

# SOME IMPLICATIONS OF DRIVER TRAINING FOR ROAD ACCIDENTS IN GABORONE

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**Abstract**—In many African countries, including Botswana, the driving schools and instruction given to pupils are uncontrolled. Thus, this paper presents the results of an investigation into the level of professional training offered by the driving schools in Gaborone. A total of 400 randomly selected drivers completed questionnaires on their training, accident records, and L-tests. Male trainee drivers received more instruction than females, and there was some indication that the pass rate on L-tests was lower for female drivers. Also, the pickup van forms the majority of the national vehicle population. It accounts for almost 40% of the accidents but is presently not used for training in the commercial driving schools. It is concluded that the quality of professional instruction in driving schools needs improvement so that learners can be encouraged to take training from these institutes.

**Keywords**—Botswana, Road accidents, Driver instruction

## INTRODUCTION

Many cities in the developing countries continue to grow at rates that severely test various amenities and systems, including road transportation. Even in the developed nations, transportation facilities are usually stressed. It has been found that car ownership in any country is largely influenced by both the economic growth and the population density (number of inhabitants/m<sup>2</sup>). For example, in the last two decades, Botswana's economy has been increasing steadily. This phenomenon has led to a substantial growth in the national vehicle population, (see Fig. 1), and sometimes this creates a frightening burden on the road network system.

In Botswana, the accident rate has become alarming and unprecedented. In 1992, the loss to the nation was about 2% of the GNP and at least 10% of the registered vehicles were involved in traffic accidents with a rather high casualty rate. The number of road accidents is increasing at an average annual rate of 15% (National Road Safety Committee 1988). This seems high in comparison with the annual increase in vehicle fleet of about 10%. Also, about 34% of all accidents occurred in Gaborone, the capital city. However, Botswana is a very large country characterized primarily by low population

density, so that a high accident rate may reduce the available manpower significantly.

Although many factors cause road accidents, it seems that human factors can contribute up to about 95% (Sabey and Taylor 1980). Thus, to combat the problem, efforts must be targeted at driver training, education, behaviour, and professionalism. Consequently, in this study, a survey was carried out to assess driver training programmes in Gaborone.

The Ministry of Works, Transport and Communications (1989) classified accidents according to time of day, day of week, type of vehicle, and age of driver. However, there is a dearth of knowledge about the area being covered in this investigation. It is certain that availability of more information about accident causes and about road-user performance and knowledge of the highway codes will improve driver training and education.

## ROAD ACCIDENTS AND DRIVER EDUCATION

Road accidents and their causes have been well investigated in many countries (Goldberg 1962; Jacobs 1976; Jolly 1986; Hayes 1989). Koyama (1990) studied novice driver education at driving schools in Japan. Less than 6% of Japanese drivers fall into this category yet they account for almost 15% of the accidents. Consequently, it was suggested that

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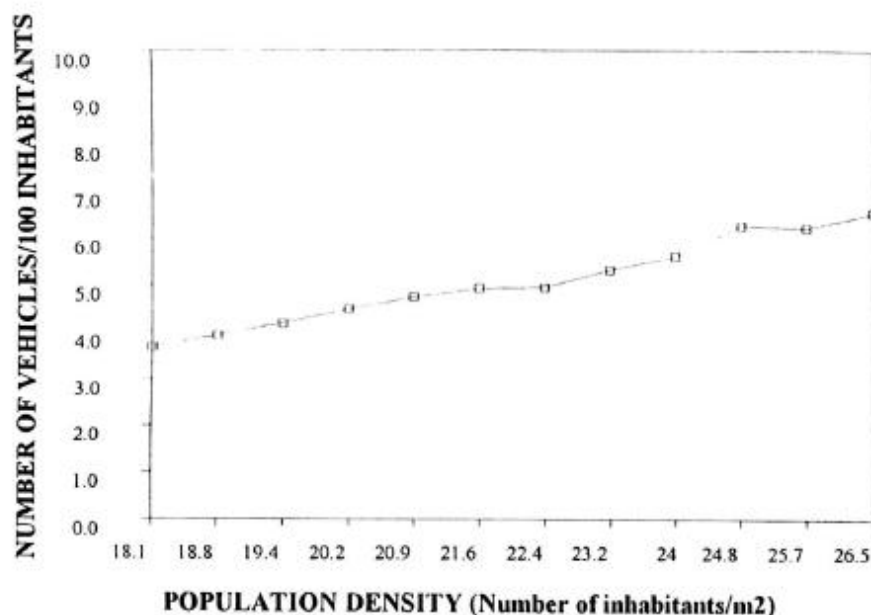


Fig. 1. Variation of number of vehicles with population density.

emphasis on driver education should be shifted from just passing an L-test (and obtaining a licence) to the importance of safe and careful driving.

