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Introduction to the Road Safety Situation in Hungary

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Árpád TÖRÖK[1*], Ágnes Orsolya KISS[1], Gábor SZENDRŐ[1]

RESEARCH ARTICLE

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Abstract

The research aims to provide an assessment for the Road Safety situation in Hungary, by showing aggregated figures and statistics on road accidents.

This article is based on ROSEE ROad safety in South East European regions report. The road safety performance of Hungary in comparison to other countries of South Eastern Europe is discussed.

In Hungary, a great potential for safety improvement exists, if serious effort for tackling the above major critical factors is made.

Keywords

road safety, data analysis, Hungary

1 The ROSEE Project

The improvement of road safety is attracting more and more interest worldwide as road accidents have become one of the major causes of death in many countries and road safety is regarded as an issue of public health. In an area where road safety standards as well as rules and regulations vary widely, the European Union saw approximately 28,000 fatalities and 250,000 injuries from road accidents in 2012 (europa.eu, 2013). This represents a 9 % decrease over the previous year, meaning that after the 2 % average decrease in 2011, Europe is back on track for meeting the 2020 target (50 % decrease in fatalities, translating to a 7 % decrease each year).

Road safety level varies among the members of the European Union and the candidate countries. Three main clusters can be distinguished based on the number of persons killed per million registered passenger cars. It is to be noted that this ratio was chosen because of the availability of incomplete and partially non-harmonised data on the actual transport performance (expressed in passenger-kilometres). North-west countries perform best with Sweden, the United Kingdom and the Netherlands having the lowest number of persons killed per million passenger cars in the last years. Countries in southern Europe (Italy, Greece, Spain and Portugal) clearly display a lower level of road safety. Finally, eastern countries (members and candidates) have the highest values of the examined ratio (Yannis et al., 2007; Bialas-Motyl, 2007; ETSC, 2013). Such differences indicate that systematic efforts are required in order to achieve a more uniform road safety performance all over the EU and reach the adopted target of halving the overall number of road fatalities in the European Union by 2020 as compared to 2010 (European Commission, 2010).

In 2012, the number of road fatalities per one million inhabitants in most EU countries of the south-eastern regions was higher than the respective EU average. Specifically, 91 persons per million population were killed in Greece, 96 in Romania, 83 in Bulgaria, 63 in Slovenia, 60 in Italy and 64 in Hungary while the respective EU average was 55 fatalities per million (ETSC, 2013). These numbers show that road accidents are a common serious problem of the countries of south-eastern

[1] Centre for Road Safety Institute for Transport Sciences
H-1119 Budapest, Thán Károly u. 3-5., Hungary
[*] Corresponding author, e-mail: torok.arpad@kti.hu

Europe and common action should be taken in order to improve road safety in this wider part of Europe and not only in the particular countries. Although the analysis of road accidents in each country may reveal differences and special characteristics that shape the final road safety performance of each country, there are also common key road safety factors, such as road infrastructure management and road user behaviour, that may, as well as need, to be explored in order to improve road safety in this part of Europe. Moreover, knowledge and experience gained in countries of central and northern Europe that perform better in road safety must be exploited and further developed. Within this framework, the project titled Road safety in South East European regions, ROSEE was approved under the 4th call of the South East Europe Transnational Cooperation Programme.

ROSEE builds on the experience of the SOL - Save Our Lives Project, which concerned the improvement of road safety in central Europe, and aims to improve coordination in promoting, planning and operation of national and regional road networks in South East Europe with an emphasis on improving accessibility and traffic safety.

2 The situation in Hungary

This article aims to illustrate the road safety situation and trends in Hungary based on the ROSEE National Report. Specifically, the road safety performance of Hungary in comparison to other countries of South-Eastern Europe is discussed; basic road safety trends in Hungary are presented and a macroscopic analysis of road accident factors related to road users, the road environment and vehicles is conducted.

As based on data from 2012, the number of road accident fatalities per million inhabitants was slightly higher in the countries of the SEE region than that of the average of the EU Member States (see Fig. 1). Within the SEE region, Hungary is only to a small extent below the best countries of the region (SK, AT).

