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TITLE The initial effects of introducing commuter omnibus services in Harare, Zimbabwe

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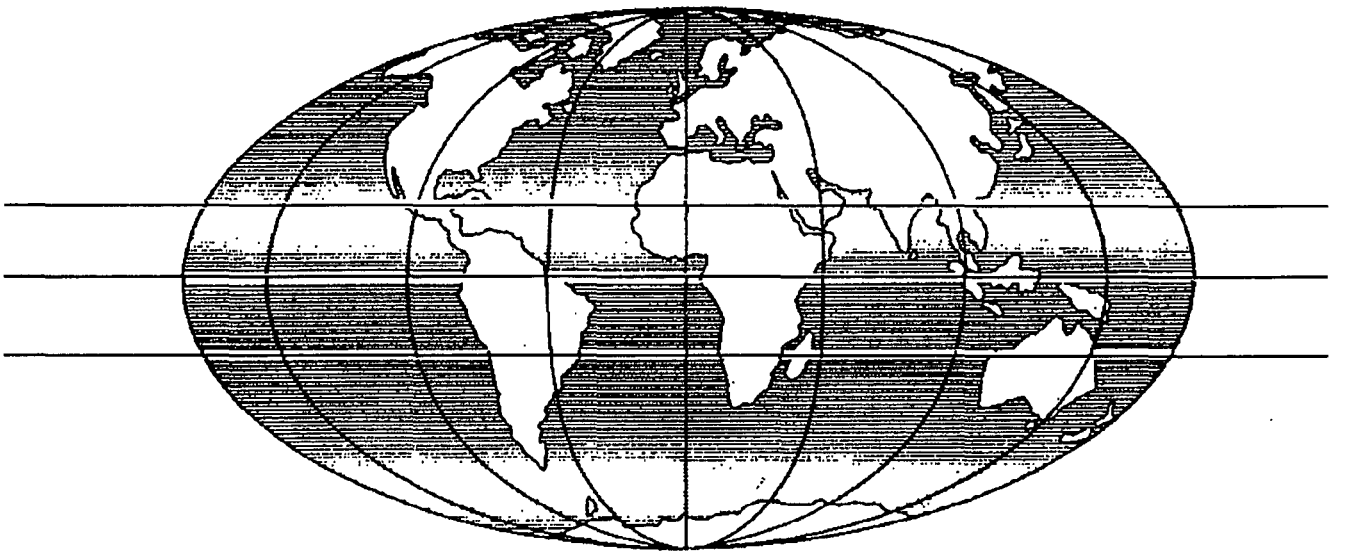

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THE INITIAL EFFECTS OF INTRODUCING COMMUTER OMNIBUS SERVICES IN HARARE, ZIMBABWE

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ABSTRACT

Over recent years, a major topic of discussion within the bus industry in both the developed and developing worlds has been the desirability or otherwise of regulating the supply and provision of stage bus services. Proponents of deregulation or free competition seek the complete relaxation of controls, arguing that this induces an increase in, and diversity of, the provision of market orientated services best suited to meet demand characteristics. Opponents of deregulation seek varying levels of control and government involvement, believing market forces may lead to increasing imperfection and imbalances in the provision of services. In addition, opponents of deregulation believe that this leads to a wasteful use of scarce resources with environmental disbenefits.

This paper adds to the debate by examining the effects of the Government of Zimbabwe's decision in August 1993 to partially deregulate the sector by allowing the introduction of privately operated commuter omnibuses to compete with the existing stage bus operator. Clearly it is too soon to make a definitive assessment, that is only possible after a much longer time period has evolved. However, an initial assessment has been made by comparing factors and case study material 'pre' and 'post' August 1993.

1. INTRODUCTION

There is continuing debate in both the developed and developing world on the role of government in the ownership and regulation of stage bus services. A wide spectrum of ownership exists in cities throughout the world, ranging from completely nationalised public sector companies (parastatals), to the private sector with various permutations in between. In major Third World cities international aid agencies such as the World Bank have for some time, encouraged and supported the provision of urban stage bus services by private operators within a less regulated environment (World Bank 1986). Increasingly, the trend has been of a gradual move to the private sector from state ownership. Recently this trend has accelerated throughout the developing world as governments have implemented Economic Structural Adjustment Programmes (ESAP) with assistance from the International Monetary Fund and the World Bank.

