

Review Article

Review of Road Traffic Accident Burdens in Transportation Sector of Ethiopia

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Abstract

The transportation sector has a very immense role in the economic development of a given country. Because human beings' day-to-day activities re highly depends on the transport service. But this sector has its own drawbacks, like road traffic crashes and environmental pollution. In Ethiopia, the road transport sector is poor in terms of quality and service delivery systems. Due to this, the frequent occurrence of road traffic crashes has been recorded in the country continuously. To that end, this paper was mainly intended to review road traffic accident burdens in the transportation sector of Ethiopia. In detail, reviewing the costs of road traffic accidents, the causing factors of road traffic accidents, the types of vehicles highly involved in road traffic accidents, and the victim groups of communities affected by road traffic accidents at the national level were the specific objectives of this paper. Meanwhile, all road traffic accident data found in Ethiopia from the federal police commission report papers, journal articles, and dissertation papers were used for analysis purposes. Besides, the collected data is presented in tables and figures. Furthermore, the data was analyzed and interpreted based on a descriptive research design. Finally, the result of this review shows that trends of road traffic accidents in Ethiopia have been increasing over time by killing, injuring people and damaging resources. Drivers' bad behaviors, low know-how of road users, poor road infrastructure, old vehicle conditions, and environmental factors are aggravating the occurrence of road traffic accidents in the country. Thus, to tackle this problem, educating people, enforcing traffic laws, enhancing engineering measures, and giving emergency responses were the recommendations given in this paper.

Keywords

Traffic, Traffic Accidents, Fatality, Injury

1. Introduction

Road traffic accidents represent a significant but often disregarded public health issue that calls for coordinated measures to achieve long-term and successful prevention. Over 3000 people worldwide pass away from traffic-related injuries every day [1].

In the active age categories of 5 to 29 years old, there were 1.35 million deaths and over 50 million injuries worldwide. In

addition, 500 million injuries and 13 million deaths worldwide will result from vehicle accidents during the next ten years [2].

Over 85% of fatalities and 90% of disability-adjusted life years lost are documented in 3rd world countries where the burden of RTA is disproportionately high [3].

In Africa, the rate of road traffic deaths is highest (26.6/100,000 people), followed by South-East Asia at

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Received: 19 March 2024; **Accepted:** 1 April 2024; **Published:** 29 April 2024



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20.7/100,000 people. [4]

African road fatalities account for more than 10% of global road fatalities, although accounting for only 4% of all motor vehicles worldwide. Road traffic crashes and injuries are predicted to rise quickly due to the increasing motorization of African nations, endangering the economic and human development of this underdeveloped but promising continent. The rate of traffic accidents in developing nations is more than twice as high as in industrialized nations, with 13.4 crashes per 100,000 persons in Europe and 32.2/100,000 in Africa, respectively. Approximately 90% of deaths, according to a breakdown of the data, take place in poor nations. At the moment, it ranks as the ninth most common source of illness burden in developing nations, particularly in Sub-Saharan Africa [5]. In Ethiopia, road traffic accidents are highly increasing due to various factors such as poor road infrastructure, low traffic law enforcement and low road traffic safety awareness among road users. Because of this, the severity of road traffic incidents is alarmingly increasing, and the country has experienced a tremendous loss of life and property each year. Also, the governmental report of the country shows that more than 3000 Ethiopians lose their lives and 10,000 of them are injured annually. Recently, a study conducted on road traffic incidents shows that in Addis Ababa city administration the fatality rate is 16.1% and above [6]. It exceeds 100 fatalities per 10,000 vehicles. This should be compared with Kenya and the United Kingdom, where the figures are about 19 and 2 per 10,000 vehicles, respectively. This figure can also be even bigger when considering the number of accidents that go unregistered. Ethiopia loses about €50 million annually due to traffic accidents. In addition, the victims are mainly public transport travelers in the working age group between 18 and 30 years old [7]. Thus, this paper was intended to review the road traffic accident burdens in the transport sector of Ethiopia.

