

## Research Article

### Knowledge of Traffic Laws and Drivers Behavior on the Roads of Tripoli City, Libya

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**Abstract:** This study aimed to examine the knowledge of traffic rules and laws among a sample of drivers from the city of Tripoli and their behavior with respect to the same. A random sample of 416 drivers was selected from various regions for Tripoli, namely: Tajura, Abo Saleem, City Centre and Janzour and administered a questionnaire that would elicit and record their knowledge and behavior regarding road rules and regulations. The study revealed that traffic accidents are most affected by and positively, statistically correlated with certain key behavioral variables determinants such as: commitment to the speed limit, respect for traffic signals, compliance with seat belt use, use of mobile phones, driving under psychological stress or when sick and eating while driving. The study also found that 56% are not committed to the speed limit, only 41% were seat-belt compliant while driving and 71% of them used mobile phones while driving. Sixty nine percent of drivers opted financial penalty for mobile phone use during driving, this may be an indication that alternate traffic rules penalties may be enforced to deter drivers from repeat offenses. Thereto, a numbers of recommendations were presented for implementation by the relevant authorities. Overall, the study found that Tripoli drivers' knowledge of/on traffic laws and accident-risks didn't affect their behavior on the road.

**Keywords:** Behavior, drivers, knowledge, traffic accidents

## INTRODUCTION

Road safety and accidents are a major public health concern and risk in both developed and developing nations, particularly due to their pervasive social, economic and health implications. (WHO (World Health Organization), 2009a) reported over 1.2 million deaths and between 20 to 50 million injuries every year and globally, which result from traffic accidents. Although traffic accidents are a leading cause of death, disability and economic burden in developing and emerging economies, they remain by nature largely preventable. Thereto, the determination of appropriate preventive measures to curb the prevalence of road accidents in any nation first requires the consideration of two key factors, namely:

- A thorough characterization of the physical features e.g., of road infrastructure and traffic network and environment as well as the human behavioral elements such as compliance with traffic laws and observance thereto in actual behavior on the road
- A thorough traffic-accident data collection, analysis system

Hoyle and Knowles (1998) and Vasconcellos (2001), road Traffic Accidents are a major problem in both developed and developing countries, Opportunities for implementation of solutions to traffic accidents in developing countries are fewer, but in developed countries with their economic power have, however, better managed to control the rising numbers of road accidents. Mupimpila (2008) traffic accidents have social and economic implications for developing countries and for the families of the casualties. Implications include loss of life, property damage, permanent disability, monetary costs and time.

An accident prevention plan would then incorporate an evaluation of the potential impacts of such selected mitigation measures, for further planning More specifically, existing literature on relevant studies indicate that the most highly acknowledged recommended measures in establishing road safety improvement plans are:

Global Status Report on Road Safety (2013), education, enforcement, engineering, evaluation and encouragement. These measures within a plan have been applied to the roads of various developed and developing nations, with much success in yielding

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Table 1: Number of car accidents from 2005 to April 2010

Years	Accidents	Car	Deaths	Injured
2005	11898	15276	1800	5380
2006	11982	16890	1866	5663
2007	13165	17859	2138	5950
2008	13352	18662	2332	6424
2009	13664	20668	2301	6791
2010 Jan-Apr	5277	7541	806	2290

Road accident statistics in Libya, Ministry of interior 2010 (M.O.I., 2010)

changes in drivers' attitudes and behavior on the road and in reducing the number and severity of road accidents. Further, such experiments reveal much insight into the relevant differences among developed, developing and emerging nations in terms of physical, behavioral, cultural and economic determinants of traffic accidents. Such studies and their findings offer a substantial resource for modeling similar accident-prevention plans for the roads of emerging nations economies such as Libya particularly since the recent from WHO (World Health Organization) (2009b) reported a global statistic of six deaths, day per six million population, wherein Libya is the second Arab nation with the highest number of accidents Oman being the first. Additionally Hussin and Amiruddin (2011) summarized the key causes of road accidents were: speeding, reckless driving, use of cell phones while driving and breaking traffic laws and regulations.

