

# BEHAVIOURAL FACTORS AND ROAD TRAFFIC ACCIDENTS: REFLECTIONS ON THE ACCRA-KUMASI-TAMALE CORRIDOR

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**Abstract:** The role of behavioural factors in risk research remains unclear despite a plethora of related research. This study provides a coherent assessment of behavioural and attitudinal factors as causes of RTAs on the Accra – Kumasi-Tamale (AKATA) Corridor. Using the mixed methods design, the study also analyses the contribution of perceived risk among road users on the corridor. The study showed that the distribution of RTAs on the AKATA Corridor by socio-demographic variables mirrors that of the national situation. The results showed that personal characteristics of drivers, such as sex, age, and education, are related quite well to road traffic accident occurrence. The results also demonstrated that behavioural factors and risk perception are by far the most important factors influencing aberrant driving and RTAs on the AKATA Corridor. In order to cure the problem the Ministry of Transport (MOT), acting through the National Road Safety Commission (NRSC), The Driver Vehicle And Licencing Authority (DVLA), and Government Technical Training Centre (GTTC), should establish fully the National Drivers' Academy in all ten regions in Ghana to provide professional training and development/refresher courses to drivers to improve their knowledge and skills. It is also recommended that there is the need to invest and concentrate efforts on driver education, training, and a progressive development for road safety officials, especially for personnel of the MTTU and for commercial drivers.

**Keywords:** Behavioural Factors, Road traffic Accidents, Accra-Kumasi-Tamale Corridor (AKATA).

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## 1. INTRODUCTION

The AKATA Corridor covers a distance of 654 km in total. The Accra–Kumasi section is 272 km long and is classified as a national road (the N6), while the Kumasi–Tamale section, which is 382 km long, is also classified as a national road (the N10). This route forms part of the Central Corridor Route and is the major route for the transportation of goods and services in Ghana. It serves the northern part of Ghana and the northern neighbouring state, Burkina Faso. The Accra–Kumasi–Tamale road has an average daily traffic volume of about 6,402 vehicles (MRH, 2005/2006). The average road width is about 7.3 m, with drains on one or both sides wherever applicable as one traverses the road. The road passes through five administrative regions of Ghana: Greater Accra, Eastern, Ashanti, Brong Ahafo, and Northern. The route serves as an international transit route for Ghana's landlocked neighbours, such as Niger, Mali, and Burkina Faso. In general, the road is asphalted and is considered a good road with an average condition score of about 80% (MRH, 2005/2006). Due to its good readability, it serves as a major route for the transport of goods between Tema Port and Tamale and Burkina Faso (Figure 1)



Source: MOT 2007

**Figure 1: Map of Ghana showing the AKATA Corridor**

## 2. METHODOLOGY

### 2.1 Questionnaire survey

A questionnaire survey was used to obtain data from drivers, passengers, pedestrians, and accident victims. Specifically, information was sought on issues such as individual profiles, environmental/physical factors and RTAs, road-user behaviour and driver training, traffic law enforcement, and institutional factors. The questionnaire included questions for passengers and pedestrians. This was conducted with passengers on board vehicles to determine their socio-economic characteristics, such as their profiles, the reasons people are involved in traffic accidents, attitudes and perceptions on the spate of accidents, user satisfaction, and so on.

The sampling procedure for the driver survey and the field survey was designed based on Road Traffic Accident black-spots designed by the Building And Road Research Institute (BRI) in 2004. The BRI lists the accident black spots in Ghana as follows: the Accra–Aflao road, the Cape Coast–Takoradi road, the Accra–Kumasi–Teshiman–Kintampo Road, and the Kumasi–Sunyani road. The focus of this study is the Accra–Kumasi–Tamale road.(AKATA)

The AKATA road was selected because of its high daily traffic volumes and its classification by the BRRRI in 2004 as accident-prone. That, notwithstanding, empirical research on the AKATA Corridor remains limited. Indeed, the BRRRI report attributed the bad traffic situation on the corridor to lack of effective planning, vehicle misuse, poor management delays, and accidents, among many other factors. The sample for survey was purposely selected from the towns identified in the BRRRI report primarily due to logistic, financial, and time constraints, in addition to the availability of data and the willingness of the populace to co-operate with the research team. The distribution of the selected field survey is given in Table 1.

**Table 1: Study localities**

| Road name         | Selected localities | No of general public | No. of Drivers | Total Respondents |
|-------------------|---------------------|----------------------|----------------|-------------------|
| Accra – Kumasi    | Accra               | 47                   | 3              | 50                |
|                   | Suhum               | 29                   | 1              | 30                |
|                   | Ejisu               | 39                   | 1              | 40                |
| Kumasi – Techiman | Kumasi              | 37                   | 3              | 40                |
|                   | Techiman            | 34                   | 1              | 35                |
|                   | Tamale              | 49                   | 1              | 50                |
| <b>TOTAL</b>      |                     | <b>235</b>           | <b>10</b>      | <b>245</b>        |

**Source:** Based on information extracted from BRRRI (2004)

In both Accra and Kumasi, views of three drivers each were sampled. This was informed by the fact that drivers at these stations travelled long distances (intra-regional or cross-country drivers) unlike the other selected town, where most of the drivers commute intra-regionally. Consequently, one driver each was sampled in those other sampled towns.

A detailed description of the methods used for the questionnaire surveys is presented below.

## 2.2 Driver, passenger and pedestrian survey

This was conducted with commercial drivers who used the road corridor. The study identified the demographic characteristics of those drivers play along the corridor. The questionnaire was pre-coded with several open-ended questions that required information on perceptions, risk, and attitudes, and institutional, physical, and behavioural factors that facilitate traffic accidents in the study area. To facilitate the exercise, research assistants were selected from the sampled towns on the road corridor and trained by the researcher to undertake the questionnaire survey. These assistants were further trained to administer the questionnaire to the general public in the sampled towns. A technique was employed in order to capture the views of both general public and specifically, prior accident victims on the corridor. It must be added that in each of the sampled research likely, the views of at least five (5) accidents victims on the corridor were purposefully captured.

