

12th International Conference "Organization and Traffic Safety Management in large cities",  
SPbOTSIC-2016, 28-30 September 2016, St. Petersburg, Russia

## Model of Calculation and Subsequent Assessment of the Economic Losses of the Ural Federal District Subjects in Case of Death and Injury in Road Traffic Accidents

Artur Petrov <sup>a\*</sup>

*Federal State Budgetary Educational Institution of Higher Education "Tyumen Industrial University", 38, Volodarskogo Str., Tyumen, 625000, Russia*

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### Abstract

According to the analysis of the statistical data of the State Traffic Safety Inspectorate of the Ministry of Internal Affairs of the Russian Federation, the high territorial differentiation of motor transport accident rate indicators has developed in our country. Hypothetically, economic losses due to death and injuries of people in road traffic accidents (RTAs) can differ considerably in various regions of Russia. The objective of the study is the differentiated assessment of economic losses of the Ural Federal District (UFD) subjects due to death and injuries of people in RTAs. The so-called "cost of average living (CAL)" of citizens of the Russian Federation and the methodology of the Russian Scientific Society for Risk Analysis served as a basis for calculations of economic losses due to the motor transport accident rate.

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Peer-review under responsibility of the organizing committee of the 12th International Conference "Organization and Traffic Safety Management in large cities"

*Keywords:* motor transport accident rate; road traffic accident (RTA); death and injuries of people in RTAs; assessment of the cost of average living; Ural Federal District (UFD); losses in gross regional product (GRP) due to death and injuries of people in RTAs; regional differences

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### 1. Introduction

The necessity of the search of ways to reduce the motor transport accident rate has been among the priority topics

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\* Corresponding author. Tel.: +0-000-000-0000 ; fax: +0-000-000-0000 .  
E-mail address: [ArtIgPetrov@yandex.ru](mailto:ArtIgPetrov@yandex.ru) <sup>a\*</sup>

on the agenda of the state administration in the Russian Federation for many years. Federal Target Programs for traffic safety (TS) improvement have been implemented in the country for more than a decade. The decrease in annual human losses due to RTAs from 35.6 thousand people in 2003 to 23.1 thousand people in 2015 is a result of the state's attention to TS problems. Despite this, the situation in the field of TS in our country still remains intimidating. For example, specific indicators (per 100 thousand inhabitants and 100 thousand vehicles) of the motor transport accident rate in Russia are approximately 5–10 times higher than in such European countries as the Great Britain, the Netherlands and Sweden.

Experts of the World Health Organization (2015) assess economic losses of Russia due to death and injuries of people in RTAs in 2.2–2.6% of the gross domestic product (GDP). It is indicated in the World Bank Report (2016) that “calculations performed in 2005 by the Ministry of Internal Affairs of the Russian Federation testify that the annual damage due to RTAs in Russia reaches 2.5% of the GDP or about 26 billion US dollars”. The above mentioned facts testify rather eloquently that the problem of the traffic and transport accident rate is not only a trouble of particular people injured as a result of RTAs but also the economic category requiring the most serious attention of the authorities.

The objective of the study is the differentiated assessment of economic losses of the Ural Federal District (UFD) subjects due to death and injuries of people in RTAs based on the developed model of the assessment of the cost of average living (CAL) and average cost of rehabilitation of a person injured in RTA (ACR) with regard to citizens of the Russian Federation from the perspective of the contribution to the formation of the country GDP.

## 2. Main text

### 2.1. Main point, assumptions and presuppositions

The main point to the proof of which the analysis of the statistical data of the State Traffic Safety Inspectorate of the Ministry of Internal Affairs of the Russian Federation on the accident rate in the Russian Federation in 2013 [STSI (el. resource)] and statistical data of the Federal State Statistics Service on the value of the gross regional product (GRP) [Federal State Statistics Service (el. resource)], presented in the article, is dedicated, can be formulated as follows: “Economic losses of the UFD subjects due to death and injuries (traumas) of people in RTAs are extremely differentiated and are mainly defined by the development level of productive forces in the region and by the total value of the regional economic product”.

The proof of this point is based on a number of assumptions and presuppositions given below.

1. Calculations of economic losses of the UFD subjects are performed for 2013 for which exact assessments of values of the GRP are available.

2. Economic losses due to death and injuries of people in RTAs (by the methodology of the World Health Organization) are determined as GRP loss because of decrease in the regional labor potential and its physical implementation and do not include the losses connected with the material damage of the parties involved in RTAs.

3. When calculating losses of the gross regional product (GRP) due to death and injuries of people in RTAs, it is necessary to use the notion “cost of average living (CAL)”. According to Bykov (2007): “the price of risk for the human life cannot be identified with the price of life, it is not the cost of the individual life but is the cost of risk for life. In particular, the economic risk magnitude for health and life represents either public consent to pay for avoiding this risk or consent for compensation to take (endure) it voluntarily. The economic risk magnitude for health and life is not the cost of the individual life or the damage connected with death of a particular person, it is the cost of risk, which is divided among all members of the affected population. This magnitude is based on the general risk exposure, without identification of particular individuals to whose death befalls. Therefore, the use of the term “life price of the average person” or “cost of average living (CAL)” is more correct”.

4. When assessing losses of the annual GRP of a particular region due to negative manifestations of RTAs, it is necessary to take into account a number of people died or injured in RTAs during the year as well as the “cost of average living” (CAL) and the “average cost of rehabilitation of a person injured in RTA (ACR) in the Russian Federation per a particular year.

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