Downing (1989) highlighted the inadequacies in the driver training programme in many African countries. For example, it was observed that driver errors were responsible for the majority of accidents. Drivers, including the professional ones, do not yield on major roads and are generally poor at estimating stopping and following distances. Consequently, it was suggested that African countries should test and monitor driving instruction so as to raise driving standards.

Darlington (1990) studied general road safety education. In particular, he discussed the level and importance of learning that was suitable for each individual road user. As adequate training is a prerequisite to good driving, learner drivers should have more professional instruction. Posttest education should include further training by advanced motoring organizations. He suggested the use of disquali-

fication and retesting, retraining, and rehabilitation, especially for drink and drive offenders. It was concluded that as increasing age was associated with conditions that reduce driving performance, older drivers should be exposed to reeducation on such topics as effects of medication and fatigue.

In Botswana, the National Road Traffic Act (1983) governs driver testing and issuance of licences for drivers and instructors and stipulates penalties for various traffic offences. The penalties are abysmally low for several offences, e.g. driving while intoxicated and dangerous driving.

In a study on road safety in South African countries, including Botswana, several deficiencies were found in the driving licence system and driver training programme (Henriksson 1990). In particular, it was discovered that a driver's licence may be obtained without taking the driving test. So as to avoid

Table 1. Accident percentages between 1991 and 1992

Description	1992	1991
Male drivers without driving licences	10.8	6.0
Female drivers without driving licences	1.3	0.9
Male drivers having driving licences	81.1	87.2
Female drivers having driving licences	6.8	5.9
Total (%)	100.0	100.0

Table 2. Summary of L-tests for four main testing stations

Station	1993* (%)		1992 (%)	
	Pass	Fail	Pass	Fail
Francistown	25	75	22	78
Gaborone	43	57	36	64
Lobatse	39	61	34	66
Selebi-Phikwe	30	70	26	74

\*The returns for November and December were not available.

Table 3. Age and sex of drivers who received professional instruction

Age range	Male (%)	Female (%)	Total (%)
<20	1	—	1
20-29	36	14	50
30-39	28	13	41
40-49	4	3	7
≥50	1	—	1
Total	70	30	100

the high level of road accidents that occurred in developed countries, he suggested that an efficient information system be installed while the numbers of drivers and vehicles are still low.

Tsayang and Nthobatsang (1991) studied road safety in Botswana and found that the standard of licensing and driver training in the country is poor. The L-test procedure before obtaining a driver's licence in Botswana consists of two parts namely, theory (road signs, safety, and knowledge of the vehicle) and a practical test on the road. The areas identified for immediate attention were: standardization of driver training, training and licensing of instructors, registration of driving schools, training of L-test examiners, and design of standard driving tests. However, these areas often overlap, and thus, in the present investigation of driver training, some aspects of other areas are also discussed.

## DATA COLLECTION

Although the police keep a substantial record of all accidents, such data are not often sufficiently detailed for driver monitoring purposes. In order that the outcome of this investigation might be of practical value, questionnaire surveys were employed for extensive sampling. The samples were randomly selected to cover two categories of drivers namely, those who attended a driving school and also those who did not receive professional instruction. Information was also gathered from driving school owners, the police, and the Road Safety Department.

The questionnaires for drivers consisted of 36 questions that were divided into various categories, namely, demographic details, type and condition of vehicles used for training, frequency and amount of instruction, topics covered during training, previous L-test attempts, accident record of candidates, and cost of taking driving instruction. The questionnaires were administered to 400 randomly selected drivers from various wards (zones) in Gaborone, and about 8% were rejected because major sections were either incomplete or incorrectly filled. The males and females respectively represented 70% and 30% of the sample.

