CONTRIBUTING FACTORS TO ROAD ACCIDENTS IN GHANA

Nathaniel Gyimah[1]
University of Education, Winneba, Ghana – **Alumnus**
Department of Geography Education
Nathanielgyimah88@gmail.com
+233249241021

Abstract

Road accidents in Ghana are taking out the lives of innocent Ghanaians. The causes of this calamity are always different from one point of view to another. This research has been executed to provide expedient information on contributing factors to road accidents in Ghana. The research has made use of predecessors' works on the causes of road accidents and their effects. Moreover, the study utilised a mixed/integrated approach to research mainly to produce unbiased information. A good collection of data was done through in-depth interviews and questionnaires. Furthermore, convenience and simple random sampling techniques were used. Genuinely, both qualitative and quantitative methods were used to analyse the gathered information. The study engaged two hundred (200) respondents as a sample size that is 100 road safety stakeholders and 100 road users. Moreover, the major contributing factors to road accidents were identified as follows; poor nature of roads, carelessness of road users, faulty vehicles, stress, unskilled drivers, inadequate road signs, inefficient MTTU personnel, speeding, lack of education, drunkenness, and gross indiscipline. Other findings were; Drivers: rash driving, violation of rules, failure to understand signs, fatigue. Pedestrian: carelessness, illiteracy, crossing at wrong places moving on the carriageway, Jaywalkers. Passengers: Projecting their body outside the vehicle, by talking to drivers. Vehicles: failure of brakes or steering, tyre burst, insufficient headlights, overloading, projecting loads. Road conditions: potholes, damaged road, eroded road merging of rural roads with highways. Weather conditions: Fog, snow, heavy rainfall, wind storms, hail storms. Based on the findings, recommendations were stipulated under the following headings; Education, Provision of road signs, Enforcement of traffic and road safety regulations, Avoidance of attitudes/distractions leading to road accidents, Availability of logistics, Construction of good roads, Maintenance of roads and vehicles and Positive development.

Keywords: *Contributing factors, road accidents, speeding, drunk driving, distractions to driver, red light jumping, safety gears, and seat belts.*

[1] Nathaniel Gyimah is an alumnus of the University of Education, Winneba, Ghana. He has a research interest in road safety. Nathaniel is known as a continental researcher who always engages in research irrespective of his location. He has been able to make international publications on; illegal small-scale mining, cocoa mass spraying program, technical and vocational education and training, and social housing systems.

1.1. Background of the study

There have been significant improvements in all sectors of the country's infrastructure, particularly in areas relating to roads and highways. Major road works could be seen all over the country and the rate of development has been sustained over a longer duration and supported with regular maintenance, reconstruction, and management, there is no doubt that the gains would be translated into long-term benefits (Kontoh, 2004).

In periods of high growth, it is very easy for engineers, designers, and planners of infrastructure to concentrate on meeting impending targets rather than taking a holistic approach to deliver what is appropriate, efficient and safe for long-term social and economic demands. The importance of road infrastructure for communities to function and generate effective economic growth cannot be overemphasised. Roads must, however, be designed and constructed to certain mandatory safety and functional standards for realistic life-cycle benefits to be accrued. Highway designers, therefore, have a professional and moral obligation to the safety of the different categories of road users: drivers, passengers, pedestrians, the disabled and include cart pullers and roadside hawkers, however, safety cannot be compromised for any reasons (Kontoh, 2004).

Incidentally, accident statistics of Ghana's roads (number of casualties per ten thousand people) are not desirably ranked among the worst in the world. Although many factors contribute to road traffic accidents, there is little doubt that engineering and planning improvements can affect road-user behaviour in such a way that accidents are less likely to occur. In other words, safer roads and well-planned roadside environments (or implementation of road safety standards) reduce the likelihood and severity of accidents (Kontoh, 2004).

According to the World Health Organisation (WHO) newsletter on road safety published in November 2003, road traffic injuries are a deadly scourge, taking the lives of 1.2 million men, women and children around the world each year. Hundreds of thousands more are injured on roads, some of whom become permanently disabled. Road traffic injuries involve issues of equity. They disproportionately affect the poor in developing countries, where the majority of road crash victims are vulnerable road users (pedestrians, cyclists, children, and passengers). Whilst road traffic accident rates are generally improving in high-income economies, many developing countries in Africa and Asia face a worsening situation (DETR, 1999). Injuries and disability resulting from road traffic crash put a significant strain on economies, typically consuming between 1 and 3 percent of a country's gross national product per annum (UN, 2003).

Traveling on Ghana's roads has become a nightmare as the country records more deaths from fatal road accidents. So far, over 230 people have died in Ghana in road accidents between January and February 2018 and 2,671 have experienced serious injuries, according to figures from the Road Safety Commission. As passengers blame drivers for speeding leading to fatal accidents, drivers are blaming the government for poor road construction, potholes, and other problems. The Accra-Kumasi highway, Accra–Aflao-Togo border, Accra-Cape Coast through to Takoradi and Kumasi –Techiman-Kintampo through to Tamale highways are noted as hotspots for road crashes in Ghana. In the Greater Accra region, the George Bush motorway alone has experienced 300 deaths as a result of road accidents since its construction in 2011, while the Tema motorway records over 200 deaths every year (Koranteng, 2018).

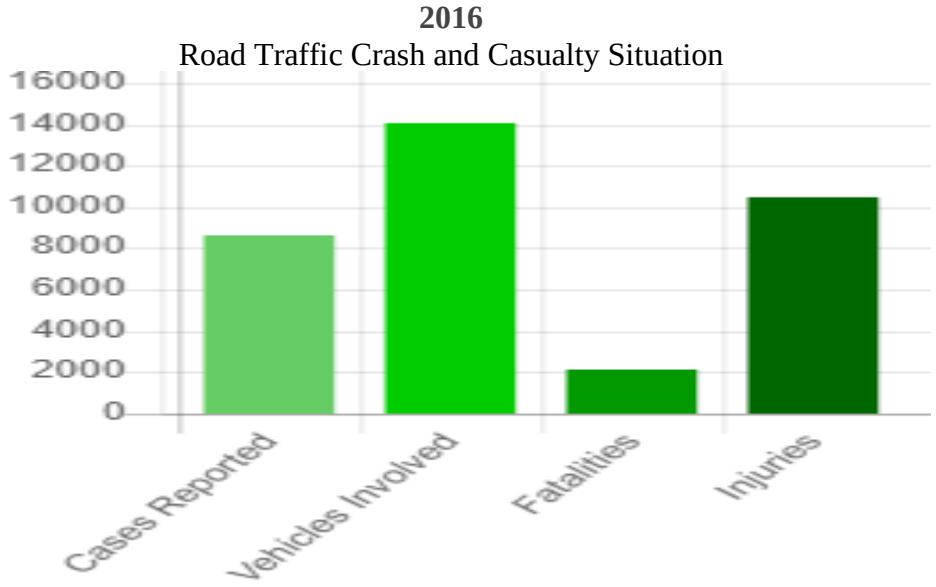
Road accidents occur for a variety of reasons. Often, drivers are distracted while behind the wheel, taking their focus away from the road. In other cases, drivers can become tired after spending multiple hours at the wheel, resulting in preventable errors. Sometimes, accidents occur for a

combination of reasons, from bad visibility to unsafe road design, or other drivers lack caution. While the causes of accidents can vary, the consequences are often the same, resulting in everything from vehicular and property damage to serious injuries (Most Common Reasons for Road Accidents, 2020).