2. Objective

This article was aimed to review the burden of road traffic

accidents in Ethiopia's transportation sector. More specifically, the paper was meant

- 1) To examine the costs associated with vehicular incidents
- 2) To determine what contributes to road traffic accidents
- 3) To identify which vehicle models are most frequently involved in traffic incidents
- 4) To identify more victim groups in Ethiopian communities affected by traffic accidents

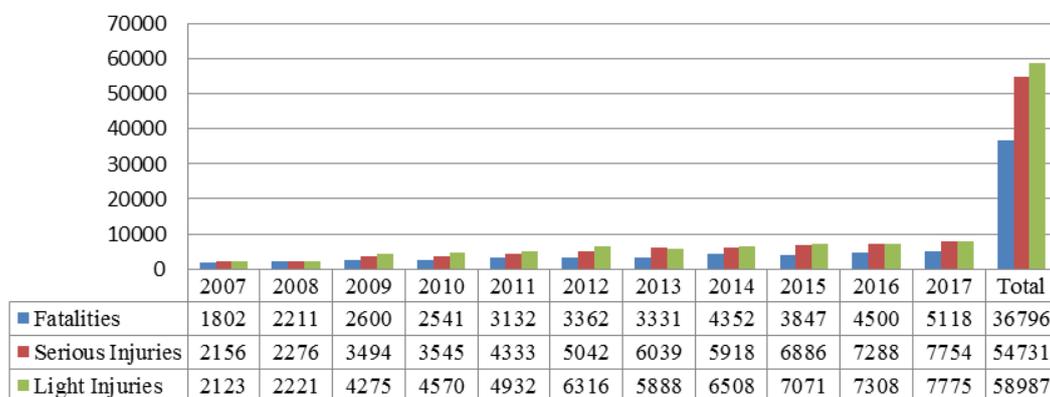
3. Methodology

Reviewing the burdens of road traffic accidents in the transportation sector and giving scientific recommendations is one of the fundamental steps used to curb the problem that has been losing life, causing physical injuries to lives and damaging resources. In this case, this paper basically emphasized reviewing the burdens of road traffic accidents in Ethiopia. To make this paper significant, the reviewed papers were all road traffic accident data found in Ethiopia for analysis purposes. Here, the entire information presented in this paper is extracted from the federal police commission report of Ethiopia, journal articles and dissertation paper sources. Finally, the collected data were presented in tables; figures and analyzed and interpreted accordingly.

4. Results and Discussion

4.1. Costs of Road Traffic Accidents

Due to poor management and policy, road traffic accidents are a serious issue that ranks Ethiopia among the worst countries in the world. Annually, a total of thousands of people are killed, the majority of whom are members of the working class [8].



Source: Federal Police Commission of Ethiopia, 2019

Figure 1. Number of Road Traffic Accidents in Ethiopia from 2007/8 -2017/18.

The number of traffic accidents in Ethiopia during the eleven years that have passed, from 2007 to 2008 to 2017–2018, is shown in figure 1 above. Accordingly, in the contry 36796 deaths, 54731 serious injuries, and 58987 light injuries were recorded. Along with this, the data in the above figure indicates that although the number of road traffic accidents tends to fluctuate from year to year, the number of fatalities and injuries has been rising.

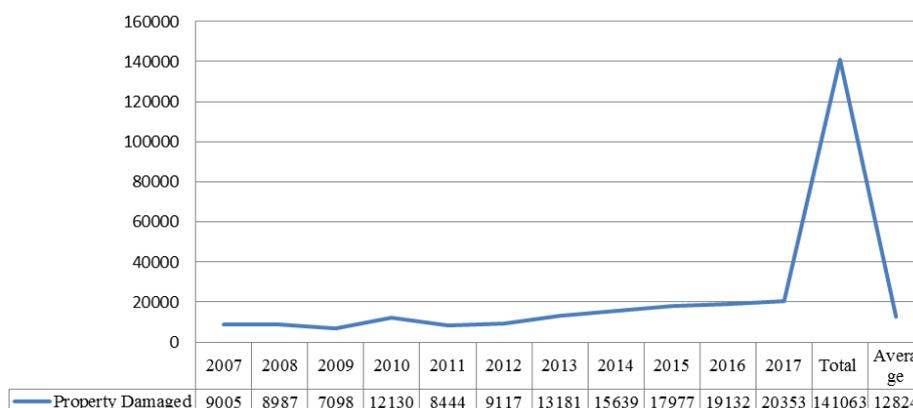
Table 1. Road Traffic Injury distribution among the Regional States (2016–2018).

