transport they used before they started to use the taxi. The responses to this question would help to enable the quantification of the impact of taxis on the various modes of transport. The table below shows the responses.

Table H-4 : Previous Mode Characteristics

Previous Mode	Responses	
	No.	(%)
Bus	12	(25%)
Car	7	(15%)
Train	21	(44%)
Bus/Train	8	(17%)
T O T A L	48	(100%)

The fact that the train seems to be the most prevalent mode which current taxi users previously used, is not completely surprising since the train journey on this route is rather inconvenient and very time consuming due to the fact that there exists no direct line. The train user therefore has to board two trains on this Langa-Mowbray route. Therefore to them the taxi provided the ideal solution to this problem in that it offered a service which is much faster, more convenient and more economically priced than the bus service.

### Attitudes of Users

An important question asked of bus users was whether they had ever used a taxi on this route and if so for what reason. Of the 31 bus users interviewed, 24 (77%) responded that they have used a taxi on this route before. Of these bus users who have used a taxi before, 92% have used the service on more than 10 occasions. The main reason for them having used the taxi was that

the taxi was quicker when they were late and could not wait for a bus which runs only every hour.

What then are the reasons for the users of buses and taxis to choose that particular mode of transport. This topic was posed to the respondents by asking them to state what the most important reason was for them using the bus or taxi and then asking what the second most important reason was and so on. A similar procedure was used to establish if users had any complaints about their mode of transport. The tables below summaries the responses of the bus and taxi users.

Table H-5 : TAXI USERS - Reasons for using the taxi

	Reason		Total	
	1	2		
Quicker	33	15	48	(60%)
Cheaper	14	7	21	(26%)
Convenient	1	1	2	( 3%)
Clean	0	2	2	( 3%)
No music	0	1	1	( 1%)
More silence	0	1	1	( 1%)
Shorter wait	0	2	2	( 3%)
Support	0	1	1	( 1%)
Nearer to home	0	1	1	( 1%)
Like them	0	1	1	( 1%)
<b>Total</b>	<b>48</b>	<b>32</b>	<b>80</b>	<b>(100%)</b>

Table H-6 : BUS USERS - Reasons for using the bus

	Reason				Total	
	1	2	3	4		
Cheaper	17	6	1	0	24	(30%)
Clipcard	10	16	0	0	26	(33%)
Convenient	1	0	0	0	1	( 1%)
Less overcrowding	1	4	10	2	17	(22%)
No taxis available	1	0	0	0	1	( 1%)
Operate earlier	1	0	0	0	1	( 1%)
Cleaner	0	1	3	0	4	( 5%)
No noise/music	0	0	2	2	4	( 5%)
No trouble	0	0	1	0	1	( 1%)
Comfortable	0	0	0	1	1	( 1%)
<b>Total</b>	<b>31</b>	<b>27</b>	<b>17</b>	<b>5</b>	<b>80</b>	<b>(100%)</b>

Note that with the bus users, those who indicated that the clipcard as being one of the reasons for using the bus, it is not known whether it is referring to the convenience of the clipcard or the reduced cost associated with a clipcard.

When asked about whether they had any complaints about the bus or taxi services, the following were the responses as shown in the tables below.

Table H-7 : TAXI USERS - Complaints

	Complaint				Total
	1	2	3	4	
Overcrowding	15	12	0	0	27
Reckless driving	10	4	1	0	15
Rude drivers	5	12	5	0	22
Dirty taxi	0	1	0	1	2
<b>Total</b>	<b>30</b>	<b>29</b>	<b>6</b>	<b>1</b>	<b>66</b>

Note that 18 (38%) of the taxi users interviewed had no complaints at all about the taxi service on this route.

Table H-8 : BUS USERS - Complaints

	Complaint			Total
	1	2	3	
Buses not on time	18	0	0	18
Fares too high	1	1	0	2
Has no music	1	0	0	1
Leave bus stop after 10-20 minutes	1	0	0	1
It is too slow	0	1	1	2
Too few buses	0	13	1	14
Reckless driving	0	0	1	1
<b>Total</b>	<b>21</b>	<b>15</b>	<b>3</b>	<b>39</b>

Of the 31 bus users interviewed, 10 (32%) had no complaints whatsoever about the bus service on this route.

To gauge the significance the difference in bus and taxi fares has on the modal choice of its users, one of the questions asked whether the user would move to the other mode should the alternative mode's fare become cheaper than the mode which they are presently using.

Of the 48 taxi users interviewed, 31 (65%) indicated that they would continue to use the taxi despite the fact that the bus may be cheaper. However, 16 (33%) said that they would then use the bus if it were cheaper than the taxi.

With the 31 bus users interviewed on the other hand, 22 (79%) indicated that they would move to using taxi if it was cheaper than the bus.

One can therefore conclude that of all the 79 bus and taxi users interviewed on this route, 38 (48%) are users that base their modal choice purely on economic reasons, ie. they choose to use the mode with the lowest fare.

# Appendix I

## Interview Survey Results

*RETREAT STATION  
to  
LAVENDER HILL & SCHEME AREA*

## APPENDIX I

### RETREAT STATION - LAVENDER HILL & RETREAT SCHEME

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#### INTERVIEW SURVEY RESULTS

On this route a total of 81 taxi and 50 bus passengers were interviewed for this survey. Of the 81 taxi users interviewed, 51 were on the Lavender Hill Route, and 30 were from the Scheme route.

