JOURNAL OF SECURITY AND SUSTAINABILITY ISSUES
ISSN 2029-7017 print/ISSN 2029-7025 online
2019 June Volume 8 Number 4
http://doi.org/10.9770/jssi.2019.8.4(9)

Scopus®

ECONOMIC GROWTH AND SECURITY OF TRAFFIC PARTICIPANTS

Valentina Peleckienė[1], Kęstutis Peleckis[2], Kęstutis Peleckis[3]

[1] Department of Management, Faculty of Business Management, Vilnius Gediminas Technical University, Saulėtekio al. 11, LT-10223 Vilnius11, Lithuania
[2]Department of Business Technologies and Entrepreneurship, Faculty of Business Management, Vilnius Gediminas Technical University, Saulėtekio al. 11, LT-10223 Vilnius11, Lithuania
[3]Department of Economics Engineering, Faculty of Business Management, Vilnius Gediminas Technical University, Saulėtekio al. 11, LT-10223 Vilnius11, Lithuania

E-mails: [1]valentina.peleckiene@vgtu.lt; [2]kestutis.peleckis@vgtu.lt; [3]valentina.peleckiene@vgtu.lt

Received 15 January 2019; accepted 15 April 2019; published 30 June 2019

Abstract. The purpose of the research paper is to observe and analyze how the economic growth of EU countries is accompanied by growth of motorization rate and fatalities during the last decades in terms of inventory on increase of motor vehicles and accidents in road traffic in order to identify regulation of the motor insurance legislation. Research methodology is statistical analysis of economic growth and motorization rate and the accidents in the EU countries during the period of 2000 - 2017. In the research paper the quantitative analysis and comparison method are applied. Findings: research paper shows that in the EU countries with higher income level, the rate of increase in motor vehicles is lower than the decline in fatalities per motor vehicle, and in countries with low income level the rate of increase in motor vehicles is higher than the decline in fatalities per motor vehicle. Practical implications: research paper demonstrates road traffic authorities need to know these specificities and take this into account in preparation of legislation to strengthen EU rules on motor insurance to better protect victims of motor vehicle accidentsOriginality - paper analyses the relationship between motorization levels and fatalities of different EU countries during last decades.

Keywords: Economic growth, motorization rate, traffic fatalities, road traffic safety, Motor Third Party Liability Insurance.

Reference to this paper should be made as follows: Peleckienė, V.; Peleckis, K.; Peleckis, K. 2019. Economic growth and security of traffic participants, *Journal of Security and Sustainability Issues* 8(4): 653–664. http://doi.org/10.9770/jssi.2019.8.4(9)

JEL Classifications: F41, F42, L51, L91, N74.

1. Introduction

The aim of this paper is to overview the conditions of road traffic safety in EU countries and identify problems of Motor Insurance Directive (MID) practice. To obtain the aforementioned aim, the following objectives are set: to analyze the motorization level of EU countries, to identify relationship between economic growth and road traffic accidents victims, to overwiev the impact of amendments of MID for increasing security of EU road traffic. Economic growth of countries is accompanied by growth of motorization rate. The growing number of motor vehicles in road traffic presents new challenges to security for road users. According the World Bank researches the traffic injuries now rank as the world's eighth-leading cause of death and the number-one killer of young people ages 15 to 24 (World Bank, 2014). These findings impose the need to spread improvements in transport safety.

The compulsory insurance of motor vehicles is an important instrument in providing financial protection against claims for physical damage and injuries resulting from traffic accidents. Motor Insurance Directive enables to travel within the EU for EU residents with their vehicles on the basis of a single premium. EU resi-

dents can travel anywhere without the need to buy additional insurance. The current Motor Insurance Directive is a consolidation of five earlier Directives. To assess the effectiveness, efficiency and coherence of the motor insurance legislation, the European Commission announced an evaluation of the MID in 2016. The conclusion of the evaluation was that most elements of the Motor Insurance Directive remain fit for purpose, while certain amendments in specific areas would be appropriate. The Commission announced on possible amendments to enhance the protection of traffic accident victims in cases when insurer is insolvent, in improvement the recognition of claims history statements, risks due to uninsured driving, harmonization of minimum amounts of cover and the scope of the Directive.The methodology of article research for development of key drivers of Motor Third Party Liability insur-ance will be based on a thorough analysis of the transport sector.

2. Theoretical framework and Methodology

As the economy of EU member States grows, the level of motorization of the population increases; it causes a growing number of road accidents and the number of killed and injured people. The relationship between economic growth, motorization level and their negative consequences was analyzed by many authors (Law Teik Hua, Markus Brueckner, Daniel Lederman, Kopits and Cropper, David W. Jones, Bener et al). Kopits and Cropper examined the impact of income growth on the death rate due to traffic fatalities, as well as on fatalities per motor vehicle and on the motorization rate (vehicles/population) using panel data from 1963-1999 for 88 countries. Specifically, they estimated fixed effects models for fatalities/population, vehi-cles/population, and fatalities/vehicles and used these models to project traffic fatalities and the stock of mo-tor vehicles to 2020. The relationship between motor vehicle fatality rate and per capita income at first in-creases with per capita income, reaches a peak, and then declines. This is because at low income levels the rate of increase in motor vehicles outpaces the decline in fatalities per motor vehicle. At higher income levels, the reverse occurs. The income level at which per capita traffic fatalities peaks wass approximately $8,600 in 1985 internationial dollars. Projections of future traffic fatalities suggest that the global road death toll will grow by approximately 66 percent between 2000 and 2020 (Kopits and Cropper, 2003). Some studies have shown that there is a U-shaped relationship between road deaths and economic growth. In new research (Law Teik Hua, 2018; Ma et al.,2018; Aney et al., 2019; Blanchet et al., 2013) finds that this relationship also holds for non-fatal road injuries in developed countries, but not in countries which are developing. He writes that an increasingly urban population, more road vehicles, and a greater number of elderly people were all likely to decrease the number of road injuries in developed countries, but do the opposite in developing countries. Studies of developed countries showed an inverted U shape relationship between economic growth and road traffic accidents (van Beeck et al. 2000). Various studies have shown that there is an inverted U-shaped relationship, which is known as the Kuznets curve, between road deaths and economic growth: that is, road deaths increase at lower income levels, but decrease once the number has exceeded a certain threshold (Law Teik Hua, 2018; Owadally et al., 2019; Hsu et al., 2015; Ma et al., 2018; Aney et al., 2019; Blanchet et al., 2013; Rumson et al., 2019; Lucas et al., 2017; Tselentis et al., 2016; Tselentis et al., 2018; Factor et al., 2018).