There are 33 registered driving schools in Gaborone out of a total of 51 in the country. Some noncommercial driving schools were also surveyed.

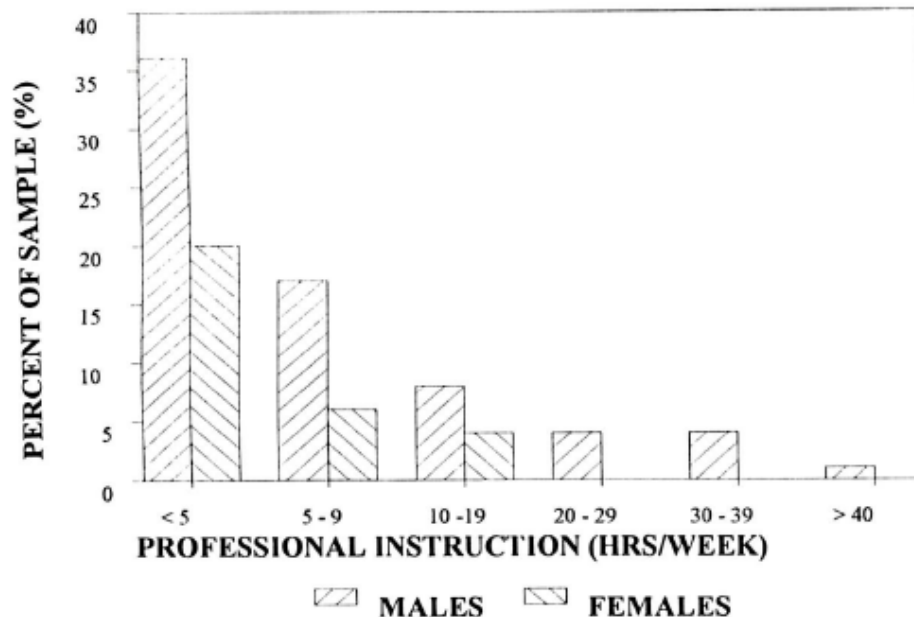


Fig. 2. Variation of weekly instruction.

Table 4. Age and sex of self-trained drivers

Age range	Male (%)	Female (%)	Total (%)
<20	1	—	1
20-29	19	6	25
30-39	28	8	36
40-49	18	12	30
≥50	8	—	8
Total	74	26	100

The driving school owners or instructors were asked 40 questions that included, details of available facilities and staffing, demographic information about trainees, and accident and L-test pass records of the institute.

DISCUSSION OF RESULTS

Table 1 compares the percentages of accidents in Botswana for 2 years, based on sex and possession of a driver's licence. It can be observed that the rate at which drivers without a driving licence become involved in accidents is on the increase, and this rate is particularly high for male drivers. It is also noticeable that the rates at which female drivers

Table 5. Subjects taught at the driving school

	*Subjects								
	1	2	3	4	5	6	7	8	9
Yes	94	77	85	74	75	21	32	57	2
No	6	23	15	26	25	79	68	43	98

\*List of subject areas

- 1. Road signs
- 2. Driving techniques
- 3. Duties of a driver
- 4. Emergency stopping
- 5. Rules of the road
- 6. Motor vehicle technology
- 7. Traffic offence and penalties
- 8. Causes of accidents
- 9. Defensive driving

become involved in road accidents are generally on the increase.

The driver population consists of good and bad drivers. The bad ones may be on the road for a long time before being involved in any type of accident, although they may continuously violate traffic regulations and cause others to have accidents. This is a particular problem because of the large number of unlicensed or under-age drivers. For example, in 1988 about 10% of drivers were unlicensed (National Road Safety Committee 1988) and in 1992, 36% of drivers killed in road accidents were unlicensed (Ministry of Works 1992). Thus, to reduce the num-