The number of fatalities per million motorized vehicles shows a much more unfavourable picture of Hungary (see Fig. 2) as they also take into account our level of motorization (see Figure below). This value in Hungary is more than double than that of the countries in the region on a higher motorisation level (eg. IT, AT, SI).

Judging the road safety situation in a country based on the two indicators above may yield ambiguous results, as is the case in Hungary – fatalities per million inhabitants are not particularly high, as opposed to fatalities per motorized vehicles. This contradiction can be solved with the methodology introduced by Trinca et al. (1988), which was adapted to Hungary by Prof. Péter Holló. By using the two indicators in conjunction, a more accurate and comprehensive picture emerges through ranking the countries based on the traffic safety situation, culture and safety issues (see Fig. 3 and Fig. 4).

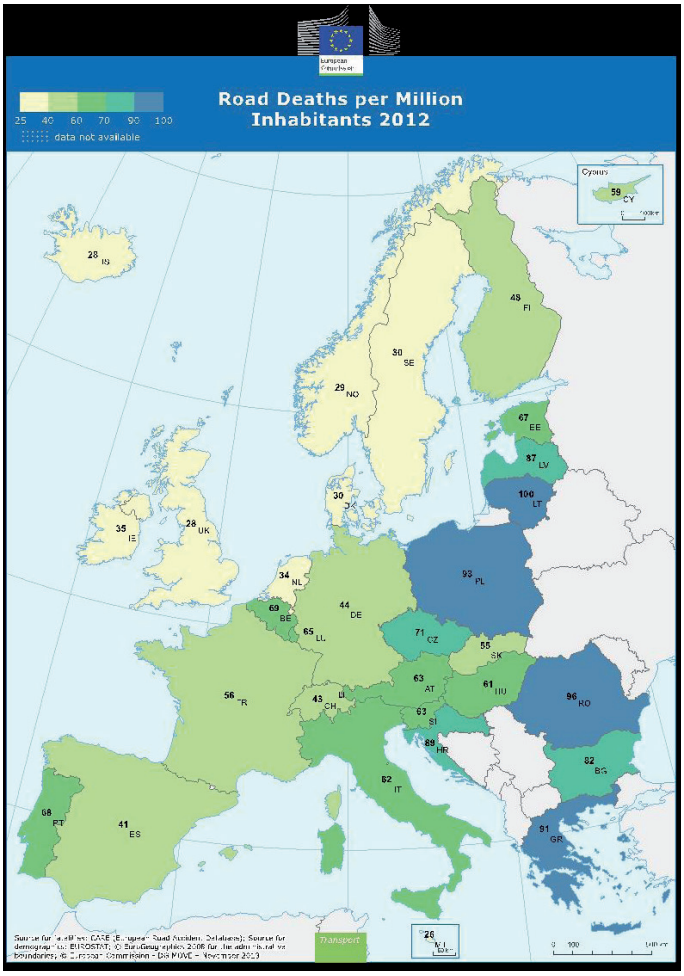

Fig. 1 Number of fatalities per million inhabitants (Source: European Commission)

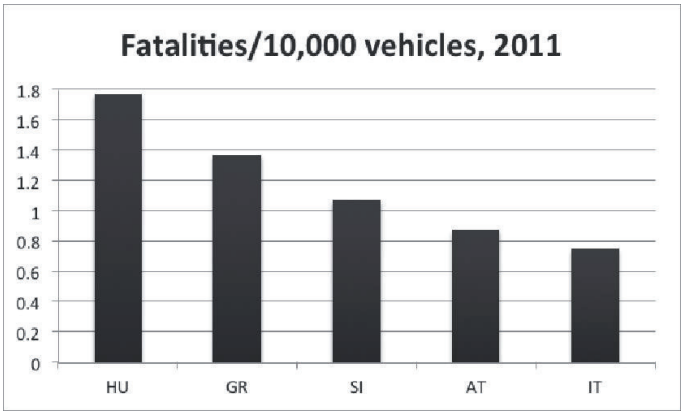

Fig. 2 Number of fatalities per 10,000 motorized vehicles in some EU Member States (Source: IRTAD)