The World Bank in its World Development Report for 1994 on Infrastructure for Development (World Bank 1994) suggests that market forces and competition can improve the production and delivery of infrastructure services. It cites the example of urban transport in Sri Lanka, where in the Bank's view, deregulation "permitted the profitable operation of smaller vehicles by small scale entrepreneurs, substantially improving service availability".

The United Kingdom, Chile and Sri Lanka are frequently cited by proponents and opponents of deregulation since the urban bus sector was deregulated by their governments in 1985/6, 1979 and 1979 respectively. Benefits of the deregulation process cited by the

World Bank (1994) Gomez-Ibanez and Meyer (1990) and Gwilliam (1989) using the UK and Sri Lanka as examples include:

- a reduction in operational costs
- an increase in productivity and an increase in market orientated services

The latter, it is suggested leads to an expansion of passenger carrying capability, increased services, and frequency and hence increased comfort for passengers. As in Sri Lanka and Chile, minibus operations have flourished in the UK following deregulation (Watts et al 1990, White et al 1992) in 1985/6. In Kuala Lumpur where minibuses were introduced in 1976, Walters (1979) suggested that the Malaysian Government hoped to expand fleet capacity and reduce congestion by inducing motorists to leave their cars at home. In Chile, however, Darbera (1993) notes that 10 years after deregulation in Santiago "the impact has been exactly the opposite of what was expected: fares have risen and the diversity of services reduced". Fernandez and de Cea (1985) however, argued that the Chilean experience produced a wider range of services than before and increased the participation of small vehicles but that operational costs had increased by 20 percent and not decreased. Darbera (1993) suggests that the deregulation process has "led to an unstable market with wide over-capacity, a tripling of fares and a decline in passenger numbers". In addition, the expansion of the fleet has "led to environmental disbenefits, traffic congestion and air pollution". Fernandez and de Cea (1989) also noted that road congestion had increased due to the expansion in the bus fleet. Meyer and Gomez-Ibanez (1993) are 'unclear' as to whether "privatization may have intensified the road safety problem and traffic congestion in the developing world".

White (1989) analysed the UK sector following deregulation and observed an unexpected decline in bus patronage despite improved service levels. Dickson (1994) argues that deregulation in South Africa "has resulted in the deterioration of urban transit to levels that are nothing short of chaos" - ie a reduction in bus and train commuter frequencies, cessation of evening and weekend services and the closure of services in some areas. Dickson also suggests that minibuses, which constitute 3.5 percent of the total vehicle fleet, account for 13 percent of the annual fatal accidents costing the country $70 million annually.

In Delhi, India, following the liberalisation of permits in 1988, private operators chose to operate only lucrative routes. Competition, it is alleged, led to a deterioration in drivers' behaviour with "drivers speeding to outrace other drivers, overloading of buses and jumping red lights to make as many trips as possible" (Herald Newspaper 1993). However, service frequency improved and passenger waiting times were reduced as a consequence of the liberalisation process.

Khezwana and Maunder (1993) suggested the need for 'quality' controls including fare ceilings within a deregulated market to ensure adequate service quality at affordable fares and sufficient vehicle and passenger safety levels. In addition, Khezwana and Maunder (1993) noted the need for 'quantity' controls, ie maximum vehicle numbers to ensure an adequate supply of capacity, thereby minimising the wasteful use of scarce resources by service duplication. Finally, Fairhurst (1992) concluded from an evaluation of the UK

sector that "on-the-road competition does not guard the public interest".

Proponents and opponents of deregulation can therefore select examples of possible benefits or disbenefits of the systems that have been deregulated. Despite its support for competition and a less regulated environment in the sector, the World Bank (1994) calls for "public scrutiny and regulation on passenger safety, service obligations and pollution" following "difficulties with route coordination, excessive congestion and unsafe driving practices in some instances". Armstrong Wright (1993) expressed similar sentiments with respect to safety and the environment.

Against this backdrop of potential benefits or disbenefits of deregulation, the Government of Zimbabwe partially deregulated the sector in August 1993 allowing privately operated 'commuter omnibuses' to compete with the existing stage bus operator, the Zimbabwe United Passenger Company (ZUPCO) in which it was the majority shareholder. Previously, ZUPCO enjoyed a monopoly in the provision of stage bus services in Harare the capital and other urban centres of the country.

This paper discusses the initial findings of the Government of Zimbabwe's decision to liberalise the sector and hence allow competition in the provision of passenger transport services in Harare. It is a summary of an already published report by Maunder and Mbare (1995).