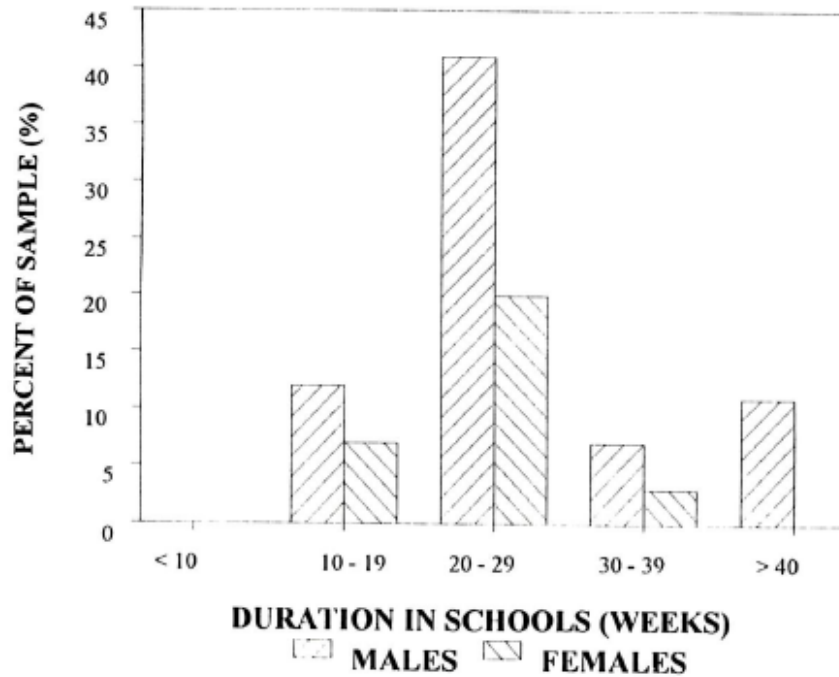


Fig. 3. Duration at driving school.



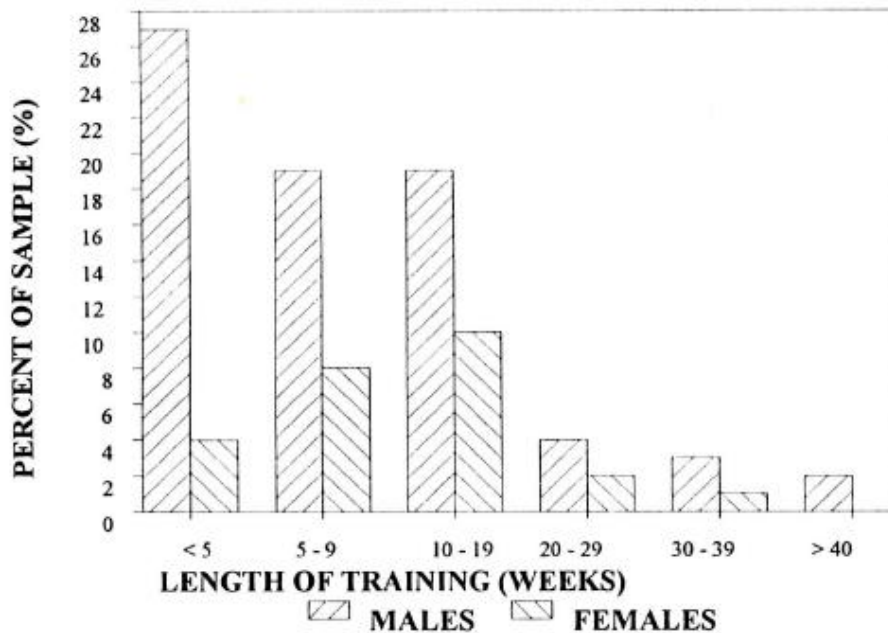


Fig. 4. Length of training for self-trained drivers.

ber of unlicensed and poor drivers in the traffic stream would require a more visible presence of police patrols and (maybe) better public information.

Table 2 shows the summary of L-tests at four main testing stations for two consecutive years. The pass rates for the stations were generally better in 1993 by comparison with the previous year. The pass rate seems to be consistently highest and lowest in Gaborone and Francistown, respectively. For example, in 1992 they were 36% and 22%, respectively. These figures increased to 43% and 25% in 1993. The performance in the southern stations (i.e. Gaborone and Lobatse) appears better than performance in the northern stations (i.e. Francistown and Selebi-Phikwe). These results may be due to the rapid increase in the number of driving schools, especially in Gaborone. Many of these schools enforce the mandatory training period of 6 months and present their trainees for L-tests only after achieving good driving skills. A follow-up study will compare the performance of self-trained and professionally trained drivers at L-tests.