**Road traffic accidents in Libya:** Libya is one of the most affected countries of the traffic accidents that lead to the death of 5 persons/day according to the Secretariat of the Libyan justice and this is a very large number of the population does not exceed seven millions (Traffic Office and Licensing of Tripoli 2010, (M.O.I., 2010)) and the deaths will reach 25 cases/day in the coming years if there is no real measures of government as the development of public transport within the city of Tripoli and encourage people to use and especially the students (Amiruddin and Adel, 2010), attention to infrastructure, also as duplication separate roads between Tripoli and neighboring cities and most importantly, the application of traffic law strictly. The total number of traffic accidents and injuries and the victims is increasing continuously as show in Table 1.

## MATERIALS AND METHODS

The problem of increasing traffic accidents and lack of respect for traffic laws is the main research methodology in this study. The study sample comprised of 520 drivers were randomly selected, 416 drivers (80%) ultimately completed the administered questionnaire and were considered to constitute the final selected sample in four main areas in the city of Tripoli were chosen for their relatively maximal

Population and instances of traffic accidents (Tajura, Abo Saleem, Aldaerbi and city centre). The questionnaire was administered after the recent war in Libya, during the period 29 Aug to 21 Dec 2012 and the questionnaire was distributed on many companies and government departments in the study area and categorized into 3 parts as:

- Demographic queries, such as personal information, age, occupation, level of education and experience in driving
- Knowledge of traffic laws and rules
- Opinions, suggestions and recommended remedial measures from drivers regarding the prevention of accidents

Data from the completed questionnaires were logged into the computer and the statistical analysis software SPSS version 19 was used to analyze and determine all variables and percentages.

**Study area:** Tripoli is the capital city of Libya and the largest seaport. Tripoli has two main airports namely Tripoli international airport and Umm Aitiqah airport. Tripoli is located on the coast of the Mediterranean Sea, north the Equator at the latitude (32.560) and longitude (13.100) and east of Greenwich (Fig. 1).

The survey was carried in Tripoli city because the capital city in Libya and it has a high number of cars and populations and enter Tripoli many of citizens from neighboring areas, as students, staff and dealers.

To spend their interests and they using different means of transport, namely taxis, coaches and vehicles all of which contribute to congestion and the poor traffic condition.

## RESULTS

Within the study area of Tripoli city, but four key areas were ultimately selected/represented in the following breakdown of drivers who participated in the survey: 212 drivers from Abo Saleem (50.9% of respondents), 78 drivers from Tajura (18.7%), 74 drivers from City Centre (17.7%) and 52 drivers from Janzour (12.5%). Table 1 summarizes the general characteristics of the study sample. The results of the study may be broadly grouped into the following sections (Fig. 2).

The analysis of the data revealed a number of interesting insights into the precursor's determinants of traffic accidents. The first notable findings were variables such as the level of education; nationality had no statistically significant correlation of traffic accidents, but age of the driver and especially the age group from 15 to 34 were more prone to traffic accidents show Table 2 and when asked about the preferred forms of penalties for each type of violation,

