

Study of the Influence of Parameters of Road Safety on the Road Accidents

D. Ennajih, M. Elgameh, A. Salik, *A. Echchelh, A. Chaouch

¹Laboratory of Electrical Engineering and Energy System, Faculty of Science IbnTofail University, Kenitra, Morocco

²Laboratory of Applied Chemistry and Quality Control, Faculty of Science IbnTofail University, Kenitra, Morocco

³Laboratory of biometric and population genetic, Faculty of Science IbnTofail, Kenitra, Morocco
**echeladil@gmail.com*

Abstract: *The periodic technical inspection of cars being a fundamental measure for improving road safety in the UK, our first problem in this work is to shed light on this process supposed to reveal the technical defects of vehicles, officials alone to many accidents. The objective of this work is the upgrade of the vehicle inspection system in Morocco, referring to the German system, a reference model in the field and proven worldwide in order help reduce the number of victims of the "war of the roads". Emphasis will also be placed on training and awareness of the individual (driver and pedestrian). The human factor is one of the causes that make our roads remain among the most deadly. After an overview on the history and development of road safety in Morocco, we will present a retrospective of the road safety policy in Germany, highlighting areas for potential benefit to improving our road safety system.*

Keywords: *Mechanical Engineering, Simulation, statistics, road safety*

1. INTRODUCTION

Each year, traffic accidents cause the death of nearly 1.3 million people and are 20 to 50 million injured. [1] The traffic accidents have become the leading cause of death among young people aged 17 to 29 years. Over 90% of deaths and injuries due to traffic accidents occur in low- and middle-income countries [2], which have only 48% of completed vehicles registered global fleet. Nearly half 46% of road deaths in the world are "vulnerable road users" [3]: pedestrians, cyclists and motorcyclists. In addition to the pain and suffering they cause, road accidents cause considerable economic losses to victims, their families and nations as a whole; they cost in most countries of 1 to 3% of their gross national product [2]. If nothing is done Traffic accidents kill nearly 1.9 million people every year by 2020. Seuls 15% of countries have comprehensive laws which address all five accident risk factors: speed, driving under drunkenness and non-use of helmets, seat belts and child safety seats Almost daily, Moroccan media report information and images relating to the tragic road accident. Every year thousands of dead and injured some escaped with permanent motor disabilities. Broken lives and families scarred forever. Moroccan roads are among the most dangerous. For the month of August 2013, more than 400 [3] people died in road accidents in Morocco against 350 [3] the same month of the previous year. Fate is not the only factor responsible for this bleeding, and before such a finding is that we can mobilize to our roads and remain a shared space, respect and safety among motorists, motorcyclists, cyclists and pedestrians. The latter being the weak link is often forgotten. The fight against road accidents is of course the state's case but not only are also involved local authorities, insurance companies, associations and all road users. The poor quality of infrastructure and the altered state of the vehicles are always presented as the main causes. However, the human factor is the cause of accidents of more than 80%. The "Welcome to Morocco" guide (published September 2006), the Embassy of France provides French nationals wishing to make a trip to Morocco highlights the pillars of road safety by focusing attention on the causes accidents on Moroccan roads: The rate of serious accidents in Morocco is particularly high proportion of the fleet and the total population. Moroccan roads kill nearly eight times more than the French roads. "The aim is thus to focus on the human factor responsible for 100% of the few road accidents of the origin of the error (training, conduct, control ...)

2. THE CONCEPT OF ROAD SAFETY

Before beginning the analysis of road accidents should be aware of the difficulty of semantics implied by the same and historical concepts of "security" and "road safety». The layout of the object "Road Safety" was born of a quantitative input to apprehend the number of road fatalities related costs incurred. This statistical data processing of the accident, on the initiative of the insurance companies, and also widely reported by the media, adds a new dimension to the issue of road safety. From simple news, it now reaches the rank of social issue. For example, Le Monde is indignant that "according to the authorized estimated 1,012,000 people were killed in traffic accidents in the United States since the beginning of the century. The association of insurance companies reporting that this figure is seven thousand greater than the losses recorded during the wars since 1715. "[2] (The car has become more deadly than the war in the US", Le Monde April 19, 1979)

