MILENKO ČABARKAPA, M.Sc.[1]
(Corresponding author)
E-mail: milenko.cabarkapa@fskl.me
DAVOR BRČIĆ, Ph.D.[2]
E-mail: dbrcic@fpz.hr
VUJADIN VEŠOVIĆ, Ph.D.[1]
E-mail: fsklbudva@gmail.com
[1] Faculty of Transport, Communications and Logistics
Žrtava fašizma bb, 85310 Budva, Montenegro
[2] Faculty of Transport and Traffic Sciences,
University of Zagreb, Vukelićeva 4, 10000 Zagreb, Croatia

Traffic Policy
Review
Submitted: Mar. 29, 2016
Accepted: Sep. 22, 2016

DEVELOPMENT OF STRATEGIC GOALS OF ROAD SAFETY MANAGEMENT: A CASE STUDY OF MONTENEGRO

ABSTRACT

Evaluation of the results of road safety management at the national level is carried out with a number of predefined indicators. These, predefined indicators should be measurable objectives of road safety management. They are set by national road safety strategies. This paper presents the control implementation of the Strategy to improve road safety in Montenegro for the period 2010-2019. The research showed that the five-year objectives of the National Strategy were achieved in the first years and significantly surmounted. This efficiency is achieved for two main reasons: the development of road safety management, and setting an unambitious, easily attainable goal. These findings are indicators that generally and globally set goals of reducing traffic fatalities cannot comprise at the same time national objectives in all countries. In this context, the methodological improvements of setting national strategic objectives established by the evidences on the national traffic safety issue are proposed.

KEY WORDS

road safety management; strategy; strategic goals; road accidents; Montenegro;

1. INTRODUCTION

According to the Global Status Reports on Road Safety for 2007, 2010 and 2013 [1] the number of people killed on the world's roads was reduced from 1.3 million in 2007 to 1.25 million in 2013, with 1.24 million in 2010, which suggests that these figures have remained invariable from 2007 to 2013, despite the increased population and global motorization. This indicates that the activities to improve global road safety, recommended by the Global Plan of the Decade of Action for road safety [2], prevented an increase in the total death volume. The goal of the Decade of action for road safety 2011-2020 [3], to stabilize the number of road fatalities in the world, was achieved in the first two years of implementation. The ultimate goal is to reduce the upward trend in road traffic fatalities, and thus save an estimated 5 million people by 2020.

According to global activities, the European Commission has proposed a reduction of traffic fatalities by 50% by 2020, compared to the situation in 2010 [4]. The improvement of road safety was included in the new global goals for sustainable development set in 2015, for the purpose of good health and well-being, by setting a specific goal to reduce traffic fatalities by 50% by 2020 [5]. Setting the global goal of road safety management was formulated by "Vision zero", a safety philosophy presuming that human life and well-being are more important than their mobility [6-9].

To assess the results of road safety management requires that a certain number of predefined indicators are provided at the national level [2]. These, predefined indicators should be measurable objectives of road safety management. They are built into national strategies for the road safety [10], derived from the analysis of road accidents, as a realistic, ambitious but achievable target [2].

2. ROAD SAFETY MANAGEMENT SYSTEM

There is a globally accepted approach that road safety can be managed. Road safety management is observed as a management system with three levels: the institutional management functions produce the interventions whose implementation produces outcomes [11]. To achieve the desirable outcomes, an integrated response is needed from all of these system elements (*Figure 1*). Such an approach to managing the system of road safety had been set by the Road Safety to 2010 Strategy of New Zealand [12], adopted by the European Council for the road safety [13], which described the issues of road safety in five hierarchical levels, from structures and cultures (entrance policy), through safety measures and programmes (exit policy), indicators of safety achievement (intermediate

outcomes), and volume of fatalities and injuries (final outcomes) to social costs. It was additionally explained as part of the projects Sunflower [14] and SafetyNet [15], through a wider context "structure and culture". Authors Bliss and Breen [16] further define the organisational manifestation of the "structure and culture" in terms of institutional management functions: coordination, legislation, funding and resource allocation, promotion, monitoring and evaluation, research and development, and knowledge transfer.

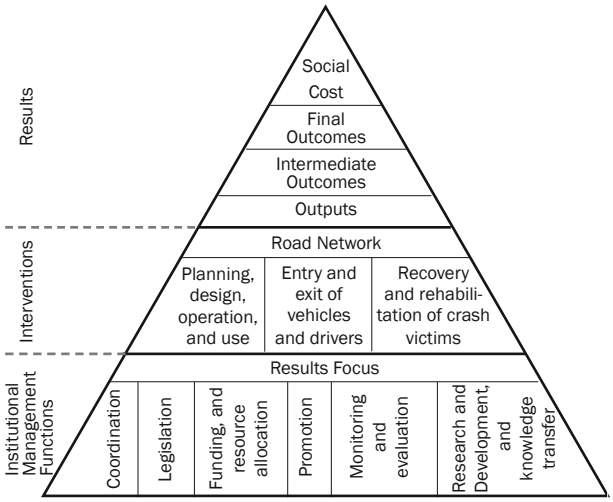

Figure 1 – Road safety management system
Source: [11]

Recommendations of the Global Report on Road Safety and the Global Strategic Plan for Road Safety 2013-2020 [17], emphasize the issues on road safety management at global, regional and national levels, pointing out the necessity of setting institutional management capacities. The recommendations particularly emphasize the significance of systematic and sustainable implementation of road safety management at national level, putting in the foreground the vital role of creating a lead agency for road safety.

