

THE STATE OF ROAD TRANSPORT SAFETY IN POLAND, SLOVAKIA AND UKRAINE

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The article presents a comparative analysis of the state of road transport safety in Poland, Slovakia and Ukraine. According to the intention introduced in the White Paper on Transport, in the European Union are taken initiatives to improve transport safety and to reduce the number of road fatalities. The article presents an analysis of the state of road transport safety in Poland, Slovakia and Ukraine on the basis of reports and statements of the relevant state bodies. The paper presents the differences on road transport safety, its structure in these countries as well as selected aspects of improvement of road transport safety.

Keywords: road transport safety, road fatalities.

Introduction

Transport understood as intended movement of people and cargoes is necessary for the functioning of society [5]. Mobility is vital for the internal market and for the quality of life of citizens, but road accidents are a serious social problem. For the solution are important implemented: new technologies in vehicles and transport infrastructure, better education and training systems as well as safety equipment.

Transport enables economic growth and job creation: it must be sustainable in the light of the new challenges we face [11]. Transport is global, so effective action requires strong international cooperation [11]. Road safety should be connected with the international safety transport systems on European roads. Road safety is a phenomenon that the general public gets to consciousness only in the case of road accident. The social and economic cost of these road accidents is huge.

Safety in transport brings together many fields of science. The science of safety concerns many manifestations of human activity and is continuously developed by them. It takes into account, among other:

- technical issues concerning the construction of means of transport,
- issues in the field of psychology,
- issues of biomechanics and medicine,
- the conditions for road infrastructure, and many others.

Today's vehicles have different types of active and passive safety systems, as well as electrical driver assistance system [13]. In many cases, drivers forget that safety systems are only the driver's support in decision-making. The driver must continue to think and to make appropriate decisions on the basis of observations on the driving situation. Detailed analysis of past accidents, their causes, effects and consequences of risk provide information on the state road transport safety [1]. In accordance with the intent outlined in the White Paper on Transport, in the European Union are taken initiatives for improving the level of transport safety and the reduction of the number of fatalities [6].

A lot of scientific papers is related to transport safety [4, 5, 9, 10, 11, 13]. The authors in their works [1, 2, 3] also attempted analysis of road safety in its various aspects. This article presents a comparative analysis of indicators of road safety in Poland, Slovakia and Ukraine.

Country identification

The intensity of vehicle transport across the borders of comparable countries leads to changes in road safety. In order to better understand the safety is needed the identification of basic parameters that characterise the given country. In Table 1 are presented parameters characterizing analyzed countries.

Table 3.

Characteristic parameters of the countries, sources: [4, 12, 14, 15, 17]

	Poland (PL)	Slovakia (SK)	Ukraine (UA)
Land area [km ²]	312,679	49,037	603,700
Population [mln]	38.5	5.4	45.9
Density of population [person/km ²]	123.2	110.2	76.0
Total road length [km]	389,700	45,340	169,648
Density of road [km/km ²]	1.3	0.9	0.28
Number of passenger cars	18,744,412	1,749,271	3,343,659

The road network of the compared countries shows a significant variation both in terms of length and density of the different types of roads, as well as of their quality [9]. It is expressed in the total road density indicators presented in Figure 1. The road density indicator is particularly low in Ukraine – 0.28 km/km² and Belarus – 0.45 km/km². Density of the road network in Poland is 1.3 km/km², while in Slovakia 0.9 km/km². Imbalances in the structure of roads have an impact on road safety [9].

