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Traffic safety in Sudan: magnitude and future challenges

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Abstract. The performance of road safety in Sudan has generally deteriorated over the last few years as accident rates have witnessed a tremendous increase. The number of road accidents was 23850 in 2001 rising to a total of 38515 in 2005, then to 61428 accidents in 2010. The 2010 fatality rate of 38 per 10,000 registered vehicles is very high compared to Arab, developing and developed countries. This paper reviews the magnitude, trends and characteristics of road traffic accidents in Sudan in order to provide a better understanding of the road safety trauma. It discusses the future trends and challenges which are expected to have significant bearing on both short and long-term traffic safety development. Finally short term remedial measures and long term National Road Safety Strategy are presented and recommended for implementation.

Key words: traffic safety; accident trends; road safety strategy; developing countries.

Introduction

In Sudan, road traffic accidents constitute one of the main causes of injury and death. It is identified as the four highest cause of death after Malaria, Tuberculosis and Diarrheal diseases with the human error being the main contributing factor.

The level of road safety in Sudan falls well behind many countries and it is very low compared to developed countries as the fatality rate per vehicle, for example, is approximately (30-40) times higher than those of the developed countries (1). The number of accidents increased more than 60 % over the last 10 years while the number of fatalities and injuries increased by about 62% and 60% respectively. Accident severity is particularly acute where the number of deaths per vehicle is about twelve times in high income countries. In 2010, the fatality rate per 10,000 vehicles was about 34% representing one of the highest rates in the world.

In view of the above statistics and of the expected future challenges it is of utmost importance to provide a proper and comprehensive understanding of the various aspects of road safety in Sudan then identify appropriate short term countermeasures and develop a long term national strategy in order to curb the present and future problem. This paper discusses and tackles both of these issues.

Magnitude, Trends and Characteristics of Road Traffic Accidents in Sudan

Recently, Sudan over the years has witnessed a tremendous increase in the various types of road accident. Figure (1) shows the variation in the number of various types of accidents over the period 1991- 2010. There was a total of (8340) accidents in year 1991 rising to a total of (18434) in year 2000 then to (61428) accidents in 2010. The decrease of total number of road accidents in 2010 is a result of the separation of south Sudan from the mother Sudan. The number of accidents per day also rose from about 65 in 2001 to about 168 in 2010.

The severity of accidents has also increased as the number of fatalities per day increased during the same period from 3 to 8 , while the number of injuries per day increased from 26 to 64 (2). Accident rates increased from about 75 accidents per 100,000 population in 2001 to about 187 in2010, whereas accidents per 10,000 vehicles increased from 533 to 801 over the same period. All of these increases are mainly attributed to the continuous increase of vehicle fleet and the limited road network provided added to many other factors related to poor drivers' behavior and level of law enforcement.

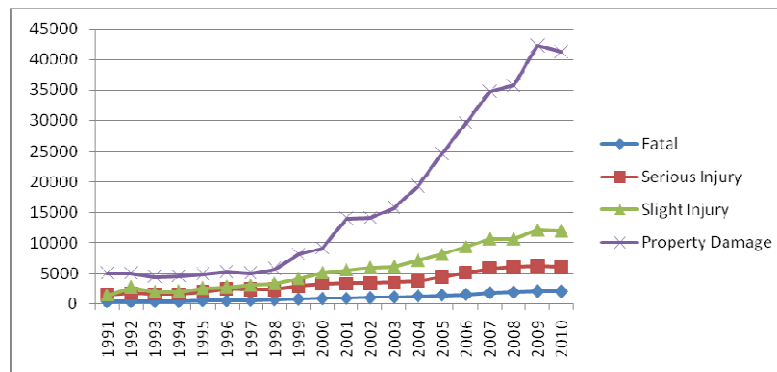


Figure (1): Trends of various types of accidents

Two accident rates are adopted to describe the road safety situation in Sudan which is the number of accidents per 100000 Population and per 10.000Vehicles. The variation in these rates are shown in figure (2) for the period 1991-2010.