Muhlrad et al. [18] define the road safety management system as a complex inter-sectoral structure as it must link and organize very different groups of stakeholders. The management system is expected to fulfil numerous criteria of "good practice", which encompass an entire cycle of development and adoption of the policy, its implementation and evaluation. An efficient organization of road safety management system is one of the preconditions for the improvement of road safety at national level [19, 20].

However, the analysis of traffic safety management in the European countries [21, 22, 23, 24, 25, 26, 27] shows that national "best practice" was not identified in either of them, but there were more elements that meet the criteria of "best practice" in the five main areas of Road Safety Management: institutional organisation, coordination and stakeholders' involvement; policy formulation and adoption; policy implementation and funding; monitoring and evaluation; scientific support and information, and capacity building.

3. STRATEGIC GOALS OF ROAD SAFETY MANAGEMENT

Road safety is a global issue which calls upon the international community to resolve it. Best world practice shows that a national strategy with measurable goals is the key component to stabilize, and then reduce fatalities and severe injuries in road accidents [1]. Norway has developed a system of road safety management by objectives [28]. According to the OECD Report "focusing on results" is the key feature of an effective road safety management system [9]. An overall objective of the European Commission has also been set to reduce traffic fatalities by 50% by 2020, compared to 2010 [29]. Finally, in defining the global objectives of sustainable development, in 2015, in the context of global health goal, a target of reducing traffic fatalities by 50% by 2020 was set [30].

However, having in mind different circumstances of each national situation, the generally set goals of reducing traffic fatalities cannot be at the same time national objectives in all countries. Therefore, the determination of national objectives should go in line with the analysis of the national problem of traffic safety, expressed through absolute and relative indicators, the observed trend changes in the indicators, a possible explanation of the causes of accidents and forecast of the future status of traffic safety.

The authors believe that the methodology of setting national strategic goals for road safety management, which should be realistic, ambitious and feasible, should include: an in-depth analysis of the national safety status on the basis of data on traffic accidents; identification of areas of activity in which the effect of the national interventions can produce improvement and predict the effects of planned national interventions (*Figure 2*).

Institutional management capacities in the field of road safety should provide the prerequisites for defining short-term and long-term national goals of reducing road casualties.

3.1 Road safety status analysis based on crash data

To achieve higher objectivity in assessing road safety status in a certain area, we need to perform an in-depth analysis to realistically observe the status and design necessary measures for enhancing the road safety.

For scientific discovery of traffic accidents causes, the analysis of a large number of accidents is required. Such an approach to the accident study highlights the

Figure 2 – Realistic goals setting of road safety Management
Source: [32, 33, 2, 34, 27]

statistical nature of the causes of accidents. In such a method, studying the accident occurrence is seen as a stable process [31]. Therefore, for this kind of approach, it is fundamental to examine what influences the probability of occurrence, and not what specifically caused the accident, as well as considering individual accidents.

One of the prerequisites for recognising the current status is an updated, informed and coordinated database on road crashes. In the EU countries a joint framework has been established for data collection on road crashes – CADaS Protocol [32], which defines the variables on road crashes in line with the European Commission recommendations. CADaS is structured into four basic data categories: A - Accident related variables, R - Road related variables, U - Traffic unit related variables and P - Person related variables, which include 77 variables and 507 values.

An analysis of the traffic safety status in an area should include the content listed in *Figure 2* [33].

3.2 Identification of activity areas in which the effects of intervention can produce improvement of road safety

Road safety can be analysed as a system based upon interaction between three main components: human, vehicle and road, in which there is a mechanical subsystem vehicle-road and two bio-mechanical subsystems: human-vehicle and human-road. Causes of incidence can be attributed to one of these factors or any of their combinations.

The areas in which effects could be produced by improvements of road safety at national level should be: road safety management; roads and mobility; vehicles; road users and post-crash response [2].

Road safety program SEETO COWI distinguishes as the main issues of road safety: speed, drunk driving, seatbelts, vulnerable road users and design of roads [34].

Priority areas of action identified in the project ROSEE – Road safety in South-East European regions [27], include: set-up of a National Strategy and a National Road Safety Authority; Ensure sustainable funds for road safety; Improvement of road infrastructure; Implementation of Directive 2008/96/EC on the whole road network and not only on TEN-T; Effective regulation of Road Safety Audit / Inspection; Road safety education and training (in all schools, continuous/periodical training for all ages, reorganization of the training, and licensing system); Effective enforcement of traffic rules; Raising road safety awareness through information campaigns.

3.3 Forecasting the effects of planned interventions

Forecasts of the effects of planned interventions in minimizing public risk on the roads, indicate the overall level of road safety and help in determining potential conditions in order to take up other preventive measures in minimizing the number of fatalities and severe injuries in crashes.

Four groups of models are used to predict public risk on the roads: models based on parameters that are not causally related to traffic accidents, models based on parameters that are causally related to traffic accidents, models based on time series, and models based on indicators of road traffic safety [33].