2. BACKGROUND

Historically, the provision of conventional stage bus services in Harare can be divided into four distinct phases: (a) pre-1980; (b) 1980 to mid-1988; (c) mid-1988 to mid-1993; (d) post mid-1993. Prior to 1980, services were provided under a franchise agreement by a subsidiary of the UK United Transport Overseas Services Company. After independence in 1980, the Government of Zimbabwe regarded urban public transport services as a key sector of the economy, and acquired a 51 percent shareholding in ZUPCO during 1988.

Following Government participation, operational performance and service levels improved. However, the financial viability of ZUPCO's Harare Division deteriorated, constraining its ability to renew or expand its fleet during 1992/93 to keep abreast of demand. Finally, in August 1993, Government liberalised the sector by allowing privately operated commuter omnibuses to compete with ZUPCO.

Despite liberalising the sector, quality controls continue to be enacted by Government to ensure that vehicles are roadworthy and that passengers are insured. Operators are presently granted the routes they wish to operate by the Controller of Road Motor Transport and no quantity restrictions on the number of vehicles per route are enforced. Most routes operated are to or from high population density areas. Maximum fare levels for commuter omnibuses and for ZUPCO stage bus services are set by Government with fares being less for ZUPCO than for commuter ombibuses for similar distances.

3. FINDINGS

Following the liberalisation process, there has been a rapid growth in both the number and variety of commuter minibus fleet and the total public transport passenger carrying capability in Harare. Figure 1 illustrates the fleet growth and Figure 2 the passenger carrying capability of the commuter omnibus fleet

The fleet grew by 118 percent between January-September 1994 and by September, commuter omnibuses represented 30 percent of the public transport fleet. Carrying capability varies greatly but the majority of vehicles carry 11-15 passengers, though a few can transport up to 118 passengers.

Most (83 percent) of the commuter omnibuses operate to and from high population density areas while the remaining 17 percent operate in medium and low density areas. Following the introduction of commuter omnibuses, the number of routes operated has increased by approximately 10 percent. Not only have the number of routes increased but some have been extended to cover the peri-urban areas of Greater Harare. Most of the small capacity emergency taxis have been displaced and now concentrate on very short routes or provide intra-suburban services.

3.1. Modal Split

The results of limited household surveys undertaken throughout Harare between April '88 and September '94 to assess demand for travel by mode are shown in Table 1.

TABLE 1

Modal split throughout Harare (percentage)

Year	ZUPCO Stage Bus	Emergency Taxi	Commuter Omnibus	Meter taxi	Motor Car or Cycle	Cycle	Walk	Other	Total
1988	18	7	-	0.5	30	1.5	42	1	100
1991	24	10	-	1	16	1	45	3	100
1992	31	9	-	1	17	5	36	1	100
1993	23	18	1	1	16	3	38	-	100
1994(Jan)	25	18	4	1	14	3	35	-	100
1994(Sep)	20	9	16	0.5	14	5.5	34	1	100

Source: Transport Research Laboratory/Department of Physical Planning Home Interview Surveys 1988-1992 and the University of Zimbabwe/Transport Research Laboratory Surveys 1993-1994

The demand for ZUPCO stage bus services increased considerably between 1988 and 1992, whereas emergency taxi usage stabilised during that period. Personal car and motor cycle usage diminished over the same period due to increasing costs of owning and operating such vehicles, cycle usage, though small, also increased. By July '93 emergency taxi use had

doubled to 18 percent reflecting the substantial increase in illegal operations, whereas demand for ZUPCO bus services had declined to 23 percent of all trips. Travel on foot continued to be the major travel mode throughout the period.

During 1994, two surveys were undertaken the first 5 months after the legal introduction of commuter omnibuses and the second 13 months later. During the January '94 survey commuter omnibuses had 'captured' 4 per cent of the market, emergency taxis had stabilised at 18 percent and ZUPCO had marginally increased to 25 percent. By September '94 commuter omnibuses had increased their share to 16 percent, the emergency taxi share had diminished by half to 9 percent and the ZUPCO share had declined to 20 percent. Clearly the growth in the commuter omnibus fleet is a reflection of the growth in demand for such services. The modern commuter omnibus vehicles are clearly replacing the ageing emergency taxis as a principal travel mode in Harare.