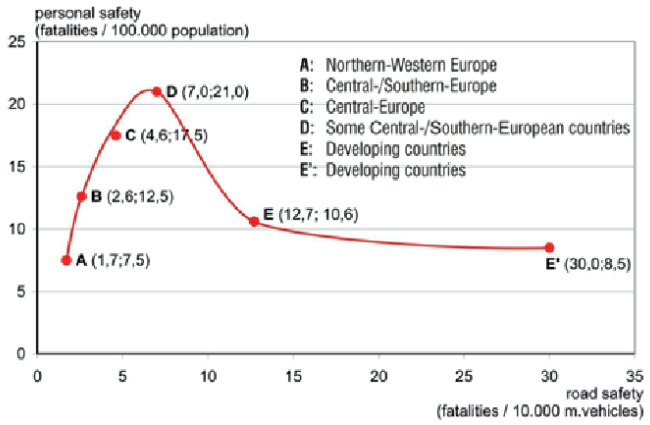

Fig. 3 The connection between traffic safety and personal safety (theoretical model) (Source: Trinca et al 1988)

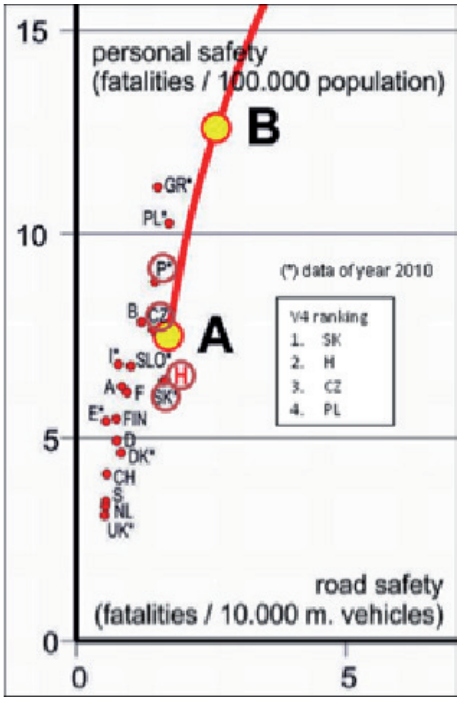

Fig. 4 The situation in Europe based on the Trinca model (2010-2011) (Forrás: P. Holló, 2013)

3 General road safety trends

Analysing the above data as panel data yields a more complete picture of the Hungarian situation. Between the period from 1991 to 2010, the number of road accident fatalities per million inhabitants shows a continually improving tendency, except for the decline between 2001 and 2006. It is to be noted, that the similar indicators of other EU countries and just as well as the EU average shows a significant positive trend in this period (see Fig. 5).

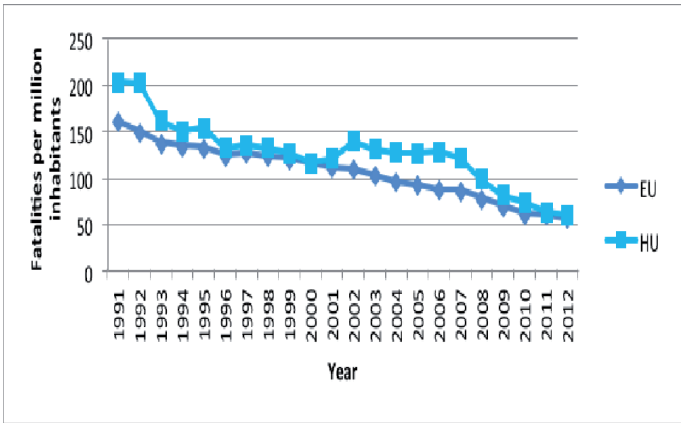

Fig. 5 The change in the number of fatalities per million inhabitants between 1991 and 2012 (Source: European Commission)

Even parallel to a dynamically improving level of motorisation (see below) significant improvement could be achieved in the last two decades regarding the number of fatalities per million inhabitants.