## 2.3 Interviews

The interview method was geared towards eliciting information from interviewees and listening to them as they expressed their views, daily experiences, and opinions in their own words. Persons for interview were purposively selected based on their capacities as policy makers, policy implementers, or key stakeholders, or as victims of RTAs or persons involved in road safety management and traffic law enforcement. English or the local dialect of interviewees within the particular locality was used to conduct the interviews. The interviews were conducted to obtain information on the factors contributing to accident causality on the corridor. An interview guide was prepared for usage. Moen et al. (2005) note in their study on risk perception that collecting information from a person who is directly involved in a hazard makes it possible for him or her to explain with personal feeling how dangerous the risk of a certain phenomenon is. Available information shows that the people who most experience the effects of RTAs are the accident victims, because they are the

injured parties. The second participant is the government, which is responsible for the provision of security, and the third are the owners of the damaged vehicles. It should be noted that accident victims include drivers, pedestrians, officials, and any kind of affected person regardless of their status. Therefore, an accident victim stands as a sample of every person in the study area. The intention of interviewing accident victims was to better understand their feelings and to present a reasoned account of their everyday life experiences, exploring the commonalities and diversities in their suffering and social experiences across time and space. Each key respondent was interviewed separately.

Apart from the key informant interviewees with accident victims, a total of twenty eight (28) MTTU officers along the road corridor were interviewed. The guiding principle was how to obtain information on how traffic policemen collect road traffic accident data, problems encountered in dealing with accidents and victims, how rules and regulations are enforced, and how interference from politicians and the general motoring public potentially contribute to the upsurge of RTAs on the road corridor. Provision was also made for these interviewees to give their opinion on how RTAs could be prevented in their specific areas of operation.

Suffice to add that there were also some interviews with at least, a government official each from the Ministry of Road and Highways(MRH), the Ministry of Transport(MOT), the National Road Safety Commission (NRSC), and the Driver Vehicle and Licensing Authority (DVLA). With regards to government officials, purposive sampling methods were used. The focus was on traffic rules and regulations, and on policy and safety measures taken to prevent RTAs on the designated roads in the corridor. In addition to using formal interviews with individuals and officials, informal interviews were conducted by talking to people from different places both within and outside the study parameters, including professionals, NGOs, priests, and community-based organizations.

#### **2.4 Focus group discussions**

As part of the data collection processes, two separate focus group discussion (FGDs) one in Accra and the other in Tamale, were conducted to provide some quality controls on data collection. This was intended to provide checks and balances to make it easier to assess the extent to which a point of view was a shared view among all participants. Each of the group was made up of three participants, made up of police MTTU officials, drivers, an assemblyman representing the district assembly and the general public. This interaction provided opportunities to validate some of the responses during the key informant interviews with the individual identified groups who had been previously interrogated. The consensus reached richly enlivened the subsequent analysis and conclusions.

#### **2.5 Data analysis**

The quantitative data collected were edited with a view to addressing questions and determining whether they had been answered partially or not at all. After the editing, the coding of open-ended responses was undertaken. After careful editing, the data obtained from the field survey were entered into the Statistical Package for Social Sciences (SPSS for Windows 16.5) for analysis. The information from the FGDs and the interviews was analysed using largely qualitative methods (content analysis). Analysis of variance (ANOVA) was used in analysing the data to control for the various risk factors that are strongly associated with RTA causation. Chi-square ( $\chi^2$ ) was used to measure the relationship between RTAs and physical or environmental factors. Logistic regression was used to determine the relative strengths of the independent variables on the risk factors.

### **3. RESULTS AND DISCUSSION**

#### **3.1. Socio-demographic characteristics of respondents at the AKATA corridor**

Socio-demographic variables are generally recognized as an important predictor of various important conditions, including traffic accidents. The identification of socio-demographic variable determinants of risk to RTAs provides opportunities for targeting preventive interventions to specific groups of road users. This section discusses the demographic characteristics related to education, gender, marital status, and profession and how these influence the behaviour of a total of 245 road users interviewed on the AKATA Corridor.

The age distribution of respondents shows that roughly 27% were aged 21–30 years; 40% were aged 31–40 years; 22% were aged 41–50 years; 10.2% were aged 50–60 years; and the remaining 1.6% were aged above 60 (Table 3).

Table 2: Socio-demographic characteristics of respondents

| Variable                  | Frequency | Percentage |
|---------------------------|-----------|------------|
| <b>Gender</b>             |           |            |
| Male                      | 204       | 83         |
| Female                    | 41        | 17         |
| <b>Age</b>                |           |            |
| 21–30                     | 65        | 26.5       |
| 31–40                     | 97        | 39.5       |
| 41–50                     | 54        | 22.0       |
| 51–60                     | 25        | 10.2       |
| 60+                       | 4         | 1.6        |
| <b>Educational status</b> |           |            |
| No formal education       | 25        | 10.3       |
| Basic education           | 54        | 22.2       |
| Secondary education       | 69        | 28.4       |
| Tertiary education        | 95        | 39.1       |
| <b>Marital status</b>     |           |            |
| Single                    | 50        | 20.4       |
| Married                   | 166       | 67.8       |
| Separated                 | 22        | 9.0        |
| Widowed                   | 3         | 1.2        |
| Divorced                  | 4         | 1.6        |

Source: Field survey, 2012

From the table, it is apparent that majority of respondents sampled were young people, aged 31–40 years. This age group represents the economically active, a category among which many have become victims of RTAs on the roads. It is therefore highly probable that respondents, if driving, could equally engage in aberrant driving. The effect of age was increased after the adjustment of socio-economic factors. Several possible reasons have been proposed, including greater risky behaviour in young people, or greater exposure to high-risk situations through behaviour on the road. This result is in agreement with findings by Abane et al. (2010), who examined the relationship between age and R RTC risk and observed the relative induced risk calculated for 25 Metropolitan, Municipal and District assemblies (MMDAs). Their study revealed that drivers below 40 years old were generally found to have a relatively higher induced crash risk than their much older counterparts in Ghana. The propensity for this category to engage in deviant driving is high, leading to increased RTAs on the corridor.