3.2. Public Transport Provision, Capacity and Demand

In order to assess the global effects of the introduction of commuter omnibus services throughout Harare, surveys were conducted on all (thirteen) major road corridors on a single mid-week day during July '93 and January and September '94. All public passenger service vehicles (both legal and illegal) crossing the cordon between 06.00 hrs and 15.00 hrs. were monitored along with the carrying capacity of the vehicles and the number of passengers being carried.

Table 2 shows the individual number of vehicles observed during the three different survey periods. For ZUPCO vehicles the numbers operational were stable during all three surveys. As a consequence of the introduction of commuter omnibuses and rigorous police enforcement, the number of legal emergency taxis, meter taxis and commuter omnibuses increased dramatically whilst the number of pirate or illegally operated vehicles decreased over the period.

TABLE 2

Total number of individual public service vehicles operational in Harare along major corridors during July 1993 - September 1994

Mode	July 1993	Jan 1994	Sep 1994
ZUPCO Minibus	63	83	73
ZUPCO Conventional	669	669	666
Legal emergency taxi	55	933	861
Legal commuter omnibus	0	409	1155
Meter taxi	482	640	591
Pirate emergency taxi	2042	1255	696
Pirate commuter omnibus	341	70	84
TOTAL	3652	4059	4126

The most significant change was in respect of the number of legal commuter omnibuses which increased from 0 in July '93 to 1155 by September '94. In total, there were approximately 2100 emergency taxis operational in July '93 and this total had diminished to 1557 by September '94. In contrast, commuter omnibuses had increased from 341 pirate operated in July '93 to 1239 (both legal and pirate) in September '94 representing 30 percent of the total supply.

Figure 3 illustrates the total number of public service vehicles operational during the three survey periods. Between July '93 and January '94, the total increased from 3652 to 4059 and by September '94 to 4126. Overall, the total supply increased by 13 percent over the entire period monitored, whereas passenger carrying capacity as illustrated in Figure 4 increased by approximately 18 percent. The rapid growth in the fleet of commuter omnibuses led inevitably to these vehicles increasing their share of the total passenger carrying capacity to 24 percent of the total monitored capacity within 13 months of their introduction. Meanwhile the emergency taxi share of capacity declined from 16 to 10 percent and ZUPCO's capacity from 75 to 63 percent between July '93 and September '94.

As part of the monitoring exercise of the number of public transport service vehicles throughout Harare, an estimate was also obtained of the number of passengers transported. Figure 5 illustrates the total demand for all modes during the three survey periods. Demand increased substantially between July '93 and January '94 rising by 16 percent. However, between January '94 and September '94 (despite a considerable increase in capacity), demand increased by only an additional 0.6 percent.

3.3. Commuter Omnibus Accident Rates

Due to the high kilometrage operated, public transport service vehicles are frequently involved in road accidents. However due to traffic conditions within the central business district, traffic speeds within Harare are generally low and hence fatalities involving public transport passenger vehicles are minimal. Data on accidents involving commuter omnibuses reported to the Zimbabwe Republic Police (ZRP) were collated by the Traffic Police section for the period January - September '94.

The total number of accidents involving commuter omnibuses reported to the ZRP ranged by month from 18 to 40 and comprised 2.6 to 5.5 percent of all reported accidents. Where a mechanical fault is assumed to have been a contributory or major factor in the cause of an accident, vehicles are referred to the Ministry of Transport and Energy's Vehicle Inspection Department (VID) for a vehicle assessment. Of the 1440 vehicle referrals to the VID between January - September 1994, sixty five (4.5 percent) were commuter omnibuses and 36 (2.5 percent) were emergency taxis. Despite the fact that most emergency taxis are generally old vehicles and commuter omnibuses generally new or relatively new, the latter have a significantly higher number of referrals to the VID.

3.4. Corridor Results

In order to assess the precise impact on users of the introduction of commuter omnibus services in Harare, a detailed study was undertaken along a single corridor. As with the earlier surveys, observations were undertaken over three periods. The first phase (July 1993) representing the "before" commuter omnibus period, while the other two phases (January 1994 and September 1994) representing the "after" period. The corridor chosen was Mufakose/Kambuzuma to city. Mufakose and Kambuzuma are two high population density residential areas adjacent to each other, located to the south western side of the Harare CBD and are 14 kilometres and 11.5 kilometres from the city centre respectively.