#### Personal Characteristics

Although the people who were interviewed were randomly selected, 94% of the taxi and 84% of the bus users were aged between 20 and 40. Of all the bus and taxi users interviewed, 55% were female. Our roadside counts also showed that 55% of all taxi users on this route were female.

The occupation of the bus and taxi users that were interviewed indicated that the majority of people are employed as domestic workers or cleaners.

Car ownership amongst the bus users is slightly greater than that of the taxi users. 36% of the bus users possess or have access to a car whilst this is the case with only 27% of taxi users.

#### Frequency of Use

The table below illustrates the distribution of bus and taxi passengers' experience with their particular mode of transport. The taxi distribution is particularly important for this study since this would indicate the extent to which the bus company have been losing out.

Table I-1 : Experience Distribution

Experience (Years)	Bus Users %	Taxi Users %
< 1	22	10
1	18	15
2	8	11
3	6	11
4	6	7
5	2	11
6	2	0
7	4	7
8	0	3
9	2	3
10	8	10
11	0	1
12	0	4
13	2	1
14	4	1
15	6	3
16	0	3
> 16	10	0
Total	100%	100%

The users of taxis seem to be more regular users of their mode than the bus users. This is demonstrated by the fact that 98% of the taxi users use the taxi on 5 days of the week whereas only 92% of the bus users use the bus on 5 days of the week. In addition, 93% of taxi users use the taxi during both the morning and evening peak trips whereas only 80% of bus users use it during both peaks, as shown in the table below.

Table I-2 : Usage Period

MODE	Peak Period (%)		
	Morning	Evening	Both
Bus	4	15	80
Taxi	2	5	93

### Trip Characteristics

Passengers were asked how long they waited on average for a bus or a taxi. The chart below summarises the results. Note that although the longest waiting time for the taxi users is 30 minutes, 97% waited between 1 and 5 minutes. The longest waiting time indicated by the bus users was 20 minutes with 93% waiting between 0 and 15 minutes for a bus.

Table I-3 : Waiting Times

Waiting Time (Minutes)	Bus Users	Taxi Users
	%	%
0 - 5	47	97
6 - 10	31	1
11 - 15	18	1
16 - 20	4	0
> 20	0	1

When asked how long it took them to walk from where the bus or taxi drops them to their destination, 23% of taxi users indicated that the bus would drop them closer to their destination than the taxi; 59% said that there was no difference in walking time and 19% indicated that the walking time is between 1 and 5 minutes less when using the taxi. With the bus users however 44% indicated that when using the bus the walk is up to 17 minutes quicker; 54% said that there was no difference in walking times; and only 2% indicated that the walk would be quicker when using a taxi.

Unlike the users of taxis, the bus users have the option of purchasing a subsidised clipcard as opposed to paying the unsubsidised cash fare. Of the 50 bus users interviewed, 43 (86%) paid the cash fare whilst the remaining 14% made use of a clipcard. Note however that on this route, at the time of the survey, the bus company was attempting to attract more passengers by reducing the cash fare but not the clipcard fare.

### Previous mode

One of the most important questions posed to the users of taxis, was what mode of transport they used before they started to use the taxi. The responses to this question would help to enable the quantification of the impact of taxis on the various modes of transport. The table below shows the responses.

Table I-4 : Previous Mode Characteristics

Previous Mode	Responses	
	No.	(%)
Bus	35	(43%)
Car	13	(16%)
Taxi	21	(26%)
Walk	12	(15%)
<b>T O T A L</b>	<b>81</b>	<b>(100%)</b>

Note that 26% of the taxi users interviewed indicated taxi as a previous mode, meaning that they have always been using the taxi on this particular route. This is to be expected on this route on which shared taxis have been operating since 1972. Also interesting to note about this route is the fact of walking as a previous mode. This is only possible due to the relatively short distance of this route.

From this chart it can be seen that the majority of previous bus users have been using the taxi service for between 1 and 10 years. Also interesting to note from this chart is that

the majority (69%) of previous private transport users have been using the taxi service for 2 to 5 years.

### Attitudes of Users

An important question asked of bus users was whether they had ever used a taxi on this route and if so for what reason. Of the 50 bus users interviewed, 40 (80%) responded that they have used a taxi on this route before. Of these bus users who have used a taxi before, 54% have used the service on 10 or more occasions. The main reasons for them having used the taxi was that no buses were available at the time, or that the scheduled buses were late.

What then are the reasons for the users of buses and taxis to choose that particular mode of transport. This question was posed to the respondents by asking them to state what the most important reason was for them using the bus or taxi and then asking what the second most important reason was and so on. A similar procedure was used to establish if users had any complaints about their mode of transport. The tables below summarize the responses of the bus and taxi users.

Table I-5 : TAXI USERS - Reasons for using the taxi

	Reason			Total	
	1	2	3		
Quicker	44	11	1	56	(49%)
Cheaper	16	7	1	24	(21%)
Convenient	20	7	4	31	(27%)
More frequent		2		2	( 2%)
Don't like bus	1			1	( 1%)
<b>Total</b>	<b>81</b>	<b>27</b>	<b>6</b>	<b>114</b>	<b>(100%)</b>

Table I-6 : BUS USERS - Reasons for using the bus

	Reason			Total	
	1	2	3		
Comfortable	5			5	(6%)
Clipcard	1			1	(1%)
Convenient	19	3		22	(25%)
Less overcrowding	12	1	1	14	(16%)
No taxis available	1			1	(1%)
Operate earlier	1			1	(1%)
Insured	1			1	(1%)
Safer from accidents	4	2		6	(7%)
Closer to home	6			6	(7%)
<b>Total</b>	<b>50</b>	<b>6</b>	<b>1</b>	<b>57</b>	<b>(100%)</b>

Note that with the bus users, those who indicated that the clipcard as being one of the reasons for using the bus, it is not known whether it is referring to the convenience of the clipcard or the reduced cost associated with a clipcard.