Education not only broadens a person's perspectives on major issues, but also opens up access to greater opportunities in that person's living conditions. Education has been found to have played a significant role in drivers' level of inducement to crash risks (Keal, 1995). Drivers with a high level of education are more likely ( than those without formal education) to quickly read and process traffic information and take decisions that will not expose them to avoidable risk. Formal literacy in driving is acquired through reading and from private information channels. The formal schooling system remains the best process for improving access to information and broadening people's perception Sam (2011). In the context of driving, education is normally achieved through driving schools. Most of the information on driving is obtained through learning on the job—what is termed the 'informal system' in Ghana.

The survey showed that 10.3% of drivers had no formal education; 22.2% had basic education; 28.4% had secondary; and 39.1% had tertiary education. The analysis indicated that the majority of the respondents had more than basic education. The striking difference is that the survey is inconsistent with national data (BRRI, 2004) that says the majority of road users on the corridor have tertiary education. In general, the situation is that the majority of drivers on most of Ghana's roads do not have even full basic education (Abane, 2012). Surprisingly, that is not the case on the AKATA Corridor.

The number of drivers who are illiterate has implications for traffic safety in the towns and villages along the corridor. Many of the drivers may not be able to correctly read road signs and symbols and markings, thereby increasing their possible risk of crashes on the road and further exacerbating the accident problem. Levels of education may also be related to traffic risk perception. Education can be considered as an indicator of social status, and it is possible that perceived traffic risks vary between individuals with higher and lower social status. In this regard, Hoseth and Rundmo (2005) found that people with higher education took less transport risk. This indicates that individuals with higher education pose lower levels of traffic risk than people with low education. The results showed that respondents perceived higher probabilities of traffic accidents than the probabilities reflected in the national mortality statistics in terms of RTAs in Ghana (NRSC, 2012).

Marriage is recognized by society as union between a man and woman for the purposes of procreation, mutual support, and companionship. In the Ghanaian and African context, marriage is actually a union between two families. Marriage is socially defined to include formal unions that are legally, traditionally, or religiously sanctioned as well as informal cohabitation. It has always been said that marriage determines the level of responsibilities of individuals; this appears to be the case in driving also. The relationship between the marriage lives of drivers and risk-taking on the road was also examined.

The results from the survey indicated that more than 67% of respondents were married. The respondents who were unmarried were 33% for respondents aged 21–30. The proportions that were divorced separated and widowed were limited to the older ages. The high percentage of drivers who were married was expected, because the majority of them were in the age category where people are economically active. A sizeable number were school drop-outs or had basic education, but had got married immediately upon leaving school. Also more than 56% of those who were married had between one and five children. The analysis showed that wide socio-demographic disparities among respondents exist along the corridor. These attitudes in turn fuel the magnitude and extent of RTAs along the AKATA road corridor.

### 3.2. Driver training, licensing and testing

An important challenge to the national fight against RTAs is the work of transport institutions, be they policy makers, implementers—such as the NRSC, the MTTU, or the DVLA—or private driver training schools. The results of a self-assessment risk survey and content analysis of the curricula of selected driving schools in Ghana revealed weaknesses, as did the test items used by the DVLA to licence motorists. Both revealed that a substantial proportion of ingredients for producing efficient and effective drivers are still missing (Abane, 2012). The deficiencies relate particularly to skills acquisition, attention to risk-increasing factors, and self-evaluation issues. Most of the driver training programmes do not cover social pressure, lifestyle, and group norms, yet these are important issues in producing efficient and effective policies and programmes for road safety management.

The essence of driver training is to harmonize the industry with new methods of training delivery which are effective and efficient towards addressing attitudes and behaviour in order to reduce crashes in accordance with the National Road Safety NRSS III. Currently, the National Drivers Academy, collaboration between the NRSC, the DVLA, and the Government Technical Training Centre (GTTC), has been established with a view to raising the profile of driving as a profession to secure investment from vehicle owners and to reduce RTAs by helping drivers upgrade their skills and knowledge basis.

Indeed, it appears many drivers are not very clear about their goals when venturing into driving. For some young persons, driving seems to be a convenient means to earn some money, given the challenges in finding more preferred jobs. Not surprisingly, a national survey on perceived risks—which included data on possession of licences, distances covered per month, and personal involvement in crashes—showed that many drivers would not qualify to drive if subjected to a test based on a driver education framework developed and proposed by Berg (2006). This is not entirely unexpected, given the fact that among those who described themselves in the survey as professional drivers, substantial numbers had relied on friends, family members, or the age-old 'driver's mate' system rather than on driving institutions when learning how to drive (Table 5.2)

**Table 3: Medium used to learn driving by type of occupation (%)**

| Medium         | Public service | Engineer | Businessman/<br>Woman | Unemployed | Peasant farmers | Professional Driver |
|----------------|----------------|----------|-----------------------|------------|-----------------|---------------------|
| Family         | 10             | 2        | 15                    | 30         | 30              | 20                  |
| Private        | 40             | 30       | 40                    | 20         | 20              | 30                  |
| Instructor     |                |          |                       |            |                 |                     |
| Media          | 5              | -        | -                     | -          |                 | -                   |
| Driving School | 30             | 60       | 30                    | 15         | 20              | 10                  |
| Mate System    | 2              | -        | 2                     | 40         | 30              | 40                  |
| No Response    | 13             | 8        | 13                    | 5          | -               | -                   |
| <b>Total</b>   | 100            | 100      | 100                   | 100        | 100             | 100                 |

Source: Field survey, 2012

Table 3.0. Indicates that only 30% of public service drivers received their training from driving schools. Among unemployed drivers, 40% received their training via the mate system. Among professional drivers, 40% received their training from the mate system.