Furthermore, road accident is the most unwanted thing to happen to a road user, though they happen quite often. The most unfortunate thing is that people do not learn from mistakes on the road. Most of the road users are quite well aware of the general rules and safety measures while using roads but it is only the laxity on part of road users, which causes accidents and crashes. The main cause of accidents and crashes are due to human errors (Causes of Road Accidents | Transport Department, Government of Jharkhand, 2020).

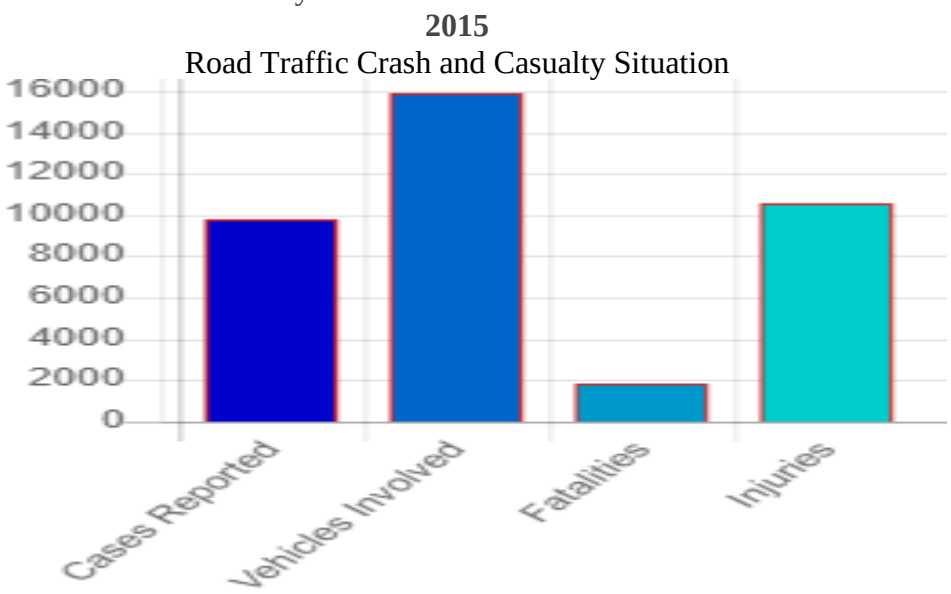
Statistically, the crash statistics in 2016 represent an increase of 15.6% and 6.77% in fatalities and serious injuries respectively but a reduction of 11.7% in crashes over the 2015 figures. For the third time running, the Traffic System Risk (TSR) index has hit the single-digit mark (9.24 fatalities/10,000 vehicles). There was an increase in fatal crashes by 7.6% in 2016, but at the regional level, the Greater Accra region recorded the highest percentage decrease of -22.1% in fatal crashes followed by the Upper West Region (-2.5%). All the remaining regions recorded increases in fatal crashes; Northern (34.9%), Volta (34.5%), Eastern (30.4%), Brong Ahafo (26.1%), Upper East (20.5%), Central (18.8%), Ashanti (11.3%) and Western (2.2%) (National Road Safety Commission, Statistics, 2018).

Figure 1.1: Road traffic crash and casualty situation in 2016



Source: National Road Safety Commission, Statistics, 2018

Figure 1.2: Road traffic and casualty situation in 2015



Source: National Road Safety Commission, Statistics, 2018

In addition to the above, in 2016, the Ashanti Region recorded the highest number of fatalities, totalling 403 deaths which represented 19.3% of all fatalities in Ghana. This was followed by Greater Accra Region (367 deaths; 17.6%), Brong Ahafo (299 deaths; 14.3%), Eastern (293 deaths; 14.1%), and Central (213 deaths; 10.2%). These five regions together contributed over three-quarters (75.5%) of all the road traffic fatalities in Ghana. It is worthy to note that, for the first time in three years, the Ashanti Region has recorded the highest number of fatalities as it used to be Greater Accra which was the leading crash-prone region based on the number of persons killed in road crashes. The worsening traffic safety situation in the Ashanti Region may, in part be attributed to the relaxation of traffic enforcement, in recent times, on the main Accra-Kumasi highway (National Road Safety Commission, Statistics, 2018).