4. ANALYSIS OF ROAD SAFETY MANAGEMENT IN MONTENEGRO

4.1 Montenegro

Montenegro covers an area of 13,812 km2. According to the 2011census, Montenegro has 620,029 inhabitants, of which 118,751 (19%) are children aged 0–14; 421,941 (68%) are the working-age population from 15 to 64; and 49,337 (13%) over 65. The length of roads in Montenegro in 2011 amounted to 7,835 km, of which 5,436 km with modern asphalt pavement, 1,680 km with gravel and 719 km are unpaved and unimproved roads. Montenegro has no highways. In 2011, Montenegro had 196,419 registered vehicles, of which 4,661 motorcycles (2.4%); 171,973 passenger cars; 1,095 vans; 1,217 buses; 12,394 trucks; 2,015 motorized machines; 977 towing vehicles; 1,911 towed vehicles; and 176 farm tractors. The number of passengers in Montenegro, in 2011, amounted to: bus intercity 6,240,000; bus in local transport 699,000; 922,000 by train; 1,259,000 by plane in international traffic; 69,000 by boat in international traffic. Gross domestic product per capita increased from 4,351 euro in 2007, to 5,561 euro in 2014 [35].

Inspired by good world practice Montenegro has adopted and started the implementation of national strategies on road safety: Transport Development Strategy [36], Strategy of the Development and Maintenance of State Roads [37], and the Strategy of Road Transport Safety Improvement 2010-2019 [38], which defines the development and functioning of the road transport safety system in Montenegro, with measures to be taken for Montenegro to become part of the regional and global road transport safety systems.

The assessment of the initial results of the implementation of the Strategy of Road Transport Safety Improvement during the period 2010-2011 [39] confirmed the importance of the development and implementation of the strategy of road safety improvement in Montenegro, and the efficiency of Montenegrin road safety management in improving road safety during the first years of the National Strategy implementation.

Five years after the first strategic document on road safety was adopted, and the year 2014 ended, as the short-term strategic goals were defined for that period, it is particularly important to analyse the functionality of road safety management in achieving the goals to reduce deaths and severe injuries of road users in Montenegro. Monitoring the changes of basic road safety indicators during the period 2004-2014, it will be possible to recognize the trends in road safety of Montenegro and to determine the feasibility of the strategic goals of road safety management. This will enable the assessment of improvements achieved in the area of road safety addressed by the short-term goals. This will also verify further implementation of the adopted National strategies or the necessity for their revision.

4.2 Institutional organization of road safety management

In the current system of organization the Government of Montenegro, through the relevant ministries of transport, health, police, justice, education and urban planning coordinates the activities to achieve the objectives of road traffic safety. In 2010 the Government of Montenegro appointed the Coordinating Body for Monitoring the Implementation of the Strategy for Improving Road Safety 2010-2019 [40]. It missed to define the issues of road safety management at the local level, as well as specific roles and tasks of the local communities in terms of road safety status.

The adoption of the new Law on Road Safety (2012, 2014) [40] prescribed standards for drivers

which reduced the tolerance to alcohol from 0.5 to 0.3 g/kg and banned the use of telephone while driving, and for the categories "young driver" and "novice driver" it prescribed the zero tolerance on alcohol and speed limit to 70 km/h. All vehicle occupants are legally obliged to fasten the seatbelt and child restraints are mandatory for children younger than five. Moped and motorcycle riders or passengers are obliged to use protective helmets. Procedures have been set for the regulation of traffic in school zones, zone "30", traffic calming zones, and accessibility for the disabled. The amendments to the Law on Roads (2011) [40] introduced modern procedures of improving road safety in accordance with the Directives 2004/54/EC [41] and 2008/96/EC [42], and is regulated by the legal responsibility of the designer and road constructors for the road safety.

Since Montenegro has not established a "lead agency" for road safety, there is no organized incitement of financial investments in road safety through all possible forms of financing. Special Law (2015) [40] solved the issue of the construction of the first section of the highway in Montenegro.

The number and consequences of accidents are reported on a quarterly basis by the National Statistics Monstat [35] and annually in the Government of Montenegro [43]. However, since 2014 a parliamentary control has been set to assess the performance of the government and the ministries on matters of road safety [40].

The first research institute in Montenegro has been established within the Faculty of Transport, Communications and Logistics in Budva (2013), and deals with specialist research on road safety [44].

By involving stakeholders (NGOs, insurance, banks), with the support of international organizations (OSCE), the Ministry of the Interior carried out three campaigns in 2014 to improve the safety of vulnerable road users "Pedestrians, safe in traffic" (Ministry of the Interior of the Government of Montenegro, OSCE, 2014), "I never drink and drive" (Ministry of the Interior of the Government of Montenegro, 2014) and "Children Safety on Roads: Safe to school, 1-30 September 2014" (OSCE Mission in Montenegro, the Ministry of the Interior of the Government of Montenegro, 2014) [43].

4.3 Analysis of the road safety strategy

National strategies and programs for road safety

Accepting the best world practice, Montenegro has adopted and began implementing National strategies for road safety. The Transport Development Strategy [36] is the first document that comprehensively defines the framework for strategic decision-making in the field of transportation. The Strategy of the Development and Maintenance of State Roads of Montenegro [37] defines and introduces new, and revises the existing policies and procedures, related to the basic tasks of developing and maintaining state roads for the period until 2019. The Strategy of Road Transport Safety Improvement (2010-2019) [38] defines the development and functioning of the road safety system in Montenegro, with measures to be taken so that Montenegro becomes part of the regional and global road safety systems.