When asked about whether they had any complaints about the bus or taxi services, the following were the responses as shown in the tables below.

Table I-7 : TAXI USERS - Complaints

	Complaint			Total	
	1	2	3		
Overcrowding	16	7		23	(47%)
Reckless driving	10	4		14	(29%)
Rude drivers	3	2	2	7	(14%)
Poor state of taxi	1		1	2	(4%)
Smoking	1			1	(2%)
No child-reduced fare	1			1	(2%)
Inconsiderate drivers		1		1	(2%)
<b>Total</b>	<b>32</b>	<b>14</b>	<b>3</b>	<b>49</b>	<b>(100%)</b>

Note that 49 (61%) of the taxi users interviewed had no complaints at all about the taxis service on this route.

Table I-8 : BUS USERS - Complaints

Complaints	Responses
Buses not on time	4
Rude passengers	1
Poor Sunday service	1
Too few buses	1
Reckless driving	1
Total	8

Of the 50 bus users interviewed, 41 (82%) had no complaints whatsoever about the bus service on this route.

To gauge the significance the difference in bus and taxi fares has on the modal choice of its users, one of the questions asked whether the user would move to the other mode should the alternative mode's fare become cheaper than the mode which they are presently using.

Of the 81 taxi users interviewed, 62 (77%) indicated that they would continue to use the taxi despite the fact that the bus may be cheaper. The remaining 23% would move to using the buses if the bus fares were much cheaper than the taxi fares.

With the 50 bus users interviewed on the other hand, only 9 (18%) indicated that they would stop using the bus and move to taxis if the taxi fare was much cheaper than that of the bus.

One can therefore conclude that of all the 131 bus and taxi users interviewed on this route, 28 (21%) are users that base their modal choice purely on economic reasons, ie. they choose to use the mode with the lowest fare.

# Appendix J

**Modal Split Survey Results**  
(71 routes)

University of Cape Town

**1988**

## MODAL SPLIT SURVEY RESULTS (1988)

71 Routes

REF	SPOINT	DESTINATION	DISTANCE	HISTORY	TAXI	BUS	XTAXI	TFARE	BFARE	BCLIP
57	Athlone	Bonteheuwel	10.00	2	111	134	45	0.70	0.85	0.00
148	Athlone	Bridgetown	4.30	18	791	23	97	0.60	0.90	0.00
149	Athlone	Hanover Park	6.50	6	263	107	71	0.70	0.80	0.00
85	Athlone	Heideveld	6.70	7	81	165	33	0.70	0.90	0.00
150	Athlone	Langa	4.50	6	293	44	87	0.70	0.75	0.00
151	Athlone	Manenberg	8.80	10	221	155	59	0.80	0.88	0.00
152	Athlone	Nyanga-Guguletu	13.00	5	829	39	96	0.70	0.98	0.00
153	Bellville	Bellville South/Glenhav	3.00	3	893	74	92	0.50	0.55	0.45
68	Bellville	Crossroads	15.00	16	304	453	40	0.90	0.92	0.57
154	Bellville	Durbanville	11.00	5	194	93	68	0.80	1.05	0.71
8	Bellville	Khyalitsa	20.00	4	539	1472	27	1.50	1.90	0.57
71	Bellville	Kraaifontein	10.50	7	162	20	89	1.20	1.20	0.74
9	Bellville	Nyanga	13.70	16	683	686	50	0.90	0.92	0.57
10	Bellville	Sarepta/Kuilsriver	8.50	7	421	12	97	0.70	0.88	0.62
11	City	Atlantis	47.00	10	220	348	39	3.00	4.18	1.74
79	City	Factreton	10.60	1	289	628	32	0.80	1.15	0.64
51	City	Hanover Park	15.80	7	549	91	86	0.60	1.95	0.93
58	City	Mitchells Plain	25.80	5	295	503	37	2.00	2.90	1.59
55	City	Mowbray	6.20	2	442	813	35	0.50	0.60	0.50
72	City	Nyanga	15.50	1	606		100	1.50		0.00
52	City	Sea Point	6.20	2	502	616	45	0.60	0.80	0.64
53	Claremont	Guguletu (B=10%)	15.50	10	389	50	89	0.90	1.10	0.69
12	Claremont	Hanover Park	7.70	9	408	155	72	0.70	0.80	0.63
13	Claremont	Khayelitsha	20.00	2	177	874	17	1.20	2.05	0.69
102	Claremont	Mitchells Plain	20.00	0.4	16	338	5	1.50	1.96	1.04
14	Claremont	Nyanga (B=90%)	17.50	10	336	449	43	0.90	1.10	0.69
15	Elsies River	Belhar	9.50	6	324	124	72	1.10	1.25	0.80
19	Elsies River	Bishop Lavis - Netreg	10.00	7	1204	231	84	0.70	0.88	0.70
17	Elsies River	Eureka	5.00	13	676		100	0.60	0.55	0.51
18	Elsies River	Matroosfontein	6.00	13	1004	174	85	0.60	0.85	0.63
74	Elsies River	Norwood	2.50	4	497	215	70	0.50	0.50	0.00
20	Elsies River	Nyanga	12.70	11	299	349	46	0.90	0.92	0.60
21	Fish Hoek	Ocean View	12.70	19	621	405	61	0.70	0.88	0.65
22	Gatesville	Nyanga - Guguletu	8.00		391		100			0.00
23	Goodwood Station	Bothasig	11.80		15		100			0.00
24	Langa (Jakkalsvlei)	Nyanga	10.50		1370		100			0.00
25	Lansdowne	Hanover Park	3.00	16	830	75	92	0.50	0.62	0.00
70	Lansdowne Rd (Nyanga)	Khyalitsa	10.00		1099		100			0.00
64	Lentegeur	Johannes Meintjies	2.50	2.5	397	205	66	0.40	0.40	0.00
26	Mitchells Plain T/C	Beacon Valley	2.50	5	1599	466	77	0.40	0.50	0.00
65	Mitchells Plain T/C	Hanover Park	17.10	5	219	1076	17	1.20	0.95	0.63
77	Mitchells Plain T/C	Johannes Meintjies	4.80	2	156	94	62	0.40	0.50	1.06
31	Mitchells Plain T/C	Rocklands	4.00	9.5	1402	76	95	0.40	0.50	0.45
29	Mitchells Plain T/C	Tafelsig	4.00	6	2813	698	80	0.50	0.50	0.00
30	Mitchells Plain T/C	Westridge	4.00	9.5	735		100	0.40	0.50	0.00
66	Mitchells Plain T/C	Wynberg	26.00	1	118	364	24	1.50	2.05	1.06
61	Mowbray	Bonteheuwel	13.50	2	214	587	27	0.90	1.00	0.69
60	Mowbray	Heideveld	10.10	2	135	1368	9	0.90	1.00	0.69
75	Mowbray	Khayelitsha	24.00	2	179	227	44	1.50	2.00	0.65
12	Mowbray	Langa (Normal)	7.80	12	1064	37	97	0.50	0.60	0.59
62	Mowbray	Manenberg	13.60	2	338	776	30	0.90	1.00	0.69
33	Mowbray	Nyanga	16.30	2	663	147	82	0.90	1.10	0.65