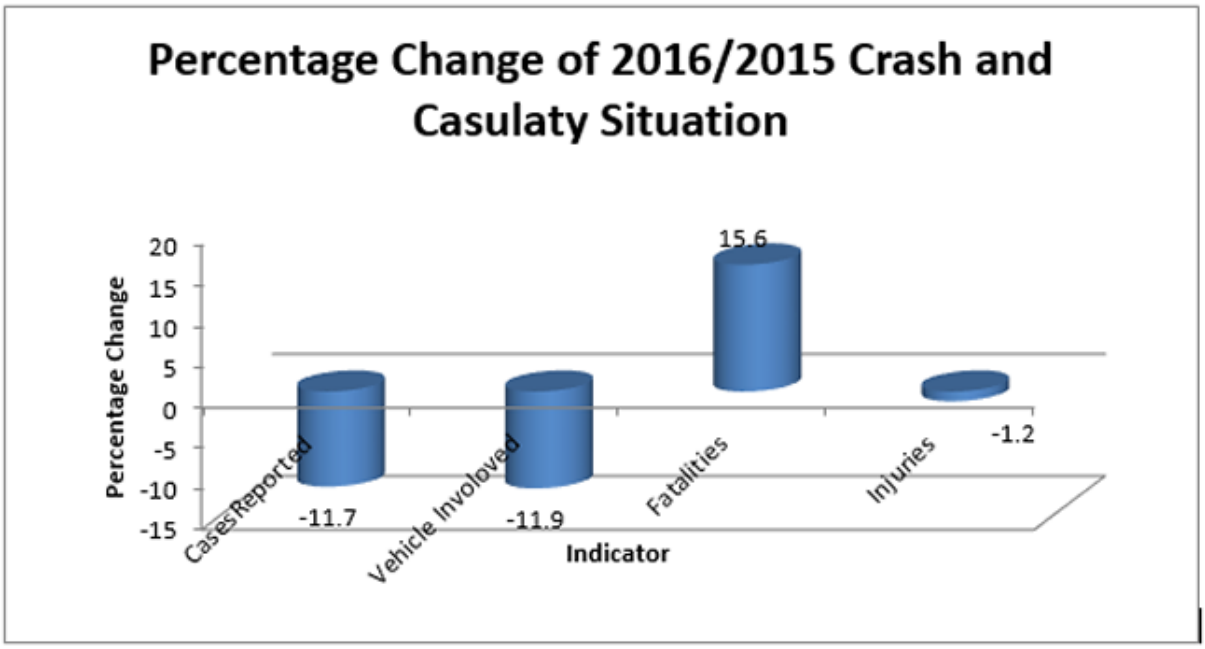
The road user class with the highest share of fatalities continued to be pedestrians (824; 39.5%) followed by motorcycle users (437; 21%) and then bus occupants (364; 17.5%). The crash statistics show that the pedestrian fatality share once again fell below the 40% mark resulting in an annual reduction of -0.84% in pedestrian fatalities over the 2015 figure. This is in sharp contrast with the annual increase of 59.0% for bus occupants, 35.3% for motorcycle and 17.5% for car occupant fatalities. Safety measures for pedestrians should be sustained whiles those for bus occupants should be refocused and stepped up to stem the situation (National Road Safety Commission, Statistics, 2018).

Moreover, motorcycle users also stood the greatest risk of death in traffic, registering the second-highest road traffic fatalities (21.0%) after pedestrians, thus overtaking fatalities among bus occupants (17.5%) and car occupants (10.7%). Though there was a drop of -9.3% in motorcycle fatalities in 2015, it increased by 35.3% in 2016. This calls for pragmatic measures to curb the rising rate of increase in motorcycle fatalities. Similar to 2015, approximately 60% of road traffic fatalities continued to occur on the non-urban sections of the road networks in 2016 while the remaining 40% were on the urban road networks. Compared to 2015, there was an increase in fatalities in both urban and non-urban road environments by 12.4% and 17.9% respectively. The

impact of speed humps on fatality reductions on the highways needs further investigations. Until 2016, there has been a consistent decrease in road traffic fatalities on the non-urban sections of the road networks since the year 2012 (National Road Safety Commission, Statistics, 2018).

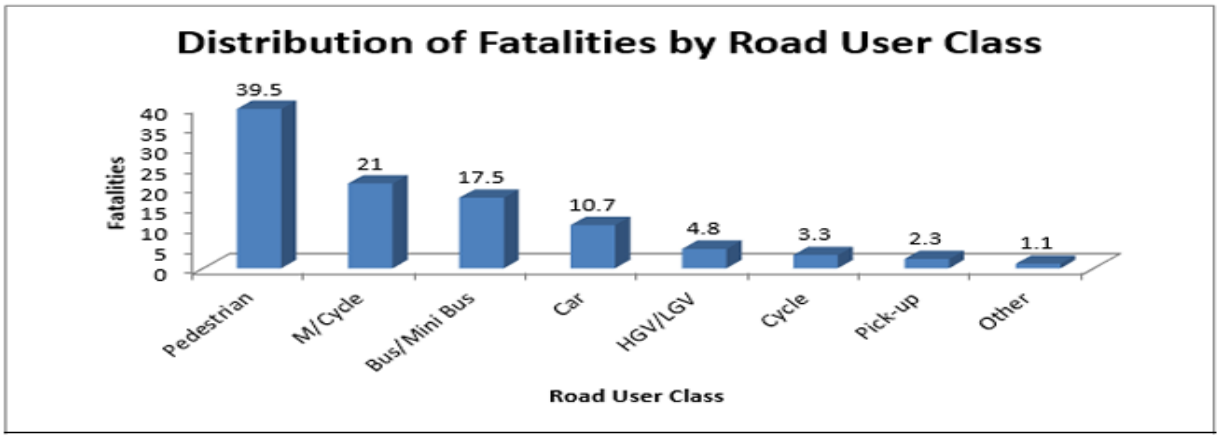
Furthermore, the month of December recorded the highest monthly fatalities, for the third year running. Compared to the national population pattern, males (78.5%) are over-represented in road traffic fatalities, accounting for about 3.7 times those of females and that the 26-35 years age-group continued to be the modal age group in the fatality statistics (National Road Safety Commission, Statistics, 2018).

Figure 1.3: Percentage change of 2015/2016 crash and casualty situation



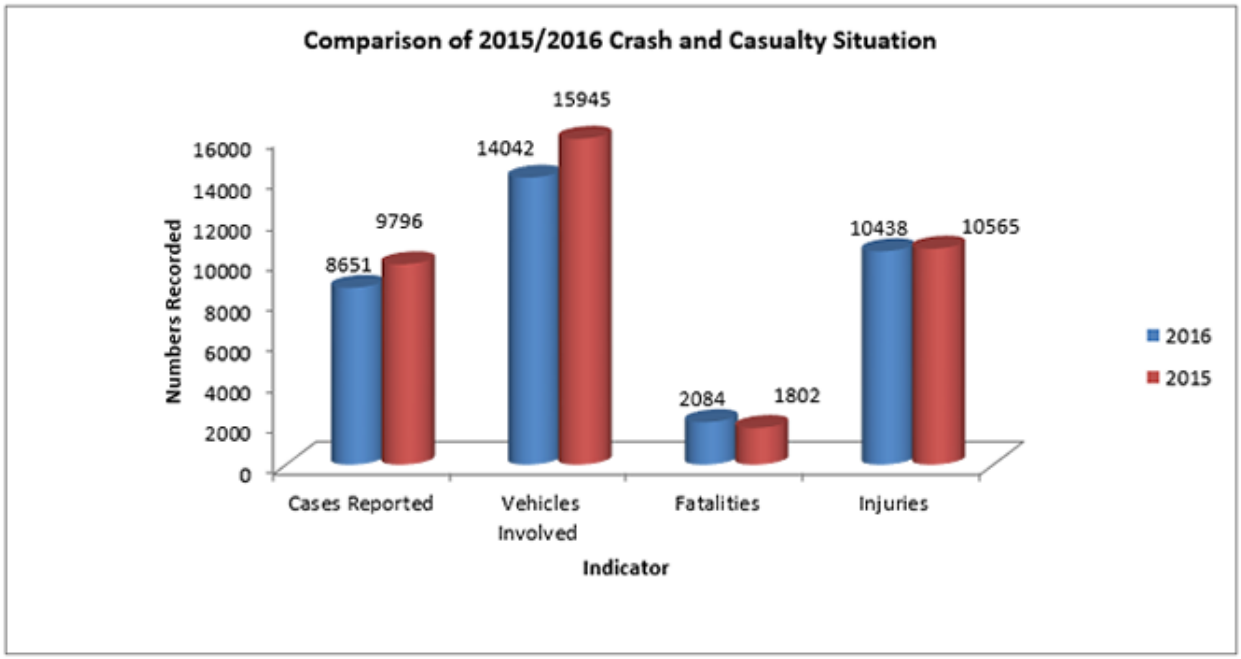
Source: National Road Safety Commission, Statistics, 2018