Strategic goals for the improvement of road safety in Montenegro (2010-2019)

The results to be achieved by the Strategy of Road Transport Safety Improvement (2010-2019) [38], have been defined as short-term and long-term goals:

- to reduce death rate by 30% until 2014, in relation to 2007;
- to reduce severe injuries by 20% until 2014, in relation to 2007;
- to reduce death volume by 50% until 2019, in relation to 2007;
- to reduce severe injuries by 30% until 2019, in relation to 2007.

4.4 Strategic road safety goals in Montenegro – progress monitoring (2010-2014)

Control of the implementation of the Strategy of Road Transport Safety Improvement in Montenegro assesses the achievement of strategic goals. Goal achievement results are expressed in absolute indicators of road safety: number of casualties and number of the injured, since the strategic goals refer solely to the absolute indicators of road safety.

The analysed period 2004-2007-2014 as the short-term goals for road safety in Montenegro planned to be achieved in 2014 are compared to the safety status in 2007.

The Strategy was adopted in December 2009, for the period 2010-2019, based on an analysis of traffic accidents data in the period from 1999 to 2008 and did not explain why the prediction of the traffic safety status is related to the year 2007. It is possible that 2007, in which there was the worst status of road safety in Montenegro in the analyzed period, has been chosen in order to "facilitate" the accomplishment of the set overall objectives, or "reduce" possible failure, since the system of road safety management has been promoted for the first time by the overall objectives, which were too ambitious compared to the then unfavourable trend of increasing mortality. This approach is wrong, because it sets an easily attainable goal or, in the case of reduced failure, avoids responsibility, which is why top government remains unchallenged to be devoted to road safety issues.

The analysis of absolute indicators of casualties in traffic accidents are given in *Figures 3* and *4*.

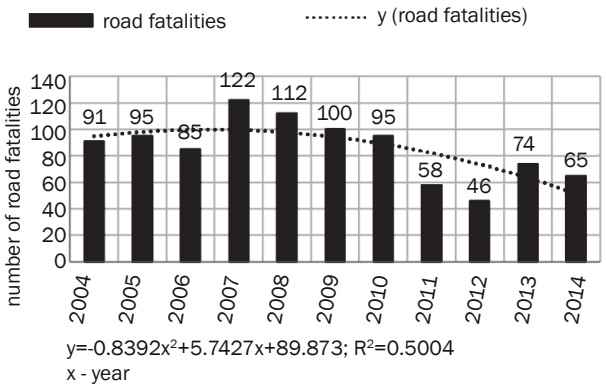

Figure 3 – Road fatalities in Montenegro, 2004-2014
Source: authors

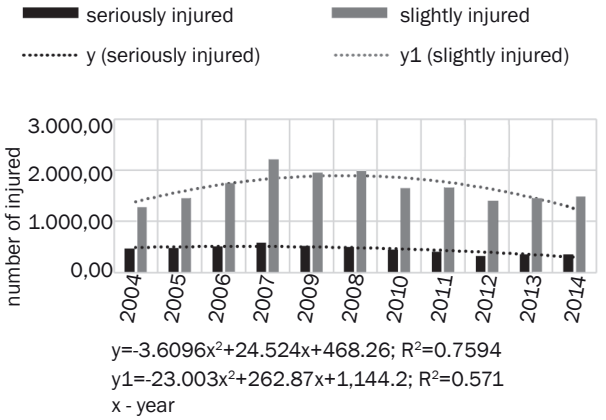

Figure 4 – Road injured in Montenegro, 2004-2014
Source: authors

By studying changes in the basic indicators of the analyzed road safety in Montenegro, in the analyzed period 2004-2014, relating to the absolute indicators of the fatalities in traffic accidents (number of casualties, the death toll, the number of severe injuries, the number of mild injuries) two periods stand out: the period of growth and the period of decline.

The number of fatalities had a rising trend from 2004 to 2007, and the falling trend from 2008 to 2014. All these changes are best described with the quadratic curve, which shows a greater alteration in the group of fatalities, not only in 2007, but also in 2013, when the number of deaths was remarkably underestimated by the theoretical curve in comparison to the real number of deaths in that year.

In total, reviewing the basic analyzed changes of absolute indicators of road safety in Montenegro, the analyzed period 2004-2014 is divided into three periods: 2007-2008, 2012 and 2013. In the period 2007-2008, all direct, absolute indicators of the fatalities in traffic accidents presented extremely unfavourable values, and in 2012, the same indicators had the most favourable values. At the same time, 2007 and 2008 were the years of great turnover in the trends of road safety indicators - from a variable increase to the continuous decline by the end of 2012, while 2013 is the year of worsening of all indicators of fatalities. This phenomenon in 2013 can be explained by the tragedy of the Romanian bus that fell into the Morača river canyon, in which 19 people were killed, accounting for 25% of the total number of deaths in 2013. If we exclude this death toll in the calculation of deaths in 2013, the obtained results do not indicate such a dramatic worsening of road safety in that year.

Short-term strategic goal: to reduce fatalities by 30% until 2014 in relation to 2007 was achieved in 2011; the second of the five years of short-term goals period, and was exceeded to 47% in 2014, while the short-term strategic goal to reduce severe injuries by 20% until 2014, in relation to 2007, was achieved in 2010, which is the first year of the implementation of the National Strategy, and in 2014 was exceeded up to 40% (*Figures 5* and *6*).