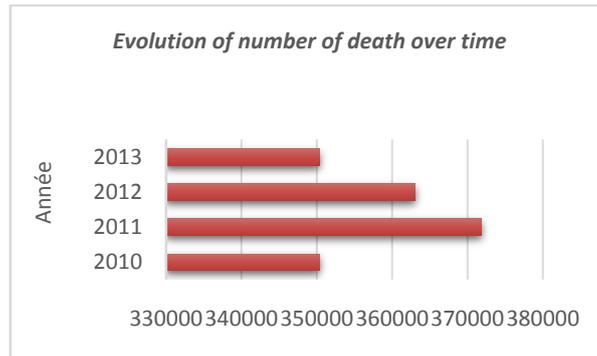


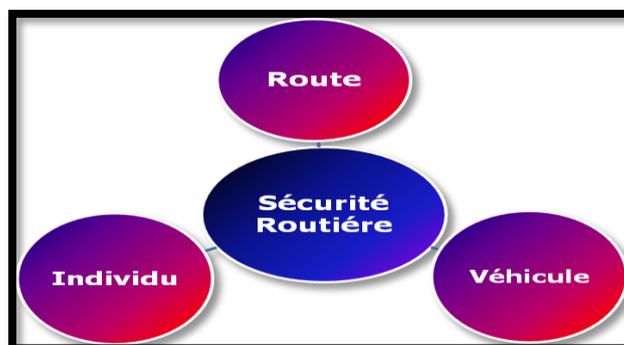
Fig1. Evolution of number of death over time

It is found that the number was increasing from 2010 to 2011 thereafter he began to decline, which leads us to believe that the measures that were taken by the competent authorities were effective and reduced the number of dead on the road in 2012 and again in 2013. In fact, the theme of road safety is seen as a technical product and not as a political object. Dramatization and the dramatization of road accidents by the media quickly played a catalytic role in the transformation of the problem of road safety policy issue and a public policy issue. Security implies the actions of the Department's road maintenance, signage, pavement markings and installation of guardrails. Its action on road safety include:

- The development and revision of standards;
- Design, standardization and promotion of road signs;
- The analysis with regard to the safety of several intersections and road sections that could be

Hazardous. He is currently studying the problem of where the accident rate is high to find remedies to make these safer blackheads.

The three pillars of road safety as evidenced by the welcome booklet as shown schematically below are:



3. THE OBJECTIVES OF ROAD SAFETY

Road safety objectives can be political or empirical. The policy objectives are used in many countries and typically aspire to ambitious reductions in deaths INJUR Y of the road. They have the advantage

of ambition and may involve a change in bed ment leads to shift from a traditional approach to reducing road accidents. However, they are not related to specific interventions, let alone the road security programs, and may not be effective in the development of a detailed dialogue between the government, stakeholders and the public on the sand indispen guarantee sustainable and successful actions. If such targets are not considered feasible and achievable, they can undermine the credibility of the establishment of goals and do not lead to improvements in the programs and gest ion of road safety. The policy objectives are best used as a means of establishing a long-term vision for the improvement of road safety, such as the realization of the goal of "zero deaths, zero injuries on the roads", in relation to the interim targets for quantified improvements over specific periods of time. There is no rule that dique in which regional or national objectives should be set first, and it is likely that CERTAI ns country first set national targets before the regional objectives, particularly in high-income countries that have certain habit of re energ security programs. Yet, one can generate new ambitions and more emphasis on achieving agreeing on regional targets.

3.1. Road Infrastructure

The road, the first pillar of road safety is essential to the economy, which guarantees the movement of people and goods. This is why every country must be served by a road infrastructure, regardless of density, size of population and resources. The main challenge of the Ministry of Transport and equipment is to develop a road network in line with the needs of a growing number of trips and resists a significant increase in traffic to ensure the maintenance and development of economic activity of the country and the safety of users. State's commitments at the extension of the road network are considerable. Signage is an essential communication tool for the road user. It must therefore be designed and installed to help the road user throughout his career by allowing him to adapt his behavior to various situations that present themselves to him, and that, by avoiding hesitation and incorrect use. It should allow it to anticipate any maneuver or change of direction and allow it to prepare. In addition to serving as his guide by indicating the route to follow and the dangers that dot the (curved or sloping pronounced shoulder soft, slippery, etc.), it reminds him of the various requirements of the Code of road safety and municipal bylaws. Signals, signs and pavement markings indicate traffic rules established to allow vehicles, cyclists and pedestrians to travel safely on the roads. As a motorist, you have to know them. The shape of the panels helps you to distinguish even in the dark, darkness, fog, rain or snow. Road signs are intended to guide the user in motion. It must meet specific criteria such as readability, consistency, consistency, visibility etc. Road signs must first be adapted and credible to be respected.