Figure 1.4: Distribution of fatalities by road user class



Source: National Road Safety Commission, Statistics, 2018

Figure 1.5: Comparison of 2015/2016 crash and casualty situation



Source: National Road Safety Commission, Statistics, 2018

1.2. Problem statement

Ghana's highway network shows encouraging signs of improvement but some reconstruction is required to avert long periods of neglect. There is a huge potential to reduce the likelihood and severity of accidents through better design standards and maintenance. In Ghana, like many developing countries, the social and economic cost of road traffic accidents can be reduced by moderate investment in road safety audits and assessment. There have been efforts to introduce cutting-edge technology to facilitate pedestrian flow, especially within urban areas. However, the designs are disproportionately unfavourable to people with natural infirmities, including the elderly, kaya-kaya, cart pullers and roadside hawkers (Kontoh, 2004).

However, highways in Ghana are inadequately signposted, and road markings are sometimes non-existent over long stretches of highway. Where departures from acceptable standards have been adopted, provision of well-designed road signs and markings can significantly contribute to the safe and efficient operation of road networks. Inadequate road markings increase the chaos and accident potential on roads, particularly in areas where complex and conflicting maneuvers are permissible. Placement of advertising billboards appears unconstrained and consequently clutters the highway corridor and impacts on visibility to the detriment of road users. Many of the safety implications on Ghana's roads are obvious, can be highlighted by independent safety auditing and assessment, and eliminated through the application of low-cost corrective measures. Given the substantial maintenance backlog of existing roads, it not considered acceptable to simply build new networks without rectifying deteriorated sections of existing roads and introducing countermeasures to get rid of safety hazards (Kontoh, 2004).

Factually, Ghana Institution of Engineers (GhIE) has expressed worry about the state of the road infrastructure in the country, especially their lifespan. Results from the Road Infrastructure Card (RIC), a process that assesses the quality and state of roads, indicates that roads in the country have been poorly built and deteriorate at a fast pace. The RIC, among other benchmarks, also monitors

and tests if the appropriate materials were used to build the roads, the level of supervision, specifications, and design. Climate change is likely to damage transportation infrastructure through higher temperatures, severe storms and flooding, and higher storm surges. There is, therefore, the urgent need for the assessment of new viable road construction materials to improve road quality and utilise cost-effective maintenance techniques in the preservation of the road assets. Road accidents have become one of the leading causes of deaths in Ghana; Efforts by government to reduce road accidents have been coupled with road safety awareness and education, although it has helped in a way but has not helped totally to curb the menace because of the increasing occurrences the primary cause of these accidents is hidden. The National Road Safety Commission (NRSC) announced that there were 19 fatalities per 10,000 vehicles in 2010. In 2011, 2,330 road accidents were bringing it to an average of 7 accidents per day across the country. In 2012, by November ending, 13,535 crashes have been recorded resulting in over 2,069 deaths in Ghana. In December 2012 alone, 246 people died and 1,260 were injured in car accidents. A car is first and foremost a mechanical vessel that operates in line with scientific principles. In a world of advanced technology and therefore causes of accidents can best be induced by engineering analysis. It is an undisputed fact that the vast majority of cars imported into this country are second hand with most of them being faulty due to the high-cost maintenance and repairs overseas. Interestingly enough, when they reach the shores of Ghana, they are handed over to mechanics known in the local parlance as "fitters" to undertake their repairs. These mechanics to the best of their knowledge and by improvising, try to fix these faults without the necessary precautions (Boamah, 2013)

It is therefore important to bring to light the contributing factors to road accidents in Ghana and also consider useful recommendations to reduce the rate of accidents in Ghana.

1.3. Objectives of the study

The main objective of the study was to find out contributing factors to road accidents in Ghana. Specifically, the study would emphasise on;

1. Causes of road accidents in Ghana.
2. Effects of road accidents in Ghana.
3. Recommendations to curb road accidents in Ghana.

1.4. Research questions

The study has the following research questions;

1. What are the causes of road accidents in Ghana?
2. What are the effects of road accidents in Ghana?
3. What are the recommendations to curb road accidents in Ghana?

1.5. Significance of the study

The study has uncountable monumental which are not limited to the following;

- Point of reference to expedient researchers who have the desire to research road safety.
- Capture the attention of government on the rate road accidents are taking away the lives of innocent citizens who are also breadwinners of their families.
- Prompt the ministry of roads and highways as a matter of urgency to bring sincere solutions to road accidents.
- Educate road users about the causes, effects, and recommendations to curb road accidents.
- Alert road stakeholders about the need to invent scientific-technological tools to foretell road users about impending and avoidable accidents.

1.6. Justification of the study

Indeed, road accidents have come to stay with humans whose causes are ramified and have kept on recurring anywhere, everywhere and anytime without replacement of the lives of lost souls. This calamity has to be viewed twice to get amicable solutions. Factually, people who are not qualified to get driving licenses manoeuvre in one way or the other to get them and in return cause road accidents. Drivers drive under the influence of alcohol which predominantly cause road accidents. The aforementioned contemplation boosted the researcher to venture into road accidents solely to find out the contributing factors, effects, and recommendations to curb the situation. This study stands to be exceptional because the researcher has attached fresh to it that is advising readers to collaborate with the recommendations to fight against road accidents in Ghana.

