

Public Transport Safety in Tanzania

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ABSTRACT: Countries of the developing world are characterised by rapid urbanisation, high growth rates in traffic and congestion and decreasing regulation of public transport. Because the majority of the developing world's inhabitants are dependent on public transport services for their mobility needs, the need for safe, effective and efficient public transport is essential to ensure adequate and affordable accessibility and the continuing sustainable development of livelihoods in the rural and urban sectors. The paper describes the operational environment of the public transport sector in Tanzania and highlights the extent and likely causes of accidents involving public transport vehicles. Finally, recommendations are made to reduce both the severity and number of public transport accidents in the future.

1 Introduction

World-wide, there are estimated to be approximately 1 million road accident fatalities and 10 million people injured annually, many with long term disabilities (World Health Report (1999) Tables 2 and 4). Almost 70 per cent of these occur in the developing or emerging world. Whilst there is a general decline in the number of fatalities in industrialised countries the opposite is true elsewhere. If account is taken of levels of motorization by expressing

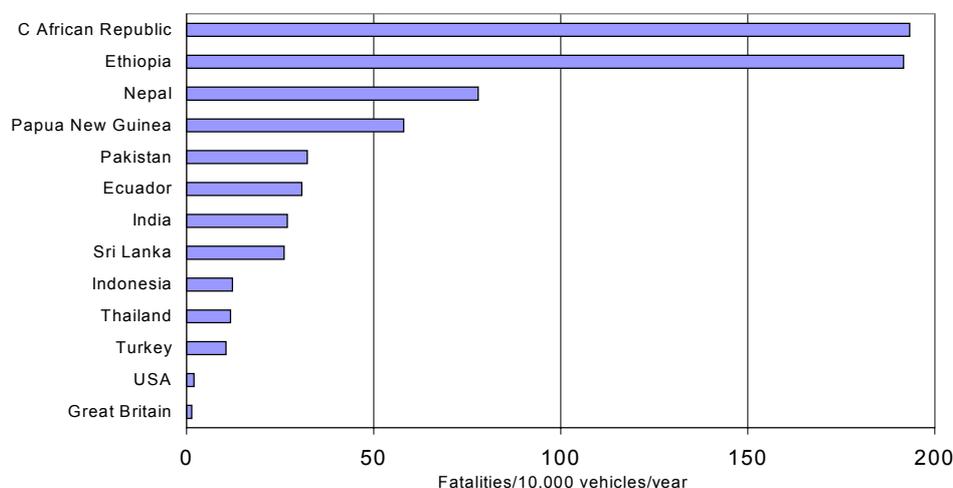


Figure 1 Fatality rates for selected countries

accident statistics as rate per registered vehicle, then less developed countries (LDCs) have rates at least 10 to 20 times higher than the best industrialised countries. The worst countries in these terms have fatality rates 100 times higher (Ghee et al 1997) as shown in figure 1.

Considerably higher proportions of those (reported as) injured in road accidents consequently die from their injuries in the developing world compared with industrialised countries. Thus, not only is the proportion of people injured per vehicle very high, but also the death rate is higher in developing countries.

Fouracre and Jacobs (1976) calculated that, for any country, the cost of road accidents was

equivalent to approximately one percent of its Gross National Product (GNP) although currently it is thought to be between one and three percent. However, using the 1 percent figure gives an estimated annual global cost of road accidents of the order of US\$230 billion, with the cost to LDCs being around US\$36 billion, a sum that they can ill afford. For example, in Mexico and India, road accidents may well be costing US\$2.5-3.2 billion per annum, in South Africa and Pakistan US\$0.5-1.0 billion and in Zimbabwe and Kenya US\$55-70 million per year.

Unfortunately, road safety is but one of the many problems demanding its share of funding and other resources in developing and emerging nations. Even within the boundaries of the transport and highway sector, difficult decisions have to be taken regarding the allocation of resources that any government can devote to road safety. In order to assist in this decision making process it is essential that a good road accident data base is established enabling the evaluation of both road accidents costs and the value of prevention.