- The quality of signaling is a key factor in its effectiveness and performance
- A poorly perceived signaling or misunderstood can be a road safety factor.

Moreover, the traffic signal standards should be developed in order to establish the Department's requirements in this area. Under the Highway Safety Code, any person responsible for the management or maintenance of public roads is required to comply with the standards where such a requirement is indicated. Hence the need for the Department to develop its own standards. The main concern of the Ministry as the first manager of infrastructure and transport systems is road safety. Improving safety is the ultimate goal, both in terms of the development of standards and rules and in terms of management and infrastructure design.

3.2. The Role and Responsibility of the Individual

Table1. Statistical data of the factors causing the accidents related to driver behavior (4)

mauvais comportement du conducteur causant des accidents avec dommages personnels				
les causes	2010	2011	2012	2013
	350 323	371 821	362 993	350 381
l'influence de l'alcool	14 237	15 114	14 380	13 327
L'utilisation incorrecte des routes	24 360	26 536	25 966	24 032
vitesse non adaptees	55 610	49 659	49 274	48 730
la distance insuffisante	42 017	43 706	44 468	45 735
erreur lors d'un dépassement	12 981	14 038	13 175	12 737
pas ceder la priorité	50 425	55 289	53 546	51 055
erreur pendant le changement de direction				
erreur marche-arriere	53 236	60 262	57 512	55 480
Comportement incorrect envers les piétons	14 647	16 037	16 498	16 232

Most accidents at source maladaptive behavior of the user (driver or not), the establishment of an automotive education not only to drive system but also to road safety is mandatory. Education in road safety concerns all road users from a very young age to the end of life. Discovered at a young age that the road is not "take" but to share is to acquire behaviors that protect against traffic hazards and take into account other users of the road space. The effective implementation of early education on road safety implies the convergence of school and family practices that promote, from the kindergarten, the construction of a civic consciousness.

The exploitation of these statistical data allows us to study the responsibility of the human being. We can already see that human behavior is often in charge of road accidents

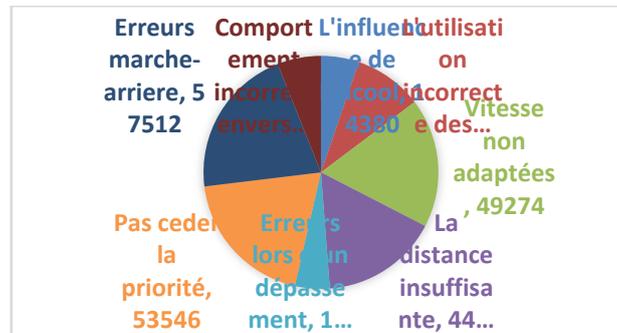


Fig2. Representation of the responsibility of the human being in the flow of the road

The poor driver behavior causing accidents with personal injury is considerable. It results in alcohol consumption, use of cell phone, not adapted speed, failure to comply with the distance allowed etc. Civic and responsible behavior of drivers is needed to ensure road safety for road users. Furthermore, education in driving and road safety is not solely the responsibility of the public policy but is part of a progressive and continuous process, with family, at school, at the time of transition from review of the license and after obtaining during the active life and beyond. However, these commitments also require the development of educational tools for teachers of driving, and also the development of early learning to drive that allows to gain experience of driving before the age by which behaviors to protect themselves from traffic hazards and take into account other road users will be acquired. Dans this context, the chain of educational continuum is gradually implementing three major steps.

3.3. Road Safety in School and College

A first acquisition behavior as a pedestrian, passenger and driver on the road should be as early as kindergarten and throughout elementary education. These first acquisitions must be validated for example at the end of primary school with a certificate. Taking into account the achievements of primary education in road safety continues throughout the school career. In college, education in road safety should extend from the Code of Conduct, knowing that a first meeting with the conduct occurs in most cases in this period (eg mopeds, etc.) Such Early learning system can only work if it has tangible benefits for obtaining the license. We should also think about those who do not get their education in schools. Drivers of two-wheeled vehicles, among which there is a high mortality rate on the road, should be the main affected by these changes. A permit two wheels should become mandatory from a certain age. Mopeds (motorcycles, small scooters ...) should at least by a simple test of technical knowledge prove their ability to meet the standards of road safety.

