

Contents lists available at [ScienceDirect](https://www.sciencedirect.com)

Journal of Transport & Health

journal homepage: www.elsevier.com/locate/jth

Road traffic safety as a public health problem: Evidence from Serbia

Aleksandra Jovic Vranes^{a,*}, Vesna Bjegovic Mikanovic^a, Jelena Milin Lazovic^b, Vladimir Kosanovic^c

^a Institute of Social Medicine, Medical Faculty Belgrade University, dr Subotica 15, Belgrade Serbia

^b Institute for Medical Statistics and Informatics, Medical Faculty Belgrade University, dr Subotica 15, Belgrade, Serbia

^c Traffic Police, Ministry of Internal Affairs of Republic Serbia, Ljermontova 12, Belgrade, Serbia

ARTICLE INFO

Keywords:

Road traffic crashes
Traffic safety
Injury
Fatality
Public Health

ABSTRACT

Road traffic safety is a significant public health issue. Unfortunately, traffic crashes are frequent, as well as the deaths and injuries caused by them. Our aim was to analyze road traffic crashes in Serbia.

Data were obtained from the database of the Ministry of Internal Affairs of the Republic of Serbia and were analyzed to identify the number of reported traffic crashes, the number of consequences (injury and fatality), demographic characteristics, and most common causes that led to accidents. Descriptive and analytical statistics were used for the analysis of data.

From 1999–2007, the number of crashes increased, and from 2008, the number of road crashes has been decreasing. Greatest reduction in the number of road crashes, compared to the previous year, was reported in 2010, after the introduction of the new Law on Traffic Safety in 2009. Car occupants and pedestrians were the most frequent victims of traffic crashes. The majority of road crashes occurred as a result of improper driving, speeding, and driving under the influence of alcohol. Men were more prone to be killed on the roads than women, and the largest number of casualties occurred in the 18–25-years age group. The highest percentage of fatality was reported in the > 65-years age group.

Promotion of safe driving behaviors can significantly improve traffic safety.

1. Introduction

Road traffic crashes are a leading cause of morbidity and mortality around the world, and a major problem and priority within the public health field. While many measures have been taken to tackle this problem, much more could be done. Center for Disease Control and Prevention (CDC) has included traffic safety as one of the most important public-health achievements in the 20th century. Despite the fact that there has been significant progress, CDC addressed that challenge for the 21st century is to sustain and improve motor-vehicle safety (CDC, 1999; WHO, 2008).

Considering the global importance of traffic, special attention should be paid to road safety and endeavor to provide standards that are of great importance to the efficiency and safety of the commuters (UN, 2011). Without the existence and enforcement of safety regulations, traffic crashes could become the leading cause of death in the world, with more than two million annually.

Despite the fact that the traffic safety management is possible, there are still significant differences in the number of traffic crashes

* Corresponding author.

E-mail addresses: aljvrnes@yahoo.co.uk (A. Jovic Vranes), bjegov@gmail.com (V. Bjegovic Mikanovic), milinjelena@gmail.com (J. Milin Lazovic), kosanovic.vladimir@gmail.com (V. Kosanovic).

<https://doi.org/10.1016/j.jth.2017.12.005>

Received 12 July 2017; Received in revised form 5 December 2017; Accepted 5 December 2017

2214-1405/© 2017 Elsevier Ltd. All rights reserved.

among countries. To improve traffic safety globally, the General Assembly of the United Nations adopted a number of resolutions. A resolution that has been particularly emphasized is the Improving Road Traffic Safety (A/RES/64/255). According to this resolution, the period between 2011 and 2020 was announced as the decade for taking action to improve traffic safety (UN, 2011).