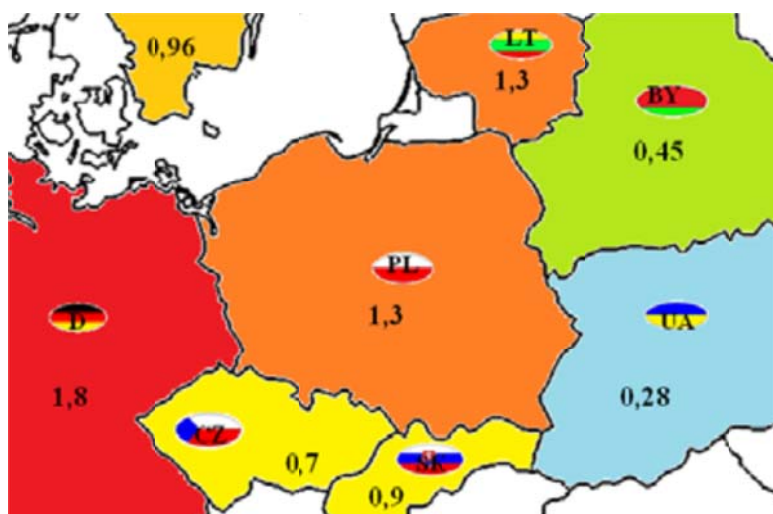


Fig. 1. Density of total road network (km/km²) of the analyzed countries in 2009

The state of road transport safety

In 2010, the UN General Assembly adopted a resolution on the action plan of all countries to improve road safety [7]. The recommendations were contained in the document of the Global Plan for the Decade of Action for Road Safety 2011-2020 [16]. The latest, fourth European Action Programme for Road Safety of European Union puts ambitious target – to halve the number of fatalities in road accidents over the next decade [8]. The main causes of accidents caused by drivers of passenger cars are invariable (according to the order of events) [8]:

1. speed – excessive or unsuitable to the conditions of the road,
2. not yielding the right of way,
3. not maintaining safe distance between vehicles,
4. incorrect behaviour toward pedestrians.

In the Table 2 are presented the statistical data of the number of traffic accidents, victims and injured in the analyzed countries (Poland (PL), Slovakia (SK), Ukraine (UA)) in years 2001 ÷ 2012.

Table 4.

Statistical data of the number of traffic accidents, victims and injured, sources: [7, 8, 14, 15, 17]

Year	Poland (PL)			Slovakia (SK)			Ukraine (UA)		
	Accidents	Killed	Injured	Accidents	Killed	Injured	Accidents	Killed	Injured
2001	53799	5534	68194	57258	614	10839	34541	5984	38196
2002	53559	5827	67498	57060	610	10263	34488	5982	37916
2003	51078	5640	63900	60304	645	11321	42409	7149	47458
2004	51069	5712	64661	61233	603	11190	45592	6966	53638
2005	48100	5444	61191	59991	560	10490	46485	7229	55999
2006	46876	5243	59123	62040	579	10692	49491	7592	60018
2007	49536	5583	63224	61071	627	11310	63554	9574	78528
2008	49054	5437	62097	59008	558	11040	51279	7718	63254
2009	44196	4572	56028	25989	347	8534	37049	5348	45675
2010	38832	3907	48952	21595	345	8140	31914	4875	38975
2011	40065	4189	49501	15001	324	7057	31281	4908	38178
2012	37046	3571	45792	13936	296	6422	30660	5094	37503
Total	563210	60659	710161	554486	6108	117298	498743	78419	595338

The Figure 2 presents the statistical data of the number of traffic accidents, victims and injured in the analyzed countries (Poland, Slovakia, Ukraine) in years 2001 ÷ 2012.

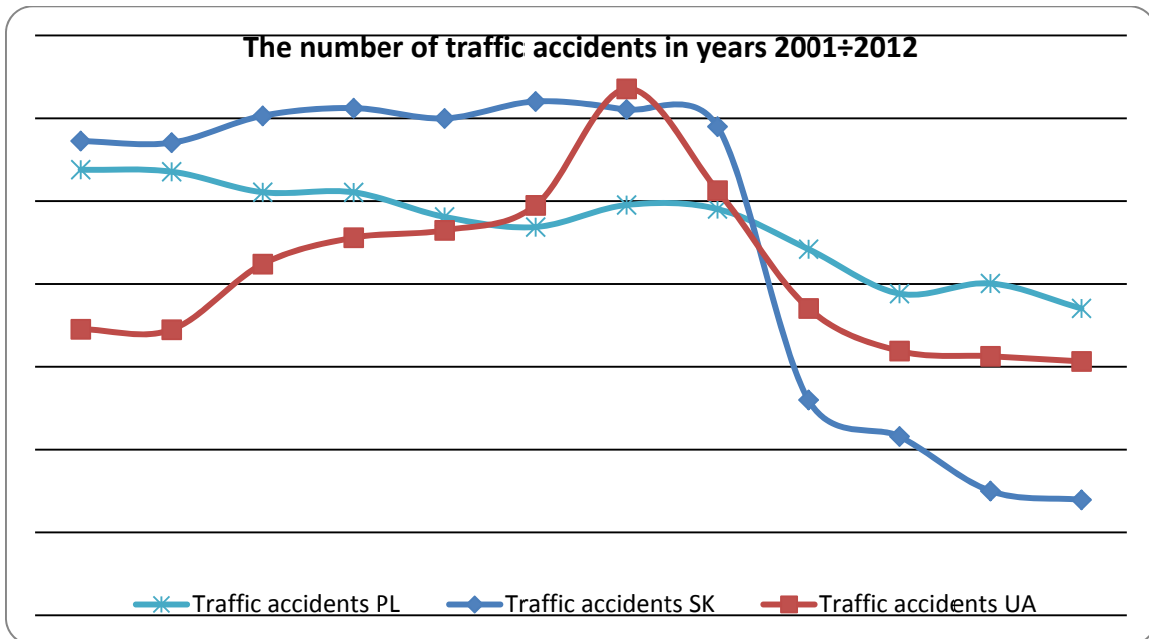


Fig. 2. Change in the number of traffic accidents in the analyzed countries in years 2001 ÷ 2012