Data were analyzed on economic growth, motorization rate and the accidents in the EU countries during period of 2000 - 2017 year. In the research paper the quantitative analysis and comparison method are applied. Main hypothesis of the research paper is following “In the EU countries of low income levels the rate of in-crease in motor vehicles is higher than the decline in fatalities per motor vehicle, in the EU countries of higher income levels, the rate of increase in motor vehicles is lower than the decline in fatalities per motor vehicle“.

In case if hypothesis will be confirmed by performing statistical analysis of EU countries aggregated by their development levels authors provide an answer to the stated hypothesis as well as provide future research recommendations. In case if hypothesis will not be confirmed by data or the analysis it either will be dismissed or stay on the level of hypothesis for further investigations.

3. Results of the research

Tables and figures should be incorporated and mentioned in the text. They must be as close to the reference as possible and should be in a form suitable for publication when printed with a good quality laser printer. Figures will be printed in black and white and should be readily interpreted without the use of colour (e.g. see Figure 1). Tables and figures should be sequentially numbered in separate series and should meet the requirements that are provided in Table 1.

The level of economic development has been characterized by real GDP per capita ratio. The indicator is calculated as the ratio of real GDP to the average population of a specific year. GDP measures the value of total final output of goods and services produced by an economy within a certain period of time. It is a measure of economic activity and is also used as a proxy for the development in a country's material living standards.

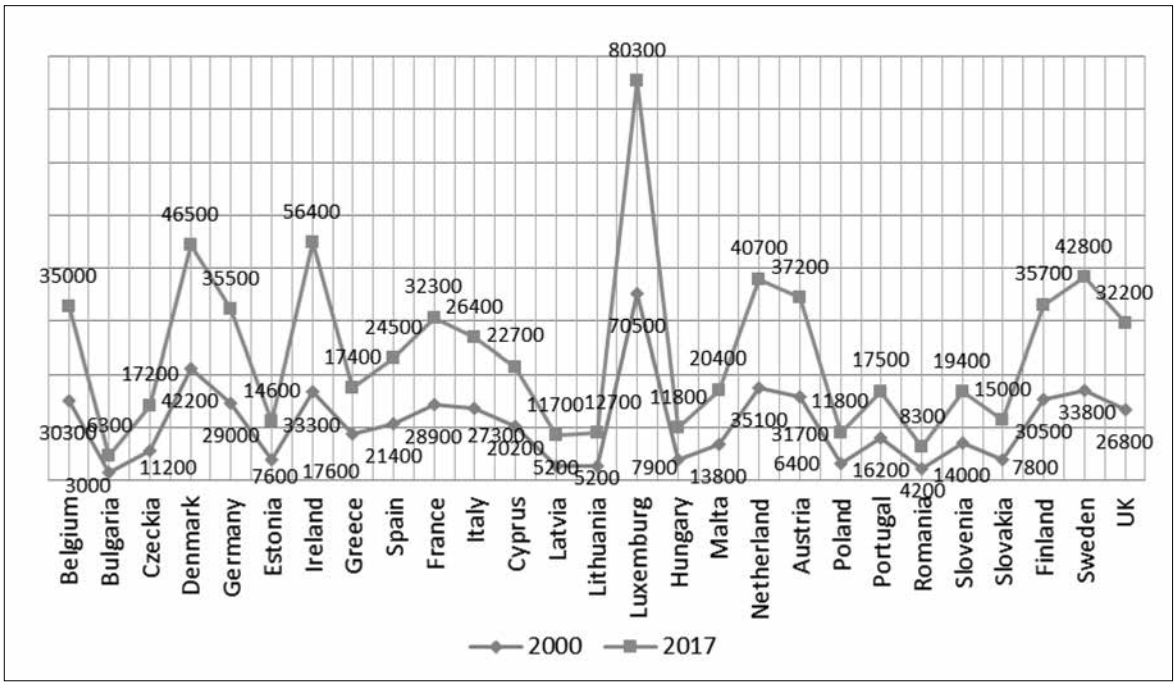


Figure 1. Real GDP, euro per capita

Source: Eurostat data 2000-2017

As Figure 1 shows real GDP per capita varies in Bulgaria from EUR 3.0 thou in 2000 year to EUR 6.3 thou in 2017. In Luxembourg during this period economic growth was from EUR 70.5 thou to EUR 80.3 thou. The nine EU member states belong to the group of low economic development. This countries' group distinguishes by lower pace of economic development comparing with other EU countries. On average, real GDP per capita is from EUR 5.9 thou in 2000 to EUR11.5 thou in 2017 in this group. Six countries are involved into lower middle group of economic development, where real GDP per capita makes from EUR 14.5 thou to EUR 19.1 during 2000-2017 period; six countries belong to the group of the upper middle economic level with average GDP per capita from EUR 27.7 thou to EUR 31.7 thou; seven countries represent the group of high economic level with average GDP per capita EUR 35.22 thou to EUR44.72 thou. Finally, Luxembourg is the EU member state with very high level of economic development which makes approximately EUR 70.5 thou in 2000 to EUR 80.3 thou in 2017. According to the level of economic development, the authors have grouped the EU countries into five categories (Table 1).