Region	2018			2017			2016		
	Deaths	Serious Injuries	Light Injuries	Deaths	Serious Injuries	Light Injuries	Deaths	Serious Injuries	Light Injuries
Tigray	386	854	381	374	858	584	371	664	356
Afar	56	73	20	72	49	31	131	164	79
Amhara	1104	1032	1252	1152	1181	1924	1035	1190	1990
Oromia	1478	1448	1386	1882	1710	1586	1541	1459	1485
Somalia	132	127	134	204	533	447	157	408	396
BG	191	136	266	36	126	215	33	224	395
SN	712	1152	725	720	1121	922	634	990	937
Gambela	19	43	81	18	20	48	16	38	101
Hareri	55	203	188	34	224	507	53	123	284
AA	528	2210	1274	585	1804	1232	477	2085	1232
DD	36	129	242	41	128	279	31	141	180
Total	4597	7407	5949	5118	7754	7775	4479	7486	7435

Source: Federal Police Commission of Ethiopia, 2019

Table 1 above shows the distribution of road traffic accidents in different regions of Ethiopia. The presented data revealed that the distribution of road traffic crashes in different regions is uneven, with road fatalities and injuries concentrated on roads in the central part of the country. From out of 12 regional states, namely the Oromia Regional State, Amhara Regional State, South Nation Regional state and the Addis Ababa City Administration accounted for almost 85% of the fatalities in the country.

Budget lose due to road traffic accident in Ethiopia



Source: Ministry of Finance and Economic Cooperation, 2019

Figure 2. Budget lose due to road traffic accident in Ethiopia from 2007/07-2017/18.

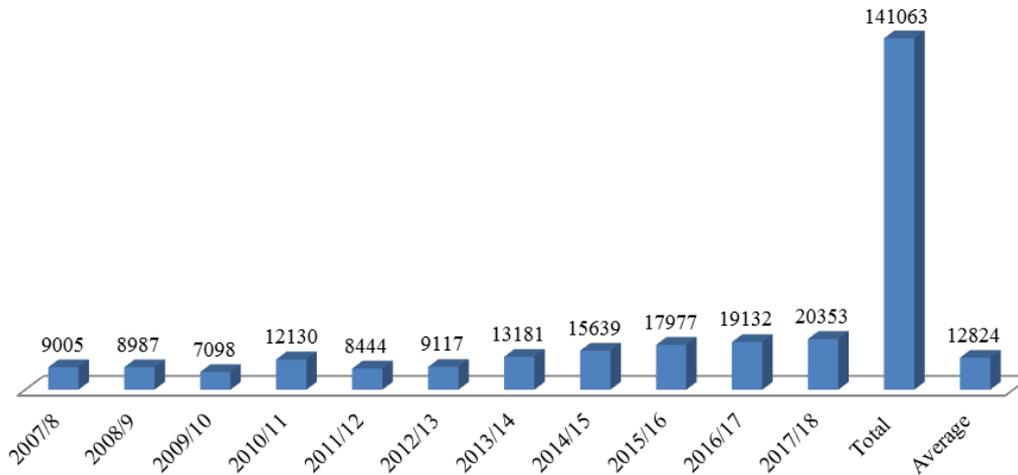
Around 36.3 billion birr were lost in Ethiopia as a result of traffic accidents. In the last eleven (11) years in Ethiopia, there have been 15 billion birr for fatalities, 12.7 billion birr for major injuries, 5 billion birr for minor injuries, and 3.7 billion birr for property damage. Over the course of the last eleven years, from 2007 to 2018, traffic accidents have cost Ethiopia 0.9% of its yearly budget on average [9].