The data reveals that a substantial proportion of respondents remain at the first and second levels of Keskinen's hierarchical level of driving behaviour model (1996). This implies that some drivers who convey passengers daily to their various destinations are still committing lapses that are characteristics of learners. They constitute a serious hazard and are an essential component of those responsible for the deaths and injuries on our roads (Abane, 2012). What is particularly dangerous is that in traffic management terms, all these persons possess valid driver licences and are constantly behind the wheels. An interview with participants revealed how they learnt to drive: the interviewees said almost all commercial drivers learnt driving through the apprenticeship system (driver's mate training). According to one driver:

*I learnt driving as an apprentice under the supervision of a master for three years. When I graduated, I served my master for six months and he helped me get a driver's licence. Luckily, within the same year I got someone's car to driver. (A personal interview with 40-year old commercial driver at Kumasi, 12 February, 2014)*

The drivers noted that this training is by observation only and takes place on the job:

*Yes. You cannot write down anything; you are training while on the job. I mean you are supposed to be observing how your master is driving at the same time as you play your role as a mate. (A personal interview with 50-year-old commercial driver at Nsawam, 10 February, 2014)*

Some of the drivers, especially the older ones, seem to recognize that the current spate of reckless driving on the part of young drivers stems from the inadequate training they undergo. In the opinion of the older drivers, inadequate driver training, especially among the young, is assuming dangerous dimensions and is a cause for concern. According to one interviewee:

*But in our time, we used to train a number of years to learn driving than they do these days. This time they spend about one or two weeks; then they become drivers. And they call themselves professional drivers. You know what they do? They come to tell you they want to learn driving. You tell them it will take three years. They say OK. When they start, as soon as they know steering control, they leave to look for cars and start driving.... Some even learnt how to drive at car-washing bays. I know about three drivers who were washing cars. They now drive cars. They learnt to drive when they were washing cars. Some started as sprayers, only to end up as drivers. (A personal interview with 50-year-old driver, at Amasaman, 9 February, 2014)*

The DVLA is responsible for issuing driver licences in Ghana. A great number of the Ghanaian motoring public have attributed aberrant driving to the method and manner of acquisition of driver's licences and have argued that this raises the possibility of occurrence of RTAs. Abane et al. (2011) argued that the ability of drivers to acquire driver's licenses from the recognized and genuine source is one of the main contributing factors to reducing potential dangers associated with road usage. Results for the survey revealed that the majority of male drivers (83.2%) stated that they had acquired their driver's license from the DVLA. Also, 73.1% of female drivers covered by the study said they had acquired their driver's license from the DVLA (Table 5.3).

About 12% of respondents, both male and female, said that they had obtained their driver's licence through 'goro boys' (middlemen/fixers). These 12%, who openly admitted that they acquired their licence through goro boys, explained their choice as a means to avoid the delays and frustration in acquiring a licence directly from the authorized source, the DVLA.

**Table 4: Acquisition of driver's licence by sex**

| Sex    | DVLA (%)   | Goro boys (%) | Total (%)  |
|--------|------------|---------------|------------|
| Male   | 180 (83.2) | 24 (11.8)     | 204 (80.2) |
| Female | 30 (73.1)  | 11 (26.19)    | 41 (8.0)   |
| Total  | 210        | 35            | 245        |

Source: Field survey, 2012

An interview with a driver revealed the following:

*Driver certification as having passed the driving tests or before one is granted a driver's license is not transparent. The conditions are not the same some pay and licences are readily offered. A potential driver must be able to understand road signs and interpret road markings, must have good sight and be able to read at a distance of 20 yards in good day light. Drivers ought to be able to drive and control the motor vehicle in traffic and finally be able to take precautions at crossroads and junctions.* (A personal interviewed with a 45-year old driver at Techiman, 9 February, 2014)

On age and disability, an interview with a commercial driver revealed the following:

*Applicants must not be less than 18 years and must not be disabled before they acquire a driver's licence. Drivers must be able to handle the steering wheel, must be able to start, move, change gears while in motion and stop when necessary, must show courtesy and consideration for other road users and must finally be able to make proper use of traffic signals. These are necessary requirements for the acquisition of driver's licence.* (A personal interviewed with a 35-year old driver at Techiman, 9 February, 2014)

On whether the current procedures for acquiring a driver's license were adequate and good, an officer from DVLA in Accra said:

*Applicants should pass through the process. There are procedures through which applicants should be able to acquire a driver's license through electronic procedures. Applicants should therefore ignore goro boys.* (A personal interviewed with a 40-year old driver in Tamale, 9 February, 2014)

The interviews show that although there is an official DVLA procedure for the acquisition of a driver's licence in Ghana, it is quite rigid, cumbersome, and time-consuming—and hence the tendency to seek other routes for obtaining a licence. Some people therefore pass 'through the backdoor' or acquire licences through goro boys. Evidence also indicates that these goro boys are in cahoots with some officials of the DVLA to procure drivers licence to drivers based on the ability to pay.

Observation revealed that of those who acquired their driver's licences after a DVLA test, 60% were issued with their licence in Accra, while the rest received their licences from the Weija, Koforidua, Tamale, Cape Coast, or Sekondi-Takoradi and Kumasi offices of the DVLA.

A surprising discovery was that a substantial number of those who obtained their licence without a DVLA test claimed to be professional drivers who drove vehicles belonging to official agencies, such as the Ghana Private Road Transport



Union (GPRTU) and various governmental and non-governmental agencies. In contrast, only slightly more than 18% who obtained their licences after a thorough examination said they were professional drivers and had over five years' driving experience, while a third of these said they had been involved in at least one accident since they acquired their licences. With this as a background, the survey elicited from respondents whether or not they had undertaken any driver training courses after the acquisition of their various driver licences.