Table 1. The groups of the EU countries by the level of economic development.

Source: authors' calculations based on Eurostat data 2000–2017.

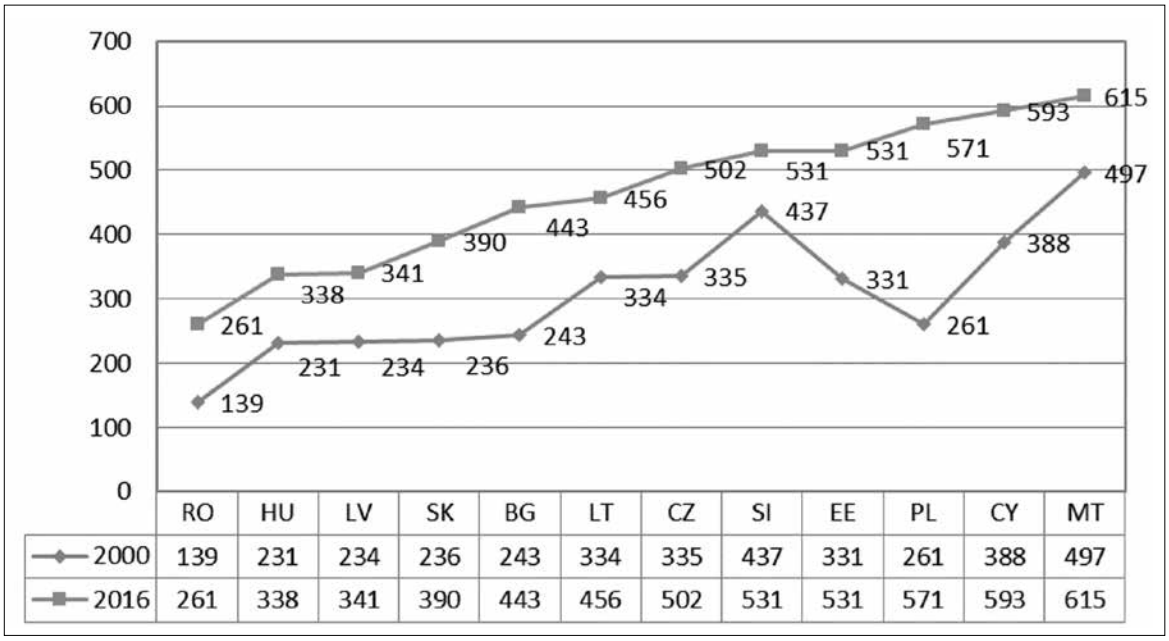
Groups of the countries	Real GDP per capita, Euro average, 2010	Real GDP per capita, Euro average, 2017
I. Low economic level	5910	11500
Bulgaria	3000	6300
Romania	4200	8300
Latvia	5200	11700
Lithuania	5200	12700
Poland	6400	11800
Slovakia	7800	15000
Croatia	-	11500
Estonia	7600	14600
Hungary	7900	11800
II. Lower middle economic level	14500	19100
Malta	13800	20400
Cyprus	20200	22700
Slovenia	7800	19400
Portugal	16200	17500
Greece	17600	17400
Czech	11200	17200
III. Upper middle economic level	27700	31700
Spain	21400	24500
Italy	27300	26400
France	28900	32300
Germany	29000	35500
Belgium	30300	35000
Finland	30500	35700
United Kingdom	26800	32200
IV. High economic level	35220	44720
Netherlands	35100	40700
Sweden	33800	42800
Ireland	33300	56400
Denmark	42200	46500
Austria	31700	37200
V. Very high economic level	70500	80300
Luxembourg	70500	80300

According to the European Commission, the average decrease in the annual number of fatalities in Europe between 2000 and 2010 was 6% (European Commission 2013). According to the OECD, the total number of people injured in traffic accidents in EU, USA and OECD Member States between 1998 and 2010 decreased by 50%, 31% and 41%, (OECD 2011).

To ensure equal conditions for road users in the EU the precondition for joining the EU was the mandatory introduction of the Motor Third Party Liability (MTPL) insurance in 2004. Now after 14 years by comparing number of passenger cars in the newly joined EU Member States with the old EU countries can be evaluated traffic safety conditions according to the number of road traffic accidents. Firstly, there will be made the comparative analysis of motorization level in the new and old EU Member States.

According to ACEA in June 2018, passenger car registrations posted a robust increase (+5.2%) across the EU, totalling almost 1.6 million new cars. Results were diverse among the five major EU markets. The United Kingdom (-3.5%) and Italy (-7.3%) both posted declines, while demand for cars increased in France (+9.2%), Spain (+8.0%) and Germany (+4.2%). Over the first half of 2018, the European passenger car market grew by 2.9% to reach 8,449,247 units. The strong performance of the new EU Member States is worth highlighting, as registrations increased by 11.4% so far in 2018 year. Looking at the major markets, demand went up in Spain (+10.1%), France (+4.7%) and Germany (+2.9%), although sales contracted in the United Kingdom (-6.3%) and in Italy (-1.4%) during the first six months of 2018 year. Overall, the passenger car fleet in almost all of the

EU Member States has grown over the last five years. Comparing the increase of motorization level in the new and old EU member states, we can see different levels of cars per 1000 inhabitants (see Figure 2).