Surveys were carried out to assess trends in public transport vehicle supply, average passenger waiting times and fares and passengers' perception of services and service levels. Supply levels were determined by monitoring the total number of public transport vehicles from 06.00 hours to 10.00 hours in the city centre direction. A total of 2000 passenger waiting times were observed and service headways monitored. Information on passenger perceptions of public transport services was obtained by conducting a 150 household survey in both residential areas 'pre' and 'post' August 1993. Finally, data on fares paid was obtained by requesting details of all journeys undertaken during a previous day as well as the fare paid for each trip.

3.4.1. Public Transport Supply, Capacity and Demand

The total number of public transport vehicles observed during the three survey periods are shown in Table 3.

TABLE 3

Trends in vehicle supply within the Kambuzuma/Mufokose-city corridor

Vehicle Type	July 1993	January 1994	September 1994
ZUPCO Buses	82	71	65
Emergency Taxis	123	240	98
Commuter Omnibuses	22*	71	161
Total	227	382	324

* Pirating and not officially recognised as legal.

The number of ZUPCO buses decreased by 21 percent over the period July '93 to September '94. Emergency taxis increased from 123 to 240 between July '93 and January '94 but then fell to 98 by September '94. Services have expanded as some emergency taxis have redeployed to operate short routes while others have started operating intra-suburban services following the introduction of commuter omnibuses. In July '93, there were 22 pirate commuter omnibuses operating along the corridor. By January '94 this number had increased to 71 and by September had risen to 161. While ZUPCO buses and emergency taxis have decreased in number over the survey period, commuter omnibuses have registered a

significant increase.

Overall, total public transport supply on the route corridor increased from 227 vehicles (July '93) to 382 vehicles (January '94) but then decreased to 324 (September '94). However, despite the decrease in the total number of operational public transport vehicles along the corridor between the last two surveys, the passenger carrying capacity increased as illustrated by Table 4. Whilst the total passenger carrying capacities of ZUPCO buses and emergency taxis decreased over the period, there was a substantial increase in capacity of commuter omnibuses. Hence the total passenger carrying capacity (all vehicles) increased from 8673 (July '93) to 10266 (September '94).

TABLE 4

Trends in passenger carrying capacity within the Kambuzuma/Mufakose-city corridor

Vehicle Type	July 1993	January 1994	September 1994
ZUPCO Buses	7262	6490	6360
Emergency Taxis	861	1680	686
Commuter Omnibuses	550	1775	3220
Total	8673	9945	10266

3.4.2. Passenger Waiting Times and Fares

A key measure of service quality is the average time a passenger has to wait before boarding a bus. Actual passenger waiting times were monitored to compare level of service changes before and after the introduction of commuter omnibuses. Figure 6 shows trends in average passenger waiting times and headways observed during the three survey periods. It is evident from Figure 6 that there has been a general decrease in the average waiting time for all public transport modes from 18 minutes (July '93) to 12 minutes (September '94), a reduction of 33 per cent. During the same period, the average service headway marginally decreased from 15.0 minutes (July '93) to 13.7 minutes (September '94). Passengers have clearly benefited from the increased quality of service which has resulted from the fleet expansion and increased passenger carrying capacity.

The household surveys revealed that passengers paid an average all-mode trip fare of 163 cents in July '93, 164 cents in January '94 and 175 cents in September '94. The increase in average fares in September '94 is partly due to ZUPCO fare increases during May 1994 but in addition, it was observed that some commuter omnibus drivers charged in excess of the authorised fare levels during peak periods. Thirdly, some drivers travelling to Mufakose from city cut the route into two ie city-Kambuzuma and then Kambuzuma-Mufakose resulting in passengers having to pay two fares for the single journey. Thus, despite Government control of fares, operators are able to circumvent the fare ceilings and charge what the market will tolerate at certain times of the day when demand is heavy.

3.4.3. Passenger Perception of Service Levels

The corridor residents interviewed in the household surveys were asked to rate the bus service under the categories of "very good", "good" "average" "poor" and "very poor". Prior to the introduction of commuter omnibuses 31 percent of respondents classified the service as 'poor' and 23 percent as 'average'. Thirteen months after the introduction of commuter omnibuses 'poor' had declined to 22 percent and 'average' had increased to 37 percent. In addition, those classifying the service as 'good' had increased from 8 percent to 24 percent. Clearly, most residents were of the opinion that the service had substantially improved following the Government decision to liberalise the public transport sector.