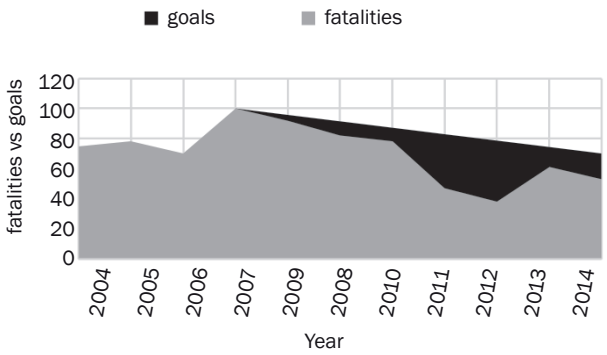

Figure 5 – Road fatalities vs. goals in Montenegro, 2004-2014
Source: authors

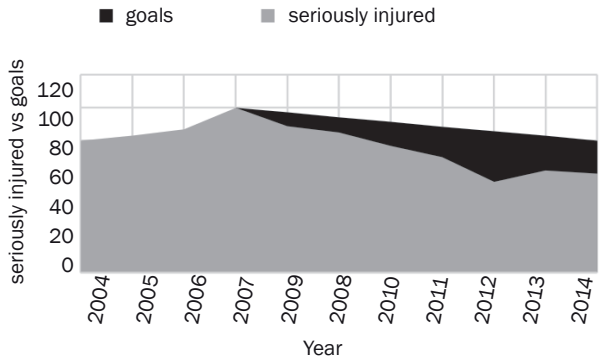

Figure 6 – Road seriously injured vs. goals in Montenegro, 2004-2014
Source: authors

Analysis of changes in the basic relative indicators of the persons killed in road accidents: public risk (deaths per 100,000 inhabitants), traffic risk (deaths

per 10,000 motor vehicles), the degree of danger (deaths per 1,000 accidents), (for dynamic traffic risk in Montenegro there is no data on vehicle-kilometre), as a function of the level of motorization (vehicles per 10,000 inhabitants) and GDP per capita (euro), on the roads in Montenegro, in the period 2000-2015 (*Figure 7*), two characteristics stand out: all relative indicators have a linear declining trend and level of motorization and GDP per capita show a linear growth trend.

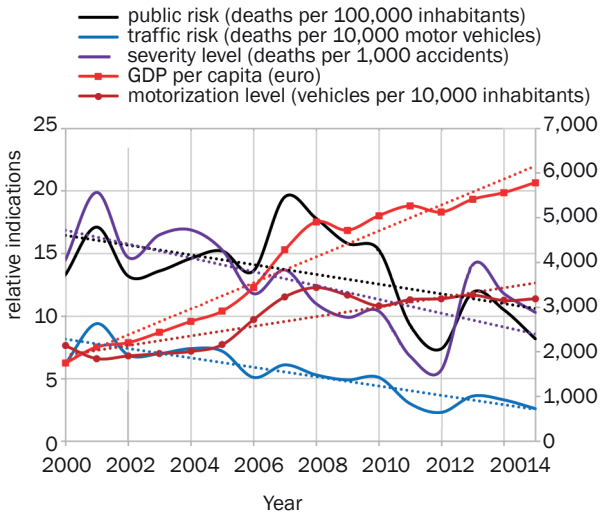

Figure 7 – Relative indicators, f (GDP, ML), Montenegro
Source: authors

These features indicate a very significant result: Montenegro has developed traffic safety management of traffic, because the public risk in road traffic is not threatened by increasing the motorization level. Otherwise, the public would be at risk of an upward trend by the Smeed's Law distribution [45].

On the basis of all the analyses, we found that the reduction in the number of accidents, injuries and deaths in road traffic of Montenegro may be linked to two groups of indicators:

- indicators that are not causally related to traffic accidents: development of institutional capacities by progress in Euro-Atlantic integration; decrease of aggression, violence and crime; growth of gross national income per capita, and
- indicators that are causally related to traffic accidents: development of road traffic safety management; modernization and rehabilitation of roads; raising awareness about safe participation in traffic; control of vehicles; control of drivers.

5. CONCLUSION

The analysis of road safety in Montenegro, in the period 2004-2014, by studying changes in absolute indicators of the fatalities in traffic accidents (number of fatalities, death toll, number of severe injuries, number of mild injuries) provided the implementation evaluation of the Strategy of Road Transport Safety Improvement in Montenegro 2010-2019, showed that the short-term goal, to reduce fatalities by 30% until 2014 compared to 2007, was achieved in 2011; the second in five years of the short-term period and was exceeded up to 47% in 2014, and the short-term goal to reduce severe injuries by 20% until 2014, in relation to 2007, was achieved as early as in 2010, the first year of the National Strategy implementation, and was further exceeded in 2014 to 40% reduction.

The analysis of changes in the relative indicators of persons killed in road accidents (public risk, traffic risk, the degree of danger), as function of the level of motorization and GDP per capita, on the roads in Montenegro, in the period 2000-2015, shows that Montenegro has developed traffic safety management, because the public risk in road traffic is not threatened by increasing the motorization level.