REF	SPOINT	DESTINATION	DISTANCE	HISTORY	TAXI	BUS	XTAXI	TFARE	BFARE	BCLIP
35	Mutual	Langa	6.00	11	253	0	100	0.60	0.80	0.52
37	Parow	Belhar	8.70	11	598	74	89	1.00	1.25	0.86
76	Parow	Norwood (B=50%)	5.50	3	216	85	72	0.60	0.80	0.00
38	Parow	Ravensmead	2.30	18	471	4	99	0.50	0.65	0.00
39	Parow	Uitsig (B=50%)	5.00	16	1496	86	95	0.40	0.62	0.70
40	Plumstead	Lotus River	8.50		28		100			0.00
41	Retreat	12th Avenue	2.50	18	781	10	99	0.50	0.88	0.68
42	Retreat	Concert Boulevard	2.60	18	2142	397	84	0.40	0.40	0.40
43	Steenberg	Lavender Hill	2.30	30	1470	0	100	0.40	0.80	0.58
44	Wynberg	Grassy Park (B=75%)	8.50	16	1460	281	84	0.60	0.80	0.68
46	Wynberg	Hanover Park	7.80	15	536	48	92	0.60	0.88	0.65
47	Wynberg	Houtbay	17.50	5	184	111	62	1.20	1.70	1.00
138	Wynberg	Khyalitsha	33.30	2	296	1058	22	1.50	2.05	0.67
50	Wynberg	Lotus River (De Wet Rd)	8.00	14	1338	81	94	0.60	0.88	0.68
45	Wynberg	Lotus River(via Ottery)	8.00	15	412	274	60	0.60	0.88	0.68
48	Wynberg	Nyanga & Guguletu	13.10	8	1204	423	74	0.90	1.10	0.69
49	Wynberg	Parkwood (B=25%)	4.20	19	1058	94	92	0.50	0.60	0.69
78	Wynberg	Tokai-Constantia	7.60	1	0	20	0	0.70	0.88	0.68
54	Wynberg	Town Centre	26.00	4	463	637	42	1.50	2.16	1.06

#### COLUMN HEADING ABBREVIATIONS

- REF : Reference number
- SPOINT : Survey Point (rank where departures/arrivals were recorded)
- DISTANCE : Distance of the route (in kilometers)
- HISTORY : The age of the taxi route
- TAXI : Number of taxi passenger departures (total for the 3 hour PM peak period)
- BUS : Number of bus passenger departures
- XTAXI : Percentage taxi share of the bus-taxi modal split
- TFARE : Taxi Fare (In Rand)
- BFARE : Bus Fare (cash/single trip fare) (In Rand)
- BCLIP : Subsidised clipcard fare (In Rand/single trip). Where 0.00 is indicated in this column, no clipcard facility is available on the route.

Note that where "(B= %)" has been indicated under the DESTINATION column, it means that the percentage indicated, is the estimated proportion of the total number of bus passenger alighting at that destination, e.g. on the Wynberg-Grassy Park bus route an estimated 25% of the passengers who boarded this bus in Wynberg, alight at the Parkwood bus stop on this route; the remaining 75% alight in Grassy Park.

On the City-Nyanga route, no bus service operates.