Clearly visible is the decrease in road accidents in 2007 and 2008 in Slovakia and Ukraine (Fig. 2). The situation in Ukraine is slightly different than in the other countries analyzed. After an increase in number of accidents from 2001 to 2007, in 2008 there has been a decline in the number of accidents, which remains and is the lowest for 10 years. In Poland, however you can see a clear systematic downward trend of number of road accidents during the whole period considered.

In Figure 3 is presented comparison of the number of traffic accidents and victims of traffic accidents (killed), in the analyzed countries in years 2001 ÷ 2012 expressed as the number of people.

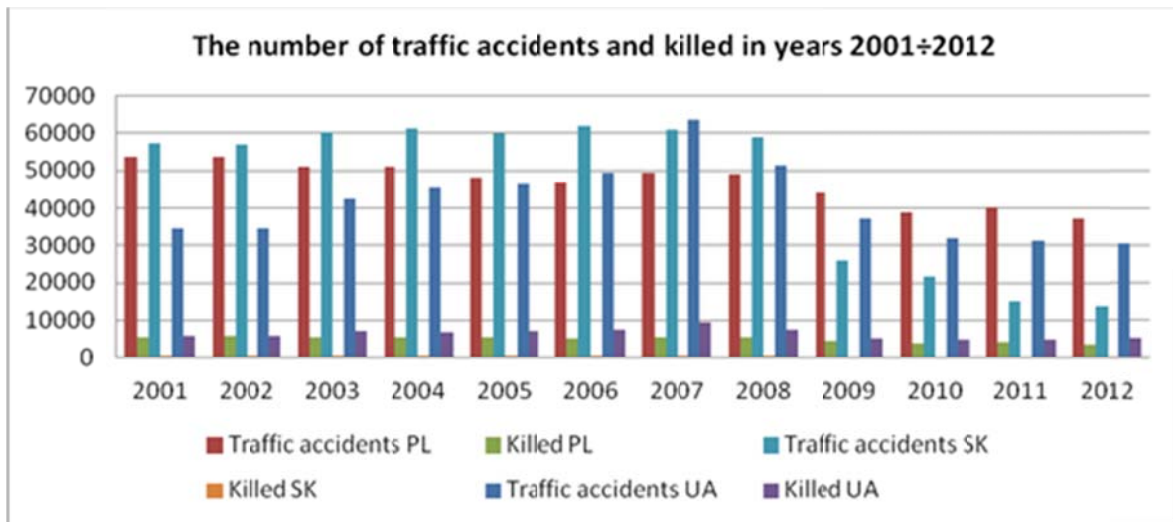


Fig. 3. Comparison of the number of traffic accidents and number of killed in traffic accidents, in the analyzed countries in years 2001 ÷ 2012 (persons)

By analysing a chart in Figure 3 is visible that in recent years there has been a decline in number of victims caused by fewer accidents on the road. The largest number of victims of road accidents is in Ukraine, although the number of accidents is less than, for example, in Poland. In 2012 in Ukraine was 30,660 accidents, in which 5,094 people were killed. During the same period in Poland were 37,046 road traffic accidents, in which 3,571 people were killed. However, in Slovakia in 2012 were 13,936 accidents in which 296 people were killed. It should be noted that the reduction in the number of road accident

victims has been declining since 2008, previously the number of victims, in particular in Ukraine, had an increasing trend. In Poland, the number of victims ranged within 5,500 victims.

In Figure 4 is presented comparison of the number of traffic accidents and victims of traffic accidents, in the analyzed countries in years 2001 ÷ 2012 expressed as the number of people.