The effectiveness in implementing the Strategy of Road Safety Improvement in Montenegro is attributed to two main reasons:

1) development of road safety management, with advancement in the following areas: institutional organisation, coordination and stakeholders' involvement; policy formulation and adoption; policy implementation and funding; monitoring and evaluation; and
2) setting an unambitious, attainable goal, selecting 2007 as the base year, as the year of the worst road safety status in Montenegro in the analysed period.

The results of this study indicate that it is necessary to revise the existing Strategy of Road Transport Safety Improvement in Montenegro 2010-2019, as a precondition for the formulation and adoption of modern policy for further improvement of road safety. This is required, in particular, because the UN Global Plan of the Decade of Action for road safety 2011-2020 and the EU White Paper on transport began to be applied in 2011. Hence, it is necessary to incorporate the guidelines provided for road safety management at the national level in the strategic documents of Montenegro relating to road safety, since they were adopted in the period from 2007 to 2009. On the other hand, it is necessary to revise the strategic goals of road safety management, starting from the set objective of the European Commission to reduce traffic fatalities by 50% in 2020, in relation to 2010, and in 2015 the newly appointed partial global health objective of sustainable development set to reduce traffic deaths by 50% in 2020. At the same time, setting realistic, ambitious, but feasible, strategic goals of road safety management should include, in terms of methodology: an in-depth analysis of the status based on data on traffic accidents, the identification of areas of

activity in which the effect of the intervention can produce improvement and predict the effects of planned interventions so that the goals encourage sustained action to achieve the desired results. Further improvement of road safety in Montenegro requires further development of road safety management, particularly through scientific support, information and institutional capacity building.

Mr **MILENKO ČABARKAPA**[1]
E-mail: milenko.cabarkapa@fskl.me
Prof. dr. sc. **DAVOR BRČIĆ**[2]
E-mail: dbrcic@fpz.hr
Prof. dr. **VUJADIN VEŠOVIĆ**[1]
E-mail: fsklbudva@gmail.com
[1] Fakultet za saobraćaj, komunikacije i logistiku
Žrtava fašizma bb, 85310 Budva, Crna Gora
[2] Sveučilište u Zagrebu, Fakultet prometnih znanosti
Vukelićeva 4, 10000 Zagreb, Hrvatska

RAZVOJ STRATEŠKIH CILJEVA UPRAVLJANJA BEZBJEDNOŠĆU SAOBRAĆAJA NA PUTEVIMA: STUDIJA SLUČAJA CRNA GORA

REZIME

Ocjena rezultata upravljanja bezbjednošću saobraćaja na putevima na nacionalnom nivou provodi se uz određeni broj unaprijed definisanih pokazatelja. Unaprijed definisani pokazatelji trebaju biti mjerljivi ciljevi upravljanja bezbjednošću saobraćaja. Oni se postavljaju nacionalnim strategijama bezbjednosti saobraćaja. U radu je prikazana kontrola implementacije Strategije poboljšanja bezbjednosti u putnom saobraćaju Crne Gore 2010-2019. Istraživanje je pokazalo da su petogodišnji ciljevi Nacionalne strategije ostvareni u prvim godinama te značajno nadvišeni. Efektivnost je postignuta iz dva osnovna razloga: razvojem menadžmenta bezbjednosti saobraćaja na putevima i postavljanjem neambicioznog, lako ostvarivog cilja. To ukazuje da opšte i globalno postavljeni ciljevi smanjenja saobraćajnih smrtnih slučajeva ne mogu biti istovremeno i nacionalni ciljevi u svim zemljama, u kom kontekstu su predložena metodološka unaprjeđenja postavljanja nacionalnih strateških ciljeva zasnivanjem na dokazima: dubinska analiza stanja nacionalne bezbjednosti saobraćaja na osnovu podataka o saobraćajnim nezgodama, identifikacija oblasti djelovanja u kojima učinak nacionalnih intervencija može proizvesti poboljšanje i predviđanje efekata planiranih nacionalnih intervencija.

KLJUČNE RIJEČI

upravljanje bezbjednošću saobraćaja; strategija, strateški ciljevi, saobraćajne nezgode, Crna Gora;