The figure 2 above depicts that budget of Ethiopia from 2007/08-2017/18 and economic lose due to road traffic

accident. From the above figure Ethiopia lost 36.3 billion birr in 11 consecutive years due to traffic accidents which equals with loss of 9.8% of total budget of the country. Annually, in the past eleven year in average Ethiopia lost around 0.9% of budget due to road traffic accident.

Damage of Property by Traffic Accidents

Previous study results shown that road traffic accident has been a cause of damage for a large number of properties.



Source: Federal Police Commission of Ethiopia, 2019

Figure 3. The Property damaged in Ethiopia due to Traffic Accidents (2007/8 -2017/18).

Figure 3 above shows properties damaged by road traffic accident in Ethiopia during 2007/8 to 2017/18. From the figure 3 it has seen as the number of property damages has been increased from year to year even-if some fluctuations are observed for little bit. These demonstrate that in Ethiopia road traffic accident is a heartbreaking event that not only takes precious and irreplaceable human life but also damages property in large numbers.

4.2. Causing Factors of Road Traffic Accidents

In Ethiopia, the poor road network, absence of knowledge of road traffic safety, mixed traffic flow system, poor legislation and failure of enforcement, poor conditions of vehicles, poor emergency medical services, and absence of traffic accident compulsory insurance law have been identified as key determinants of road traffic accidents [10]. As well, the influence of alcohol or drugs, failure to respect the right-hand rule, failure to give way for vehicles, failure to give way to pedestrians, following too closely, improper overtaking, improper turning, overtaking on curves, over speeding, failure to respect traffic signs, driving with fatigue, driving without attention, improper parking, overloading, pedestrian errors, failure to respect traffic police orders, and improper stopping

were human factors that caused traffic crashes. Further, defective roads, failure in vehicles, and defective environments were causes of traffic crashes in addition to unidentified and other causes [11]. Similarly, another study finding shows that from 2011 to 2015 around Finfine, in 1407 traffic crashes, 1254 (89.12%) were human errors, 95 (6.75%) were road and environmental factors, and 58 (4.12%) were vehicle factors, respectively. Besides, drink-driving, driving opposite the right side, not giving priority to vehicles, not giving priority to pedestrians, driving over normal speed, reckless driving, improperly changing, and starting to drive wrongly were human factors that caused road traffic crashes. Besides, vehicle breaks, old tire problems, steering problems, and tire blasts were vehicle-related factors that cause traffic crashes in addition to road and environmental problems [12]. In general, these illustrations show that bad behavior by drivers, low know-how of road users, poor road infrastructure, weak traffic law enforcement, old vehicle conditions, and environmental factors (fog, forest, dust, mountain, and valley) were road traffic-causing factors in the country.

4.3. Victims of Road Traffic Accident

In developing nations, vulnerable road users, including

bicycles and pedestrians, account for the majority of traffic fatalities. Pedestrian injuries make up 84% of all road traffic fatalities in Ethiopia, compared to 32% in Britain and 15% in the United States. Conversely, in nations with high levels of motorization, the bulk of teen-ager fatalities on the roads are caused by drivers and passengers [13]. The Ethiopian traffic police commission report (2018) revealed that during 2009 to 2017, between 2977 traffic crashes occurred on Addis Ababa to Adama old roads about 1353(45.45%) were pedestrians, 1267(42.57%) were passengers and 356 (11.97%) were drivers. Likewise, in 8458 road traffic incidences recorded in Addis Ababa during 2018–2020, the victim groups were 6766(80%) pedestrians, 101591(12%) passengers, 423(5%) drivers and 254(3%) others [14]. Besides, in 2018, in Ethiopia, 4597 deaths, 7404 serious injuries and 5949 slight injuries were recorded. In these incidental cases, 2372(51.6%) passengers, 1513(32.9%) pedestrians and 712(15.5%) drivers died. Besides, in 7404 serious injuries, 3887(52.5%) were passengers, 2734(36.9%) were pedestrians and 786(10.6%) were drivers. Moreover, in 5949 slight injuries, 3786(63.6%) were passengers, 1660(27.9%) were pedestrians and 503(8.5%) were drivers [15].