Countries throughout the developing world are characterised by rapid urbanisation, high growth rates in traffic and, consequently, congestion and decreasing regulation of public transport. All of these factors point to the need for a clear assessment of the safety and environmental problems faced by public transport operators. Because a majority of the developing world's inhabitants are dependent on public transport services the need for safe, efficient and effective public transport services is essential to ensure adequate and affordable accessibility, for sustaining individuals livelihoods and rural and urban development.

The Transport Research Laboratory (TRL), funded by the UK Government's Department for International Development (DFID) is currently evaluating the safety and roadworthiness of public transport vehicles by assessing the scale of the problem resulting from road accidents and the effect of varying maintenance practices on bus fleet roadworthiness. The effects of accidents on passenger comfort and safety are also being investigated and recommendations developed for safer public transport services.

The 3 year study, which commenced in July 1997, is being undertaken in a number of countries which are assumed to be representative of the developing world in terms of sector environment, income, ownership and regulation. Studies have already been undertaken in India, Nepal, Tanzania and Zimbabwe and analysis is underway for Thailand. Accident data have been collected from official sources in the countries and interviews undertaken of police, bus owners, operators, drivers, conductors, passengers and associations to obtain opinions as to the causes of bus accidents. Finally, vehicle condition and driver behaviour are monitored. This paper highlights the findings for Tanzania.

2 Current Situation

Deaths, injuries and property loss with severe financial and social implications on those involved from traffic accidents are causes of great concern throughout the world. Tanzania is no exception. The Tanzanian public outcry for government measures to stop road carnage is understandable. Despite the recently introduced countermeasure of installing speed limiters on buses, the public is tired of hearing news of some road mishap somewhere on the road network as posed by the heading "Road terror again" in the Daily News of January 24th, 1998 (plate 1).

Road accidents in Tanzania are costly and unacceptably high. In 1994, it was estimated that

the nation lost at least 11 billion Tshs [£11M] through road accidents¹. The National Insurance Corporation (NIC) last year disbursed over 15 billion Tshs [£15M] on motor vehicle accidents, the claims represented 55 percent of all claims launched by customers during the year².

Within mainland Tanzania, the regional distribution of road accidents shows about 35 percent of all accidents in Tanzania occur in the Dar es Salaam region. This is likely to be explained by the high concentration of motor vehicles, commercial / industrial and social activities relative to the other regions. Against this background, the need to study road safety in Tanzania cannot be over-emphasised. This study focuses on one aspect, bus safety.

The Central Transportation Licensing Authority (CTLA), a department within the Ministry of Communication and Transport, governs the licensing of the public transport services. All operators must apply to the CTLA for licensing and route permit. They must also pay a registration fee prior to operation on routes assigned to them. For obtaining the license and route permit the operator must submit the vehicle registration card, business license tax clearance certificate and vehicle insurance documents along with the initial application. Thereafter the vehicle must be presented to the traffic police for a roadworthiness inspection. The vehicle inspection certificates once obtained are required to be presented to the CTLA, which considers the application and grants the bus-operating license. Daladala operators apply for and are granted bus-operating permits for more than one route, while the majority of long distance operators currently have single route permit.

Thus the regulation of public transport services by the issuance of license puts undue emphasis on the quantity control of entry to the market with little mechanism for the regulation and promotion of the quality and levels of service once the permit is issued.

2.1 Legal Framework

There are two main pieces of legislation, which control bus operation in Tanzania. These are the Road Traffic Act and the Transportation Licensing Act. In addition there are proposed standards by the Tanzania Bureau of Standards for bus bodybuilding, which are waiting to be incorporated into regulation by the government.