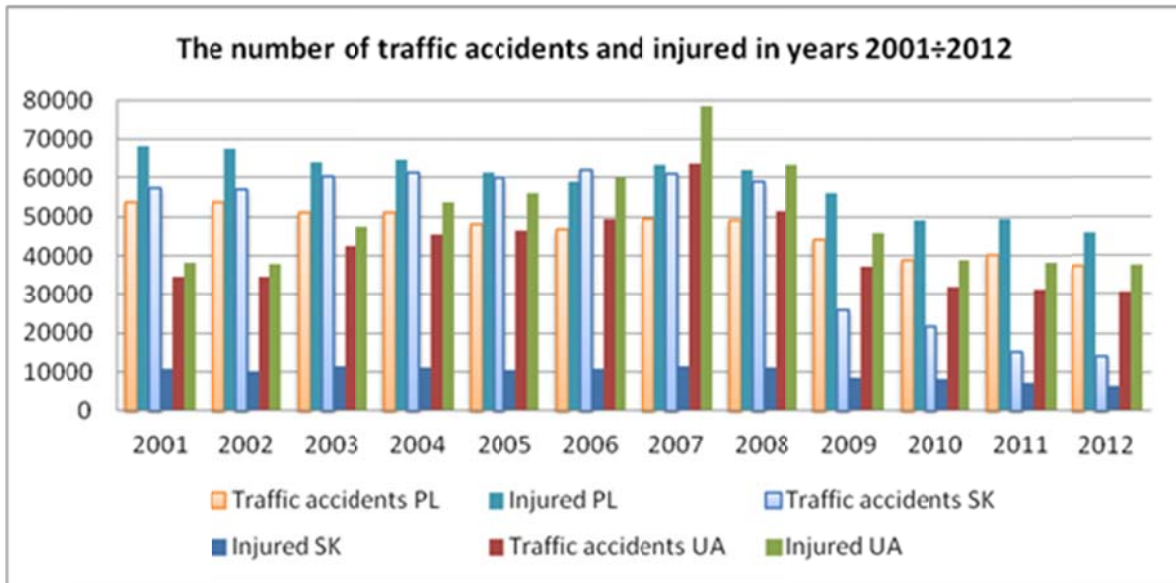


Fig. 4. Comparison of the number of traffic accidents and injured of traffic accidents, in the analyzed countries in years 2001 ÷ 2012 (persons)

Analyzing the graph in Figure 4 it is clear that in Poland and Ukraine the number of injured in the road accidents is far greater than the number of the accidents over the entire analyzed period of time. In contrast to these countries is the situation in Slovakia where the number of injuries is several times less than the number of accidents and in the last three years is less than half.

Conclusion

Consequence of the increased number of vehicles on the road is the occurrence of the risks associated with their use. As shown, road transport is the cause of collisions, accidents and deaths as a result of their consequences, and a large number of injured [1].

The analysis shows that the actions taken to improve the level of safety on the road over the years bring results in the form of a smaller number of accidents and their victims [3]. Road safety in all compared countries improves. Significantly lower number of accidents and their consequences on the background of compared countries is in Slovakia, especially in the last three years during the period considered.

The steepest decline in the number of accidents occur in Slovakia and Poland, where in 2012 compared to 2001, the number of accidents decreased by 75.67 % and 31.14 %. In Ukraine this ratio is smaller and amounts to 21.34 %.

In the period 2001 ÷ 2012 among the analyzed countries in Poland has been the largest number of accidents – 563,210, then in Slovakia 554,486 traffic accidents and the lower number in Ukraine – 498,743 accidents.

At that time the greatest severity of accidents, expressed as the number of killed in road accidents occurs in Ukraine – 78,419. In Poland at the time were 60,659 and in Slovakia 6,108 people killed in road accidents.

The largest number of injuries in road traffic accidents occurred in Poland – 710,161 people. Then in Ukraine 595,338 people were injured and in Slovakia 117,298 people were injured.

Complexity of the issue of road safety does not allow for a holistic treatment in a short article. Therefore, further analysis of selected issues of transport safety is justified.

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Кабан Я., Дроздель П., Крживонос Л., Лищак Ш. Стан безпеки дорожнього руху в Польщі, Словаччині та Україні. У статті представлений порівняльний аналіз стану безпеки дорожнього руху в Польщі, Словаччині та Україні. Аналіз стану безпеки дорожнього руху проведений на основі звітів і публікацій відповідних державних органів. У роботі представлені відмінності організації безпеки дорожнього руху в цих країнах. Розглянуто окремі аспекти підвищення безпеки автомобільних перевезень.

Ключові слова: безпека дорожнього руху, дорожньо-транспортні пригоди, смертельні випадки.

Кабан Я., Дроздель П., Крживонос Л., Лищак Ш. Состояние безопасности дорожного движения в Польше, Словакии и Украине. В статье представлен сравнительный анализ безопасности дорожного движения в Польше, Словакии и Украине. Анализ состояния безопасности дорожного движения проведен на основе отчетов и публикаций соответствующих государственных органов. В работе представлены различия организации безопасности дорожного движения в этих странах. Рассмотрены отдельные аспекты повышения безопасности автомобильных перевозок.

Ключевые слова: безопасность дорожного движения, дорожно-транспортные происшествия, смертельные случаи.

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