Note: Since 2008, due to the economic crisis, the Hungarian transport sector has been characterized by decreasing and stagnating road traffic levels/road transport performance. This had a significant influence on the indicators of road safety performance as well. The above statement is visualized by Fig. 6 Further, it has to be noted that the number of fatalities shows a more rapid decrease than the number of injury crashes.

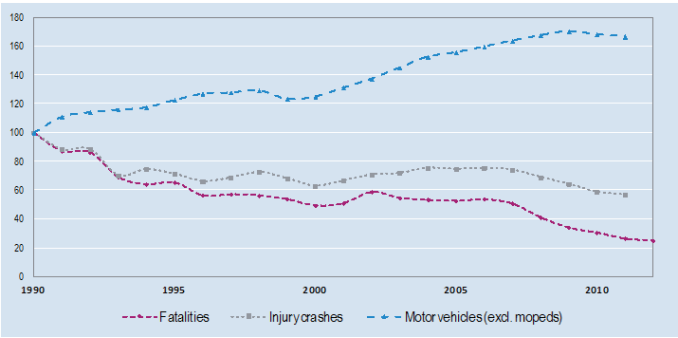

Fig. 6 Reported road fatalities, injury crashes and motorised vehicles 1990 - 2011 (Source: IRTAD 2013 Annual Report)

During the TISPOL operation in 2009, the extent of drink driving was established to be around 2% (an improvement compared to the previous years' value), which is otherwise in line with the EU average. The maximum permitted blood alcohol content in Hungary is 0.0. According to the penal code, since 1st July 2013 a blood alcohol content of 0.5 g/l, instead of the earlier 0.8, or a 0.25 mg/l breath air alcohol content is already considered a criminal act, and entails the immediate withdrawal of the licence. The high ratio of speeding is a further major problem in Hungary. As based on police data, about 30-55% of all the drivers do regularly exceed the applicable speed limits (see Table 1). Unfortunately, there is no data

available about the number of "relative" speedings (relative in view of the external conditions, such as visibility, weather and traffic conditions, and the road conditions).

Table 1 Ratio of speeding on the different road types in Hungary as compared to the European average. Source: Police

Ratio of speeding drivers	2012	2013
In built-up areas	63,5 %	62,5%
Rural areas	36,5 %	37,8%

As based on a European assessment using a drivers' survey from 2009, Hungary was recommended to take further steps to reach a higher level of speed legislation enforcement, seatbelt law enforcement and child restraint law enforcement. According to a new survey based on subjective evaluation, there is significant improvement regarding seatbelt and child restraint use, but there are still insufficiencies regarding the adherence to speed limits.

Regarding the efficiency of control, according to the former survey, roadside enforcement of speeding and seatbelt use should be intensified.

4 Road accident factors related to road users

The Hungarian modal split has changed significantly in the last two decades, as the number of private cars has been growing considerably initiating a substantial shift to private transport, with a parallel decline in public transport.

Efforts to increase road safety and the change of external conditions, e.g. the improvement of the passive safety of passenger cars (Bosurgi et. al., 2013), the increase in the seatbelt use ratio, the development of the road network and the structural change regarding travel behavior favoring private transport, led to a significant decrease in the number of fatalities of all road users in Hungary. This change is most significant in case of the pedestrians, but considerable improvement is seen for cyclists, passenger car occupants, mopeds and motorcycles and scooters as well (see Table 2).

Understandably, the values ordered by age group show a similarly improving trend. The travel behavior of young people has changed in the last decade. While they used to be pedestrians, nowadays their parents frequently transport them in their cars. This had a significant positive effect in their age group (see Table 2 and Fig. 7). It is important to note that the different age groups are characterized by different mobility needs. However, transport performance data distributions by age group are not available.