On route no.s 22,23,24, & 70, the Modal Split observations were not recorded. Here the taxi passenger departures were taken from the MTP Kombi-taxi Survey (annual) which were conducted about a month before our survey.

# Appendix K

**Daily Bus and Taxi Passenger volumes on  
each of the 5 representative routes**

*Impact Quantification (Chapter 7)*

University of Cape Town

TABLE K-1 : CITY - ATLANTIS ROUTE

Peak Period	Taxi	Bus
PM Peak (3 hour)	220	348
PM Peak (Contra)	45	71
OFF Peak	294	275
OFF Peak (Contra)	147	138
Total	706	832

TABLE K-2 : CITY - MOWBRAY ROUTE

Peak Period	Taxi	Bus
AM Peak (3 hour)	538	1427
AM Peak (Contra)	42	334
PM Peak (3 hour)	442	813
PM Peak (Contra)	124	138
OFF Peak	319	888
OFF Peak (Contra)		
Total	1465	3600

TABLE K-3 : CITY - SEA POINT ROUTE

Peak Period	Taxi	Bus
AM Peak (3 hour)	1293	930
AM Peak (Contra)	789	605
PM Peak (3 hour)	959	862
PM Peak (Contra)	502	616
OFF Peak	453	886
OFF Peak (Contra)	560	696
Total	4556	4595

TABLE K-4 : LANGA - MOWBRAY ROUTE

Peak Period	Taxi	Bus
AM Peak (3 hour)	989	70
PM Peak (3 hour)	1019	35
PM Peak (Contra)	45	0
OFF Peak	2499	28
OFF Peak (Contra)	252	24
Total	4804	157

TABLE K-5 : RETREAT ROUTE

Peak Period	Taxi	Bus
AM Peak (3 hour)	3364	322
AM Peak (Contra)	101	21
PM Peak (3 hour)	2142	397
PM Peak (Contra)	115	34
OFF Peak	363	68
OFF Peak (Contra)	544	83
Total	6629	925

# Appendix L

## Classification of Routes (71 routes)

*Impact Quantification (Chapter 7)*

University of Cape Town

MODAL SPLIT SURVEY RESULTS (1988)  
CLASSIFICATION OF 71 ROUTES

REF	SPOINT	DESTINATION	DISTANCE	HISTORY	XTAXI	TRAIN	REP
57	Athlone	Bonteheuwel	10.00	2	45	I	L
148	Athlone	Bridgetown	4.30	18	97	N	S
149	Athlone	Hanover Park	6.50	6	71	N	S
85	Athlone	Heideveld	6.70	7	33	N	M
150	Athlone	Langa	4.50	6	87	N	S
151	Athlone	Manenberg	8.80	10	59	I	L
152	Athlone	Nyanga-Guguletu	13.00	5	96	N	S
153	Bellville	Bellville South/Glenhaven	3.00	3	92	N	R
68	Bellville	Crossroads	15.00	16	40	N	S
154	Bellville	Durbanville	11.00	5	68	N	S
8	Bellville	Khyalitsha	20.00	4	27	I	L
71	Bellville	Kraaifontein	10.50	7	89	D	M
9	Bellville	Nyanga	13.70	16	50	N	S
10	Bellville	Sarepta/Kuilsriver	8.50	7	97	D	M
11	City	Atlantis	47.00	10	39	N	A
79	City	Factreton	10.60	1	32	D	M
51	City	Hanover Park	15.80	7	86	N	S
58	City	Mitchells Plain	25.80	5	37	D	M
55	City	Mowbray	6.20	2	35	D	M
72	City	Nyanga	15.50	1	100	D	M
52	City	Sea Point	6.20	2	45	N	S
53	Claremont	Guguletu (B=10%)	15.50	10	89	I	L
12	Claremont	Hanover Park	7.70	9	72	N	S
13	Claremont	Khayelitsha	20.00	2	17	I	L
102	Claremont	Mitchells Plain	20.00	0.4	5	N	A
14	Claremont	Nyanga (B=90%)	17.50	10	43	I	L
15	Elsies River	Belhar	9.50	6	72	N	S
19	Elsies River	Bishop Lavis - Netreg	10.00	7	84	N	S
17	Elsies River	Eureka	5.00	13	100	N	S
18	Elsies River	Matroosfontein	6.00	13	85	N	S
74	Elsies River	Norwood	2.50	4	70	N	R
20	Elsies River	Nyanga	12.70	11	46	I	L
21	Fish Hoek	Ocean View	12.70	19	61	N	S
22	Gatesville	Nyanga - Guguletu	8.00		100	N	S
23	Goodwood Station	Bothasig	11.80		100	N	S
24	Langa (Jakkalsvlei)	Nyanga	10.50		100	D	M
25	Lansdowne	Hanover Park	3.00	16	92	N	R
70	Lansdowne Rd (Nyanga)	Khyalitsha	10.00		100	I	L
64	Lentegeur	Johannes Meintjies	2.50	2.5	66	N	R
26	Mitchells Plain T/C	Beacon Valley	2.50	5	77	N	R
65	Mitchells Plain T/C	Hanover Park	17.10	5	17	N	S
77	Mitchells Plain T/C	Johannes Meintjies	4.80	2	62	N	S
31	Mitchells Plain T/C	Rocklands	4.00	9.5	95	N	S
29	Mitchells Plain T/C	Tafelsig	4.00	6	80	N	S
30	Mitchells Plain T/C	Westridge	4.00	9.5	100	N	S
66	Mitchells Plain T/C	Wynberg	26.00	1	24	N	A
61	Mowbray	Bonteheuwel	13.50	2	27	I	L
60	Mowbray	Heideveld	10.10	2	9	I	L
75	Mowbray	Khayelitsha	24.00	2	44	I	L
12	Mowbray	Langa (Normal)	7.80	12	97	I	L
62	Mowbray	Manenberg	13.60	2	30	I	L
33	Mowbray	Nyanga	16.30	2	82	I	L