2.1.1

Road Traffic Act, 1973

Generally this act defines:

- Classification of motor vehicles [Part II section 9]
- Application for registration of motor vehicles [Part II section 10]
- Offences and penalties related to registration of motor vehicles [Part II section 18]
- Driving licenses related to [Part III]
- Prohibition from driving without a valid driving license [section 19]
- Classification of motor vehicles for driving licenses [section 20]
- Learner driving license [section 21]
- Driving tests [section 23]
- Certificate of competence [section 24]
- Mandatory cancellation or suspension of driving license [section 27]

1 Road Safety Programme, Ministry of Works, United Republic of Tanzania, 1996

2 The Daily News newspaper, 5 February 1998

- Discretionary power of cancellation or suspension of driving license [section 28]
- Offences [section 37 and 38]
- Use of motor vehicles related to [section IV]
- Causing bodily injury or death through dangerous driving [section 40]
- Causing bodily injury or death through carelessness [section 41]
- Reckless or dangerous driving [section 42]
- Driving under the influence of drink or drugs [section 44]
- Enforcement [Part VI]

2.1.2 Transportation Licensing Act, 1973

The Transportation Licensing Act was recently amended and defines:

- Establishment of licensing authorities [Part III section 4]
- Licensing of transport [Part III section 10]
- Classes of licenses [Part III section 11]
- Procedure on application for licenses [Part IV]
- Conditions, variations, revocation and suspension of licenses and penalty for non compliance of licenses [Part V]

2.1.3 Proposed Standard for Bus Body Building, 1998

Due to trade liberalisation different types of buses have been brought into the market from different countries. There has also been a proliferation of bus-body builders in Dar es Salaam where bodies of most buses are fabricated. These buses differ in sizes, models, capacities, etc. The public has complained in respect of narrow seats, low cabin height, lack of enough ventilation and above all the weakness of bus bodywork.. In response to this, the Tanzania Bureau of Standards has prepared standards for bus bodybuilding, which are soon to be incorporated into regulation by the government. The standards define in detail the following requirements for buses related to:

- External dimensions
- Engine and exhaust system
- Information display
- Information plates
- Bumper bars, protective devices, bonnets and roof carriers
- Sides and roof
- Entrances and exits
- Seats
- Windows and windscreen
- Number of standing passengers
- Passageways
- Number of persons that may be carried
- Seating and number of persons that may be carried on a school bus

2.2 Operational Environment

The organisational structure of the bus industry in Tanzania can broadly be categorised into two regimes namely: urban and long-distance operations including rural services.

2.2.1 Urban Buses

Urban operations presently comprise conventional buses and minibuses, but for many years, the Dar es Salaam Motor Transport (DMT) or “Usafiri Dar es Salaam (UDA)” as it was later

called after its establishment in 1974 operated as a monopoly in Dar es Salaam. UDA, wholly owned by the government (but now on a privatisation schedule) operated conventional urban buses. Following the deterioration of its services due to breakdown of buses and high operational costs, the government in 1983 allowed private operators, now famously known as “Daladala”, to provide public transportation services for the city population. While UDA’s fleet size has dwindled and now comprises conventional and minibuses, the number of registered Daladala has dramatically increased to 4500 operational in 1997.

Daladalas operate in almost all municipalities throughout the country. The fleet is very diverse in both type and capacity but the majority a passenger capacity ranging from 16 - 36. On most routes the 16-passenger capacity Toyota Hiace dominates. The majority of Daladala vehicles are imported as reconditioned vehicles or bought second hand from Japan and the Middle East. The routes operated range from less than 3 kilometres to long routes of approximately 30 kilometres, the latter being peri-urban routes. Services are not scheduled and vehicles only leave a rank when they are full. Daladala drivers usually start work at approximately 0430 - 0500 and finish at 2300 - 2400. Most Daladala vehicles have been operated for less than 8 years in the Dar es Salaam region. However, the average age of Daladala vehicles may be up to or more than 10 years.

Driver remuneration is generally not fixed but is commission based. Some operators stipulate revenue targets to be achieved by their drivers. Both methods of remunerating the Daladala drivers encourage speeding, overtaking, poor parking and frequent vehicle stoppages to pick up or drop passengers on their way to anticipated destinations. Most of the drivers employed in the Daladala business are very young. There are no laid down procedures for driver recruitment. For instance, a driver discharged by one operator can be re-engaged by another operator in a matter of hours without even ascertaining the reasons for dismissal. Consequently, driver turnover is very high. There are no driver training programmes for the majority of drivers.