Analyses based on age and sex of candidates were incomplete, as the relevant fields were not available in the returns. However, for 1993, the performance in Gaborone was categorized on gender. The pass rates for male and female candidates were, respectively, 30% and 13%. Thus, sex seems to be an important variable in performance on an L-test. However, as there are several other factors

(e.g. number of hours of instruction, extra hours of practical before a test, and conditions under which instruction was given) that can influence the performance of a candidate, many of which are interactive, it would be essential to use a multivariate statistical analysis to determine the major determinants of performance in an L-test (Forsyth and Kompfner 1990).

Age and gender of drivers are important variables in traffic monitoring because they can easily be determined and used in many control measures. Table 3 presents the breakdown by age and gender of respondents who received instruction from driving schools (i.e. sample A). It can be seen that 50% of the sample were aged between 20 and 29 years. For each age range, there were more males than females. It seems that older persons and teenagers do not attend driving schools in Gaborone. This observation is partially explained by the policy of some driving schools that refuse older persons because of poor visual acuity. However, further investigation is required, especially as younger people are more prone to involvement in road accidents. Table 4 depicts the age and gender of those respondents who did not attend a professional driving school. In a cohort study carried out in the United Kingdom, Forsyth and Kompfner (1990), found that at least 40% of the sample were aged below 20 years. Thus, it can be concluded that people learn driving earlier in life in the United Kingdom than in Botswana.

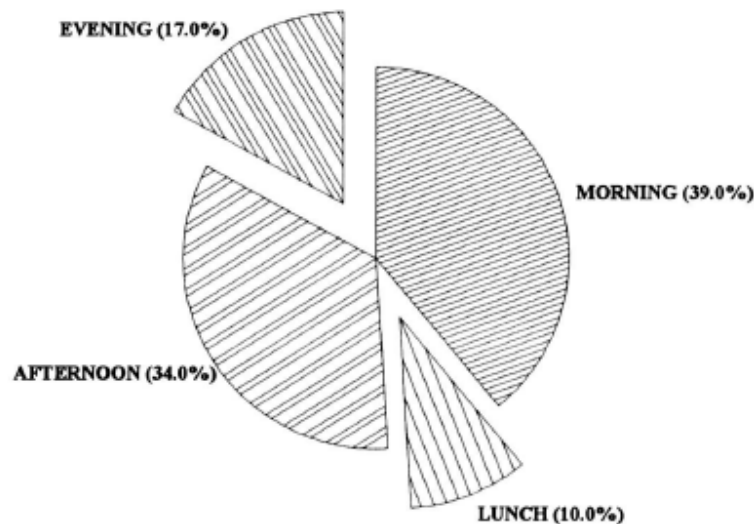


Fig. 5. Time of training in the driving schools.

Adequate driver training requires many hours of practice on different road networks. Figure 2 shows the variation of professional weekly instruction received by sex. Generally, male trainees received more hours of instruction than their female counterparts. For example, no female received 20 or more hours of training per week, whereas some male learners received up to 40 hours per week. However, most learners were instructed for less than 10 hours per week.

Figure 3 presents the duration of driving instruction. The minimum and maximum periods vary from 10 to 40 weeks, respectively, depending on sex. However, the average time for both sexes is about 24 weeks. Comparatively, Fig. 4 shows the length of training for drivers who did not attend a driving school. The distribution implies that most of them were driving unaccompanied in less than 20 weeks. However, self-trained female drivers have a relatively longer training period than their male counterparts. For example, about 38% and 52% of the males and females sampled, respectively, spent 10 or more weeks for training. A future study will monitor the driving history, including accident records, of this section of the driving population.

Figure 5 shows the time of day when trainees received instruction, and it can be seen that the majority of respondents were trained in the morning hours. Although some were trained in the evening, many novice drivers were ignorant of night driving until they started to drive unaccompanied.

All the respondents were asked whether they took the L-test more than once. The responses obtained from the sample are in good agreement with data collected from the Driver Examiners' unit, and this further lends credence to the sampling procedure.

