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AN ACTION DECADE OF ROAD SAFETY IN EU AND IN SLOVAKIA

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Key words: *road transport, safety, traffic accidents*

Abstract: *The article deals with the issue of traffic accidents in road transport. It assesses the road safety in European Union and in the Slovak Republic. Furthermore, the article focuses on the concept of transport safety, because that one is not only an important traffic and social issue, but also an economic one. Traffic accident rates are connected to heavy material damages, permanent physical injuries and very often irreparable casualties.*

1 INTRODUCTION

The safe movement of goods and people is at the heart of the aims of the European Union. In the past, increased mobility has been driven by the interest, which also highlighted by its sharp increase the negative. There are, however, a number of problems currently associated with road transport. The costliest are crashes, injuries and fatalities Society and the individual are dependent upon road transport and will be so for the foreseeable future. Increasing road safety is therefore inevitably a process, which seeks to alleviate the negative consequences of traffic accidents. Personal security should not be a right and responsibility only a certain group, but we should all hare it. This idea is stated in the ETSC opinion: *"Every citizen has an elementary right and the responsibility for safe road transport. This right and responsibility serves to protect citizens before loss of life and health consequences, which have been caused by road transport. "*

2 SAFETY IN ROAD TRANSPORT

In order to be able to study “traffic safety” there must be a suitable operational definition that clearly and distinctly identifies what is and is not represented or implied by this term. A good dictionary or thesaurus such as Collins or Oxford English, will typically define safety in terms of: the quality or condition of being safe, or even: freedom from danger or risk of injury. If the term is placed before another noun, it is usually used to describe: a contrivance designed to prevent injury or damage. While these definitions are sufficient to describe the general characteristics of safety, they are less useful in suggesting how “safety” may be operationalised for scientific study. [6]

Terminology Dictionary crisis management defines security, state of social, natural, technical, technological system or other system, which in particular internal ones and outside conditions allows you to perform the specified functions and their development in the interest of man and society ". [11]