It can be seen that although both accident rates fluctuated in the first few years but has been constantly increasing since 1997. The only slight drop in 2010 may be explained by possible incompleteness of data. This could be related to the trend of annual growth of both parameters.

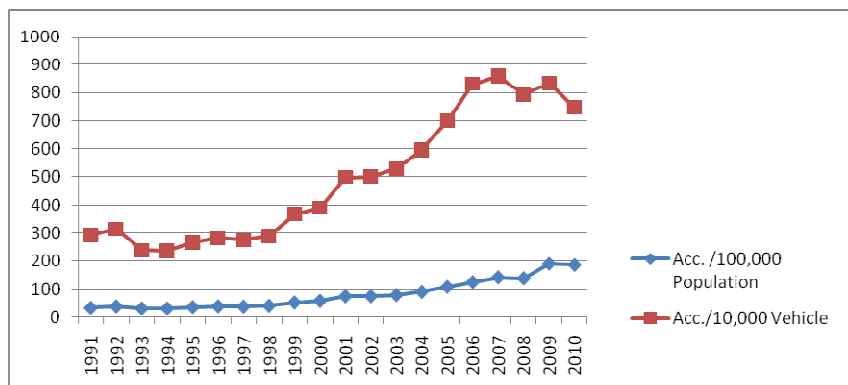


Figure (2): Trends of Accident Rates

The current fatal to injury ratio is about 1:10 which compares well with the Middle East and North Africa where it is 1:12. However, the ratio compares poorly with developed countries such as the United Kingdom for example where the figure is around 1:80.

The number of injuries per 100.000 populations showed constant increase over the years. However, the number of injuries per 10.000 vehicles showed an increase until 2007, but later fell. This could be attributed to the high increase in number of vehicles as compared to that of injuries (2). The number of injuries per 1000 accidents is shown to have decreased from 398.66 in 2001 to 382.58 in 2010. This is not an indication of road safety improvement, but because the number of injuries fluctuated at different rates than that of accidents(2).

Results and Discussion

This section presents the results of a more comprehensive analysis of accidents that occurred in Sudan during 2010 with the aim of providing a better understanding of traffic safety situation in the country(3).

In 2010 there were 61428 road accidents in Sudan, causing 23501 injuries and 2758 fatalities. Around 72.86% of the accidents occurred in the capital state (Khartoum) followed by Highway and Algezira, 4.19% and 3.89% respectively. These states comprise only 29.17% of the total population meaning much higher per capita accident rates than other states. This is expected since these states have most ministries, work places, economic activities and greater vehicle activity.

Temporal Variation of accidents could be summarized as follows:

- The highest percentage of fatal accidents (55.46%) occur during day hours (7am-7pm). and (44.54) occurs during night.
- The highest percentage of accidents (17.20%) occurs on Thursday which coincides with the end of working week causing high traffic volumes. On the other hand, the days of week which corresponds to low traffic volumes (Tuesday and Friday) show the lowest percentage of accidents.
- The winter season has the highest number and percentages of accidents. This may be explained by severe weather conditions. Furthermore, summer season was found to have the lowest average fatal accidents (2.70%). Serious Injury accident and slight injury accident follow the same average arrangement (most in winter and less in summer).

The distribution of accidents by region showing Khartoum state on the state registering the highest number of fatal accident (891), serious Injury accident (3695), Slight Injury accident (6156), Drunk (260) and as compared to other states of Sudan.

It was found that the road where the highest number of accidents occur is Khartoum-Madne in Aljazeera state. In 2010, a total of 355 accidents took place on this road. This is characterized with sharp curves, heavy traffic volume and high percentage of heavy vehicles (trucks). It is the eldest and longest highway in Sudan connecting Khartoum and east of Sudan. Khartoum-Aljabal road in Khartoum state is ranked second with total of (289) accidents. This road is also old and long connecting, Khartoum and West of Sudan. It carries heavy traffic flow with high proportion of heavy vehicles.