4.4. Vehicles Involved in Road Traffic Accidents

The occurrence of traffic accidents in Ethiopia is increasing due to rapid motorization without appropriate regulation. During the year 2004/5, the 1801 fatal accidents recorded in the country, trucks, cars, taxis, buses and others were vehicle types were involved in road traffic accidents. From these fatality records, 859(48%) were caused by trucks, 320(20%) were caused by cars, 259(14%) were caused by taxis, 204(11%) were caused by buses and 117(6%) were caused by other vehicles [16]. Similarly, in 2012/13 there were 240 recorded traffic accidents in the Hospital of Wolaita zone. Among these recorded traffic accidents, 75 (31.2%) were caused by motor cycles, 52 (21.7%) were caused by Isuzu, 34 (14.2%) were caused by Bajaj and 30(12.5%) of them were caused by other vehicle types [17]. By the same token, the study conducted on magnitude and factors associated with road traffic accidents among traumatized patients in Arba Minch general Hospital illustrates that among 112 road traffic accidents, 45 (40%) were due to motorcycle, 37 (33%) were due to Bajaj three wheel motorcycle, 13(11.6%) were due to public bus, 13(11.6%) were by public bus, 6 (5.3%) were by Isuzu, 5 (4.4%) were by minibus and the remaining 6 (5.3%) were caused by other vehicles [18]. These shows concerning types of vehicles that cause road traffic accidents are from two wheels to high freight trucks and public transport buses. Above all, the recent data shows two wheel motorcycles and three wheel Bajajs are highly causing road traffic accidents in Ethiopia.

5. Conclusion

In all parts of Ethiopia, causing road traffic accidents is a factor that causes huge loss of life, physical injuries and property

damage. Thus, based on the findings of the review, the researchers conclude that in Ethiopia the distribution of road traffic crashes that caused death and injury in different regions is uneven. Likewise, from a total of 12 administrative regions, the Addis Ababa City Administration accounted for almost 85% of the fatalities in the country. Besides, due to road traffic accidents, Ethiopia lost a huge amount of budget, i.e. 15 billion birr for fatalities, 12.7 billion birr for serious injuries, 5 billion birr for light injuries, and 3.7 billion birr for property damage in the past eleven (11) years in Ethiopia from 2011-2018. In addition to death, injury and loss of budgets in Ethiopia, a road traffic accident has been recorded as a heartbreaking event that not only takes precious and irreplaceable human life but also damages property in large numbers. From the causing factors perspective, the stand of road traffic accidents; bad behavior of drivers, low know-how of road users, poor road infrastructure, weak traffic law enforcement, old vehicle conditions, and environmental factors (fog, forest, dust, mountain, and valley) were commonly recorded factors. Regarding the victims of road traffic accidents, vulnerable road users such as pedestrians, cyclists, passengers and drivers are highly involved in incidents. Furthermore, even if the occurrence of traffic accidents in Ethiopia were due to rapid motorization without appropriate regulation, recent data shows two-wheel motorcycles and three-wheel Bajajs, which cause high road traffic accidents in Ethiopia.

6. Recommendations

In order to tackle the road traffic crash problems of the road transportation industry by understanding the severity of road traffic accidents, the government of Ethiopia should design and implement policies that ensure the safety of road users in all regions of the country. Also, basic road safety education should be given to pedestrians, passengers, cyclists, motorcyclists and children in schools and working areas. Besides, traffic rules that enforce seat belt use, child restraint use and helmet use should be implemented properly. To minimize road related causes of traffic accidents, road projects should be designed and constructed based on ‘safety first’ traffic rules and urban roads should be separated into pedestrian, cyclist and vehicle roads. Above all, the transport authority of Ethiopia should follow up the driving license authorities providing institutions. Since most driving license providing institutions takes money and give license without giving effective trainings to the driver trainees.

Abbreviations

- AA: Addis Ababa
- BG: Benshangul Gumuz
- DD: Dire Dawa
- SN: Southern Nation
- UNECA: United Nations Economic Commission for Africa
- WHO: World Health Organization

Author Contributions

Jilo Wolde Bulcha is the sole author. The author read and approved the final manuscript.

Conflicts of Interest

The authors declare no conflicts of interest.

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