4. DIVERSITY OF DRIVING LICENCE

The inventor of the modern automobile Carl Benz was the first in 1888 to receive written permission from the Grand Duchy of Baden authorities to use his car on public roads after locals complained about the and noise of the motor odor. Then to the early 20th century European authorities have issued licenses to drive motor vehicles on request. Subsequently permission to drive was compulsory and the establishment for the first time driving license in the UK. Every car owner should register his car with the local government authority should be able to provide proof of registration on request. The minimum age at the time was 17 years. The license gave the holder permission to ride on the road at a maximum speed of 20 miles per hour or about 32 km / h2. Compulsory driving test was introduced in 1934 with the entry into force of the Law Road Traffic Act 1934 [5] A study of the different models of driving license in Europe shows that the driving license points system has been proven. This

implies a change of conditions for obtaining a driving license either for consideration or general principles. The general principles: the driving license has a capital of points x (Germany: 18 Points, 12 Points France) for a probationary period of a few years (Germany: 2 France 2 or 3), it aims to better manage the first years of driving and to empower young drivers and offending drivers.

4.1. The Review of the License

Renewal and rewriting of the General theory test (the Code) for learner drivers are required. The situations presented to the candidates should take more into account the aspects of risk factors and focus more on having positive attitudes vis-à-vis other road users (using behavioral learning). Thus, the practical test should include questions on road safety, the technical issues related to the equipment of the vehicle (tires, brakes, accessories ...)

4.2. Driving After A Driving License

Training courses and post-license awareness must increase as in most European countries in the following way: First, the initiation of mandatory courses for novice drivers who have committed a serious offense. On the other hand, on a voluntary basis, in addition to partial reconstitution Internship points about offending people, often in the context of the company, additional training is being developed in various forms: appointment of Evaluation for young drivers, visit development for experienced drivers or advocacy to road hazards.

5. THE TECHNICAL CONTROL OF THE VEHICLE

The technical inspection of vehicles is only meaningful if it is part of a security approach for the user of the controlled vehicle. The mandatory periodic technical inspection of vehicles used to verify the essential components of vehicles, related to safety and the environment, at the technical level and at the level of compliance on a well-defined rules. It is also a preventive measure to improve road safety by the lower bound of accidents due to the failure of some of the vehicles bodies. The increase in the cost of living is it a reason for us to save on the maintenance of our vehicle? An analysis of the periodic technical inspection of vehicles in Germany, leader in this area, highlights three basic elements as shown schematically below:

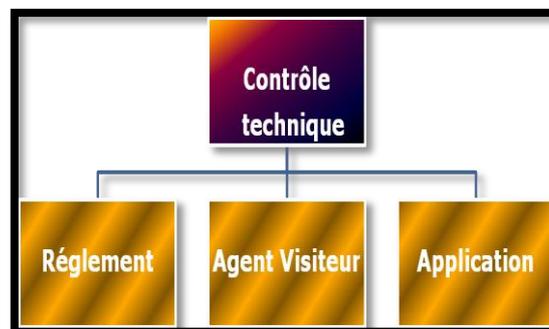


Fig3. The three basic elements.

6. CONCLUSION

The layout of the object "Road Safety" was born of a quantitative input to apprehend the number of road fatalities related costs incurred. This statistical data processing of the accident, on the initiative of the insurance companies, and also widely reported by the media, adds a new dimension to the issue of road safety. From simple news, it now reaches the rank of social issue. The quantitative and qualitative analysis presented in this paper shows how the human being is the central factor in the accident and that road safety depends on the physical and psychological behavior of the latter. Furthermore, education in driving and road safety is part of a progressive and continuous process, with family, at school, at the time of driving license and pass the examination after obtaining during working life and beyond. However, these commitments also require the development of educational tools for teachers of driving, and also the development of early learning to drive that allows to gain experience of driving before the age by which behaviors to protect themselves from traffic hazards and take into account other road users will be acquired. We will develop our next study necessary and possible measures to be taken to better manage and understand the road safety of road users of this scourge which is the first deadly cause of the productive part of society

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AUTHORS' BIOGRAPHY



Driss ENNAJIH PHD student at IbnTofail University, Automotive Mechanical Engineering



Mostapha. El Gameh PHD student at IbnTofail University, Automotive Mechanical Engineering



Abdeslam Salik student at IbnTofail University, Automotive Mechanical

Adil ECHCHELH PHD, Professor, Laboratory of Electrical Engineering and Energy System, Faculty of Science IbnTofail, Kenitra, Morocco

Abdelaziz CHAOUCH PHD, Professor IbnTofail university, Laboratory of Applied Chemistry and Quality Control, Faculty of Science IbnTofail, Kenitra, Morocco