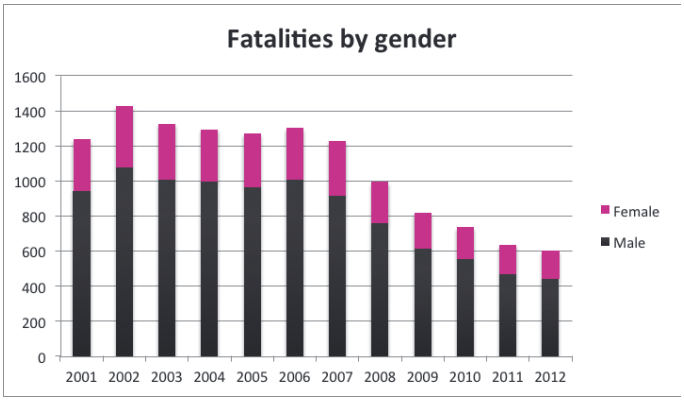

Fig. 7 The number of fatalities by gender (Source: DaCoTa)

Figure 7 shows the number of road accident fatalities by gender. Even though the ratio of men is still significantly exceeding those of women, male fatalities have decreased significantly in the last few years, thus the relative difference between the genders has somewhat decreased. It has to be noted that transport performance data distribution by gender is not available.

Demographic figures show that the number and rate of older people among the population are increasing continuously. Consequently, the problems of ageing are diversified and it is a long term and important task to retrain the mobility of older people and enhance their safety. It requires versatile activities in the fields of technology, regulation, and healthcare. The study made in Hungary examined the transport habits of older people and explored their vulnerability chances on the roads. Explored and analyzed the characteristics of the accidents of older drivers, cyclists, and pedestrians.

Table 2 Reported fatalities by road user group. Source: IRTAD 2013 Annual Report

									2011% change over		
	1990		2000		2010		2011		2010	2000	1990
Bicyclist	313	13%	182	15%	92	12%	85	13%	-8%	-53%	-73%
Mopeds	95	4%	33	3%	19	3%	31	5%	63%	-6%	-67%
Motorcycles and scooters	143	6%	52	4%	49	7%	52	8%	6%	0%	-64%
Passenger car occupants	974	40%	500	42%	330	45%	268	42%	-19%	-46%	-72%
Pedestrians	803	33%	346	29%	192	26%	124	19%	-35%	-64%	-85%
Others	104	4%	87	7%	58	8%	78	12%	34%	-10%	-25%
Total	**2432**	**100%**	**1200**	**100%**	**740**	**100%**	**638**	**100%**	**-14%**	**-47%**	**-74%**

More than half of the travels of the elderly happen in the morning hours within built-up areas and the most common reason for travel is shopping. According to the data of SARTRE studies (Social Attitudes to Road Traffic Risk in Europe), the distance travelled by car (8,600 km/year) and the frequency of car driving (1-4 times/week) of older people are the lowest among this age groups. The rate of speeding, non-use of seat belt and drink-driving is also the lowest. In searching for the causes of the road accidents of this age group, we can find that there is a higher rate of fault in perception and not giving priority but there is a lower rate of fault in vehicle handling. The responsibility of the elderly can be proved in almost three-quarters of the accidents that include the fault of not exploring the danger and the lack of efforts to avoid it, too.

The mobility level of the elderly is low therefore the number of injured in accidents is also relatively low. Among the number of injured old people, the number of drivers injured is the highest (most of them are cyclists and passenger car drivers) and the figure is increasing. Nearly three-quarters of the elderly pedestrians get injured as a victim in most cases as result of not receiving priority at pedestrian crossings (Vujanić, 2014). Older people are the most vulnerable road users as their injuries tend to be more serious and the rate of fatal injuries in this age group is three times higher than among young people.

Declining skills due to ageing should not necessarily mean worse road safety performance. Older drivers are able to compensate their deficit in cognition and reaction time at some degree. They avoid rush hours and traffic jams, evening hours and unfavorable weather conditions (Ben-Edigbe et al., 2013). It is also possible to prepare for the physical and mental changes of the human body at this age that can be done by the elderly driver as well as his family members. It is important to get to know the symptoms that appear during driving and beyond that that suggest the necessity of limited driving or to avoid driving. This is a long and difficult mental process where both self-restraint and self-selection have important roles.

When implementing accident prevention activities aiming to improve road safety of the elderly the most important task is to reduce the number of injuries. Beside that it is also essential to change the negative attitude towards the popular belief that older people drive dangerously. Statistical data do not confirm this, the risk of accidents correlating to the distance driven is not higher among older drivers. The risk of road accident injuries of the elderly is lower than at younger age groups correlating to the population.