REF	SPOINT	DESTINATION	DISTANCE	HISTORY	%TAXI	TRAIN	REP
35	Mutual	Langa	6.00	11	100	D	M
37	Parow	Belhar	8.70	11	89	D	M
76	Parow	Norwood (B=50%)	5.50	3	72	N	S
38	Parow	Ravensmead	2.30	18	99	N	R
39	Parow	Uitsig (B=50%)	5.00	16	95	N	S
40	Plumstead	Lotus River	8.50		100	N	S
41	Retreat	12th Avenue	2.50	18	99	N	R
42	Retreat	Concert Boulevard	2.60	18	84	N	R
43	Steenberg	Lavender Hill	2.30	30	100	N	R
44	Wynberg	Grassy Park (B=75%)	8.50	16	84	N	S
46	Wynberg	Hanover Park	7.80	15	92	N	S
47	Wynberg	Houtbay	17.50	5	62	N	S
138	Wynberg	Khyalitsha	33.30	2	22	N	A
50	Wynberg	Lotus River (De Wet Rd)	8.00	14	94	N	S
45	Wynberg	Lotus River(via Ottery)	8.00	15	60	N	S
48	Wynberg	Nyanga & Guguletu	13.10	8	74	N	S
49	Wynberg	Parkwood (B=25%)	4.20	19	92	N	S
78	Wynberg	Tokai-Constantia	7.60	1	0	N	S
54	Wynberg	Town Centre	26.00	4	42	N	A

#### COLUMN HEADING ABBREVIATIONS

REF : Reference number

SPOINT : Survey/observation point

DISTANCE: Distance of route (in kilometers)

%TAXI : Percentage taxi share in taxi-bus modal split

TRAIN : Whether a train service operates on the route

D = Direct train service

I = Indirect train service

N = No train service

REP : Route representation

M = Mowbray-City route category

S = City - Sea Point route category

R = Retreat route category

A = City-Atlantis route category

L = Langa-Mowbray route category

# Appendix M

**Passenger Trips lost by each mode on  
each of the 71 routes during the  
2.5 hour and 3 hour PM peaks**

***Impact Quantification (Chapter 7)***

University of Cape Town

IMPACT QUANTIFICATION RESULTS  
2.5 hour PM Peak : Passenger Trips Lost

REF	SPOINT	DESTINATION	R	TAXI2	TCONT	TOTPEAK2	BIMPAK2	TIMPAK2	CIMPAK2	WIMPAK2
57	Athlone	Bonteheuwel	L	103	22	125	39	68	18	0
148	Athlone	Bridgetown	S	749	72	821	739	0	82	0
149	Athlone	Hanover Park	S	247	12	259	233	0	26	0
85	Athlone	Heideveld	M	66	4	70	45	21	4	0
150	Athlone	Langa	S	264	3	267	241	0	27	0
151	Athlone	Manenberg	L	213	15	228	71	123	33	0
152	Athlone	Nyanga-Guguletu	S	744	16	760	684	0	76	0
153	Bellville	Bellville South/Glenhav	R	805	115	920	534	0	205	182
68	Bellville	Crossroads	S	268	33	301	271	0	30	0
154	Bellville	Durbanville	S	178	548	726	654	0	73	0
8	Bellville	Khyalitsha	L	483	47	530	166	287	77	0
71	Bellville	Kraaifontein	M	148	24	172	110	52	10	0
9	Bellville	Nyanga	S	636	71	707	637	0	71	0
10	Bellville	Sarepta/Kuilsriver	M	392	76	468	300	141	26	0
11	City	Atlantis	A	194	40	234	199	0	34	0
79	City	Factreton	M	264	3	267	172	81	15	0
51	City	Hanover Park	S	506	30	536	483	0	54	0
58	City	Mitchells Plain	M	252	0	252	162	76	14	0
55	City	Mowbray	M	387	93	480	308	145	27	0
72	City	Nyanga	M	606	59	665	427	201	38	0
52	City	Sea Point	S	425	1367	1792	1613	0	179	0
53	Claremont	Guguletu (B=10%)	L	389	21	410	128	222	60	0
12	Claremont	Hanover Park	S	408	26	434	391	0	43	0
13	Claremont	Khayelitsha	L	177	1	178	56	97	26	0
102	Claremont	Mitchells Plain	A	16	0	16	14	0	2	0
14	Claremont	Nyanga (B=90%)	L	336	0	336	105	182	49	0
15	Elsies River	Belhar	S	298	56	354	319	0	35	0
19	Elsies River	Bishop Lavis - Netreg	S	1123	103	1226	1104	0	123	0
17	Elsies River	Eureka	S	676	23	699	629	0	70	0
18	Elsies River	Matroosfontein	S	958	59	1017	915	0	102	0
74	Elsies River	Norwood	R	481	13	494	287	0	110	98
20	Elsies River	Nyanga	L	266	31	297	93	161	43	0
21	Fish Hoek	Ocean View	S	555	89	644	579	0	64	0
22	Gatesville	Nyanga - Guguletu	S	391	9	400	360	0	40	0
23	Goodwood Station	Bothasig	S	15	119	134	121	0	13	0
24	Langa (Jakkalsvlei)	Nyanga	M	1370	619	1989	1276	600	113	0
25	Lansdowne	Hanover Park	R	802	39	841	488	0	187	166
70	Lansdowne Rd (Nyanga)	Khyalitsha	L	1099	816	1915	598	1037	279	0
64	Lentegeur	Johannes Meintjies	R	397	21	418	243	0	93	83
26	Mitchells Plain T/C	Beacon Valley	R	1509	283	1792	1040	0	398	354
65	Mitchells Plain T/C	Hanover Park	S	219	20	239	215	0	24	0
77	Mitchells Plain T/C	Johannes Meintjies	S	142	13	155	140	0	16	0
31	Mitchells Plain T/C	Rocklands	S	1320	215	1535	1381	0	153	0
29	Mitchells Plain T/C	Tafelsig	S	2630	327	2957	2662	0	296	0
30	Mitchells Plain T/C	Westridge	S	693	44	737	663	0	74	0
66	Mitchells Plain T/C	Wynberg	A	99	143	242	207	0	36	0
61	Mowbray	Bonteheuwel	L	198	4	202	63	110	29	0
60	Mowbray	Heideveld	L	119	56	175	55	95	26	0
75	Mowbray	Khayelitsha	L	125	3	128	40	69	19	0
12	Mowbray	Langa (Normal)	L	957	95	1052	329	570	153	0
62	Mowbray	Manenberg	L	305	71	376	117	203	55	0
33	Mowbray	Nyanga	L	599	50	649	203	352	95	0

