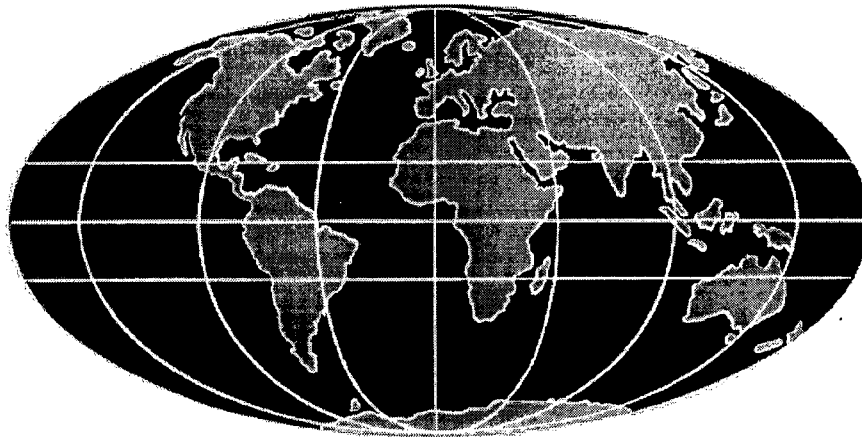


**TITLE: Public transport safety in
Nepal and Zimbabwe**

by: D A C Maunder and T Pearce



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Public transport safety in Nepal and Zimbabwe

Countries of the developing world are characterised by rapid urbanisation, high growth rates in traffic and congestion and decreasing regulation of public transport. Because a majority of the developing world's inhabitants are dependent on public transport services the need for safe, efficient and effective public transport is essential to ensure adequate and affordable accessibility. This article highlights the extent of bus accidents in Nepal and Zimbabwe, their likely causes and makes recommendations to reduce both the severity and number of public transport accidents in the future.

Background

Worldwide, there are estimated to be some half a million road accident fatalities each year. Almost 70 per cent of these occur in the developing 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 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).

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 1.5 and 2.0 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.

By Dr D A C Maunder, PhD, BA, MIHT, FCIT and T Pearce BA.

Dr Maunder is a Senior Project Manager within the Traffic and Transport Centre of the Transport Research Laboratory. He has 25 years experience of working on public transport and urban transport issues in the developing world. He was awarded his PhD in 1983 at Leicester University and has published numerous papers and reports. He is a member of the Institution's Council and currently chairs the International Committee.



Tim Pearce is a Senior Consultant within the Safety and Environment Centre of the Transport Research Laboratory. He was involved in UK Transport related research projects for 15 years before specialising in problems relating to developing countries. During the last 9 years he has been closely involved in the problems of the roadworthiness of vehicles in the Third World. He is the author of many papers and reports.



e-mail to dmaunder@trl.co.uk or tpearce@trl.co.uk or see the TRL website at www.trl.co.uk.



Typical bus on rural service in Nepal

Countries of the developing world are characterised by rapid urbanisation, high growth rates in traffic and, congestion and decreasing regulation of public transport. Because a majority of the developing world's inhabitants are dependent on public transport services the need for efficient, safe and effective public transport is essential to ensure adequate and affordable accessibility for urban and rural residents and for sustainable 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. Studies have already been undertaken in Nepal and Zimbabwe and analyses are underway for India and Tanzania. 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 Nepal and Zimbabwe.

NEPAL

The first bus services operated in Nepal commenced in 1957 and since then the fleet has grown substantially. By 1996 there were a total of 7800 conventional buses and 2752 minibuses operating public transport services throughout the Kingdom (Maunder et al 1998).

Accident rates

During the period July 1995-June 1996, a total of 3379 accidents were reported to the police nationwide (urban and long distance) with bus accidents representing 14% of the total. However the 479 serious bus accidents resulted in 365 fatalities and 1751 injured persons. The totals representing 39 percent of all road fatalities during the 12 month period and 60 percent of all road casualties therefore bus accidents represent a significant

proportion of all road accidents and injuries in the Kingdom of Nepal.

Figure 1 illustrates the predominance of injuries and accidents caused by bus-only accidents in Nepal

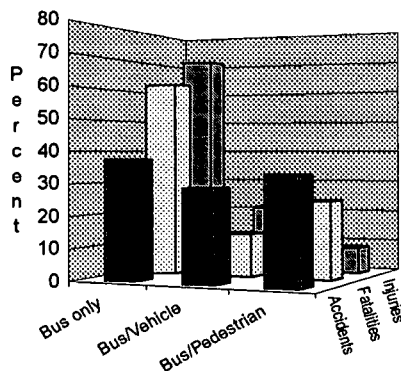


Figure 1 Bus accidents in Nepal [1995-6]

Bus-only accidents are defined as those in which the driver loses control and the bus either leaves the road or overturns. These are the most frequently occurring bus accidents resulting in 71% of total injuries and 63% of fatalities. Of the remaining bus accidents, bus/vehicle collisions resulted in 21% of injuries and 14% of fatalities and bus/pedestrian 8% and 24% respectively. Unsurprisingly, pedestrians are very much at risk and are more likely to die than be injured if hit by a bus.