In response to a direct question as to whether the level of public transport had improved as a result of the introduction of commuter omnibuses, 78 percent of residents interviewed in January '94, answered 'yes' while 22 percent thought the service was unchanged. In the September '94 study, 81 percent were affirmative. It is evident that residents acknowledge improvements in service quality resulting from the introduction of commuter omnibuses and their opinions confirm the results of the service level study.

4. DISCUSSION

The introduction of commuter omnibuses in Harare was undertaken to liberalise the sector rather than to totally deregulate the market environment. Operators cannot legally compete on fares as these are officially determined and controlled by Government. However, at the moment, the system is flexible and due to lack of enforcement, commuter omnibus fares have tended to rise at certain times of the day when demand is high. Thus increased competition has not led to a reduction in fares as many proponents of deregulation have suggested.

Secondly, although operators have been granted routes of their choice, the present regulations stipulate that these should be designated by the Minister of Local Government, Rural and Urban Development. Plans are already under way, however, for the Local Authority to undertake this responsibility. Currently, the Local Authority is concerned that as the commuter omnibus fleet increases so a build-up in traffic congestion will ensue, exacerbated by a lack of off-street parking facilities for such vehicles in the city centre. As a consequence, the Local Authority is likely to limit the future growth of commuter omnibuses in the capital.

It is evident from the study that the introduction of commuter omnibuses has improved the level of service in Harare. The fleet expansion and increase in passenger carrying capacity has ensured that passenger waiting times have decreased, and the expansion of routes has benefited passengers who previously were not provided with a service. The redeployment of emergency taxis on shorter routes and intra-suburban routes has meant that these services now penetrate areas which previously were not supplied with a quality service.

It is difficult at present to determine the likely effects that commuter omnibuses have had on the conventional bus services provided by ZUPCO. From the corridor results. ZUPCO are

likely to operate a smaller route network than present, allowing them to operate a higher service frequency on the reduced network. With the fare advantage and constrained growth in personal incomes, ZUPCO will continue to have a substantial market for the foreseeable future. In addition, they are likely to provide additional services such as private and company hires to maximise fleet utilisation throughout the day.

Despite an improvement in the level of service attributed to commuter omnibuses, it can be argued that the mushrooming of small capacity vehicles results in an overall inefficient use of resources; smaller vehicles being less efficient in terms of cost per passenger carrying capacity than conventional buses.

Environmental issues are a subject of concern worldwide. The growth of commuter omnibuses in Harare has contributed to the growth in congestion within the city centre. As there are no official areas for the vehicles to load with passengers, certain roads are frequently blocked with commuter omnibuses waiting to load with passengers. Clearly, off-street parking sites need to be provided at key locations within the city centre for the loading and unloading of passengers.

The attractiveness of some parts of the city and the general aesthetic have been adversely affected. Current evidence also shows that commuter omnibuses are more prone to accidents than emergency taxis. In short, the growth of commuter omnibuses may have already had negative impacts on the environment which is likely to deteriorate still further, as the number of commuter omnibuses continue to increase.

5. CONCLUSIONS

Although eighteen months from their introduction is not sufficient to make any definitive conclusions on the commuter omnibuses, current results indicate that:

- the introduction of commuter omnibuses has increased both the supply and capacity of the public transport system in Harare.
- the level of service has improved as illustrated by the reduction in passenger waiting times.
- passengers perceive the introduction of commuter omnibuses positively and acknowledge the improvement in public transport services which has ensued.
- the additional routes operated has considerably expanded the total public transport network.

On the negative side;

- fares have tended to rise especially during the busiest times of the day.

- along certain corridors conventional services provided by ZUPCO have diminished thereby constraining modal choice and leaving passengers increasingly dependent on commuter omnibus services.

- congestion at major boarding locations in the city centre appears to have increased, adversely affecting other road users and the environment in general.

It is evident that passengers have benefited from changes that have resulted in an improved service. In the long term, however, the continued increase of commuter omnibuses if allowed, is likely to erode ZUPCO's revenue and increase congestion and pollution on the urban environment to the detriment of all Harare's residents. Clearly, in the future, a balance will be required on the need to improve the level of public transport service and hence its sustainability on the one hand and the wider community costs on the other.