	RO	HU	LV	SK	BG	LT	CZ	SI	EE	PL	CY	MT
2000	139	231	234	236	243	334	335	437	331	261	388	497
2016	261	338	341	390	443	456	502	531	531	571	593	615

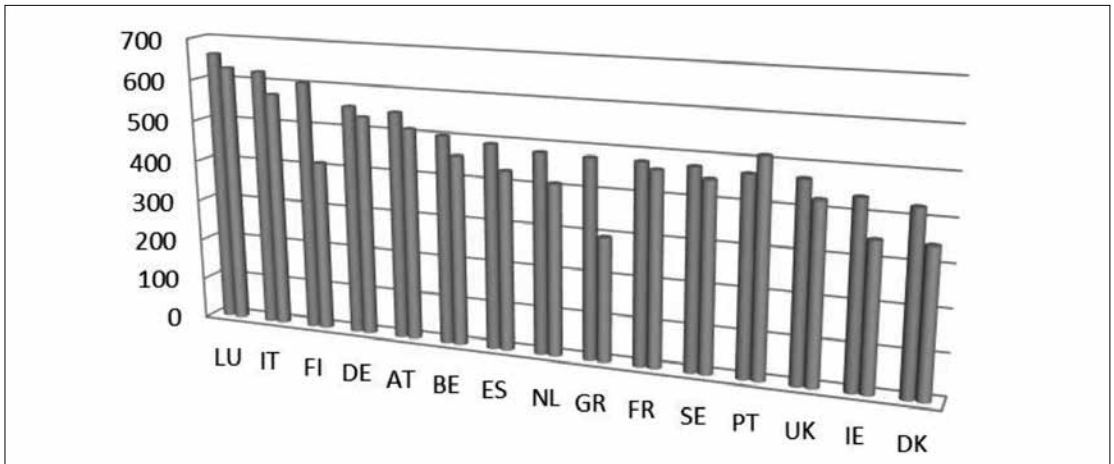
Figure 2. Motorization rate of the new EU Member States in 2000 - 2016 (passenger cars per 1000 inhabitants)

Source: Eurostat

According to Figure 2 the number of passenger cars in almost all new EU Member States has grown over the last years: the average number of cars per 1000 inhabitants was 505 in 2016. Amongst the new EU Member States with the highest "motorization rates" i.e. passenger cars per 1000 inhabitants, in 2016 was recorded in Malta (615), Cyprus (593), Poland (571) and Estonia (531). The highest growth rate was in Poland (118%), Romania (87%), Belgium (82%), Slovakia (65%), Estonia (60%). The lowest growth rate was in Slovenia (21%), Malta (24%), Lithuania (37%), Latvia (45%), Hungary (46%).

In Figure 3 are presented statistics on motorization growth of old Member States. The highest number of registered passenger cars per 1000 inhabitants in 2016 was observed in Luxemburg with 662 cars. Thereafter followed Italy (625) and Finland (604). The lowest amount of cars per 1000 inhabitants was in 2016 among Ireland (439), Denmark (429) and Portugal (470).

In Figure 3 is presented statistics on motorization growth of the old Member States. The highest number of registered passenger cars per 1000 inhabitants in 2016 was observed in Luxemburg with 662 cars. Thereafter - followed Italy (625) and Finland (604). The lowest amount of cars per 1000 inhabitants was in 2016 among Ireland (439), Denmark (429) and Portugal (470). The highest growth rate over the 16 year period from 2000 to 2016 was recorded in Greece (61%), and Finland (46%). Other Member States recorded less growth of motorization in France (3,5%), Germany (4,1%) while one Member State (Portugal) recorded a decline in the number of registered passenger cars over the period observed: experienced a fall of 8,4% from 513 to 470 cars per 1000 inhabitants.



	LU	IT	FI	DE	AT	BE	ES	NL	GR	FR	SE	PT	UK	IE	DK
2016	662	625	604	555	550	503	492	481	479	479	477	470	469	439	429
2000	630	572	413	533	512	457	431	412	297	463	451	513	426	349	348

Figure 3. Motorization rate of old EU Member States in 2000 - 2016 (passenger cars per 1000 inhabitants)

Source: Eurostat

4. Discussion and interpretation of results obtained

In 2017, based on Community Road Accident Database (CARE) the European Union sees more than 40,000 fatalities and 1.7 million injuries from road accidents each year, i.e. the average number of people killed per 1 million inhabitants consisted 49. In Lithuania, according to CARE data, 67 people were killed per 1 million inhabitants in 2017. A higher number of people killed on roads per 1 million inhabitants in 2017 were represented in 6 European countries: in Greece (69 killed/million inhabitants), in Latvia (70 killed/million inhabitants), in Poland (75 killed/million inhabitants), in Croatia (90 killed/million inhabitants), in Bulgaria (96 killed/million inhabitants) and in Romania (98 killed/million inhabitants). The leading country between the EU Member States in 2017 was Sweden, where 25 people were killed per 1 million inhabitants. Since 2011 Lithuania was seeking to achieve an ambitious target of the National Road Safety Development Program for 2011–2017 to get between 10 European Union states showing the best results or to reduce the number of the killed per 1 million inhabitants to 60. But it didn't managed to achieve this target: the number of people killed per 1 million inhabitants in Lithuania reached 67 in 2017 year and according to this indicator Lithuania took only 20 position among European Union countries. Since the start of the National Road Safety Development Program for 2011–2017 the number of fatalities per 1 million of population in Lithuania decreased by 27 %. In 2017, on the roads and streets of Lithuania 3192 injury accidents took place where 192 people were killed and 3752 were injured. Compared to 2016 the number of road accidents and people injured were almost the same – number of accidents decreased by 0,3 % and number of injured people increased by 0,1 %, the number of road fatalities remained unchanged (Statistics of fatal and injury road accidents in Lithuania, 2011–2017, Vilnius 2018).