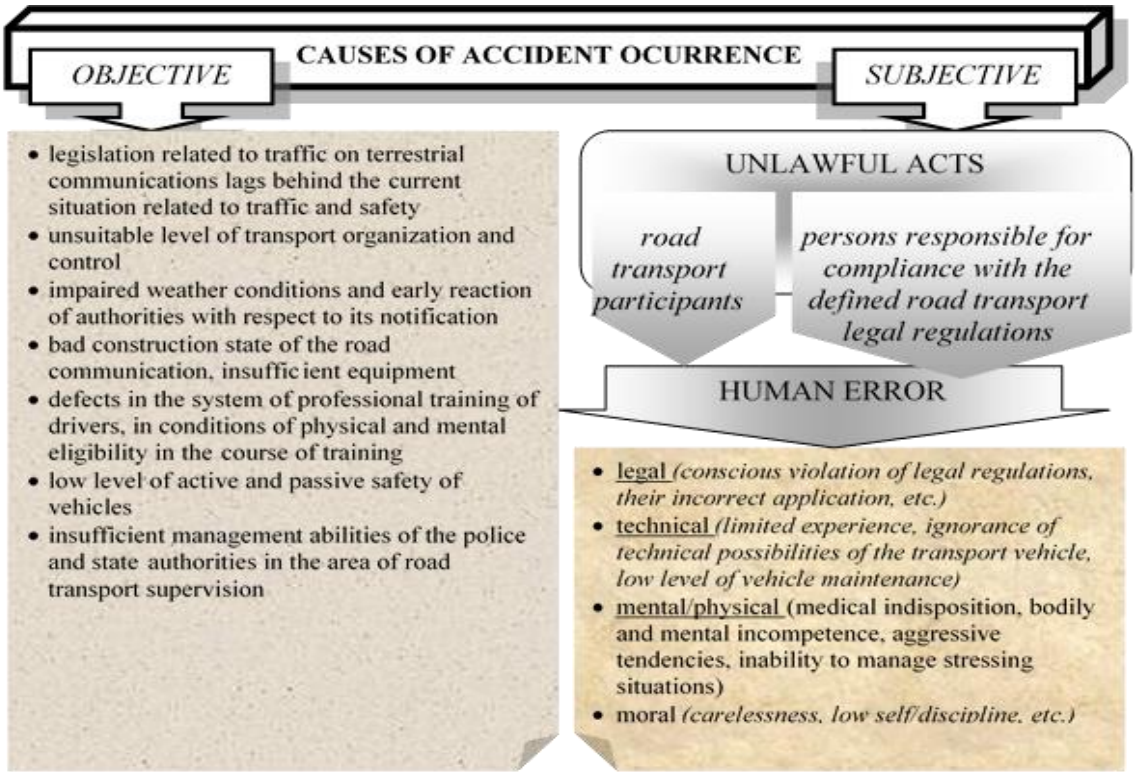

Figure 1 Objective and subjective causes of accident occurrence [9]

It is often argued that traffic safety should be represented as a continuum that stretches from standard safe road-user behaviour and performance at one end to traffic accidents (of varying outcome severity levels) at the other. This continuum allows connectivity between the bottom-up approach to traffic safety found in the behavioural sciences, and the macroscopic interpretation of traffic safety a s representing accident frequency and outcome severity. For such a continuum to be of value, it is necessary to establish the relationships between the various intermediate levels, as proposed by Von Klebelsburg (1964) and others before him (see Figure 3). [1]

Figure2 Traffic safety and the relationship between errors, standard behaviour, traffic conflicts and accidents [1]

Road safety may be influenced along many separate dimensions and various models have been used in road safety management:

- There are three main variables that decide the road safety level in terms of health consequences: exposure in traffic, risk of a crash given the exposure, consequence of the crash.
- The health consequences of road crashes may be influenced by actions taken before the crash (active safety), during the crash (passive safety), and post-crash (rescue, treatment, rehabilitation).

- Most of the crashes are triggered by human errors, sometimes intentional but normally unintentional. There are three basic ways to reduce the human errors: selection of road users (for example, licensing), improving road users. [2]

The first mentioned model is the most comprehensive and will be used here. The second does not include exposure as an important safety variable and the third does not include passive safety as an important safety variable.

Apart from the above mentioned basic factors, which affect the safety of road transport and its quality, there are many other factors. Among other factors, which affect the risks in road transport possible to include:

- Road Infrastructure
- Quality of the crew of the means of transport
- The availability of assistance by the components of the integrated rescue system
- The degree of vulnerability of the territory, weather and climatic conditions, risks of tectonic and tellurian character. [12]

Figure 3 illustrates the general task of road safety work split up into active and passive road safety improvements. Active road safety tries to reduce the frequencies of collisions, to lower the left curve. A majority of the active safety measures are aimed at reducing the probability of human errors. Passive safety on the other hand strives at increasing the human tolerance to the violence released at collisions (e.g. by means mentioned above), to move the right curve to the right. [4]

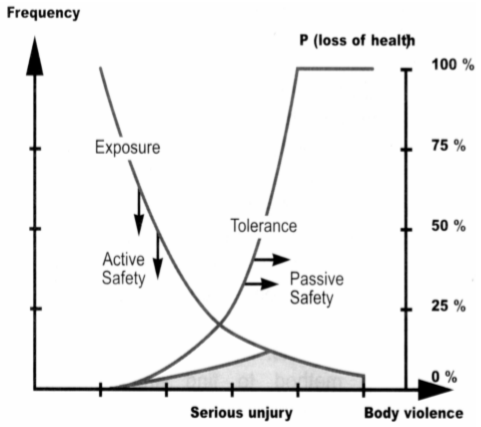

Figure 3. Illustration of the different functions of active (preventive) safety and passive (injury reducing) safety measures. [1]

The surface under the two curves indicates the size of the problem, the number of seriously injured and killed road users. The indicated movements of the two curves work to reduce this problem area.