The majority of Daladala operators have an operating fleet of less than 15 vehicles and lack proper maintenance facilities or programmes. Vehicle maintenance for minor repairs are carried out at backyard workshops after a persistent outcry from the driver about a particular vehicle fault. Major repairs are undertaken at external workshops, the majority of which belong to friends. During the study it was found that UDA undertake routine maintenance regularly; whilst major repairs or vehicle services are undertaken quarterly. The difference between the Daladala operators and the UDA is stark.

2.2.2 Long Distance Buses

The Tanzania trunk road network, has a total of 3306km of paved roads and 6290km of unpaved roads. The routes operated on trunk roads are long with the longest within the country being Dar es Salaam to Bukoba, approximately 1425 km. Most routes have their origin or destinations in a city/ town.

The services operated are:

- Inter-regional, which are services between cities/towns within the country on paved and gravel roads
- Urban-rural comprising a high proportion of services on gravel roads

- Cross border services

The most common types of buses are operated with capacity ranging from 45 - 65 passengers. The majority of successful long distance operators have a proper maintenance programme. Minor repairs are undertaken daily or after long distance buses reach their destinations. Major repairs and services are undertaken weekly for some companies or after 25000 kilometres for other companies. The majority of long distance operators have an average fleet size of less than 10.

Driver turnover is very high as some long distance drivers now prefer to drive Daladalas in urban centres, as they realise that income opportunities are better despite the lack of job security.

The operational environment for long distance services changed recently. Quantity and fare controls on routes have been liberalised and entry into the industry is now very much dependent on the roadworthiness of the vehicle.

Due to the increased number of passenger fleet over the years 1992 to 1997 (increasing by 41%) and especially during 1995-7, buses compete for passengers by employing touts who often 'force' passengers to board buses not of their choice. It is also alleged that, buses race against each other in order to pick up intermediate passengers along the route. On the other hand, the competition for passengers has resulted in some operators introducing semi luxury and luxury coaches on selected routes to attract more passengers.

3 Accidents

3.1.1 National Accident Statistics

The police collect basic road accident data in Tanzania manually by completing an accident form. The police, however, are not informed of all accidents involving personal injury especially when minor injuries are involved and so only fatal accident reporting is complete.

Table 1 presents a summary of all road accidents in Tanzania from 1993 to 1998. The total number of reported accidents increased from 1993 to 1997 by 14%. The total number of fatalities increased each year from 1993 to 1996, but declined by approximately 10% in 1997, measurable injuries have remained at a fairly constant level compared to reported accidents. It should be noted that figures for 1998, across the board, have shown a decline and it is likely that this is due in part to the effects of the global recession as well as increased safety awareness and enforcement.

Table 1 Road accidents in Tanzania Mainland [1993-7]

<i>Year</i>	<i>Accidents Reported</i>	<i>Fatalities</i>	<i>Injuries</i>
1993	12595	1483	11513
1994	13781	1548	12377
1995	13767	1663	12625
1996	14050	1809	12515

1997	14335	1625	12490
1998	12234	1583	11381
Annual average	13,460	1,619	12,150

Source: Traffic Police Record

Table 2 shows accidents by vehicle type for the years 1993-1997. The distribution highlights that private cars, Daladalas and pickups were the most involved in road accidents. The high number of cars clearly reflecting their increase in numbers throughout the country in recent years and the pressure on Daladala drivers to achieve daily targets may well contribute to their high involvement in accidents.