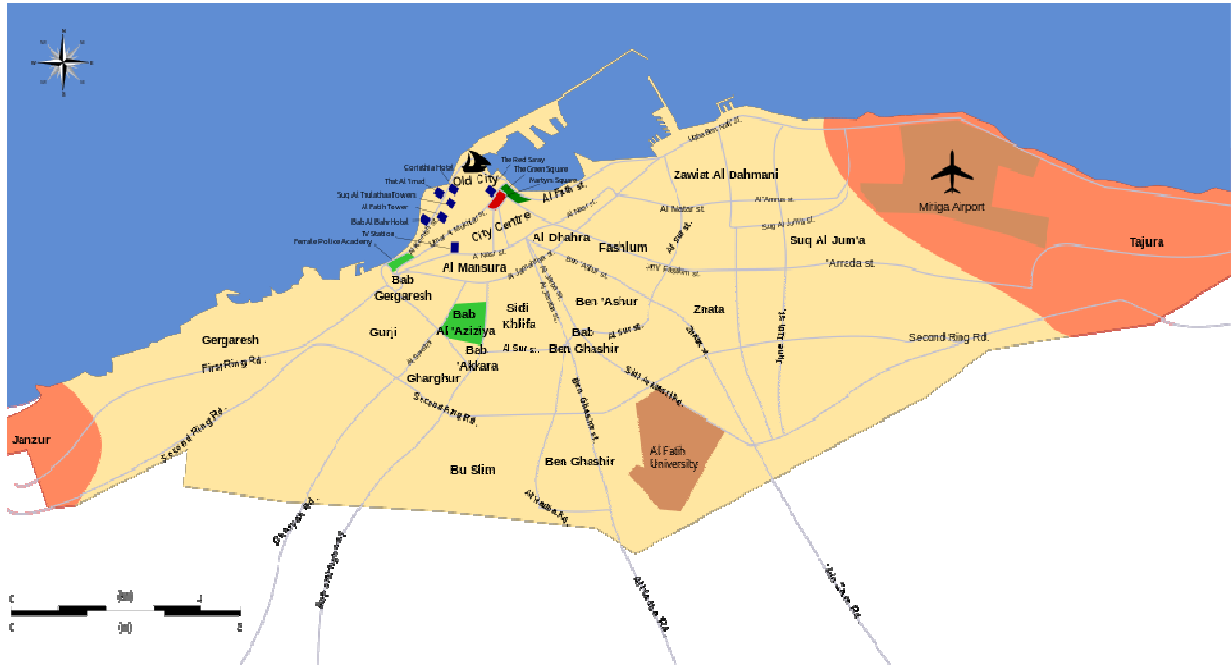


Fig. 1: Shows the study area (Google maps 2013)

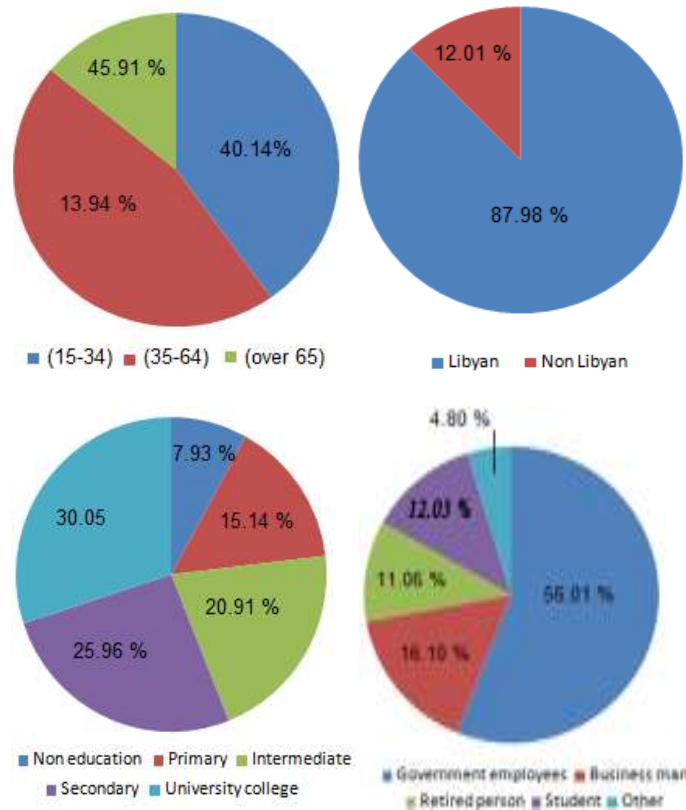


Fig. 2: General demographic characteristics of the study sample

show Table 1, 44.6% of the respondents chose to pay money for each traffic violation, 18.6% agreed on the withdrawal of driving license privileges for an interim

period 25% acquiesced to disciplinary measures such as imprisonment and 11.8% chose booking the car temporarily. The most appropriate penalty for mobile