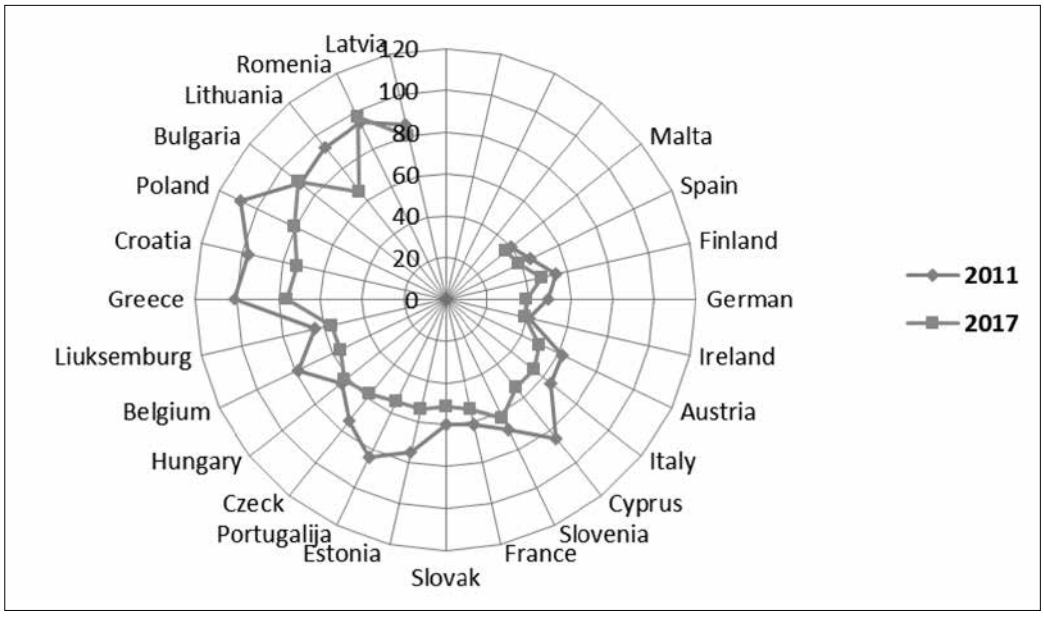


Figure 4. Road fatalities per million of population in EU

Source: CARE, 2017

Over a long time period, a clear downward trend can be observed in all Member States except Malta. In particular, the number of road traffic victims has been cut by two-thirds or more in Portugal (from 2 730 in 1996 to 563 in 2016, or -79.4%), Latvia (-73.4%), Lithuania (-71.8%), Spain (-67.0%), Greece (-66.7%) and Slovenia (-66.6%). Overall in the EU, the number of road traffic victims more than halved (-57.4%) between 1996 and 2016 (Eurostat, 2016).

European roads remain the safest in the world: the EU counted 49 road fatalities per one million inhabitants, against 174 deaths per million globally in 2017. According to data from the World Health Organization about 1.3 million people die each year on the world's roads, of which 25.300 lost their lives in the EU last year. 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. For every person killed in traffic crashes, about five more suffer serious injuries with life-changing consequences. Serious injuries are common and often more costly to the society because of long-time rehabilitation and healthcare needs. The Commission estimates that 135 000 people are seriously injured on Europe' roads every year. 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. In 2017 year, only two EU Member States recorded a fatality rate higher than 80 deaths per million against eight in 2011. 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.

In 2017 can be distinguished the following trends: the average level of motorization was 500 cars per 1000 inhabitants, and the average death rate per 1 million of population was approximately 50. Given that the highest real GDP per capita was in Luxemburg (80.3 thou euro per capita with the higher motorization rate (662 cars per 1000 inhabitants). In this country the number of fatalities was 56 per 1 million inhabitants in comparison with 159 in 2000 year. From other hand in Bulgaria the real GDP euro per capita was 6.3 thou euro per capita, the motorization rate - 443 cars per 1000 inhabitants with fatalities of 99 per 1 million inhabitants. In Table 1 the EU countries have been grouped into five categories, such as: very high economic level, high economic level, upper middle economic level, lower middle and low economic level thereafter, the relationship between motorization rate growth and decrease of fatalities among these countries' groups has been examined fatalities among these countries' groups has been examined.

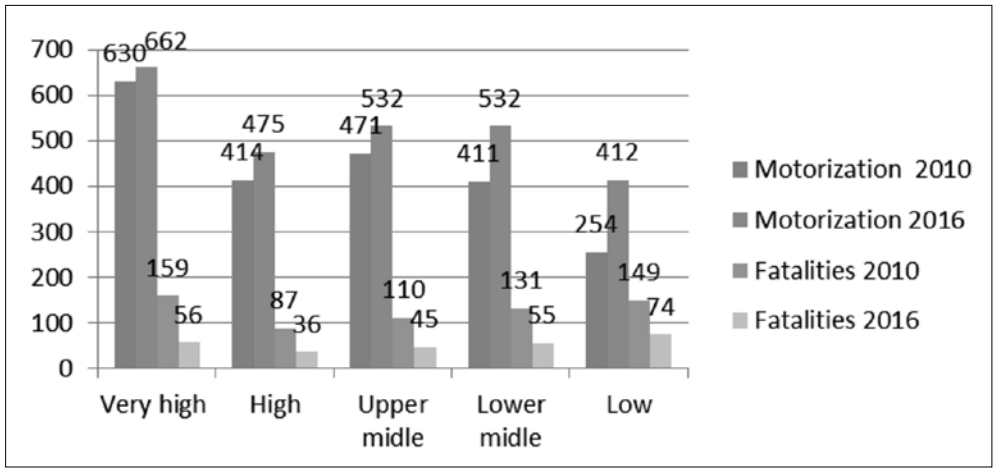


Figure 5. Relationship between income growth, motorization and fatalities in countries of different economic level (source: Eurostat)

Source: Eurostat

Figure 5 shows the relationship between motorization growth rate and decline of fatalities in countries of different economic growth level.