Table 2 Vehicles involved in road accidents in Tanzania Mainland [1993-7]

	1993	1994	1995	1996	1997	Annual average
Private Cars	8920	8867	8758	9616	8903	9013
Pick-Ups	2820	2803	2769	3040	2814	2849
PSV (Buses)	54	54	53	58	54	55
PSV (Daladala)	4148	4124	4073	4472	4140	4191
Taxis + private hire	27	27	27	29	27	27
HGV	732	728	719	789	731	740
Motor Cycles	434	431	426	468	433	438
Pedal Cyclists	461	458	453	497	460	466
TOTAL	17596	17492	17277	18968	17562	17779

Source: Traffic Police Records

3.1.2 Bus Accident Statistics

It was very difficult to obtain data on accident casualties and accident severity by vehicle types nationally [in fact even basic vehicle fleet statistics proved impossible to obtain]. Generally, the Traffic Police do not analyse data from regions by vehicle type although this is possible from monthly accident report forms. In addition, completion of such data by the regional Traffic Police is usually incomplete. However, during this study it proved possible to obtain accident fatalities and casualties by vehicle type from Traffic Police records for two complete years, i.e. 1997 and 1998 by manually collating and analysing the data. Table 3 summarises the accident data by vehicle type for the years 1997 and 1998.

Table 3 Casualties by vehicle class, Tanzania Mainland [1997-8]

Vehicle Type	1997			1998			Average % distribution		
	Vehicles	Fat ^s	Injuries	Vehicles	Fat ^s	Injuries	Vehicles	Fat ^s	Injuries
Private Cars	8903	425	3452	8485	361	3251	50.7	24.5	28.0
Pick-Ups	2814	325	2610	2682	312	1668	16.0	19.8	17.9
PSV Buses	54	242	1974	52	274	2197	0.3	16.1	17.5
PSV Daladala	4140	364	2615	3946	380	2395	23.6	23.2	21.0
Private Hire	27	5	115	26	4	192	0.2	0.3	1.3
HGVs	731	75	575	696	68	516	4.2	4.5	4.6

Motor Cycles	433	122	689	413	97	594	2.4	6.8	5.4
Pedal Cyclists	460	67	460	438	87	568	2.6	4.8	4.3
TOTAL	17562	1625	12490	16738	1583	11381	100%	100%	100%

Source: Traffic Police

For 1997 and 1998 an average 51% of the total vehicles involved in accidents were private cars, 24% were Daladalas, 16% were Pick-Ups and other vehicle types accounted for 9%. Long distance buses accounted for just 0.3% of the total vehicles involved in accidents. However, when fatalities and injury data are considered, private cars accounted for 24% of the total fatalities and 28% of the total injuries. Daladalas accounted for 23% fatalities and 21% injuries, Pick-Ups 20% fatalities and 18% injuries, and long distance buses 16%

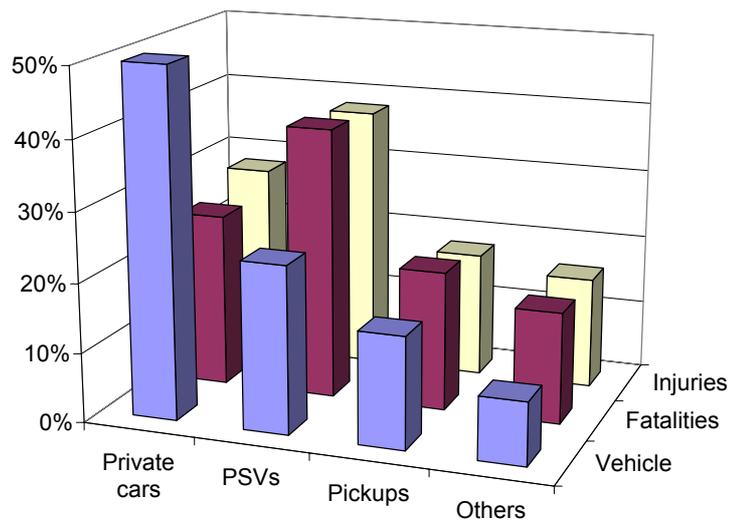


Figure 2 Casualties by vehicle class, Tanzania [1997/8]