**Table 5: Driver training after the acquisition of licences**

| Sex    | No (%)     | Yes (%)    | Total (%)  |
|--------|------------|------------|------------|
| Male   | 98 (48.2)  | 105 (51.8) | 203 (82.8) |
| Female | 14 (33.3)  | 28 (66.7)  | 42 (17.2)  |
| Total  | 112 (45.7) | 133 (54.3) | 245 (100)  |

Source: Field survey, 2012

This is reinforced by the findings of a study conducted by the Pan African Health Organisation and the National Road Safety Council of Jamaica, which revealed that 71% of persons who obtained driver's licences without being examined had no accidents, while 40% of those who obtained drivers licence with training (Davidson, 2006) had accidents.

The study has revealed that quite a sizeable percentage of respondents (45.7%) have never received training after their first acquisition of a driver's license. The male to female ratio for no training after acquisition and issuance of a driving license is one in two males relative to one in three females. This state of affairs is worrisome in connection with efforts to reduce road crashes. Education and training is said to hold the key to effective development (Groeger, 2004) and change in attitude, which will eventually lead to reduction in the carnage on our roads

The results show that inadequate driver training is a significant contributor to the upsurge of RTAs on the corridor. It has been discovered that the mode of training of drivers on the corridor is 80% informal. Driving knowledge is primarily acquired through informal contacts and observation rather than proper education and training. The concern is that this mode of training poses a great threat to road safety management. It is well known that driving skills and competence are acquired through instruction and practice (Groeger, 2006). Therefore, the number of years spent in acquiring driving skills helps to shape road-use attitudes and behaviour in a significant way (Groeger, 2000, 2004). The result of inadequate driver training and improper means of licence acquisition leads to dangerous and inexperienced driving. This leads to an upsurge in RTA cases. Since such informal driver training is just via observation under the supervision of a 'master', dangerous driving and aberrant behaviour are passed on from one reckless driver to another. The result is poor interpretation and comprehension of road signs and symbols. Thus, drivers engage in aggressive driving, speeding, and general road-rage behaviour, all of which lead to increased RTAs in Ghana. This is consistent with a study in Europe which revealed that aggressive driving is the cause of most accidents (Parker et al., 1996.)

### 3.3. Road-use behaviour on the AKATA Corridor

Driver behaviour and attitudes towards traffic safety and road safety management are issues that still generate heated debates worldwide. Attitudes influence behaviour, and so behaviour can have either positive or negative implications on what one is doing, including driving. It is widely reported in Ghana, as in many other countries, that 80–90% of all reported road crashes result from the negative attitudes, wrong behaviour, and wrong perceptions of road users: drivers, motorcycle riders, and pedestrians (Amegashie, 1989; Abane, 1994; 1995; 2004; 2010; Obeng-Odoom, 2010).

Many accidents in all countries are attributable to the driver. The key issue here is that the driver is at the centre of the causal factors of traffic accidents, because most crashes are caused by the human factor. This human factor is largely shaped by attitudinal problems exhibited by drivers. With the upsurge in traffic accidents, attitudes and perceptions have widely become an area of concern, since it is believed that personal perceptions of risk beliefs always act as mediators between knowledge and behavioural factors (Berg, 2006).

A set of negative behaviours and attitudes, listed as deviant behaviours and therefore constituting danger on the road, was examined (Table 5.1). The survey found that among the listed set of behaviours perceived by road users as negative and unsafe, the majority of the respondents were of the view that the behaviours listed constituted deviant behaviour. The negative behaviours were ranked according to the frequencies with which they occurred. The mean rating was based on a five-point scale, where 1 represented 'Never' and 5 represented 'Always'.

**Table 5.1: Lapses/errors and violations by drivers on the AKATA Corridor**

| Negative behaviours of drivers                       | Never | Seldom | Sometimes | Often | Always |
|--|-------|--------|-----------|-------|--------|
| I drive continuously for more than 4 hours           | 25    | 16     | 29        | 12    | 18     |
| I drive while communicating on a phone               | 40    | 16     | 36        | 5     | 3      |
| I tailgate other drivers                             | 44    | 24     | 28        | 2     | 2      |
| I honk my horn more than most other drivers          | 49    | 19     | 21        | 7     | 4      |
| I force people off the road while driving            | 59    | 21     | 14        | 3     | 3      |
| I flout road speed-limit regulations                 | 62    | 14     | 18        | 2     | 4      |
| I yell at others whether they can hear me or not     | 61    | 13     | 22        | 3     | 1      |
| I do not know road signs and signals                 | 69    | 19     | 10        | 0     | 2      |
| I get into physical fights with others while driving | 75    | 13     | 8         | 3     | 1      |
| I drink and drive                                    | 76    | 11     | 11        | 2     | 0      |

Source: Field work, 2012

**Table 6: Kendall's coefficient of concordance of result of violations of drivers on the AKATA Corridor**

| Item                    | Parameter |
|-------------------------|-----------|
| Number of observations  | 245       |
| Kendall's $W^a$         | 0.13      |
| Chi-square              | 294.40    |
| Degrees of freedom      | 9         |
| Asymptotic significance | 0.00      |

Source: Field work, 2012

From Table 6.0, the Kendall's coefficient as a result of the analysis was found to be 0.13. This indicates there is a positive agreement among respondents that deviant driving factors listed in Table 5.5 significantly influence behaviour and therefore increase RTAs on the corridor. This result confirms the findings of Abane (2010), which indicated that negative behavioural factors exhibited by drivers or driver violations lead to increases in road deaths and injuries from RTAs.

The survey found that 60 respondents said they drive and communicate, while two respondents said they always tailgate while driving. Eighteen respondents said they sometimes flout speeding regulations. The implication is that the issues of deviant behaviour are increasingly becoming a challenge on the corridor. Costs are incurred through deaths and injuries in accidents on the corridor, and these costs and numbers of accident victims are likely to be increase. On the financial side, a study focusing on economic cost implications of RTAs is required.