In Luxemburg, which is country of Very high economic level, the growth of motorization level during the period 2000-2016 consist 5 percent, as the number of fatalities decreased by 35 percent.

In the EU countries with High economic level (Netherlands, Sweden, Ireland, Denmark and Austria) motorization rate grew by 15 percent and the number of fatalities – decreased by 59 percent.

In the countries of Upper middle economic level motorization rete grew by 13 percent, while fatalities – drop by 58 percent.

In the Lower middle economic level countries the growth of vehicles number was 29 percent and fatalities – drop by 57 percent.

In the countries of Low economical level motorization level grew by 62 percent, as number of fatalities decreased by 50 percent.

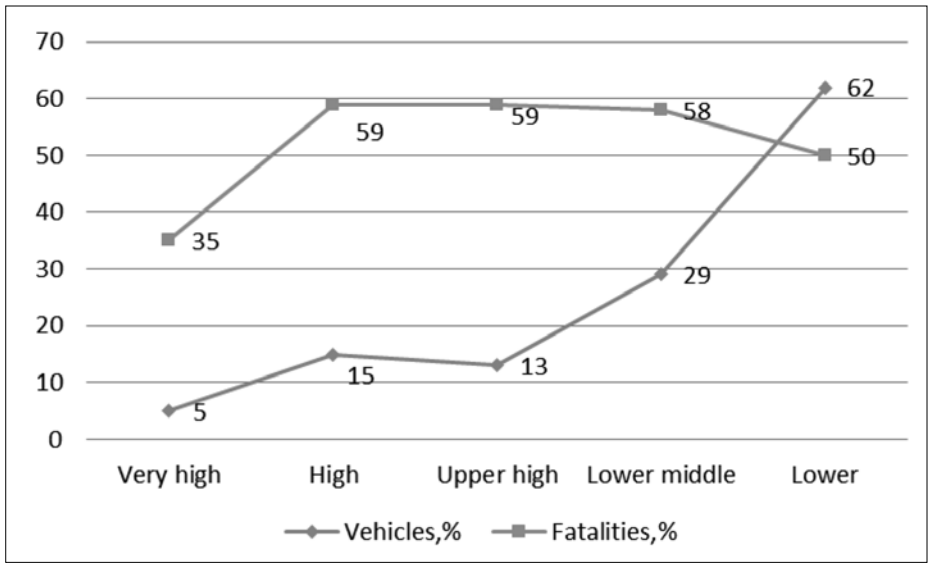


Figure 6. The rate of increase in motor vehicles and fatalities per motor vehicle, %.

The results in Fig.6 confirm hypothesis that in the countries of higher income level, the rate of increase in motor vehicles is lower than the decline in fatalities per motor vehicle, and in countries of low income levels the rate of increase in motor vehicles is higher than the decline in fatalities per motor vehicle. The key findings will be translated into objectives, which consequently lead to measures in the area of arrangements on Motor Third Party Liability insurance regulations development and improvements in transport safety.

Conclusions

Economic growth of countries is accompanied by growth of motorization rate, which results in an increase of road traffic injuries. Although the EU guarantees the free movement of persons, the member states differ in terms of economic growth, motorization growth rates, and fatalities on the roads. Scientists are trying to find the relationship between economic growth and road traffic accidents by creating models to project traffic fatalities and the stock of motor vehicles in future. The insurance of motor third party liability (MTPL) serves as powerful instrument for regulation problems arising after accidents. Insurance companies must take into account the accident rate and deaths in road accidents when calculating insurance premiums. However, these variables vary greatly in separate EU member states.

The Commission announced on possible amendments to enhance the protection of traffic accident victims in cases when insurer is insolvent, in improvement the recognition of claims history statements, risks due to uninsured driving, harmonization of minimum amounts of cover and the scope of the Directive. To obtain the aforementioned aim, the following objectives are set: to analyze the motorization level of the EU countries, to identify relationship between economic growth and road traffic accidents victims.

EU countries have been grouped into five categories, such as: very high economic level, high economic level, upper middle economic level, lower middle and low economic level thereafter, the relationship between motorization rate growth and decrease of fatalities among these countries' groups has been examined.

The number of passenger cars in almost all new EU Member States has grown over the last years: the average number of cars per 1000 inhabitants was 505 in 2016. Amongst the new EU Member States with the highest "motorization rates" i.e. passenger cars per 1000 inhabitants, in 2016 was recorded in Malta (615), Cyprus (593), Poland (571) and Estonia (531).

Statistics on motorization growth in old Member States showed that the highest number of registered passenger cars per 1000 inhabitants in 2016 was observed in Luxemburg with 662 cars, Italy (625) and Finland (604). The lowest amounts of cars per 1000 inhabitants were in 2016 among Ireland (439), Denmark (429) and Portugal (470).

Results of research on the relationship between motorization rate growth and decrease of fatalities among these countries' groups confirmed hypothesis as in the EU countries of higher income levels, the rate of increase in motor vehicles is lower than the decline in fatalities per motor vehicle, and in countries of low income levels the rate of increase in motor vehicles is higher than the decline in fatalities per motor vehicle. The key findings will be translated into objectives, which consequently lead to measures in the area of arrangements of Motor Third Party Liability Insurance regulation development and improvements in transport safety.