fatalities and 17% injuries]. In total conventional buses and Daladalas accounted for 24% of vehicles involved in accidents during 1997/98 but generated 39% of fatalities and injuries [see figure2. It can be observed that approximately each long distance bus involved in a road accident resulted in an average of 5 fatalities and 39 injuries while the approximate unit fatalities and injuries for other vehicle classes is insignificant. Within the public transport sector, long distance buses represented 1.3% of vehicles involved in accidents and accounted for 41% of fatalities and 45% of injuries whereas Daladalas represented 98.3% of vehicles involved in accidents and accounted for 59% and 55% respectively – the figures reflecting the higher number of Daladalas operational compared to the long distance fleet and the lower severity of urban road accidents.

3.2 Probable Causes Of Road Accidents

3.2.1 Findings from Police Records

The police are not informed of all road accidents involving personal injury, especially when minor injuries are involved and so only fatal accident reporting is complete. Table 4 presents information obtained from the Traffic Police records, as to the causes of road accidents in Tanzania from 1993 to 1997.

Table 4 Causes of Road Accidents [1993-7]

	1993	1994	1995	1996	1997	Mean
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Reckless Driving	7282	7358	6836	7577	8085	7428
Vehicle Defects	1920	2508	2804	2307	2080	2324
Speed	349	470	833	718	362	546
External factors	865	984	931	939	848	913
Alcohol	181	171	136	175	106	154
M/Cyclists	303	339	367	330	1077	483
Cyclists	870	926	923	1053	846	924
Pedestrians	819	1025	937	950	831	912
TOTAL	12589	13781	13767	14049	14235	13684

Source: Traffic Police Records

From Table 4, it can be seen that reckless driving, vehicle defects, pedestrians, cyclists and the prevailing environment were the principal causes of road accidents based on police records during the period shown. The distribution of causes of road accidents based on the data in Table 4 are presented in Figure 3. The causes of all road accidents (bus accidents reflect the same trends) can be divided into three main categories:

1. Human factors = 76%
2. External factors = 7%
3. Vehicle condition = 17%

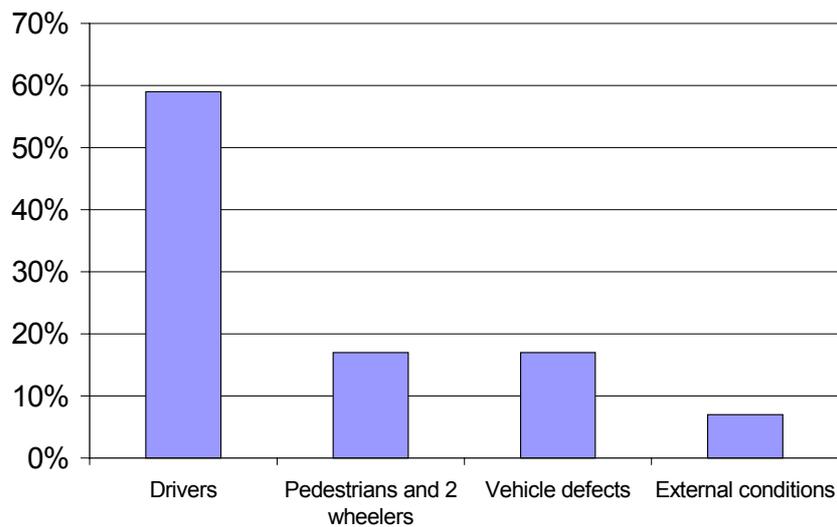


Figure 3 Causes of road accidents, Tanzania [1993-97]

3.2.2 Public Perception of Bus Accidents

A questionnaire survey of 200 randomly selected passengers and drivers of Daladala and long distance buses and interviews of 20 major organisations involved in the public transport industry were carried out in order to ascertain public opinions and perceptions.