2 ASSESSMENT OF ROAD SAFETY IN EUROPEAN UNION

Over the last decades, the EU has made great progress in reducing road fatalities. Between 2001 and 2010, Europe cut the number of road deaths by 43% in spite of the increased traffic volumes, and reduced it by another 17% since 2010.Thanks to decisive action at local, national and EU level, the EU has made impressive progress over the past decades. However, the progress rate has lately slowed down. After two years of stagnation (2014 and 2015), the number of road fatalities was reduced by 2% in 2016, and by another 2% in 2017. While the last two years give rise to some optimism, it will be very challenging for the EU to reach its

ambitious target of halving the number of road deaths between 2010 and 2020. Further efforts are therefore needed by all actors to improve road safety. [3]

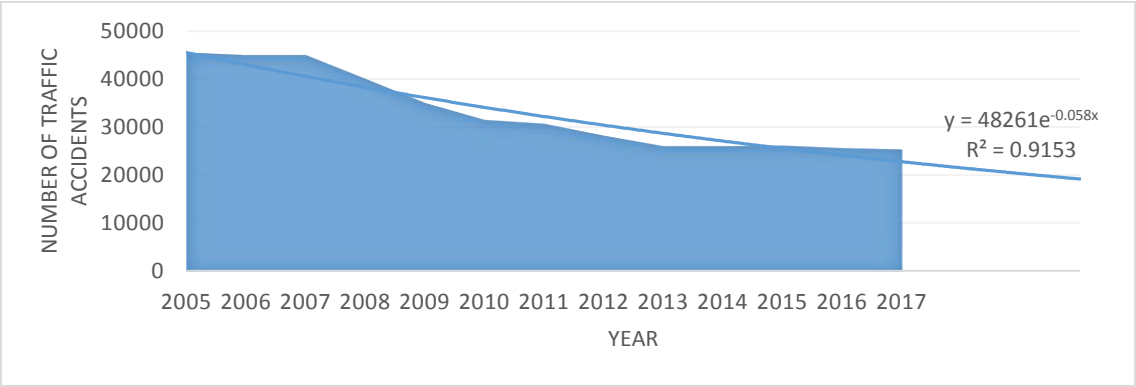

Figure 4 EU fatalities and targets 2005 – 2020 [3]

As an overall trend, the performance gap between EU Member States has been narrowing year after year. Following a pronounced discrepancy in Member States' road safety records in the 1970s and 1990s, a clear convergence began in 2000. Last year, only two EU Member States recorded a fatality rate higher than 80 deaths per million inhabitants, against seven in 2010. In 2017, the majority of Member States had a road fatality rate below 60 deaths per million inhabitants, and eight of them stood below 40 deaths per million inhabitants. [3] Road safety statistics for 2017 have shown the second year of decline in fatal accidents on roads throughout Europe as manufacturers add technology to their vehicles.

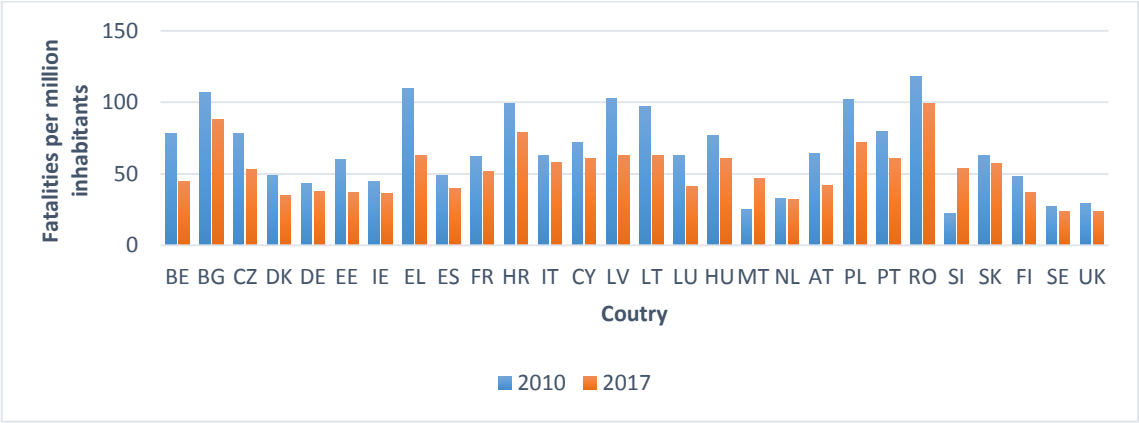

Figure 5 Fatalities per million inhabitants by country– 2010 and 2017[3]