Pedestrian accidents were found to be the highest and account for 41.75% of total followed by collision accidents 28.06%, overturning accidents 17.02%, and falling accidents 8.46%. The high percentage of pedestrian accidents may be attributed to careless driving and pedestrians being not aware of road safety principles.

A total of 21200 vehicles were involved in the accidents that occurred during 2010, about 25.3 % of total vehicles involved in accidents were passenger cars indicating the

effect of the relatively high percentage of passenger cars in Sudan as they constitute about 61.1% of the total fleet of vehicles. The second highest vehicle types involved was minibuses (18.2%). This is because minibuses constitute the most form of public transportation used in Sudan. Motorcycle three-tire were also involved in a significant number of accidents 11.93% because they hinder the movement of vehicles and make staggering movement between cars. However, it is necessary to look into the total distances travelled by each of these transport modes (expressed in veh-km) before drawing any conclusion. It was not possible to obtain this parameter for Sudan.

Three main causes of accidents were identified namely speeding, tyre explosion and wrong overtaking which contribute to about 42%, 38% and 20% of total accidents respectively.

Most casualties were found to be of slight injury type (60%). However, there remains a cause for concern, as nearly one third of casualties are serious injuries and one tenth involves death.

As regards gender, females were involved in a lower percentage of casualties (28.60%) indicating more use of roads by males and less careful driving. In addition, it is generally noticed that females are more abiding to traffic regulations thereby reducing their severity of injury.

Regarding age group, children (under 18 year) were involved in about 12% of total casualties. Most casualties were young to middle aged, around 47 % of casualties were between 21 and 40 years old, perhaps because this group uses the roads more frequently, and they are less careful than other age groups, especially the elderly.

It was found that the age group more than 81 years is less defendants in casualty accidents (0.32). This may be attributed to the fact that this group tend to use roads less frequently, and they are more conscious.

Future Trends, Challenges and Strategies

A number of prediction models anticipate that the problem of road safety in Sudan is expected to grow in the future and to become more aggravating(4). This is due to a number of characteristics within the Sudanese society that might have significant bearing on both short-term and long-term traffic safety development. These characteristics produce challenges that need to be addressed. Among these challenges, the followings are identified as those most affecting short -term and long- term safety development.

- Increased life expectancy and many will need to travel longer journeys.
- The steady migration towards the larger urban centers.
- Increased car ownership and car usage in the absence of good and efficient public transport.
- Road network development does not match the needs.
- Poor driver behavior and increasing aggressive driving.
- Getting new types of vehicles without adequate inherent safety characteristics.
- Increased privatization of the road traffic and increased resistance against rules and regulations.

The above issues need to be addressed and the traffic safety consequences must be included in planning and implementing the traffic safety activities. Therefore, there is a need to apply short- term and long-term remedial measures. The short- term measures are designed to gain immediate benefits where the long-term measures take the form of a long term National Road Safety Strategy (NRSS) adopting safe system approaches.

The short-term remedial measures which are believed to be most effective include those related to engineering, education, enforcement and environmental issues of road safety.

The strategy has a clear vision, strategic objectives and interventions to improve road safety. The NRSS main long-term interventions include four cornerstones: safe roads, safe speed, safe vehicles and safe people. Making this strategy requires the collaboration of all concerned parties from private sector to civil society. In addition, the following recommendations are necessary for implementation:

1-provide improved reporting and recording system conduct sufficient data collection and analysis to understand accident risk and evaluate current performance.

2-Adopt a highly ambitious vision of road safety.

3- Employ proven interventions for immediate benefits and early gains.

4-Set interim targets to move more systematically towards the NRSS vision.

5-Develop a safe system approach to achieve ambitious targets.

6-Strengthen the road safety management system.

Conclusions

The magnitude, trends and characteristics of road traffic accidents in Sudan were analysed. The results showed that the level of road safety in Sudan is poor, falls well behind many countries and is very low compared to developed countries. The future trends and challenges which are expected to have significant bearing on both short and long-term traffic safety development were identified together with recommended short term remedial measures and long term National Road Safety Strategy.

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