It is clear, from both passengers and drivers, that long distance buses are erroneously perceived to have more accidents than Daladalas. Some passengers and drivers also indicated that urban bus accidents are not as serious (i.e. do not result in high rates of casualties/fatalities) as long distance bus accidents due to lower speeds. One explanation as to why the majority of passengers and drivers think that long distance buses have more accidents than

other modes of transport may be due to the fatality rate and the wide reporting of such accident in the newspapers and television. On the other hand, professionals and operators interviewed within the 20 organisations involved in the public transport industry were correctly of the opinion that urban buses have a higher accident rate (up to 20 times more likely to be involved in an accident than long distance buses) but resulting in a lower casualty rate of 0.1 fatalities and 0.6 casualties per accident compared to 5 and 39 per accident respectively for long distance/rural buses.

The perceptions of passengers, drivers, and organisations as to the principal contributory cause of bus accidents in Tanzania was human error, in addition, three other factors were identified as shown below:

- human factors = 72%
- external factors = 18%
- lack of enforcement = 2.5%
- vehicle condition = 7.5%

The above figures are similar to the police findings discussed earlier.

Human Factors

The human factor is perceived to be the principal cause of most bus accidents. However there are a number of subfactors within the human factor, which were mentioned by both sets of respondents, and these are listed below:

- Misjudgment
- Excessive speed
- Overtaking errors
- Negligent pedestrians, passengers, cyclists and cart pushers
- Alcohol and drugs consumption
- Reckless driving
- Overloading of passengers and goods
- Parking errors
- Driver fatigue

The travelling public blames deregulation of the public transport system for the increased number of accidents occurring on both urban and long distance services. Inevitably this has led to an increase in the number of buses servicing the network, although demand has not similarly increased. Consequently, buses compete for passengers by speeding.

Reckless driving, speeding and driving errors were cited as the most common causes of bus accidents in respect to long distance and urban buses. For instance, one of the long distance fatal bus accidents that killed 19 passengers and injured 13 others in Moshi on December 17, 1996, was attributed to a combination of reckless driving and non consideration of other road users. The 65 seat Dar es Salaam bound bus collided head on with another bus.

Some drivers and respondents ironically revealed, that passengers encourage drivers to speed without considering the increase in accident risk. However other drivers use speed as a marketing tool to encourage passengers to travel with them.

Other factors contributing to accidents include poor parking and stopping of buses especially

Daladadas, little respect for other drivers and the influence of alcohol and drugs to combat tiredness.

The contribution of human error in causing accidents is not only confined to drivers. Passengers and pedestrians also contribute to accidents. It is common for passengers to try to disembark from a bus while it is in motion or to distract the attention of the driver. Pedestrians, especially in the rural areas, are also not very conversant with traffic regulations governing the use of the road.

Some fatal bus accidents may occur during the rainy season when drivers often take irrational decisions and attempt to cross flooded rivers. For instance, the road accident said to be the worst in recent history of road accidents in Tanzania occurred on May 3, 1998. The accident claimed the lives of about 70 passengers and more than 25 were injured when a bus they were travelling in was swept away by floods overflowing Msangazi River Bridge. The bus was supposed to carry 65 passengers but was considerably overloaded (95 plus). Drivers are often encouraged by passengers to cross flooded bridges and as a result often make errors in judgement resulting in the bus being washed away.

In brief, human error is perceived by most respondents to be the main cause of bus accidents in Tanzania.

External Factors

The external factors mentioned by both sets of respondents, include:

- poor road condition
- poor road engineering and alignment
- lack of road signs and markings
- erratic traffic signals due to frequent power cuts

There are signs that the existing infrastructure is increasingly being overloaded as the number of vehicles increase. Many roads outside urban areas are in a very poor state of repair. Even those in the urban areas are frequently narrow, ill maintained and lack adequate bus stands. A number of bridges on roads outside urban areas are also very narrow and can only accommodate one vehicle at a time. Potholes and sandy soils on roads were mentioned also as contributing to accidents. Both individuals and organisations appeared to share the consensus that there is a lack of adequate provision of road signs through the network..

In urban areas, power shedding is common and so traffic signals may fail resulting in accidents at high volume intersections.