During the last decade, a number of necessity measures have been taken to improve a functioning traffic safety system in the Republic of Serbia. The law on Traffic Safety on Roads 2009 implemented major changes such as: introduction of negative points, prohibition of use of mobile phones and other communication devices by drivers and pedestrians while crossing the street, permitted alcohol level in blood was reduced to 0.03 g/dl, and the maximum speed in populated areas to 50 km/h. The term of "violent driving" was introduced which applies to drivers not considering the safety of others, and not caring for the lives of other traffic participants. Beginner drivers hold a trial permit for a year and cannot drive alone at night. Prosecutions can be done on the basis of a video record. Significantly higher fines are imposed. The law is in compliance with the rules made by the European Convention on traffic and contemporary requirements, and changes that were adopted within the legislation of other EU countries. Considering the recommendations and goals of the United Nations and European Union within this field, the traffic safety situation in the last decade in Serbia has gone through a positive transformation, which is reflected, above all, in a significant reduction of the number of car crash deaths (Official Gazete, 2015; TSA, 2014a, 2014b).

The aim of this work is to analyze road traffic crashes and casualties (injury and fatality) in Serbia from 1999 to 2014.

2. Material and methods

Data from traffic police crash reports were provided by the Ministry of Internal Affairs of the Republic of Serbia, analytics, telecommunication, and information technologies department database, for the period between 1999 and 2014. When a crash occurs, traffic police officers go to the scene to secure the site, organize relief, and collect the data, using a dedicated form. Data on injury are collected by the traffic police based on information from hospitals. If there are injured or dead participants a police team then sequesters the area and perform detailed measurements, photos of the scene of the accident and assess the cause of the accident.

The focus of the present paper is to analyze the number of traffic crashes within the reporting period, number of consequences (fatality and injury), categories of the traffic participants, demographic characteristics, as well as the identification of the most frequent causes of crashes.

Participant categories in road traffic crashes were observed and divided based on the practice that is applied in IRTAD (International Traffic Safety Data and Analysis Group).

Categories are as follows:

1. 1 Cars (drivers and passengers)
2. Pedestrians
3. Motorbikes (riders and passengers)
4. Cyclists
5. Tractors (drivers and passengers)
6. Lorries and buses and
7. Other categories.

The most frequent causes of traffic crashes are classified into the following categories:

1. Unadjusted or irregular vehicle speed
2. Irregular or incorrect driving or riding (not providing right of way, overtaking, passing, holding up, parking)
3. Psychophysical driver's condition (alcohol consumption)
4. Irregular or incorrect behavior of other traffic participants
5. Technical vehicle safety condition
6. Irregular road, gear, or traffic sign conditions
7. Others

Descriptive statistics were reported as absolute frequencies and percentages for categorical variables. The significance of differences by demographics characteristics and casualties (killed and injured) was assessed using the chi-square test.

Number of road traffic crashes were assessed using the joinpoint regression analysis (Joinpoint regression software, Version 4.3.1.0 – December 2016, available through the Surveillance Research Program of the US National Cancer Institute). The joinpoint analysis detected when statistically significant changes in the trend occur, and determined the trends between joinpoints. The Monte Carlo Permutation method was performed to identify the best-fitting combination of line segments and joinpoints (Kim et al. 2000). Grid Search method was selected (Lerman, 1980).

The Annual Percentage Change (APC) with the corresponding 95% confidence interval (CI) was estimated for each identified trend, by fitting a regression line to the natural logarithm of the rates, using calendar year as a regression variable. The joinpoint analysis provided average annual percentage change (AAPC)—a summary measure over a fixed interval; for each AAPC estimate, we calculated the corresponding 95% confidence interval (95% CI). Disparities in number of accidents with fatal outcome according to age, gender and passenger/driver were tested by using a comparability test – a procedure proposed by Kim et al. (2000). The goal of the comparability test was to answer whether the two regression mean functions were identical (test of coincidence) or parallel (test

Download English Version:

<https://daneshyari.com/en/article/7486994>

Download Persian Version:

<https://daneshyari.com/article/7486994>

[Daneshyari.com](https://daneshyari.com)