Table 2: The latest vehicles statistic until the thirty first of October 2009 (in Tripoli)

Type of vehicle	Libyan citizen	Foreigner citizen	Total
Own car	713258	30538	743796
Coaches and minibuses	118256	5301	123557
Taxis	47031	0	47031
Motorcycles	543	55	598
Lorry	11944	1589	13533
Trailer	7509	791	8300
Tractor	476	119	595
Heavy equipment	6170	1678	7848
Total	905187	40071	945258

Statistics General Administration of Traffic and Authorizations (2009)

Table 3: Knowledge of traffic laws and driver behavior on the road

Commitment to the speed limit		
Committed		181 (43.50)
No commitment		235 (56.49)
		416
Respect for traffic signal		
Respect		240 ( 57.69)
No respect		176 ( 42.30)
		416
Compliance with seat belt		
Compliance		171 ( 41.10)
No compliance		245 (58.89)
		416
Use a mobile phone		
Use		296 (71.15)
No use		120 (28.84)
		416
Driving under psychological stress or when sick		
Continues to drive		165 (39.66)
Does not continue to drive		251 (60.30)
		416
Eating while driving		
Eat		153 (36.77)
Do not eat		263 (63.22)
		416

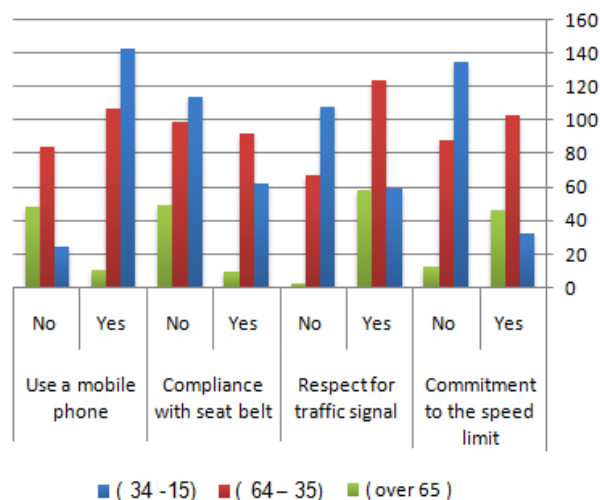


Fig. 3: The relationship between the age of the driver and some of the variable

phone use during driving, 70% of drivers opted for financial penalty, 17.6% of them suggested the withdrawal of driving license privileges and 12.4% reported that they did not deem a penalty necessary.

**Knowledge vs. practice:** The findings of the study also reveal that despite their knowledge of impermissible maneuvers, many drivers still make driving decisions and take risks that are counterintuitive to their knowledge. Most notably, a large number of drivers do not respect traffic signals. Illustratively, for instance, 56% of drivers did not adhere to the speed limit on roads and 71.15% of drivers using a mobile phone while driving, although they know that speed and mobile phone use is violation of traffic laws.

**Variables of traffic accidents and their correlation:** The number prevalence of traffic accidents in the studied areas varied from one region to another, the proportion of accidents per geographic regions being as follows: Abo Saleem witnesses the most accidents (50.9%), followed by Tajura (18.7%) city centre (17.7%) and Janzour (12.5%). Table 3 summarizes the relationship of traffic accidents with some relevant physical systems and behaviors in driving. Analysis revealed statistical significance for all variables, which implies the existence of a positive relationship between traffic accidents and these variables and that accidents increase in proportion to these variables.

## DISCUSSION

Many studies have indicated the high mortality rates in Arab countries, particularly due to deaths and injuries caused by traffic accidents. In Libya, traffic accidents are the second largest cause of deaths, after infectious diseases, particularly of for young people (Hamza, 2008).