References

Aney, M. S., Ho, C. 2019. Deadlier road accidents? Traffic safety regulations and heterogeneous motorists' behavior, Regional Science and Urban Economics, ISSN 0166-0462 https://doi.org/10.1016/j.regsciurbeco.2019.04.003

Batkovskiy, A.M., Leonov, A.V., Pronin, A.Yu., Semenova, E.G., Fomina, A.V., Balashov, V.M. 2019. Sustainable development of Industry 4.0: the case of high-tech products system design, Entrepreneurship and Sustainability Issues 6(4): 1823-1838. http://doi.org/10.9770/jesi.2019.6.4(20)

Blanchet, J., Lam, H. 2013. A heavy traffic approach to modeling large life insurance portfolios, Insurance, Mathematics and Economics,

53(1): 237–251, ISSN 0167-6687, https://doi.org/10.1016/j.insmatheco.2013.04.011

Brueckner, M., Lederman, D. 2018. Inequality and economic growth: the role of initial income, Journal of Economic Growth 23(3), 341–366.

Caplinska, A., Ohotina, A. 2019. Analysis of financial literacy tendencies with young people, Entrepreneurship and Sustainability Issues 6(4): 6(4) 1736-1749. http://doi.org/10.9770/jesi.2019.6.4(13)

Cherchyk, L., Shershun, M., Khumarova, N., Mykytyn, T., Cherchyk, A. 2019. Assessment of forest enterprises' performance: integrating economic security and ecological impact, Entrepreneurship and Sustainability Issues 6(4): 1784-1797. http://doi.org/10.9770/jesi.2019.6.4(17)

Dalevska, N., Khobta, V., Kwilinski, A., Kravchenko, S. 2019. A model for estimating social and economic indicators of sustainable development, Entrepreneurship and Sustainability Issues 6(4): 1839-1860. http://doi.org/10.9770/jesi.2019.6.4(21)

David W. J. 2010. Mass Motorization and Mass Transit: An American History and Policy Analysis, Indiana University Press, 1–288. https://www.amazon.co.uk/Mass-Motorization-Transit-American-Analysis/dp/0253221714

Dobrovolskienė, N., Tvaronavičienė, M., Tamošiūnienė, R. 2017. Tackling projects on sustainability: a Lithuanian case study, Entrepreneurship and Sustainability Issues 4(4): 477-488. http://doi.org/10.9770/jesi.2017.4.4(6)

Dudin, M.N., Ivashchenko, N.P., Gurinovich, A.G., Tolmachev, O.M., Sonina, L.A. 2019. Environmental entrepreneurship: characteristics of organization and development, Entrepreneurship and Sustainability Issues 6(4): 1861-1871. http://doi.org/10.9770/jesi.2019.6.4(22)

Ernits, E., Antov, D., & Kott, A. 2017. Assessment of the precision of data collected about the traffic accidents with property damage only in claim handling process by insurance companies. Transport, 32(2), 160–166. https://doi.org/10.3846/16484142.2014.914571

European Commission - Fact Sheet. 2018. Road safety statistics: What is behind the figures? Brussels. 1-56. Retrieved from http://Users/VALENT~1/AppData/Local/Temp/MEMO-18-2762_EN-1.pdf

European Commission. 2017. Road Safety: What is behind the figures? Brussels, 10 April 2018.

Factor, R. 2018. An empirical analysis of the characteristics of drivers who are ticketed for traffic offences, Transportation Research Part F: Traffic Psychology and Behaviour 53:1–13, ISSN 1369-8478, https://doi.org/10.1016/j.trf.2017.12.001

Gerasimov, B.N., Vasyaycheva, V. A., Gerasimov, K.B. 2018. Identification of the factors of competitiveness of industrial company based on the module approach, Entrepreneurship and Sustainability Issues 6(2): 677-691. http://doi.org/10.9770/jesi.2018.6.2(15)

Hsu, H., Shiu, Y., Chou, P., Chen, Y. J. (2015). Vehicle insurance and the risk of road traffic accidents, Transportation Research Part A: Policy and Practice 74: 201–209, ISSN 0965-8564, https://doi.org/10.1016/j.tra.2015.02.015

International Transport Forum. 2017. Road Safety Annual Report. Paris, France. 1–586. Retrieved from http://www.sipotra.it/wp-content/uploads/2017/10/Road-Safety-Annual-Report-2017.pdf

Kopits, E., Cropper, M. 2003. Traffic Fatalities and Economic Growth. The World Bank. Development Research Group Infrastructure and Environment, 37(1):169-78.

Law Teik Hua. 2018. Factors associated with the relationship between non-fatal road injuries and economic growth? Journal of Transport Policy 42; 1-192.

Lisin, E., Kurdiukova, G., Ketoeva, N. 2018. Sustainability issues of territorial power systems in market conditions, Entrepreneurship and Sustainability Issues 6(2): 1041-1052. http://doi.org/10.9770/jesi.2018.6.2(38)

Lysytsia, N., Martynenko, M., Prytychenko, T., Gron O., Us, M. 2019. Prospects for innovations in marketing of economic educational services in Ukraine, Entrepreneurship and Sustainability Issues 6(4): 1771- 1783. http://doi.org/10.9770/jesi.2019.6.4(16)

Lithuanian MTPL Law. 14 June 2001 No. IX-378. Retrieved from https://www.cab.lt/web/en/law-on-compulsory-insurance.