2.1.0. Road signs

2.1.1. Road markings

Road markings consist of a series of coloured lines, arrows, patterns, and symbols, simple words (such as STOP, SLOW, TURN LEFT,) and other devices that are applied to, set into, or attached to a carriageway of a sealed road. Their main functions are to guide vehicles into definite positions on the carriageway, supplement the regulations and warnings of traffic signs and signals and indicate permissible turning manoeuvres. Road markings (edge lines, lane delineators and centre lines) encourage order on roads and separate opposing traffic thereby eliminating conflict. On multi-lane carriageways, lane discipline allows traffic to flow smoothly, minimise chaos and maximise the capacity of the road. Without the edge of road markings, wheel loads outside edge lines will accelerate carriageway deterioration. In many parts of the world including Britain, various road markings have a particular statutory meaning which road user is obliged to know. Road markings are also used to indicate a variety of parking, waiting and loading restrictions. In Britain for example, continuous longitudinal lines on the carriageway are used to discourage crossing and transverse lines are used to indicate stop lines. The resources required to install road markings are infinitesimal compared to the capital cost of road construction. Road markings are cheap ways of imparting information to drivers and other road users, yet long stretches of some sealed primary roads in Ghana have no road markings, the easiest, quickest and final activity in the road construction process (Kontoh, 2004).

2.1.2. Traffic calming

This is a term used for the application of engineering and physical measures designed to control traffic speeds and encourage driver's behaviour appropriate to the environment. Traffic calming uses specific measures to reduce and control vehicle speeds to a level commensurate with the activities taking place along a road. It can also encourage drivers to adopt a uniform speed without excessive acceleration or deceleration. Besides, traffic calming can be used to influence a driver's behaviour towards non-motorised road users. The overall aim is to tame the motor vehicle so that its usage at particular locales is compatible with other forms of road users. A variety of measures can be used to influence the driver's behaviour and perception. The essence of traffic calming, however, lies not in the use of specific measures but in the overall objective to create safer roads and better environmental conditions. In Ghana, the commonest form is the road hump sometimes called the sleeping policeman. Narrow road humps installed across roads in pairs of twos, threes or more such as those found in some areas in Ghana may be referred to as rumble strips. In developed countries, traffic calming is seldom used on roads with speed limits greater than 50 km/hour. Its use in Ghana on primary roads where speeds are relatively higher due to lack of resources and mechanisms to enforce speed regulations, especially on approaches to towns and villages, pedestrian crossings, schools are considered appropriate provided the strategic objectives of improving driver's behaviour, concentration, awareness and reducing speeds are achieved. The sudden encounter of road humps is dangerous. It is not good for installing road humps without the

necessary advanced warning as seen in some areas in Ghana. It has been found, for example, that the most effective traffic calming measures are generally those that are very conspicuous (Kontoh, 2004).

2.1.3. Pedestrian facilities

Walking is the most frequently used mode of transport because it is involved in all modes of travel. Pedestrians encompass people of both sexes and all ages and socio-economic groupings. They include people of various degrees of physical fitness, including the elderly, the disabled or the mobility impaired. In Ghana, it is considered reasonable to define pedestrians to include cart pullers and the kaya-kaya man or woman (street porters). It is worth remembering that the majority of serious injury and fatal road accidents occur to pedestrians for obvious reasons. Pedestrian facilities in Ghana include footways, footbridges and pedestrian crossings. The commonest at-grade pedestrian crossings in Ghana are the zebra crossings where the pedestrian has legal priority over the motor vehicle. A motor vehicle must, therefore, give way to a pedestrian who steps onto a zebra crossing and this precedence continues while the pedestrian is on the carriageway. In Britain, zigzag, double yellow or double red lines substitute for edge and lane markings either side of pedestrian crossings. The relevant design standards encourage designers to incorporate high-friction surfacing approximately fifty metres in advance of pedestrian crossings to assist and minimise the risk of skidding during breaking, thus offering additional protection to users (Kontoh, 2004).

2.1.4. Traffic Signs

Road signs offer a medium for communicating with drivers to assist them in the driving task.
Three principal types of signs can be identified according to their functions:

- Regulatory signs; carry mandatory instructions which must by law be obeyed or prohibit certain manoeuvres respectively;
- Warning signs; are usually advanced instructions which alert motorist to danger ahead;
- Information signs; are intended to assist drivers in getting to their destination.

By convention, road signs need to be comprehensible to all including non-local or foreign drivers. Emphasis is therefore placed on the use of signs which communicate their messages by ideographic representations rather than by inscriptions. Road signing is an area in highways, traffic, and transportation engineering that is benefiting from advances in modern technology. New road signs being promoted in developed countries include variable message signs, in-vehicle information, and navigation systems, highway telematics, and many others and are based on satellite communication, video surveillance and global positioning systems. These are geared towards achieving a comprehensive intelligent transport system (Kontoh, 2004). Road signing in Ghana is generally very basic and a complete overhaul of the system is essential as some of the discussions above already show. The only signs identifiable in Ghana within the highway corridor are probably the private advertising billboards, which may be illegal. Numbers of signs per stretch of road, typeface, size, colour, mounting height and design have not been regulated. These signs undermine the serenity of road space, are stressful in particular to the non-local drivers, and impact on the environment in the form of visual intrusion and obstruction (Kontoh, 2004).

2.1.5. Drainage

The majority of highway culverts in Ghana have been built in concrete, with headwalls at both the upstream and downstream ends. These headwalls have structural concrete upstand abutting the running edge of the carriageway with workmanship generally beyond reproach. The structural headwalls stand in isolation, range in height from 450mm to 1000mm, and above the finished road level. Most highway design standards would recommend some protection for concrete obstructions close to the running edge, usually in the form of safety fencing to contain errant vehicles and avoid

impact. These concrete structures are particularly dangerous on unlit urban and rural roads. The effect increases on bends, peaks, and troughs, and on unsealed roads where vehicles utilise wider road space to avoid deteriorated sections. In the absence of safety fencing, the most cost-effective way to downgrade the risk of impact is to coat the structures with high visibility reflective paint in vertical or horizontal stripes of contrasting colours (usually red, yellow or black stripes in white background). Concrete or stone-lined ditches either side of settlements along high-speed rural and urban roads have similar safety implications. This group of ditches could be lined with inexpensive marker posts or bollards with reflective bands to make them more conspicuous (Kontoh, 2004).