The findings on driving while using a communication device are consistent with the findings by Abane et al. (2010: 83), who found an inconclusive relationship between receiving/making calls while driving and an upsurge of traffic accidents in Ghana. However, Abane et al. (2010) point out that the use of a telephone while driving is gradually becoming an important risk factor in the country as the use of mobile telephones expands. It is increasingly becoming very clear that the use of telephones while driving/riding presents a new challenge in road safety management that ought to be addressed.

### 3.4. Perception of risks among road users on the AKATA Corridor

The interplay of risk factors in the road traffic system is so complex that presenting them in a neat risk intervention pairing is impossible without being repetitive and simplistic. However, we cannot ignore the risk factors contained in the whole continuum of road traffic accident causation. These factors continue to play a very significant role in how people perceive the traffic accident problem. The success of any initiative to deal with the RTAs will very much depend on recognition and care-seeking behaviour by the people affected, as it is said that perceptions mould people's reaction to the world around them. Individual risk perceptions need to be considered within the particular socio-cultural belief models which orient local definitions of health and illness (Van de Geest, 1997).

This study also sought to understand how drivers perceive certain behaviours as risky and how these behaviours have the potential to cause traffic accidents and injuries on the corridor. A set of questions was therefore asked to determine these perceptions. The seven negative behaviours identified by respondents are listed in Table 5.7. Each of these variables was ranked on a scale of 1–5, with 1 representing ‘Never’ (the lowest probability of causing RTAs) and 5 denoting ‘Always’ (the highest probability of causing RTAs). The mean rank determined that more drivers perceived that they indulged more in such risky acts.

**Table7: Perception of faulty vehicles as risk factors to accident causation on the AKATA Corridor**

| Faulty vehicles leading to road accidents | Lowest | Very low | Low | Moderate | High | Very high | Highest |
|---|--------|----------|-----|----------|------|-----------|---------|
| Worn or smooth tyres                      | 22     | 19       | 16  | 10       | 9    | 10        | 14      |
| Under-inflated tyres                      | 33     | 31       | 10  | 10       | 4    | 7         | 7       |
| Tyre burst (prior to accident)            | 9      | 8        | 13  | 5        | 11   | 19        | 35      |
| Poor brakes                               | 7      | 7        | 24  | 17       | 16   | 10        | 19      |
| Faulty steering                           | 11     | 13       | 9   | 34       | 14   | 12        | 2       |
| Poor lights                               | 11     | 12       | 16  | 11       | 34   | 9         | 5       |
| Poor general maintenance                  | 5      | 10       | 12  | 12       | 11   | 31        | 15      |

Note: All figures denote percentages across a row

Source: Questionnaire survey, February 2012

**Table 8: Kendall’s coefficient of concordance results of perception of faulty vehicles as a causal factor of accidents on the AKATA Corridor**

| Item                     | Parameter |
|--------------------------|-----------|
| Number of observations   | 245       |
| Kendall’s W <sup>a</sup> | 0.14      |
| Chi-square               | 199.78    |
| Degrees of freedom       | 6         |
| Asymptotic significance  | 0.00      |

Source: Questionnaire Survey, February, 2012

Table 8.0 demonstrates that more than half of drivers agreed that a tyre burst prior to an accident constitutes risky behaviour and therefore has a high probability of causing a crash on the corridor. Apart from tyre burst, the majority of drivers also perceived and agreed that general maintenance of vehicles is necessary to avoid RTAs on the corridor. The survey indicated that non-maintenance of vehicles was therefore perceived as the second most risky activity on the part of respondents, and it has the potential to cause traffic accidents on the corridor. The import of these findings is that respondents perceive the set of identified behaviours as negative and unsafe, and they believe each has the potential to induce a traffic accident on the corridor. The finding is an indictment, not only of drivers who engage in such behaviours, but also of institutions tasked with ensuring safety on the corridor which do not take active measures to control and limit such behaviours. This finding is consistent with a study by Rundmo and Iversen (2004), who posited that the consequences of negative events will be evident when thinking about the risk source. They concluded that there is a need to take preventive action to avoid traffic accidents.

Fatigued drivers were named by 10% of respondents. Disobeying existing traffic regulations and running red lights scored about 1% each among respondents. Alcohol and drug abuse contributed to about 8% per cent of the perceived risk by respondents. Some 6.49% of respondents perceived speeding as a risk factor contributing to RTAs. About 25% of the sample related the capability of perceived risk factors to cause traffic accidents to other factors, such as impaired vision, lack of physical strength, pedestrians using the middle of the road, general physical impairment, poor attitude, and bad judgment.

The findings demonstrate that overtaking in the face of oncoming vehicles was perceived as a problem area. The majority of respondents perceived that it is the largest perceived risk in terms of inducing accidents on the corridor. Respondents perceived issues relating to attitude and judgment as the lowest factors leading to traffic accidents on the corridor. This perception contradicts the old assertion that judgment and attitude are among the main factors responsible for traffic accidents. The result is also inconsistent with the findings of most literature on RTAs, especially the study of Hoseth and Rundmo (2005). The reason, this current study discovered, can be attributed to the fact that the majority of respondents were well educated and that their judgment and attitude regarding road safety problems was adequately high. This reason accords with findings by the same Hoseth and Rundmo (2005), who noted that the risk perception of lower-level traffic risk is different in individuals with higher education from that in those with low education.

### 3.5. Gender dynamics of traffic accidents on the AKATA Corridor

Overall, findings in this study indicate that male respondents are perceived as taking higher risks in regard to traffic violations, compared with their female counterparts. The variation in terms of gender regarding risk perception factors in the study area tended to hugely vary. The data obtained from the field ranked some perceived risk-taking behaviour according to gender common to the motoring public. The respondents ranked the risk-taking behaviour as ranging from speeding through running red lights and driving under the influence of alcohol and drugs.