Lithuanian National Road Safety Development Program for 2011–2017. 2017. The Lithuanian Ministry of Transport and Communications. Retrieved from https://ec.europa.eu/transport/road_safety/sites/roadsafety/files/pdf/20151210_1_lithuania.pdf

Lucas, E. C., Mendes-Da-Silva, W., Lyons, A. C. 2017. Gender differences in attitudes towards driving and demand for private Insurance: Evidence from middle class drivers, Transportation Research Part F: Traffic Psychology and Behaviour 47: 72–85, ISSN 1369-8478, https://doi.org/10.1016/j.trf.2017.04.022

Ma, Y., Zhu, X., Hu, X., Chiu, Y. 2018. The use of context-sensitive insurance telematics data in auto insurance rate making, Transportation Research Part A: Policy and Practice, Volume 113, Pages 243–258, ISSN 0965-8564, https://doi.org/10.1016/j.tra.2018.04.013

Masood, O.; Tvaronavičienė, M.; Javaria, K. 2019. Impact of oil prices on stock return: evidence from G7 countries, Insights into Regional Development 1(2): 129-137. https://doi.org/10.9770/ird.2019.1.2(4)

Monni, S.; Palumbo, Tvaronavičienė, M. 2017. Cluster performance: an attempt to evaluate the Lithuanian case, Entrepreneurship and Sustainability Issues 5(1): 43-57. http://doi.org/10.9770/jesi.2017.5.1(4)

OECD. (2017). World Development Indicators. Organization for Economic Cooperation and Development. Retrieved from http://databank.worldbank.org/ data/reports.aspx?source=world-development-indicators

Owadally, I., Zhou, F., Otunba, R., Lin, J., Wright, D. 2019. An agent-based system with temporal data mining for monitoring financial stability on insurance markets, Expert Systems with Applications 123; 270-282, ISSN 0957-4174, https://doi.org/10.1016/j.eswa.2019.01.049

Pavolová, H., Bakalár, T., Emhemed, E.M.A, Hajduová, Z., Pafčo, M. 2019. Model of sustainable regional development with implementation of brownfield areas, Entrepreneurship and Sustainability Issues 6(3): 1088-1100. http://doi.org/10.9770/jesi.2019.6.3(2)

Policy orientations on road safety for 2011-2020. 2017. Towards a European road safety area.

Rumson, A. G., Hallett, S. H. (2019). Innovations in the use of data facilitating insurance as a resilience mechanism for coastal flood risk, Science of The Total Environment, Volume 661, Pages 598–612, ISSN 0048-9697, https://doi.org/10.1016/j.scitotenv.2019.01.114

Sasongko, G., Huruta, A.D., Wardani, A. 2019. Does the Wagner's Law exist in a strategic national area? An evidence from Kedungsepur - Indonesia, Insights into Regional Development 1(2): 99-117. https://doi.org/10.9770/ird.2019.1.2(2)

Saurabh, V. (2013). CARE Database: CaDaS – Common Accident Data Set. Version 3.2. European Commision, DirectorateGeneral for Mobility and Transport. 133 p. Retrieved from http://ec.europa.eu/transport/road_safety/pdf/statistics/cadas_glossary.pdf

Statistics of fatal and injury road accidents in Lithuania, 2014–2017. 2018. Retrieved from https://lakd.lrv.lt/uploads/lakd/documents/files/eismo_saugumas/statistika/en/2018/statistics_2014%E2%80%932017.pdf

The international MAIS trauma scale (Maximum Abbreviated Injury Score) has been used for the EU definition of serious road traffic injuries as from 2014. The scale 3 and more (MAIS3+) is the one applying to seriously injured.1–27

Tselentis, D. I., Yannis, G., Vlahogianni, E. I. 2016. Innovative Insurance Schemes: Pay as/how You Drive, Transportation Research Procedia, Volume 14, Pages 362–371, ISSN 2352-1465, https://doi.org/10.1016/j.trpro.2016.05.088

Tselentis, D. I., Theofilatos, A., Yannis, G., Konstantinopoulos, M. 2018. Public opinion on usage-based motor insurance schemes: A stated preference approach, Travel Behaviour and Society, Volume 11, Pages 111–118, ISSN 2214-367X, https://doi.org/10.1016/j.tbs.2018.02.003

Vinogradova, N.P., Popov, A.N. 2019. Methodological basis of economic decision-making, Entrepreneurship and Sustainability Issues 6(4): 1798-1806. http://doi.org/10.9770/jesi.2019.6.4(18)

Vorotnikov, I.L., Sukhanova, I.F., Lyavina, M.Y., Glukhova, M.I., Petrov, K.A. 2019. Economic sanctions and import substitution, Entrepreneurship and Sustainability Issues 6(4): 1872-1883. http://doi.org/10.9770/jesi.2019.6.4(23)

World Health Organisation. 2017. Violence and Injury Prevention. Road traffic injuries. Report. 1-100. Retrieved from http://www.who.int/violence_injury_prevention/road_traffic/en

Zeibote, Z., Volkova, T., Todorov, K. 2019. The impact of globalization on regional development and competitiveness: cases of selected regions, Insights into Regional Development 1(1): 33-47. https://doi.org/10.9770/ird.2019.1.1(3)

Valentina PELECKIENĖ, Assoc. Prof., Dr., Department of Management, Faculty of Business Management, Vilnius Gediminas Technical University. The author of more than 100 publications. Research interests: economic growth, sustainable development, increase in the efficiency of business meetings and negotiations.

Kęstutis PELECKIS, Prof., Dr., Department of Business Technologies and Entrepreneurship, Faculty of Business Management, Vilnius Gediminas Technical University. The author of more than 200 publications. Research interests: economic growth, sustainable development, increase in the efficiency of business meetings and negotiations.
ORCID ID: orcid.org/0000-0001-9886-2431

Kęstutis K. PELECKIS, Assoc. Prof., Dr., Department of Economics Engineering, Faculty of Business Management, Vilnius Gediminas Technical University. The author of more than 120 publications. Research interests: economic growth, sustainable development, business negotiation strategies, international business negotiations, increase in the efficiency of business meetings and negotiations.