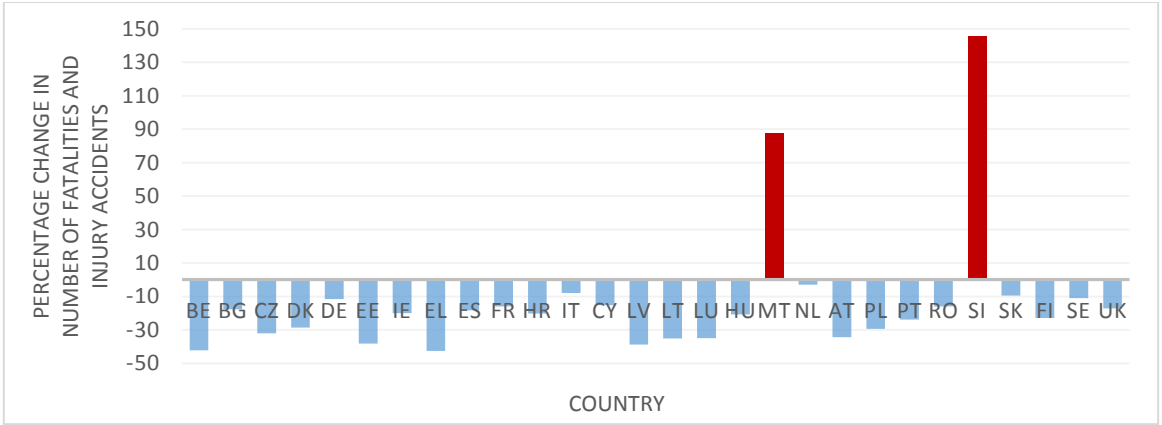

Figure 6 Percentage change in number of fatalities and injury accidents by country, 2010 and 2017 [3]

In order to reach the EU strategic target of halving the number of road deaths from 2010 to 2020, additional efforts are needed. Member States are the main actors as most of the day-to-day actions are delivered at national and local level: enforcement of traffic rules, infrastructure development and maintenance but also education and awareness raising campaigns. The European Commission acts where there is a clear EU added-value, for instance through legislation enabling the enforcement of cross-border traffic offences or by setting technical safety standards for infrastructure and vehicles. The Commission actively monitors the situation, stimulates and helps Member States to improve their performance through the exchange of data, knowledge and experience, and by sharing best practices.

Technological breakthroughs in the last decade have greatly improved vehicle safety. The significant advances in innovation and technology have a strong future potential to improve road safety, in particular in the area of vehicle automation and connectivity. To pave the way towards automation and better management of traffic, the Commission aims to develop a master plan on the deployment of cooperative Intelligent Transport Systems (ITS) – a two-way communication between vehicles, with and between road infrastructure. Such systems allow vehicles to warn each other directly (e.g. in case of emergency breaking) or through the infrastructure (e.g. upcoming road works).

3 ASSESSMENT OF ROAD SAFETY IN THE SLOVAK REPUBLIC

Since 1995after the present day to extend the road network from the original 17,868 km to 18,041 km. Strong increase in length occurred at the motorway, from the original 198 km to 474 km. The speed of the road has changed from 0 km to 287 km. The growth of motorways and express roads results in a deterioration of road II. and III. classes, due to insufficient financial investment. Routes I and II. classes together make up 6,917 km. This is a type of ground communication, with the greatest number of road transport means, because they are mainly used for transport between counties and districts.