2.2.0. Causes of road accidents

According to the Transport Department in Jharkhand, the following are causes of road accidents;

2.2.1. Speeding

Most of the fatal accidents occur due to speeding. It is a natural psyche of humans to excel. If given a chance man is sure to achieve infinity in speed. Driving above the speed limit is a common practice for many motorists. It is also illegal behaviour that vastly increases the risk of losing control of a vehicle and causing an accident. The faster a vehicle travels, the longer it takes to slow down in the event of an obstacle. Even a small increase in speed can result in a much higher risk of being involved in a collision or other type of accident. As such, motorists need to be aware of the speed at which they are traveling and stay within the legal limits. An increase in speed multiplies the risk of accident and severity of the injury. Faster vehicles are more prone to accidents than slower ones. The higher the speed, the greater the risk. At high speed, the vehicle needs a greater distance to stop (braking distance). A slower vehicle comes to halt immediately while faster one takes a long way to stop and also skids a long distance due to the law of motion. A vehicle moving on high speed will have a greater impact during the crash and hence will cause more injuries. The ability to judge the forthcoming events also gets reduced while driving at a faster speed which causes error in judgment and finally a crash.

2.2.2. Drunk driving

Consumption of alcohol to celebrate any occasion is common. But when mixed with driving it turns celebration into a misfortune. Alcohol reduces concentration. It decreases the reaction time of a human body. Limbs take more to react to the instructions of the brain. It hampers vision due to dizziness. Alcohol dampens fear and incites humans to take risks. All these factors while driving cause accidents and many times it proves fatal. For every increase of 0.05 blood alcohol concentration, the risk of accident doubles. Apart from alcohol many drugs, medicines also affect the skills and concentration necessary for driving.

2.2.3. Distractions to driver

Though distraction while driving could be minor but it can cause major accidents. Distractions could be outside or inside the vehicle. The major distraction nowadays is talking on a mobile phone while driving. The act of talking on the phone occupies a major portion of the brain and the smaller part handles the driving skills. Drivers can become distracted behind the wheel for a variety of reasons. Some of the leading causes of distracted driving accidents include using a cell phone while driving, as well as eating food or drinking from a mug or bottle while behind the wheel. This division of brain hampers reaction time and ability of judgment. This becomes one of the reasons for crashes. Some of the distractions on the road are;

- Adjusting mirrors while driving
- Stereo/Radio in vehicle
- Animals on the road

2.2.4. Red light jumping

It is a common sight at road intersections that vehicles cross without caring for the light. The main motive behind Red light jumping is saving time. The common conception is that stopping at the red signal is a wastage of time and fuel. Studies have shown that traffic signals followed properly by all drivers save time and commuters reach the destination safely and timely. A red-light jumper not only jeopardizes his life but also the safety of other road users. This act by one driver incites another driver to attempt it and finally causes chaos at the crossing. This chaos at the intersection is the main cause of traffic jams. Eventually, everybody gets late to their destinations. It has also been seen that the red-light jumper crosses the intersection with greater speed to avoid the crash but it hampers his ability to judge the ongoing traffic and quite often crashes.

2.2.5. Avoiding safety gears like seat belts and helmets

The use of a seat belt in four-wheeler is now mandatory and not wearing seat belt invites penalty, same in the case of helmets for two-wheeler drivers. Wearing seat belts and the helmet has been brought under law after proven studies that these two things reduce the severity of injury during accidents. Wearing seat belts and helmets doubles the chances of survival in a serious accident. Safety gears keep people intact and safe in case of accidents. Two-wheeler deaths have been drastically reduced after the use of helmet has been made mandatory.

2.3. Other causes of accidents roads in Ghana

Drivers: rash driving, violation of rules, failure to understand signs, fatigue, alcohol. ***Pedestrian****:* Carelessness, illiteracy, crossing at wrong places moving on the carriageway, Jaywalkers.

Passengers: Projecting their body outside the vehicle, by talking to drivers, alighting and boarding vehicle from the wrong side traveling on footboards, catching a running bus, etc. ***Vehicles:*** Failure of brakes or steering, tyre burst, insufficient headlights, overloading, projecting loads.

Road conditions: Potholes, damaged road, eroded road merging of rural roads with highways. ***Weather conditions:*** Fog, snow, heavy rainfall, wind storms, hail storms.

2.4. Poor roads prone to accidents in Ghana

Responsibly, two poor roads that are prone to accidents were selected from the previous ten (10) regions which are as follows;

- **A road that links Asankrangwa and Affiena:** This road had been badly deteriorated and untarred from time immemorial. It is a very busy road that takes people in and out of Asankrangwa in the Wassa Amenfi West Municipal of Western Region. It is one of the roads in Wassa Amenfi West Municipal that transport foodstuffs to its environment. This road usually becomes flooded during the rainy season where road users at this time carry all heavy loads on their heads and sometimes people get dead due to the flooding. The road is one of the cocoa roads in Wassa Amenfi West Municipal but has become a death trap for road users. It is a road that can take off uncountable innocent road users' lives. Importantly, this road demands the attention of the government be reconstructed and provide bridges where necessary mainly to avoid future road accidents since such road is prone to accidents. Even though there is a contractor on the road but it has been proven futile.

Figure 1.6: Poor nature of road that links Asankrangwa and Affiena

Source: Ayerakwa (2017)

- **Asankrangwa – Sefwi Bekwai road:** This is a road that links Wassa Amenfi West Municipal and Western North Region. It is also one of the roads used by many road users who transact in terms of business in Kumasi that is, it also links Wassa Amenfi West Municipal and Kumasi in the Ashanti Region. The road is in its delipidated state which needs the attention of the government to renovate it purposely to prevent future road accidents.
- Abuakwa – Bibiani road (Ashanti Region)
- Adenta – Aburi road (Greater Accra Region)
- Ajumako - Breman Asikuma road (Central Region)
- Amasaman town road (Greater Accra Region)
- Atronie - Akyerensua road (Bono Ahafo Region)
- Dode Pepeso – Nkwanta road (Volta Region)
- Dunkwa – Denkyire Asikuma road (Central Region)
- Jasikan – Kadjebi road (Volta Region)
- Kandiga – Sirigu road (Upper East Region)
- Koforidua – Mamfe road (Eastern Region)
- Konongo – Agogo road (Ashanti Region)
- Navarongo – Pungu (Upper East Region)
- Subi Junction – New Abirem road (Eastern Region)
- Tamale - Salaga road (Northern Region)
- Tepa Junction – Goaso road (Bono Ahafo Region)
- Wa – Bulenga road (Upper West Region)
- Wa – Nyoli – Sawla road (Upper West Region)
- Yendi – Saboba road (Northern Region)

2.5. Roads spotted for accidents in Ghana

Some seven roads in Ghana have been marked as the most dangerous highways in the country due to the number of recorded road accidents on these roads. In 2018 alone, there were over 13,000 reported cases of road accidents across the country, with about 15,000 casualties including recorded death cases. According to the National Roads and Safety Commission report (2004-2011), 13 major highways in the country were assessed for road crashes within the 8 years. The seven (7) roads below were spotted for accidents based on statistics as published by GhanaWeb on Tuesday, 26th March 2019 captioned as ‘’Seven most dangerous highways in Ghana’’;

1. **Accra–Cape Coast:** This road is 145 kilometres’ long via the N1 Highway. Within the 8 years, there were 6,104 road crashes on that stretch with 7,465 casualties. This means that consistently for eight years, 2 people died or got injured in road crashes on that stretch every single day.