REFERENCES

[1] WHO. Global status report on road safety. Geneva: WHO [Internet]; 2009, 2013, 2015 [cited 2015 Dec 20]. Available from: http://www.un.org/ar/roadsafety/pdf/roadsafetyreport.pdf, http://www.who.int/violence_injury_prevention/road_safety_status/2013/en/, http://www.who.int/violence_injury_prevention/road_safety_status/2015/GSRRS2015_Summary_EN_final2.pdf?ua=1
[2] WHO. Global Plan for the Decade of Action for Road Safety 2011-2020. Washington: WHO [Internet]; 2011 [cited 2012 June 15]. Available from: http://www.who.int/roadsafety/decade_of_action/plan/plan_english.pdf?ua=1
[3] UN. A/RES/64/255/UN. Improving global road safety. UN [Internet]; 2010 [cited 2010 Dec 10]. Available from: http://www.who.int/violence_injury_prevention/publications/ road_traffic/ UN_GA_resolution-54-255-en.pdf?ua=1
[4] EC. Towards a European road safety area: policy orientations on road safety 2011-2020. EC [Internet]; 2010 [cited 2011 June 12]. Available from: http://ec.europa.eu/transport/road_safety/pdf/com_20072010_en.pdf
[5] The Global Goals For Sustainable Development. Good Health and Well-being. The Global Goals [Internet]; 2015 [cited 2015 Sep 05]. Available from: http://www.globalgoals.org/global-goals/good-health/
[6] Tingvall C. The Zero Vision: A Road Transport System Free from Serious Health Losses. In: von Holst H, Nygren A, Thord R, editors. Transportation, Traffic Safety and Health. Berlin, Heidelberg: Springer-Verlag, 1997; p. 37-57.
[7] Sweden. The Vision Zero Initiative. [Internet]; 1997 [cited 2012 May 12]. Available from: http://www.visionzeroinitiative.com/about-us/
[8] Tingvall C, Haworth N. Vision Zero - An ethical approach to safety and mobility. Paper presented at: 6th ITE International Conference Road Safety & Traffic Enforcement: Beyond 2000; 1999 Sep 6-7; Melbourne, Australia; 1999 [cited 2012 May 12]. Available from: https://www.monash.edu/muarc/research/our-publications/papers/visionzero
[9] Towards Zero: Ambitious road safety Targets and the Safe system Approach. Paris: Joint OECD/ITF Transport Research Centre [Internet]; 2008 [cited 2010 June 11]. Available from: http://www.itf-oecd.org/sites/default/files/docs/08targetssummary.pdf
[10] Vešović V. [Strategic management of traffic]. Berane: FMSK; 2009. Montenegrin
[11] Bliss T, Breen J. Implementing the Recommendations of The World Report on Road Traffic Injury Prevention Country guidelines for the conduct of road safety management capacity reviews and the related specification of lead agency reforms, investment strategies and safety programs and projects. Washington: World Bank, GRSF [Internet]; 2009 [cited 2010 Avg 06].Available from: http://documents.worldbank.org/curated/en/ 712181469672173381/ pdf/815980WP0Traff-00Box379836B00PUBLIC0.pdf
[12] New Zealand. National Road Safety Committee. Land Transport Safety Authority. Road Safety Strategy 2010: A Consultation Document. NRSC [Internet]; 2000 [cited 2010 Aug 05]. Available from: http://www.imvia.co.nz/media/3755/mot_safer_journeys_discussion_document.pdf
[13] Wegman F, et al. Transport safety performance indicators. ETSC [Internet]; 2001 [cited 2010 Jan 10]. Available from: http://archive.etsc.eu/documents/perfindic.pdf

[14] Koornstra M, et al. SUNflower: a comparative study of the development of road safety in Sweden, the United Kingdom, and the Netherlands. Leidschendam: SWOV, Dutch Institute for Road Safety Research [Internet]; 2002 [cited 2004 May 05]. Available from: http://ec.europa.eu/transport/roadsafety_library/publications/sunflower_report.pdf

[15] SafetyNet. Road Safety Management. SafetyNet [Internet]; 2008 [cited 2011 May 22]. Available from: http://ec.europa.eu/transport/road_safety/specialist/erso/pdf/ safety_issues/policy_issues/07-road_safety_management_en.pdf

[16] Bliss T, Breen J. Road Safety Management Capacity Reviews and Safe System Projects Guidelines, updated edition. WB [Internet]; 2013 [cited 2014 Aug 10]. Available from: http://siteresources.worldbank.org/INTTOPGLOROASAF/Resources/2582140-1371235287855/Road-Safety-Management-Guidelines-EN.pdf

[17] The World Bank. Global Road Safety Facility. Strategic Plan 2013-2020. Washington: World Bank, GRSF [Internet]; 2013 [cited 2014 Aug 10]. Available from: http://siteresources.worldbank.org/INTTOPGLOROASAF/Resources/GRSF-strategic-plan-2013-2020.pdf

[18] Muhlrad N, Gitelman V, Buttler I, editors. Road safety management investigation model and questionnaire. Deliverable 1.2 of the EC FP7 project DaCoTA. DaCoTA [Internet]; 2011 [cited 2011 Dec 12]. Available from: http://www.dacota-project.eu/Deliverables/DaCoTA_WP1_D1%202_final_2011-09-21.pdf

[19] Elvik R. Does the use of formal tools for road safety management improve safety performance? Proceedings of the 2012 TRB Annual Meeting; 2012; TRB, Washington DC; 2012 [cited 2015 Dec]. Available from: https://www.toi.no/articles-9000/does-use-of-formal-tools-for-road-safety-management-improve-safety-performance-article31675-814.html

[20] DaCoTA. Road Safety Management, Deliverable 4.8p of the EC FP7 project DaCoTA. London: DaCoTA [Internet]; 2012 [cited 2013 Dec 25]. Available from: http://safetyknowsys.swov.nl/Safety_issues/pdf/Road%20Safety%20Management.pdf

[21] Papadimitriou E, et al. Analysis of road safety management in the European countries. D 1.5 DaCoTA. DaCoTA [Internet]; 2012 [cited 2012 Aug 18]. Available from: http://www.dacota-project.eu/Deliverables/Dacota_Deliverable1.5_Vol.2_final.pdf

[22] Jahi H, et al. Investigating road safety management processes in Europe. Procedia - Social and Behavioral Sciences. 2012 [cited 2015 Sep 15];48:2130-2139. Available from: http://www.sciencedirect.com/science/article/pii/S1877042812029291

[23] Dupont E, et al. Needs for Evidence-Based Road Safety Decision Making in Europe. Procedia - Social and Behavioral Sciences. 2012 [cited 2015 Sep 15];48:2513-2522. Available from: http://www.sciencedirect.com/science/article/pii/S1877042812029655

[24] Papadimitriou E, et al. Is road safety management linked to road safety performance. Accident Analysis and Prevention. 2013;59:593-603.