Tab. 1 Development of motorways and express roads for the period 1995-2017 [8]

Year/way	1995	2000	2005	2010	2015	2017	1995/2017	2010/2017
Highway	198	296	334	427	464	474	+58,23%	+9,92%
Speed ways	0	27	126	190	277	287	+100,00%	+33,80%
I. class	3074	3222	3215	3318	3302	3306	+7,02%	-0,36%
II. class	3878	3826	3734	3643	3616	3611	-7,39%	-0,89%
III. class	10718	10394	10401	10408	10360	10363	-3,43%	-0,43%

Figure 7 statistics on traffic accidents are presented in Slovak republic. From statistical data, that worst year from the point of view of traffic accidents was 2006 with 62,040 traffic accidents. The largest drop occurred in 2008, where the number of traffic accidents decreased by 56%. In 2008, we recorded 59 008 traffic accidents and in 2009 a total of 25,989 traffic accidents. Such a reduction in road accidents has not actually occurred. However, it is necessary to mention § 64 of Act No. 8/2009 Coll. on road traffic and on amendments and supplements to certain laws, as amended, which results in a drop in traffic accidents in the SR. In that law a traffic accident means, road traffic incident, which becomes directly related to the carriage of the vehicle and in which:

a. the person killed or injured,
b. damage to the way or generally beneficial equipment,
c. escape dangerous goods or damage to any of the vehicles involved, including transported goods or other property, which may well be more than one-hundred times more damage under the Criminal Code (€ 3,990).

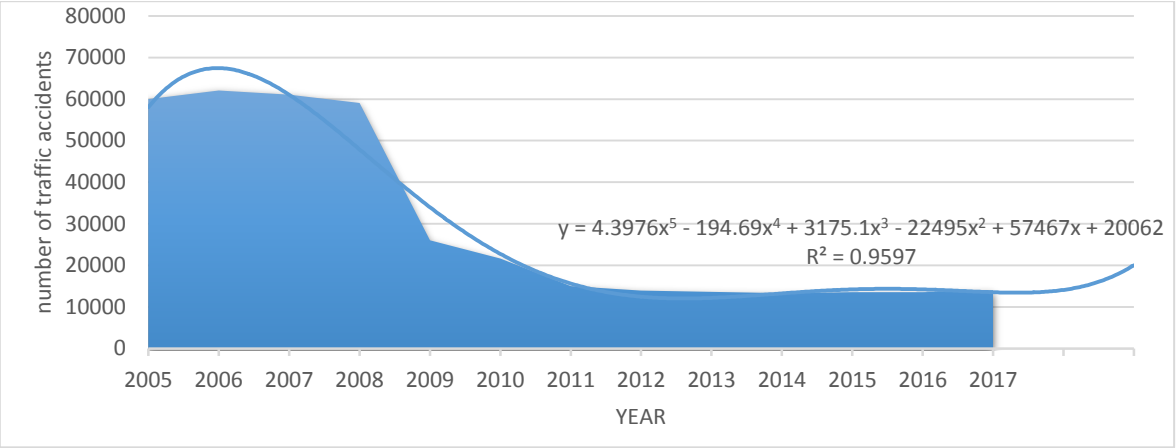

Figure 7 Traffic accidents in the Slovak Republic, 2005 and 2017[5]

From mathematical and statistical point of view is the occurrence of traffic accidents on the road it can be considered, for rare occurrences unequally distributed phenomena. Furthermore, their occurrence can be considered for a discreetly changing variable. The risk is for each section of the road network calculated by comparing the occurrence traffic accidents with serious and fatal injuries to the volume of traffic. The mentioned issue of critical accidents sites is also included in the National Safety Plan road traffic for 2011-2020.