REF	SPOINT	DESTINATION	R	TAXI2	TCONT	TOTPEAK2	BIMPAK2	TIMPAK2	CINPAK2	WIMPAK2
35	Mutual	Langa	M	220	30	250	161	76	14	0
37	Parow	Belhar	M	567	37	604	388	182	34	0
76	Parow	Norwood (B=50%)	S	185	6	191	172	0	19	0
38	Parow	Ravensmead	R	411	47	458	266	0	102	90
39	Parow	Uitsig (B=50%)	S	1402	243	1645	1480	0	164	0
40	Plumstead	Lotus River	S	28	3	31	28	0	3	0
41	Retreat	12th Avenue	R	781	14	795	461	0	177	157
42	Retreat	Concert Boulevard	R	2030	107	2137	1240	0	475	422
43	Steenberg	Lavender Hill	R	1470	58	1528	887	0	340	302
44	Wynberg	Grassy Park (B=75%)	S	1390	134	1524	1371	0	152	0
46	Wynberg	Hanover Park	S	494	56	550	495	0	55	0
47	Wynberg	Houtbay	S	184	240	424	382	0	42	0
138	Wynberg	Khyalitsha	A	296	6	302	257	0	45	0
50	Wynberg	Lotus River (De Wet Rd)	S	1270	181	1451	1306	0	145	0
45	Wynberg	Lotus River (via Ottery)	S	398	18	416	374	0	42	0
48	Wynberg	Nyanga & Guguletu	S	1204	23	1227	1104	0	123	0
49	Wynberg	Parkwood (B=25%)	S	972	74	1046	941	0	105	0
78	Wynberg	Tokai-Constantia	S	0	0	0	0	0	0	0
54	Wynberg	Town Centre	A	435	15	450	384	0	66	0
TOTALS						47652	34600	5152	6047	1853

COLUMN HEADING ABBREVIATIONS

REF	: Reference number of route
SPOINT	: Survey/observation point
R	: Route Category (see Appendix L)
TAXI2	: Number of taxi passenger departures during the 2.5 hour PM peak period
TCONT	: Contra flow of taxi passengers for the same observation period
TOTPEAK2	: Total number of taxi passenger trips (TAXI2 + TCONT)
BIMPAK2	: Number of bus passenger trips converted to taxi trips (2.5 hour PM peak only)
TIMPAK2	: Number of train passenger trips converted to taxi trips (2.5 hour PM peak only)
CINPAK2	: Number of private car passenger trips converted to taxi trips (2.5 hour peak)
WIMPAK2	: Number of walking trips converted to taxi trips (2.5 hour peak)