Figure 6 shows the types of vehicle that were used for training. Only 18% of the sample were trained with pickup vans (i.e. Hilux) whereas, in the last 4 years, about 40% of the total accidents involved drivers of this type of vehicle. Also, none of the commercial driving schools currently uses pickup vans for instruction, even though they form the majority of the vehicle population (Ministry of Works, Transport and Communications, 1992).

Table 5 depicts the subjects studied at the driving schools. Most respondents agreed that they received instruction in the first five subjects, while the other subjects were not taught to between 43% and 98% of the sample. In particular, defensive driving and motor vehicle technologies seem neglected. Defensive driving is defined as driving to prevent accidents in spite of incorrect actions by others or the presence of adverse conditions (Forsyth and Kompfner 1990). It was observed by McCarthy (1988) that defensive driving courses brought safe driving techniques to many American drivers. Thus, it should also be an important component of driving instruction in any approved driving school in Botswana.

The trainees were requested to assess the quality of their training, based on the following six deter-

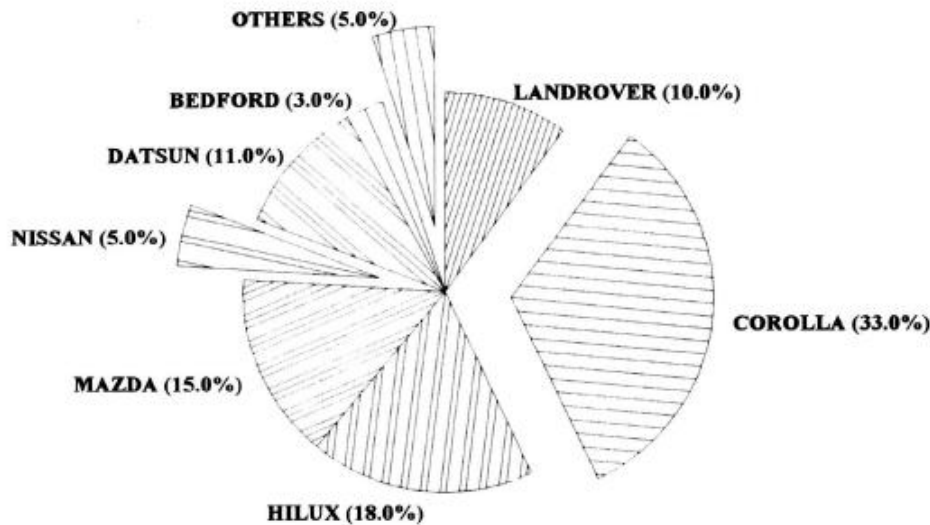


Fig. 6. Vehicles used for instruction.

minants: practice, road signs, vehicle technology, causes of accidents, preparation for an L-test, and availability of safety posters. Table 6 shows their ratings. Vehicle technology, causes and prevention of accidents, and availability of posters were not particularly satisfactory to most respondents. Thus, the use of audiovisual aids in driving schools should be highly encouraged. Also the variation of quality in these institutes is immense and may be due to the fact that operations of driving schools are not monitored or controlled in Botswana (Oladiran and Pheko, 1994). Consequently, the poor ones should be upgraded so that the curricula followed in all the schools are uniform as in many other countries, e.g. United Kingdom, Japan, Zimbabwe, and the United States.

Table 6. Rating of driving schools

Rating	*Rating areas					
	1	2	3	4	5	6
Good	67	70	20	33	53	24
Fair	28	21	31	32	28	20
Poor	5	9	49	36	19	56

\*List of rating areas

1. Practice
2. Road signs
3. Vehicle technology
4. Causes of accidents
5. Preparation towards L-tests
6. Availability of safety posters

## CONCLUSIONS

As people's tendencies to buy cars increase, the rate of vehicular accidents is likely to rise. This direct relationship can, however, be controlled by proper training of drivers and improving regulatory measures, including appropriate police patrols.

Many drivers in Gaborone did not attend driving schools, so that their skill was usually acquired by self-effort based on trial and error or assistance from relations. The only way to achieve homogeneity in driving skill is to regulate the driving programme. One major step in this endeavour is to standardise the driving schools and monitor their training performance and professionalism.

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