2. **Aflao–Accra:** This road is 187 kilometre's off the N1 highway and has recorded 3,919 road accidents in the year under review. 6,826 persons got injured or died from the incidents.
3. **Tema – Hohoe**: This is 191 kilometres' long. This stretch recorded 1,965 road crashes with 4,393 people being casualties. This makes it an average of 2 persons getting injured or dying from each reported accident on the stretch via the N2 highway.
4. **Kumasi–Techiman**: This is a 126-kilometre stretch using the N10 highway. In 8 years, 1,702 road crashes were officially recorded on this stretch. This resulted in 3,481 casualties, indicating that each accident left about 2 people dead or injured.
5. **Kintampo–Tamale**: 939 road crashes occurred on this stretch within the years under review via the N10 highway with 2,523 casualties. The stretch is 196 kilometres.
6. **Takoradi–Elubo**: The 130-kilometre road via the N1 highway has seen 839 road crashes within 8 years and 1,425 casualties as a result.
7. **Tamale–Bolga**: On this stretch, 780 motor accidents were recorded with 1,696 casualties. The stretch is located on the N 10 highway and is approximately 160 kilometres long.

3.1. Methods and materials

The study focused on Ghana particularly road accidents by way of ascertaining the major contributing factors and their remedies. This research concentrated on both primary and secondary sources of data. Moreover, the study utilised a mixed/integrated approach to research mainly to produce unbiased information. A good collection of data was done through in-depth interviews and questionnaires. Furthermore, convenience and simple random sampling techniques were used. Genuinely, both qualitative and quantitative methods were used to analyse the gathered information. The study involved one hundred (100) road safety stakeholders: ten (10) road safety stakeholders were engaged from each of the previous ten (10) regions. Likewise, ten (10) road users from each of the previous ten (10) regions added up to get one hundred (100) road users. In total, the study engaged two hundred (200) respondents as a sample size that is 100 road safety stakeholders and 100 road users. Factually, road safety stakeholders engaged in the study were; DVLA, Ghana Highways Authority, Ghana Police Service, National Ambulance Service, Ghana Red Cross Society, NADMO, Ghana Health Service, Local Government Service, GPRTU, Ghana National Fire Service, and Ghana Education Service. However, road users involved in the study were; drivers, pedestrians, cyclists, motorists, and passengers.

4.1.0. Analysis and findings

4.1.1. Analysis

Table 1.1: Sex of respondents

Sex	Frequency (f)	Percentage (%)
Male	165	82.5%
Female	35	17.5%
Total	**200**	**100%**

Source: Field data (2020)

Many males participated in the study which comes with 82.5% of the total number of participants involved in the study and the remaining 17.5% represented females. This shows that females are needed most in any phenomenon, this low participation on the part of females are everywhere in the world where females do not avail themselves to social activities such as meetings, and conferences. This calls for the massive participation of females in any activities since decision making is made and observed collectively.

Table 1.2: Breakdown of respondents according to ten (10) region

Region	Frequency (f)	Percentage (%)
Ashanti	20	10%
Bono Ahafo	20	10%
Central	20	10%
Eastern	20	10%
Greater Accra	20	10%
Northern	20	10%
Upper East	20	10%
Upper West	20	10%
Volta	20	10%
Western	20	10%
Total	**200**	**100%**

Source: Field data (2020)

The in-depth interviews and questionnaires were administered on a regional basis where twenty (20) respondents (10%) were sorted from each of the previous ten (10) regions.

Table 1.3: Causes of road accidents

Causes of road accidents	Frequency (f)	Percentage (%)
Poor nature of roads	31	15.5%
Carelessness of road users	16	8%
Faulty vehicles	12	6%
Stress	18	9%
Unskilled drivers	29	14.5%
Inadequate road signs	10	5%
Inefficient MTTU personnel	11	5.5%
Speeding	28	14%
Lack of education	15	7.5%
Drunkenness	20	10%
Gross indiscipline	10	5%
Total	**200**	**100%**

Source: Field data (2020)

Road accidents are predominantly caused by poor nature of roads as 31 participants stressed that representing 15.5% of the total participants. 16 respondents which represented 8% emphasised that road accidents are caused by the carelessness of road users. 12 respondents denoting 6% disclosed that road accidents are caused by faulty vehicles. 18 participants representing 9% made it known that stress sometimes causes accidents. 29 participants (14.5%) agitated that accidents are mostly happened by unskilled drivers who manage badly to get driving licenses. 10 respondents (5%) cleared the air that road accidents are caused by inadequate road signs which means some roads in Ghana do not have road signs, for example, a road that links **Asankrangwa** and **Affiena (Wassa Amenfi West Municipal, Western Region).** 11 participants (5.5%) aired that inefficient MTTU personnel has resulted in many road accidents. 28 (14%) respondents disclosed that speeding has brought road accidents to its peak. 15 participants (7.5%) alarmed that lack of education has also become a key contributor to road accidents. 20 respondents (10%) said that drunkenness has great involvement in road accidents as a lot of drivers drive under the influence of alcohol. 10 participants (5%) lamented that gross indiscipline has hidden say to road accidents. Inferentially, the causes of road accidents are dependent on the lamented causes reported by the respondents.

Table 1.4: Effects of road accidents

Effects of road accidents	Frequency (f)	Percentage (%)
Death	87	43.5%
Damage of property	19	9.5%
Injury	61	30.5%
Unnecessary expenses	11	5.5%
Negative economic impact	10	5%
Depopulation	7	3.5%
Business failure	5	2.5%
Total	**200**	**100%**

Source: Field data (2020)

87 respondents (43.5%) alarmed that the major effect of road accidents is death which is inevitable but sometimes avoidable: They also lamented that their numerous family members were dead because of road accidents. 19 participants (9.5%) cleared the air that road accidents have resulted in many uncountable damages of property. 61 respondents (30.5%) said that injury has become another option apart from death: Many people have become disable due to road accidents. 11 participants 5.5%) aired that unnecessary expenses are also part of the effects of road accidents since expenses which are not budgeted become budgeted in the event of road accidents. 10 respondents (5%) disclosed that road accidents bring negative economic impact on the economy because economic gurus sometimes lose their lives in the course of road accidents. 7 participants (3.5%) said that road accident brings a reduction in the population since road accidents take off the lives of people daily, monthly and yearly. 5 respondents (2.5%) lamented that road accidents sometimes bring business failure in the sense that many people travel to a place for businesses so accidents which are occurred in this enclave result in business failure and sometimes, businessmen and women die out of road accidents. Implicational, all effects of road accidents are negative and uncountable people lose their lives, properties are damaged, people become disable, unnecessary expenses are made, business persons are also lost, towns become depopulated, and economic gurus are also dead or injured all because of road accidents.