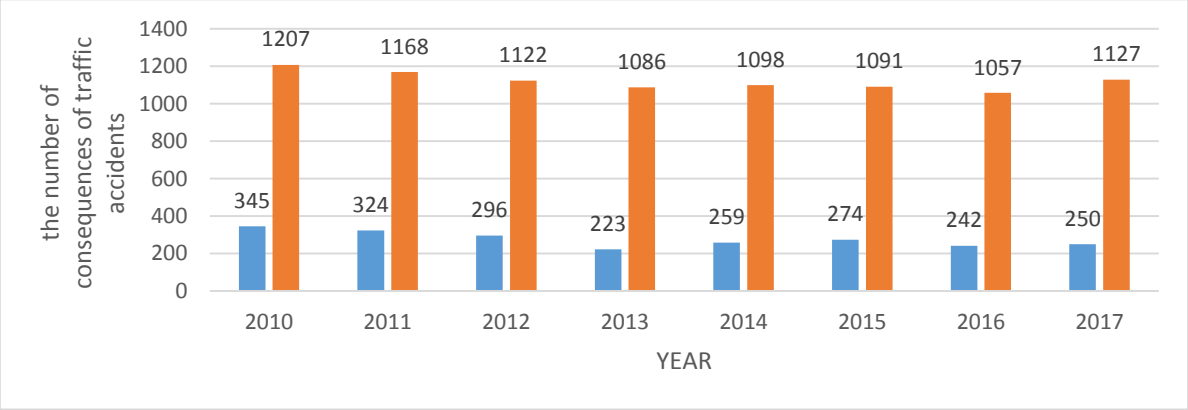

Fig. 8 Consequences of traffic accidents, 2010 and 2017 in the SR [5]

Slovakia has failed to reverse the negative trend of the last two years, when the number of victims on the road after the most prominent 2013 year he has grown. Ministry of the Interior of the Slovak Republic in 2016, that we are a leader in the region. Calculate the number of inhabitants we have the least death compared with neighbouring countries. While in Slovakia he died in 2016 on the road 45 people per million inhabitants, in Austria it was 50, in the Czech Republic 53, Hungary 58 and in Poland up to 70. In 2017, in terms of population, 57 people per million inhabitants died.

Within the Slovak Republic, every year there is an increased number of all registered motor vehicles in the SR and the number of passenger cars registered in the Slovak Republic. On average, two people have one vehicle. This indicator also has an impact on traffic intensity. Intensity of traffic is an important indicator, because statistical indicators of traffic accidents

and consequences of traffic accidents are evaluated in relation to the intensity of transport and are so- individual risk on the selected road network. Traffic load monitoring takes place every five years and carried out by nationwide traffic counting on the road network to the Slovak Republic.

CONCLUSION

According to the European Commission, 25,300 people lost their lives on EU roads in 2017, which is 300 (2%) fewer than in 2016 and 6,200 (20%) fewer than in 2010. While this trend is encouraging, reaching the EU objective of halving road fatalities between 2010 and 2020 will now be very challenging. All this calls for fresh efforts from all actors to make European roads safer. While national and local authorities deliver most of the day-to-day actions, such as enforcement and awareness-raising, the Commission is currently working on a series of concrete measures to spur further substantial progress. This would be another step towards a 'Europe that protects'. The extent of the responsibility of each of us is determined by the degree, how we can influence the road traffic process. For its participants, emphasis is placed on adherence to good practice, which are trying to keep the whole system in a safe and predictable condition. Slovak republic as a full member of the European Union respects the recommendations of the European Commission in the field of road safety and tries to fill them up. Guarantee of this fact is the Program Statement of the Government of the Slovak Republic of 2010, in which, inter alia, it is declared: "*The Slovak Government will support the development of a high- available and integrated transport infrastructure, competitive transport services, user-friendly and ecologically and energy-efficient and safe transport. "*

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ПЛАН ЗА ДЕЙСТВИЕ В ОБЛАСТТА НА ПЪТНАТА БЕЗОПАСНОСТ В ЕС И СЛОВАКИЯ

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Ключови думи: *автомобилен транспорт, безопасност, пътно-транспортни произшествия.*

Резюме*: Настоящият доклад разглежда проблемите, произтичащи от пътно-транспортни произшествия. В него се оценява нивото на пътна безопасност в Европейския съюз и Република Словакия. Освен това основен акцент в доклада е поставен върху пътната безопасност, тъй като този въпрос е важен не само от превозна и социална гл. т., но и от икономическа. Пътно-транспортните произшествия предизвикват тежки материални загуби, физически увреждания, както и загуба на човешки животи.*