This study found that the prevalence of traffic accidents was very high and equally so across three major regions of Tripoli namely, Abo Saleem then Tajura and City Centre, followed closely by that in Janzour. The study also revealed that traffic accidents are most affected by and positively, statistically correlated with the following key behavioral variables determinants: commitment to the speed limit, respect for traffic signals, compliance with seat belt use, use of mobile phones, driving under psychological stress or when sick and eating while driving. Irrespective of the drivers' knowledge on the traffic rules related to these variables, instances of weak commitments to these variables had a definitive impact on raising the chance occurrence of accidents. Although the level of education and age of drivers were not found to be significantly associated with the rate incidence of traffic accidents, but the age of driver it's had an effect on traffic accidents, but not the high level because the study sample was of primarily middle-aged men, those variables did affect drivers' commitment to respecting traffic laws (Fig. 3 and Table 4).

Table 4: Relationship of some variables (age, education level, nationality) behavior while driving

Situation	Commitment to the speed limit		Respect for traffic signal		Compliance with seat belt		Use a mobile phone	
	Yes	No	Yes	No	Yes	No	Yes	No
Age group								
(15-34)	32	135	59	108	62	114	143	24
(35-64)	103	88	124	67	92	99	107	84
(Over 65)	47	11	56	2	9	49	10	48
Statistical significance	p<0.0001		p<0.0001		p<0.0001		p<0.0001	
Education level								
Non education	14	19	11	22	12	21	25	8
Primary	29	34	30	33	22	41	47	16
Intermediate	39	48	62	25	30	57	63	24
Secondary	47	61	66	42	59	49	71	37
University college	52	73	71	54	48	77	89	36
Statistical significance	p<0.0001		p<0.0038		p<0.152		p<0.0001	
Nationality								
Libyan	159	207	209	157	139	227	267	99
Non Libyan	20	30	31	19	34	16	21	29
Statistical significance	p<0.0072		p<0.005		p<0.0001		p<0.0001	

The study showed that young people are the least committed to traffic instructions, especially in compliance with speed and they most violators of traffic light and more using mobile phone, these results were expected, because young people possess the spirit of challenge and lack of patience and not to think of the consequences of things, there is no doubt that the failure to respect traffic lights leading to traffic accidents and this is also confirmed by previous studies also was noted that one third of the sample continue driving despite the sense of fatigue and sleep. Regarding traffic awareness of on the roads, first came TV, because most other programs didn't get acceptance from citizens, most publications are distributed at traffic week, no one interested by it, citizens prefer TV and especially, traffic police programmers and your safety on the road.

### CONCLUSION

In light of the study's findings, the Libyan Ministry of Transportation and Traffic Management in Tripoli must clearly show more political and administrative commitment to traffic management and regulatory enforcement, particularly in heavy traffic zones such as Tripoli. In particular, the authorities need to adapt extended traffic legislation adopted from those in developed countries that not only focuses on financial penalties which, as found in this study. The public authorities must interested more, traffic management especially must adopt deterrent laws and avoid the financial penalties and focus to another penalties, like booking the car for long with the police, or provide a system to calculate points on license by type of offence, if the number of points connect to a certain extent must temporarily withdraw the license, this application requires very control system on roads, Surveillance cameras must be provided in each crowded roads and we have made some personal observations at several intersections and main roads in Tripoli and would like to provide the following recommendations:

- Public transport systems should be improved in a major way and the masses should be encouraged to use it more than owning vehicles. Such initiatives are best presented to the public through media programs and public service messages that provide environmental, economic, ergonomic and other such incentives.
- Traffic signals should be enhanced in number, visibility and impact, wherein periodic and permanent warning signs should be enforced particularly in situations such as residential areas, school crossings, school bus stops, heavy pedestrian areas and busy commercial areas.
- Street lights should be enhanced in number, visibility, design and impact.
- Particularly, speed limits signs and 'no cell phone' signs must be constructed placed with emphasis on their in number; visibility and impact, especially near intersections and of pedestrians crossings, where city roads branch into intercity highways.
- Intensification on the application of the traffic law strictly, would have a great positive influence on traffic safety in Libya Prior to the issuance of driver's license should be there a rigorous testing procedure of theoretical and practical driving skills.

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