4.2. Findings

- It was known that the contributing factors to road accidents do not rest on a single entity but different factors come together to cause road accidents which are not limited to the following; poor nature of roads, carelessness of road users, faulty vehicles, stress, unskilled drivers, inadequate road signs, inefficient MTTU personnel, speeding, lack of education, drunkenness, and gross indiscipline.
- Other contributing factors to road accidents were highlighted from the perspective of drivers, pedestrians, passengers, vehicles, road conditions, and weather conditions.
- Another contributing factor was deficiency associated with road infrastructure.
- It was realistically found that the direct effects of road accidents are; death, injury, damage of property, unnecessary expenses, business failure, negative economic impact, and depopulation.
- It was also highlighted that there are myriad causes of road accidents but their effects are unwelcoming.
- It was ascertained again that the main causes of road accidents are human errors.

5.1.0. Recommendations

Recommendations are presented under the following headings based on the findings gathered; Education, Provision of road signs, Enforcement of traffic and road safety regulations, Avoidance of attitudes/distractions leading to road accidents, Availability of logistics, Construction of good roads, Maintenance of roads and vehicles and Positive development;

5.1.1. Education

- Intensive education for road users. Not only on road signs but other precautionary measures.
- Agency for road safety management should carry out education and sensitisation programmes across the country and constantly engaging stakeholders at all levels to take the necessary steps in their various endeavours to prevent human deaths and injuries on roads.
- NGOs, religious bodies, traditional councils/leaders, professional bodies, musicians, captains of industry and the Media should discuss road safety at their various platforms since the fight against road accidents can only be fought and won collectively.
- Proper road safety programmes are encouraged.
- Carefulness on the part of the drivers is urged.
- Resting periods are needed for drivers on a long journey.
- One should use safety belts and gears of prescribed standards and tie them properly for optimum safety.

5.1.2. Provision of road signs

- To ensure the safety of pedestrians, drivers need to be warned on approach to zebra crossings. Solid and conspicuous road markings are required on the carriageway approximately twenty metres either side of the crossing strip.
- For traffic calming to be effective on high-speed roads, it must always be preceded by a speed reduction measure which may be in the form of warning signs indicating the road feature ahead.
- As a matter of urgency, policy and decision-makers have to consider mounting well-designed directional signs to major landmarks such as universities, schools, and colleges, cultural centres, hospitals, hotels, cities, and towns.

5.1.3. Enforcement of traffic and road safety regulations

- Strict compliance with existing road safety procedures, standards, and regulations are encouraged.
- MTTU personnel should be effective and efficient.
- Corporal punishment for speeding drivers is greatly needed.
- Driving licenses should be given to competent drivers only.

5.1.4. Avoidance of attitudes/distractions leading to road accidents

- Avoidance of speeding
- Do not use your cell phone while driving
- Concentrate, keep your eyes on the road while driving.
- Never drink and drive.

5.1.5. Availability of logistics

- There should be adequate devices to check speed.
- There should be vehicles to transport MTTU personnel to checkpoints before, during and after road accidents.

5.1.6. Construction of good roads

- Construction of good roads is encouraged to avoid future accidents especially a road that links **Asankrangwa** and **Affiena** in the **Wassa Amenfi West Municipal** of Western Region.
- Engineers must take into consideration the avoidance of road accidents when designing roads.
- Major roads must be dual carriage
- Minor ones must be tarred
- Building good roads with good demarcations

5.1.7. Maintenance of roads and vehicles

- The government should renovate all damaged roads.
- Repair of cars are encouraged to make them road wealthy

5.1.8. Positive development

- Improvement of road safety laws is encouraged effectively.
- The government should empower all road safety stakeholders (NRSC, DVLA,) to invent scientific technologies on the roads mainly to alarm/foretell drivers, passengers, and pedestrians about avoidable accidents.

References

Accidents: *Seven most dangerous Highways in Ghana*. (2019). Retrieved on 28th March 2020 from https://www.ghanaweb.com/GhanaHomePage/NewsArchive/Accidents-Seven-most-dangerous-Highways-in-Ghana-733281

Ayerakwa, P. (2017). *A letter of appeal concerning flooding on Asankran Oda – Breman Road in the Asankrangwa District.* Retrieved on 28th March 2020 from https://www.modernghana.com/news/781708/a-letter-of-appeal-concerning-flooding-on-asankran.html

Boamah, S. P. (2013). *The hidden cause of road accidents and deaths*. Retrieved on 28th March 2020 from https://www.ghanaweb.com/GhanaHomePage/features/The-hidden-cause-of-road-accidents-and-deaths-282863

Causes of Road Accidents | Transport Department, Government of Jharkhand. (2020). Retrieved on 28th March 2020 from http://jhtransport.gov.in/causes-of-road-accidents.html

Jamal, H. (2016). *Highway Engineering & Transportation Engineering Lecture Notes Course Contents*. Retrieved on 28th March 2020 from https://www.aboutcivil.org/highway-transportation-engineering-lectures-notes.html

Kontoh, A. (2004). *Ghana's Roads? Which Way?* Retrieved on 28th March 2020 from https://www.ghanaweb.com/GhanaHomePage/features/Ghana-s-Roads-Which-Way-54862

Koranteng, K. A. (2018). *Ghana's Deadly Roads | FairPlanet*. Retrieved on 28th March 2020 from https://www.fairplanet.org/story/ghanas-deadly-roads/

National Road Safety Commission—Statistics. (2018). Retrieved on 28th March 2020 from http://www.nrsc.gov.gh/index.php/statistics

Ohio University. (2020). *A Civil Engineer's Look at Roads and Highways | Ohio University*. Retrieved on 28th March 2020 from https://onlinemasters.ohio.edu/blog/a-civil-engineers-look-at-roads-and-highways/

Yaw, A. (2018). *Engineers Lament Over The State Of Ghana's Roads*. Retrieved on 28th March 2020 from https://www.modernghana.com/news/849842/engineers-lament-over-the-state-of-ghanas-roads.html