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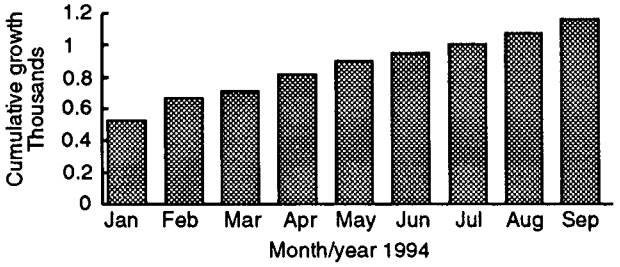

Fig 1 Monthly growth of the commuter omnibus fleet.

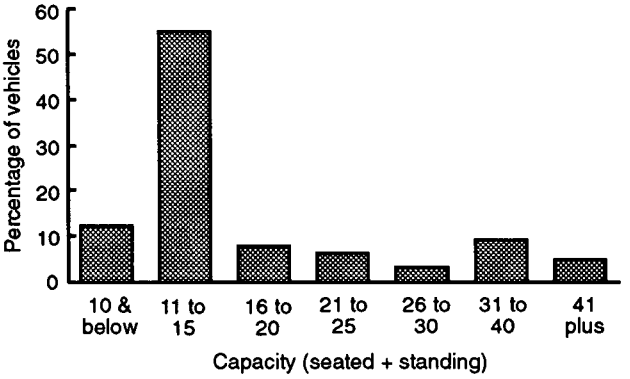

Fig 2 Commuter omnibus passenger carrying capacity

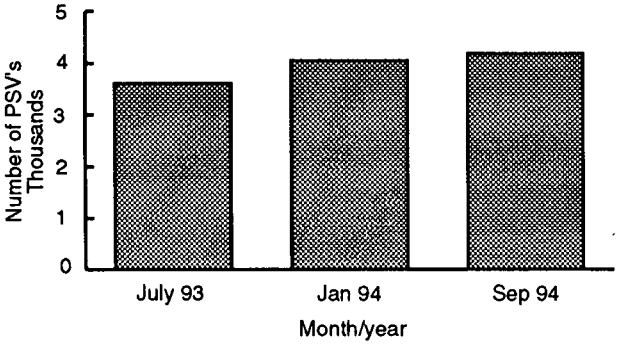

Fig 3 Public transport provision along major corridors in Harare

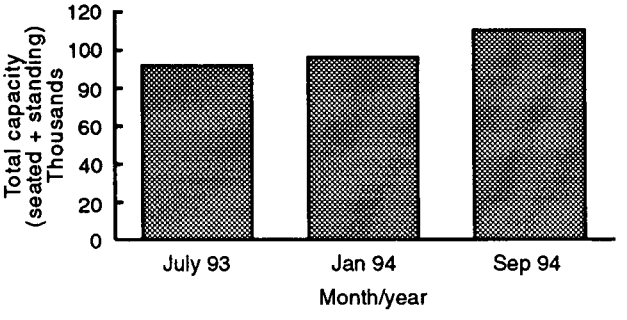

Fig 4 Public transport passenger capacity along major corridors in Harare

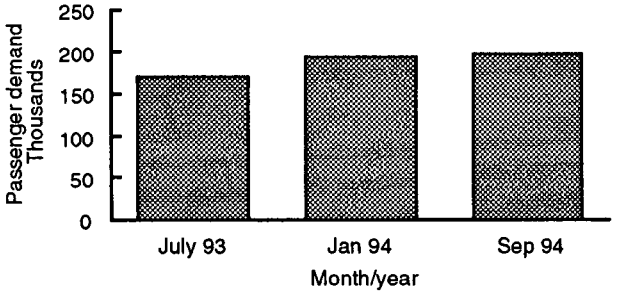

Fig 5 Estimates of demand for public transport services along major corridors in Harare

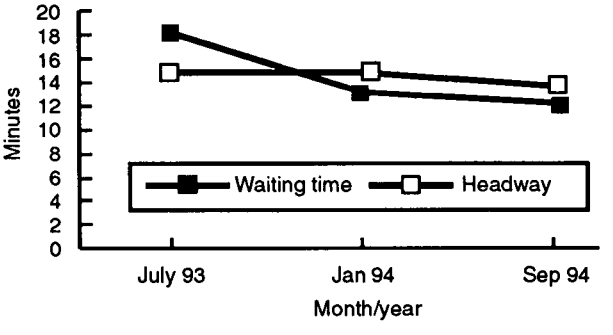

Fig 6 Average waiting time and headway in both directions along the Kambuzuma/Mufakose-city corridor