The findings from the survey were that 5.25% of the female population sampled on the road with a mean rank of 10.25% per cent perceived overtaking in the face of oncoming vehicles as a dangerous risk factor contributing to RTAs on the corridor. Male respondents, constituting about 5% of the mean ranking, also perceived overtaking in the face of oncoming vehicles as equally risky. This indicates that the female population perceive overtaking in the face of oncoming vehicles as more risky than their male counterparts do. The finding supports the generally held perception that women are more careful behind the wheel. Dejoy (1992) argues that males perceive themselves as less susceptible to traffic accidents and have better driving skills than females. The findings of a traffic safety campaign among Norwegian adolescents by Rundmo and Iversen (2004) revealed that females reported higher probabilities of traffic accidents after the campaign. The male respondents in the Norwegian study, therefore, corroborate the finding on the AKATA Corridor that males have a lower perception of risk than females.

With regard to perception on driving under the influence of alcohol and drugs, the findings revealed that the majority of male respondents perceived higher risk than their female counterparts: 20% of females and 80% of males. The reason is that males have the habit of drinking as a social habit more than females do, and so this applies to driving. This reinforces the 'health belief model' cited in Stroebe and Stroebe (1999): preventive behaviour is more probable when the individual perceives him-/herself as vulnerable to the particular risk item in question. Accordingly, it is likely that an individual will behave more carefully in traffic if he/she perceives higher probabilities of traffic accidents. Several studies indicate that a cognitive component of traffic risk perception (i.e. probability of traffic accident) and driver behaviour are weakly related. It is for this reason that Rundmo and Iversen (2004) attribute a weak predictor of behaviour to accident risk. However, these results should be interpreted with caution for two interrelated reasons. First, these studies investigated a general perception of traffic risk, instead of risk perception related to specific traffic accidents and situations. Secondly, the internal reliability in the risk perception scales in these studies is questionable. Variation in perceived traffic risk was not solely related to the particular traffic situation in question.

### 3.6. The effects of culture, religion and socio-economic factors on traffic accidents on the AKATA Corridor

The survey found that commercial drivers perceived that there are major risks associated with the work they do. When commercial drivers were interviewed, however, it appeared that their survival needs and cultural and religious beliefs mediated their perceived risk of RTAs on the corridor. This is what a 30-year-old commercial driver said in an interview in Kumasi about his religious beliefs and their relationship with RTAs on the corridor:

*It is very possible and practicable that I don't think about the influx of road traffic accidents. The Bible says that whatever we say with our mouth shall come to pass.... I don't think I want to think about the problem of accident at all. I obviously believe that accidents can be caused by bad spirits like evil dwarfs. It can also be traceable to curses.* (A personal interview, 10 February, 2014)

Other drivers interviewed said that thinking about accident risk factors and death are taboo subjects in the culture of their area. In the words of a 20-year-old commercial driver in Techiman:

*As far as I am concerned, I will never be a victim of road traffic accident. What you think is what you get. My mouth will give all sorts of trouble to me. It can be a curse; it can be a blessing. Whatever comes from your mouth comes from your heart. This is what the Bible says.* (A personal interview, 15 February, 2014)

Women respondents generally perceived risk as an occupational hazard. This seems to have fuelled the accident problem on the corridor. The study also found a significant relationship between gender and traffic accidents on the corridor: male participants tend to perceive other drivers as worse (more likely to cause an accident) as they get older, whereas women perceive them as better (less likely to cause an accident) as they grow older.

In Ghana aberrant driving falls under two broad classifications, according to the Republic of Ghana (2004), Road Traffic Act 2004 (Act 683). Section 2 of the Act says that a person drives dangerously if (a) the way and manner that person drives falls below what is expected of a competent and careful driver or (b) if it is obvious to a competent and careful driver that it would be dangerous driving the vehicle (i) in that manner, or (ii) in its current state (p. 13-14). In the same Act, Section 3 defines careless and inconsiderate driving as when 'a person who drives a motor vehicle on a road without due care and attention, or without reasonable consideration for other persons using the road'. The contravention of the Act's driving rules and regulations attracts penalties for offenders.

Generally, risk perception has to do with how drivers of motor vehicles deal with driving situations on the road by adapting their action both to the physical environment and the behaviour of other road users. Although drivers appear to understand that the driving occupation has risk factors with potentially dire consequences for all road users, they seem to describe them as mere occupational hazards. The available literature supports this finding. Dery (1999) carried out a study on hazard and risk perception among young novice drivers and observed that young drivers in general underestimate the risk of accidents in hazardous situations. Young male drivers also tend to rate dangerous traffic situations as less risky than old drivers (Trankle et al., 1990). These authors suggested that educational measures designed for young drivers should focus on different aspects of their risk perception and risk tolerance.

Some participants explained that the influence of culture makes it a taboo to talk about accidents and death. For others, religious practices encourage them not to have negative thoughts about future events because, as they explained, whatever you say with your mouth will come to pass. And for yet another group, they were almost always pre-occupied with their challenging socio-economic conditions to the extent that these conditions excused and provided a justification for their perceived risky driving. Drivers were evasive in their response to the questions: 'How probable do you think it is for you to be involved or injured in a traffic crash?' 'How concerned are you about traffic crash risk?'

The consequences of inaccurate risk perception are dangerous for driving and for attitudes to vehicle maintenance. The study's finding on risk perception is supported by a risk compensatory theory and a risk homeostatic theory proposed by Wilde (1994) and Adams (1999). These theories assume that humans adapt their behaviours to the intensity (high or low) of risk as a function of their subjective perception. For example, if drivers see themselves to be in a greater risk situation, they will try to behave with a lot more caution than when they perceive themselves to be in a less risky situation (Wilde, 1994).