The forms of information and dissemination aiming to enhance the road safety of the elderly car drivers, passengers, cyclists, and pedestrians can be different ranging from brochures through skills development courses to forming traffic environment and developing public transport. Dissemination should not only aim older people but every road user although in different forms.

5 Accident factors related to the road environment

There are significant differences in the fatality rates of the different road types, partly due to the diverse network lengths and traffic characteristics, and partly because of the different level of development, road safety standards and accident risks regarding the different road types. In 2011, 57%, 37% and 7% of all the fatalities happened on rural roads, on urban roads and on motorways, respectively. The biggest improvement in the last two decades was seen on the urban roads (see Fig. 8).

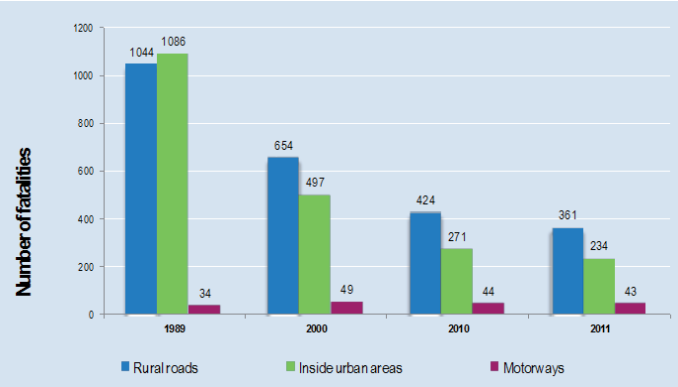

Fig. 8 Reported fatalities by road type (Source: IRTAD 2013 Annual Report)

The relationship between the number of fatalities and lighting conditions cannot be scientifically analysed, as transport performance data distributions by the different lightning conditions are not available. Examining the accident data by themselves show that both under daylight conditions and at nighttime the number of fatalities has significantly decreased, although the decrease of the daylight figure seems to have come to a standstill (see Table 3).

Table 3 Fatalities by different lighting and weather conditions. Source: IRTAD 2013 Annual Report

Fatalities by lightining and weather conditions	2006	2007	2008	2009	2010
During daylight	738	696	562	466	457
During nightime	512	479	401	356	283
While raining	83	113	80	61	84

6 Accident factors related to the vehicle

The dynamic growth of the vehicle fleet in Hungary is primarily explained by the increase in the number of passenger cars, but the number of goods vehicles and motorcycles has also grown rather considerably (see Fig. 9).

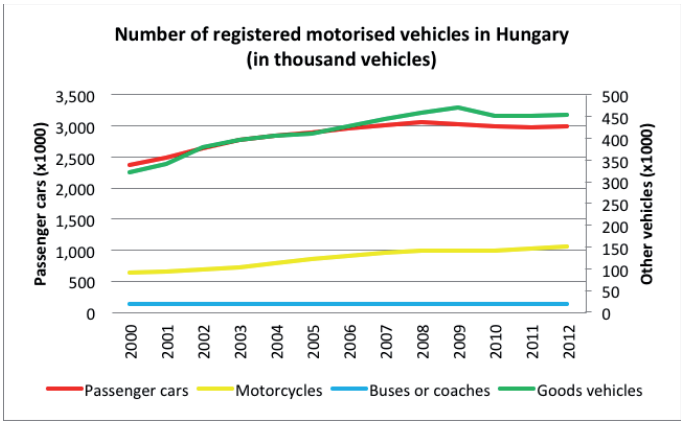

Fig. 9 Number of vehicles registered in Hungary (Source: DaCoTa)

The age distribution of the passenger car fleet has been continually shifting towards the higher age bands in the last years. Apart from a low number of new cars having been sold, the age of the fleet was basically growing in parallel with the number of years (Fig. 10), thus being even further removed from the European average.