IMPACT QUANTIFICATION RESULTS  
 Passenger Trips Lost during 3 hour PM Peak

REF	SPOINT	DESTINATION	REP	TAXI	TCONT	TOTPEAK	BIMPAKP	TIMPAKP	CIMPAKP	WIMPAKP
57	Athlone	Bonteheuwel	L	111	23	134	42	73	20	0
148	Athlone	Bridgetown	S	791	76	867	780	0	87	0
149	Athlone	Hanover Park	S	263	12	275	248	0	28	0
85	Athlone	Heideveld	M	81	5	86	55	26	5	0
150	Athlone	Langa	S	293	4	297	267	0	30	0
151	Athlone	Manenberg	L	221	15	236	74	128	34	0
152	Athlone	Nyanga-Guguletu	S	829	18	847	762	0	85	0
153	Bellville	Bellville South/Glenhav	R	893	128	1021	592	0	227	202
68	Bellville	Crossroads	S	304	37	341	307	0	34	0
154	Bellville	Durbanville	S	194	598	792	712	0	79	0
8	Bellville	Khyalitsa	L	539	53	592	185	321	86	0
71	Bellville	Kraaifontein	M	162	26	188	121	57	11	0
9	Bellville	Nyanga	S	683	77	760	684	0	76	0
10	Bellville	Sarepta/Kuilsriver	M	421	82	503	322	152	28	0
11	City	Atlantis	A	220	45	265	226	0	39	0
79	City	Factreton	M	289	4	293	188	88	17	0
51	City	Hanover Park	S	549	33	582	524	0	58	0
58	City	Mitchells Plain	M	295	0	295	189	89	17	0
55	City	Mowbray	M	442	106	548	352	166	31	0
72	City	Nyanga	M	606	59	665	427	201	38	0
52	City	Sea Point	S	502	1615	2117	1905	0	212	0
53	Claremont	Guguletu (B=10%)	L	389	21	410	128	222	60	0
12	Claremont	Hanover Park	S	408	26	434	391	0	43	0
13	Claremont	Khayelitsha	L	177	1	178	56	97	26	0
102	Claremont	Mitchells Plain	A	16	0	16	14	0	2	0
14	Claremont	Nyanga (B=90%)	L	336	0	336	105	182	49	0
15	Elsies River	Belhar	S	324	61	385	347	0	39	0
19	Elsies River	Bishop Lavis - Netreg	S	1204	111	1315	1183	0	131	0
17	Elsies River	Eureka	S	676	23	699	629	0	70	0
18	Elsies River	Matroosfontein	S	1004	62	1066	959	0	107	0
74	Elsies River	Norwood	R	497	14	511	296	0	114	101
20	Elsies River	Nyanga	L	299	35	334	104	181	49	0
21	Fish Hoek	Ocean View	S	621	99	720	648	0	72	0
22	Gatesville	Nyanga - Guguletu	S	391	9	400	360	0	40	0
23	Goodwood Station	Bothasig	S	15	119	134	121	0	13	0
24	Langa (Jakkalsvlei)	Nyanga	M	1370	619	1989	1276	600	113	0
25	Lansdowne	Hanover Park	R	830	40	870	505	0	193	172
70	Lansdowne Rd (Nyanga)	Khyalitsa	L	1099	816	1915	598	1037	279	0
64	Lentegeur	Johannes Meintjies	R	397	21	418	243	0	93	83
26	Mitchells Plain T/C	Beacon Valley	R	1599	300	1899	1102	0	422	375
65	Mitchells Plain T/C	Hanover Park	S	219	20	239	215	0	24	0
77	Mitchells Plain T/C	Johannes Meintjies	S	156	14	170	153	0	17	0
31	Mitchells Plain T/C	Rocklands	S	1402	228	1630	1467	0	163	0
29	Mitchells Plain T/C	Tafelsig	S	2813	350	3163	2847	0	316	0
30	Mitchells Plain T/C	Westridge	S	735	46	781	703	0	78	0
66	Mitchells Plain T/C	Wynberg	A	118	171	289	246	0	43	0
61	Mowbray	Bonteheuwel	L	214	5	219	68	118	32	0
60	Mowbray	Heideveld	L	135	64	199	62	108	29	0
75	Mowbray	Khayelitsha	L	179	4	183	57	99	27	0
12	Mowbray	Langa (Normal)	L	1064	106	1170	366	634	171	0
62	Mowbray	Manenberg	L	338	78	416	130	226	61	0
33	Mowbray	Nyanga	L	663	55	718	224	389	105	0

REF	SPOINT	DESTINATION	REP	TAXI	TCONT	TOTPEAK	BIMPAKP	TIMPAKP	CIMPAKP	WIMPAKP
35	Mutual	Langa	M	253	35	288	185	87	16	0
37	Parow	Belhar	M	598	39	637	409	192	36	0
76	Parow	Norwood (B=50%)	S	216	7	223	200	0	22	0
38	Parow	Ravensmead	R	471	54	525	304	0	117	104
39	Parow	Uitsig (B=50%)	S	1496	259	1755	1579	0	175	0
40	Plumstead	Lotus River	S	28	3	31	28	0	3	0
41	Retreat	12th Avenue	R	781	14	795	461	0	177	157
42	Retreat	Concert Boulevard	R	2142	113	2255	1309	0	501	445
43	Steenberg	Lavender Hill	R	1470	58	1528	887	0	340	302
44	Wynberg	Grassy Park (B=75%)	S	1460	140	1600	1440	0	160	0
46	Wynberg	Hanover Park	S	536	60	596	537	0	60	0
47	Wynberg	Houtbay	S	184	240	424	382	0	42	0
138	Wynberg	Khyalitsha	A	296	6	302	257	0	45	0
50	Wynberg	Lotus River (De Wet Rd)	S	1338	191	1529	1376	0	153	0
45	Wynberg	Lotus River(via Ottery)	S	412	18	430	387	0	43	0
48	Wynberg	Nyanga & Guguletu	S	1204	23	1227	1104	0	123	0
49	Wynberg	Parkwood (B=25%)	S	1058	80	1138	1024	0	114	0
78	Wynberg	Tokai-Constantia	S	0	0	0	0	0	0	0
54	Wynberg	Town Centre	A	463	16	479	409	0	71	0
TOTALS						50674	36846	5472	6416	1940

COLUMN HEADING ABBREVIATIONS

Please refer to page M-2 (note that the abbreviations are the same except for the fact that the above figures are for the 3 hour PM peak)