Vehicle Condition

In 1995, according to statistics from police records, approximately 20% of bus accidents were caused by bus defects. This figure was significantly reduced to approximately 17% in 1997 due, in part, to ongoing economic reform changes that have led to a growth in vehicle sales and hence a younger bus fleet being operated. In order to ascertain the vehicle condition, surveys were undertaken of a number of buses, both urban and long distance, in Dar es Salaam, Tanga and Morogoro regions. Table 5 illustrates the results from the surveys and highlights the generally good condition of long distance buses compared to Daladadas.

Table 5: Survey data showing percentage of faults identified

Component	Long distance buses	Daladala
Number of vehicles	30	50
Good bodywork	Few	10%
Mirrors	Few	30%
Windscreen wipers	Few	10%
Tyres	5%	15%
Wheel nuts	5%	12%
Front lights	0%	15%
Rear lights	0%	14%
Brake lights	0%	30%

4 Summary and Conclusions

In Tanzania as in all countries where studies have been undertaken by TRL road accidents are increasing over time. Public transport vehicles appear to be involved in a higher proportion of accidents than their numbers warrant. However, this is principally because buses cover a high annual mileage through their duty cycles. Considering the number of passengers transported a safety culture should be active and evident however, it does not seem to be the case at the present time.

The most frequent causal features of bus accidents in Tanzania identified by TRL comprise:

- Poor driver behaviour
- Pedestrian/other road user behaviour
- Mechanical condition of bus

The overriding factor, which needs to be addressed, is how to improve bus driver behaviour. Suggestions to improve bus driver behaviour are listed below. It is clear however that drivers need to be better educated and trained when initially learning to drive but in particular:

- The need to consider raising the minimum age to drive a public vehicle from 18 to 25 and the maximum put at 60.
- Drivers should be taught not just the technical skills to pass the driving test but also the social and psychological skills required to be a safe and responsible professional PSV driver.
- Bus drivers, like all HGV drivers, should also participate in refresher driver training courses so that the inevitable bad habits acquired can be eliminated at a relatively early stage.
- Owners should be encouraged to provide financial incentives for drivers who have been 'accident free' during the previous 12-month period.
- Medical and health checks need to be provided for drivers especially ageing drivers.
- Owners and drivers should be encouraged to work within existing legal maximum hours.

These may increase costs but are likely to be less expensive in the longer term than the cost of human tragedy, vehicle replacement and other third party costs.

As well as improving the behaviour of the bus driver, road safety campaigns need to be

funded and encouraged so that all road users are better educated as to how to behave when crossing and using the road and when herding animals on the rural road network. In this respect the National Road Safety Council which has the responsibility of coordinating all road safety matters in the country needs adequate and secure funding which could be guaranteed by a proposed levy on all Third Party insurance premiums.

Many owners and operators need to be encouraged to maintain their vehicles to a much higher standard than at present. Preventative maintenance can improve performance and productivity and extend the operational life of the vehicle. A safe, smart vehicle is also more likely to attract passengers than an unsafe and poorly maintained vehicle and also passengers might be encouraged to afford a slightly higher fare for such a vehicle/service. Owners/operators also need to understand that vehicle maintenance is a sound, effective business practice which can minimise vehicle downtime and costly, time consuming breakdowns whilst in service.

Vehicle inspection needs to be carried out regularly at least annually by the Ministry of Works possibly under the auspices of the Road Safety Unit. The police should be left with enforcement of inspections at the roadside when they feel that a vehicle is likely to be unroadworthy.

Enforcement is a key and corollary to all road safety solutions in Tanzania. This will entail improving conditions of the police force, instituting better working conditions and pay (to deter corruption) and providing and maintaining modern equipment.

Finally, improvements in bus safety cannot be achieved by one individual or discipline, it is a collective responsibility and a collective spirit is required of all those involved including:

- Bus owners, drivers, conductors and mechanics
- Operator associations/unions
- Police and government departments
- Road Safety Associations/ driver training schools
- Manufacturers and repairers of vehicles, spare parts and tyres
- ALL road users

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