Probable Causes

From comments made by the diverse groups interviewed, the likely causes of bus accidents can be categorised as follows:

- Drivers and driving habits
- Vehicle condition
- Road condition
- Other factors

Most agreed that one single factor was unlikely to cause an accident and that a combination of causes was likely. The factors raised in respect of drivers and their driving habits were:

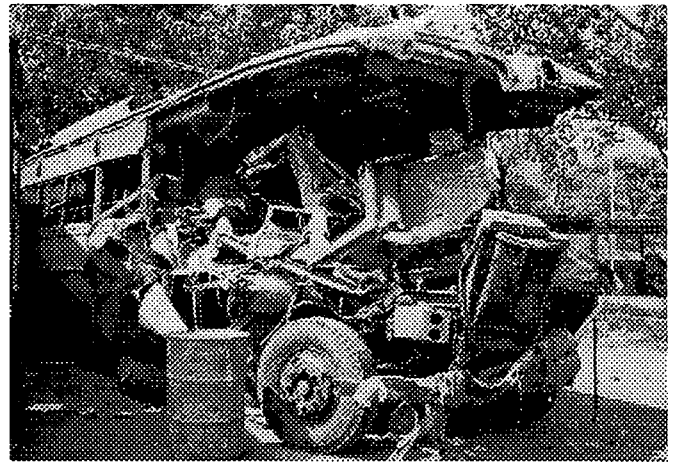
- Ease of obtaining a Heavy Vehicle licence
- Lack of professional driver training
- Lack of knowledge of the Highway Code
- Driver fatigue due to long working hours
- Overloading of vehicles to maximise revenue
- Night drivers consuming alcohol or drugs
- Speeding

Surveys of vehicle condition were performed by TRL in Kathmandu and Butwal throughout the operational day. It was observed that 65% of buses had one or more faults in terms of tyres, wheel fixings, front/rear lights. Yet all had passed an annual Vehicle Fitness Test and were legally fit to operate.

Overall, factors affecting vehicle condition were found to be:

- Lack of maintenance due to cost
- Worn tyres and duplicate parts used to minimise costs
- Irrelevance of the annual Vehicle Fitness Test.

Road condition, a lack of road maintenance, poor alignment and a lack of traffic signs and safety features were all identified as possible accident causes along with weak enforcement of traffic regulations and a lack of road sense by pedestrians in rural areas when herding animals on the road.



Bus awaiting repair following typical accident

ZIMBABWE

Urban public transport services are supplied by the Zimbabwe United Passenger Company (ZUPCO), now wholly owned by the government. ZUPCO operates both conventional buses and minibuses. There are also privately operated commuter omnibuses introduced in 1993, consisting of various vehicle types and capacity (Maunder et al 1993,1995,1996), and emergency taxis [estate cars operated on a shared taxi basis] which are currently being phased out. Long distance bus services (inter city and rural) are provided by ZUPCO and the private sector who operate mainly conventional single deck vehicles.

Accident data

Accident data is collected by the Zimbabwe police and is analysed by the Zimbabwe Traffic Safety Board. In 1992 there were a total of 27,150 reported accidents leading to 1,066 fatalities and 13,458 injured persons and, by 1996, the totals had increased to 38,777, 1,205 and 18,070 respectively.

During 1996, 72% of bus accidents [78%, of bus related injuries] occurred on municipal, (urban) roads yet most bus fatalities, 74%, occurred on inter urban roads i.e. on long distance bus services.

Likely causes

Extracting and analysing data from police statistics of bus accidents in 1996 has led to the following findings:

- 58% of bus accidents were classified as blameworthy [driver's fault]
- blameworthy accidents led to 76% of bus fatalities and 75% of injuries

Grouping blameworthy causes as assessed by the police led to the following findings:

- Driver misjudgement 82%
- Vehicle defect 7%
- Road condition, drink/drugs, other 11%

Clearly, driver misjudgement, including factors such as excessive and reckless speeding, following too closely, overtaking and reversing errors, failure to give way, etc, was the key element of blameworthy accidents as apportioned by the Zimbabwe Police.

As in Nepal, the perceived causes of bus accidents were discussed with numerous passengers, individuals and organisations. Three broad categories evolved namely:

- Driver behaviour
- External factors and
- Vehicle condition.

The most frequently quoted factors in respect of driver behaviour included reckless driving, driver fatigue and the use of unqualified and inexperienced drivers. One long distance operator suggested that "speed is used as a marketing tool" whereas in urban areas "speed is used to maximise earnings" and, where

excess speed is concerned, carelessness and reckless driving will follow.

Conclusions

In both Zimbabwe and Nepal 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 identified by TRL so far comprise:

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

The overriding factor needing to be addressed is how to improve bus driver behaviour. Possible solutions are listed below. It is evident, however, that bus drivers need to be better trained when initially learning to drive but in particular:

- Social and psychological skills, required to be a safe and responsible professional driver, should also be taught.
- Refresher driver training courses to eliminate the inevitable bad habits acquired should be encouraged.
- Awards for 'accident free' driving should be promoted.
- Medical and health are necessary for all, especially ageing, drivers.
- Enforcement of legal maximum hours should be given a higher priority

These factors 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 network.

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 bus is more likely to attract passengers than an unsafe and poorly maintained one. Owners/operators 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.

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 transport departments
- Road safety associations and driver training schools
- Manufacturers of vehicles, spare parts and tyres
- ALL road users

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