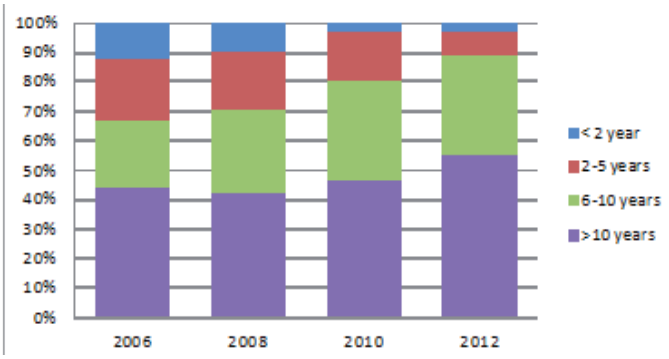

Fig. 10 Passenger car distribution by age group (Source: DaCoTa)

Undoubtedly, the reduction in demand due to the economic crisis must be the reason for this aging. Figure 11 shows clearly that the dominant number of fatalities in the passenger car category (57 %) is followed by the number of motorcycle fatalities (15 %).

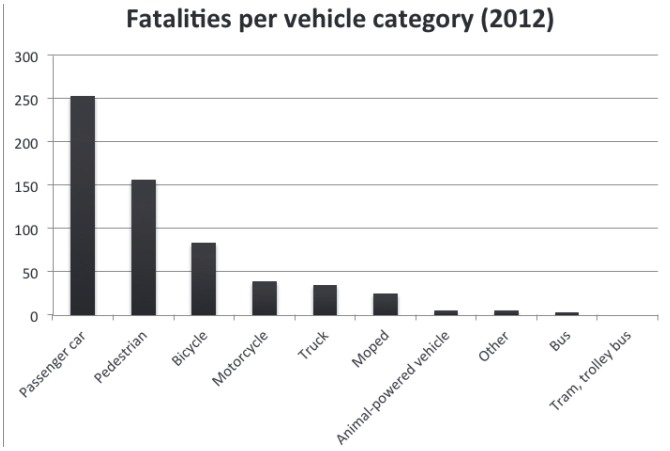

Fig. 11 Number of fatalities by vehicle type categories (Source: Hungarian Central Statistical Office)

7 Summary

The Hungarian Road Safety Action Programme determines the road safety goals, targets, priority areas and actions for the period 2011-2013. The situation analysis of the programme assumes that the majority of the accidents are caused by human factors, thus handling them becomes the most important goal of road safety activities. In line with the European field of action, increasing the level of compliance and preparedness of road users is the primary task.

To reduce the number of fatalities and injuries, it is of vital importance to have traffic rules and regulations enforced more strictly and also to enhance control efficiency. From May 2008 until the end of 2012, as based on cumulated data, more than 2.6 million owner's liability cases were registered. A monthly average of more than 61 thousand administrative proceedings led to a sanction, 86% of these were due to speeding. As a result of offences within the scope of owner's liability, nearly 16 billion HUF was imposed on vehicle operators as an administrative sanction last year.

To further improve the transport safety of children and youngsters, with content and construct well matching the age of the target group, modern travel trainings need to be provided. Pupils in the middle school age are mainly educated about the most important rules and basic conditions of travelling by bicycle or on foot, while high school students are trained in bicycle and moped driving, just as well as in pedestrian behaviour. It is also important to mention elderly road users as another priority topic in road safety in Hungary as well as the EU.

Due to the rules and regulations becoming stricter, the number of fatalities and personal injuries has become significantly lower in the road transport sector as compared to the peak in 1990. The improvement was especially remarkable between 2007 and 2011. In 2011, when the decrease in the countries of the EU was a mere 2 %, and several well-performing countries seemed to relapse, Hungary has shown a remarkable decrease of 14 %. In recognition of this achievement, Hungary was granted the PIN Award from the ETSC in 2012. Zero tolerance and owner's liability (since 2008) related to drink driving and speeding, the higher penalty points and the higher sanctions since 2011, the regulations enabling more powerful enforcement vis-a-vis the vehicles registered abroad, the obligatory road safety impact audit concerning road infrastructure projects, just as well as the road safety audit independent from the designer and the contractor are to be highlighted as the most important road safety efforts of the recent years.

Acknowledgement

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