[25] Muhlrad N, et al. Analysis of road safety management systems in Europe. Proceedings of the Transport Research Arena (TRA) 5th Conference: Transport Solutions from Research to Deployment; 2014 Apr 14-17; Paris, France. 2014 [cited 2015 Sep 04]. Available from: https://www.researchgate.net/publication/270645439_Analysis_of_road_safety_management_systems_in_Europe

[26] Wegman F, et al. Evidence based and data driven road safety management. IATSS Research. 2015 July;39(1):19-25.

[27] Yannis G, et al. Road Safety in South-East European Regions. Paper presented at: The 6th Pan-Hellenic Conference on Road Safety; 2015 March 12-13; Athens, Greece. 2016 [cited 2016 Jan 26]. Available from: https://www.researchgate. net/.../273936929_Road_Safety_in_South_-_East_ European_ Regions.

[28] Elvik R. Road safety management by objectives: A critical analysis of the Norwegian approach. Accident Analysis and Prevention. 2008;40(3):1115-1122.

[29] EC. White Paper on transport - Roadmap to a single European transport area Towards a competitive and resource-efficient transport system. EC [Internet]; 2011 [cited 2011 Dec 20]. Available from: http://ec.europa.eu/transport/themes/strategies/doc/ 2011_white_paper/white_paper_com(2011)_144_en.pdf

[30] UN. The Global Goals for Sustainable Development. The Global Goals [Internet]; 2015 [cited 2015 Oct 10]. Available from: http://www.globalgoals.org/global-goals/good-health/

[31] Milošević S. [Traffic psychology]. Beograd: Naučna knjiga; 1981. Serbian

[32] Saurabh V. Care Database. CADaS Common Accident Data Set. Directorate-General for Mobility and Transport. European Commission [Internet]; 2015 [cited 2015 Dec 12]. Available from: http://ec.europa.eu/transport/road_safety/pdf/statistics/cadas_glossary.pdf

[33] Lipovac K. [Traffic safety]. Beograd: SL SRJ; 2008. Serbian

[34] Agustsson L. Road safety programs. Road Safety Audit Handbook. EC DG LARG, SEETO [Internet]; 2014 [cited 2015 Dec 12]. Available from: http://www.seetoint.org/wp-content/uploads/downloads/2014/11/1_3-LAAG-Roadsafetyprograms-RSA-W.pdf

[35] Statistical Office of Montenegro [homepage on the Internet]. Census of Population. Report on the roads. Number of registered road vehicles. The number of traffic accidents. GDP per capita. 2016 [cited 2016 Aud 05]. Available from: http://www.monstat.org/cg/

[36] Montenegro. Montenegrin Government - Ministry of Transport, Maritime Affairs and Telecommunications. [Transport development strategy of Montenegro]. Podgorica: MTMAT; 2008. Montenegrin

[37] Montenegro. Ministry of Transport, Maritime Affairs and Telecommunications. [Strategy of development and maintenance of state roads in Montenegro]. Podgorica: MTAT; 2009. Montenegrin

[38] Montenegro. Ministry of Internal Affairs. [Strategies to improve road transport safety in Montenegro 2010-2019]. Podgorica: MIA ; 2009. Montenegrin

[39] Čabarkapa M. [Strategic control of implementation of Strategy to improve road safety in Montenegro]. Tehnika. 2012;3:476-480. Montenegrin

[40] Montenegro. Montenegro Gazzete. No. 28/2010, 33/2012, 58/2014, 36/2011, 52/2014. Montenegro Gazzete [Internet]; 2015 [cited 2015 Dec 12].

Montenegrin. Available from: http://www.sluzbenilist.me/SLOsnPretraga.aspx/

[41] EC. Directive 2004/54/EC of the European parliament and of the Council of 29 april 2004 on minimum safety requirements for tunnels in the trans-european road network. EC [Internet]; 2004 [cited 2010 Aug 25]. Available from: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32004L0054

[42] EC. Directive 2008/96/EC of the European parliament and of the Council - On road infrastructure safety management. EC [Internet]; 2008 [cited 2010 Aug 25]. Available from: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:319:0059:0067:EN:PDF

[43] Montenego. Ministry of Internal Affairs. [Statistics on traffic accidents on roads in Montenegro]. Podgorica: MIA; 2015. Montenegrin

[44] Faculty of Transport, Communications and Logistics. [homepage on the Internet]; 2015 [cited 2015 Dec 10]. Montenegrin. Available from: http://www.fskl.me/

[45] Adams J.G.U. Smeed´s Law: some further thoughts. John Adams [Internet]; 1987 [cited 2010 May 10]. Available from: http://john-adams.co.uk/wp-content/uploads/2006/smeed's%20law.pdf

[46] EC. Directorate General Energy and Transport. Road safety evolution in EU. Fatalities by population. CARE (EU road accidents database) or national publications [Internet]; 2016 [cited 2010 Aug 05]. Available from: http://ec.europa.eu/transport/road_safety/pdf/observatory/historical_evol_popul.pdf