This is consistent with the findings of the present study, given the fact that Ghanaian driver's traffic risk perception is not just a simple matter but rather a complex issue mediated by culture, religion, and socio-economic status. Results from the survey showed that respondents perceived attitudes as important predictors of driver behaviour in the AKATA Corridor. Of all the attitudes and behaviours, respondents ranked driving continuously for more than four hours as one of the RTA-inducing behaviours on the corridor. Following that is driving and communicating at the same time. Respondents perceived drunk-driving as least dangerous.

Section 118 of Road Traffic Regulation 2012 (LI 2180) (Republic of Ghana, 2012) requires that a person or owner of a motor vehicle should not drive or cause or permit another person to drive a vehicle for a continuous period exceeding four hours, amounting in aggregate to more than eight hours in a period of 24 hours, unless the driver rests at least 30 minutes after each continuous period of four hours. Even though the objective of the regulation is to limit or prevent driver sleepiness and fatigue behaviour during long trips, it has been abused and this constitutes a negative attitude that fuels the accident problem on the corridor. Similarly, Regulation 107 of the Road Traffic Regulation 2012 (LI 2180) prohibits the use of communication devices while driving; yet respondents ranked this second and agreed it is a negative behaviour that most drivers on the corridor indulge in. The lowest-ranked behaviour was drunk-driving. This disproves a survey by

Asiamah et al. (2002), which asserted that drunk-driving was a major problem among commercial drivers in Ghana. In general, our study revealed that respondents perceived lack of knowledge of road signs and symbols, flouting traffic rules and regulations, and drunk-driving as very low risk factors among other traffic violations.

Our study revealed that respondents were aware that the behaviour of other road users, such as pedestrians, passengers, and cyclists, influences driving behaviour in significant ways. They pointed out that the behaviour of passengers, for example when they are on board a vehicle or they are waiting by the roadside to board, poses a great deal of danger to drivers by way of forcing them to make a series of intermittent stops, often at short notice and at dangerous spots. Respondents also expressed concern about the fact that passengers wait anywhere along the corridor, including accident-prone areas, and expect vehicles to stop and pick them up—and hence the upsurge in the rate of pedestrian and passenger casualties on the road corridor.

As Table 5.5 demonstrates, fairly low but significant proportions of respondents agreed that they had sometimes committed these driving errors themselves in the course of their driving. The low returns can be explained by the ‘positive self, negative other’ attitude of people. No one wants to admit to being a bad driver. In fact, it is always the other driver who is performing badly (see Abane, 1994, 2004; Abane et al., 2010). Such behaviour—which can be described as a self-enhancement bias, an illusion of superiority and overconfidence (Walton & McKeown, 2001)—is a threat to road safety management.

Errors and rule violations relating to the issues mentioned in Table 5.5 constitute a serious road safety challenge in the country and should be given adequate prominence in road safety action plans and strategies. Several previous studies have highlighted this challenge, and this should have become the main-stay of the national road safety policy. For instance, Abane (1995, 2004, 2010), Afukaar (2001), and Asiamah et al. (2002) found drivers in various parts of the country, including Cape Coast, Kumasi, Tamale, and Accra, to be prone to crashes due mainly to excessive speeding, aggressive driving, reckless driving, and running through red lights. In another comparative study of urban traffic crashes in Accra and Trondheim, Jørgensen and Abane (1999) also underscored the need to ensure that road users strictly abide by speed limits and observe traffic regulations, since over-speeding was obviously among the leading causes of crashes. Afukaar (2003) and Afukaar et al. (2003), after studying behavioural characteristics and their involvement in different types of road crashes, attributed high road-crash casualty to excessive speeding by drivers and singled out driving violations as one of the strongest variables that can be used to demonstrate a direct link with crash risk. This is largely in accord with the findings of the current study.

This finding corroborates findings by Damsere-Derry et al. (2008), whose study in Ghana looked at two dimensions of driver behaviour: speed-mean (the average speed of a moving vehicle within the distance covered as posted by the speed limit) and dispersion (the greater or larger differences in speed between moving vehicles, or the spread of the distribution of speed within vehicles). They used unobtrusive measures, such as speed guns, to collect data on the travelling speeds of 28,489 vehicles at 15 different urban locations on highways categorized into three types. They found that 98%, 90%, and 97% of vehicles that plied these three route types (national, inter-regional, and regional roads, respectively) exceeded the required speed limit of 50 km/hour. They thus concluded that excessive speeding and speed dispersion are highly prevalent on highways in Ghana.

#### 4. CONCLUSION

What the present study has shown is that the distribution of RTAs on the AKATA Corridor by socio-demographic variables mirrors that of the national situation. The results showed that personal characteristics of drivers, such as sex, age, and education, is related quite well to road traffic accident occurrence, and these results are consistent with earlier findings by Abane (1994, 1995, and 2010). The results also demonstrated that behavioural factors and risk perception are by far the most important factors influencing aberrant driving and RTAs on the AKATA Corridor.

The analysis further revealed that the behaviour of road users on the AKATA Corridor requires guidance and control for appropriate interaction with other components of the road traffic system. In findings similar to other research already conducted in Ghana, the study concluded that 58% of the total RTAs recorded as head-on collisions resulted from poorly calculated overtaking, and 42.3% of recorded accidents were as a result of various mechanical failures, such as brake failure and burst tyres. It is therefore true to say: ‘Accidents just don’t happen; they are caused.’ Human behaviour and risk perception on the corridor weigh very significantly in terms of traffic accident causation.

The study found that the commonest negative driver behaviours observed on the corridor include driving continuously for more than four hours without resting, driving while communicating, tailgating, and flouting regulations on speed limits. The frequency of occurrence of these negative practices is surprising, considering the fact that during the survey several police officers were visible on the corridor. There is therefore reason to suspect that actual policing is not a priority for all police personnel working on the corridor, although if they were to perform their official duties and enforce the regulations it would certainly help to reduce the number of avoidable accidents.

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