

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

Potential for Enhancing Traffic Safety on Highways of Russia

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Abstract

The article investigates the correlation between the factors of enhancing traffic safety on highways and parameters of the economic growth in Russia and in countries with transition economy; such correlation does not always lead to traffic safety enhancement. As a rule, the population motorization (car density) level growth in such countries is not accompanied by efficient actions on accident rate decrease. Among the factors enhancing traffic safety on highways are the efficiency of traffic infrastructure planning (changing and removing traffic flows from cities' centers, creation of a large amount of pedestrian and bicycle lanes separated from traffic flows) as well as harmonization of physical infrastructure and safety goals, ensuring conjugation of the developed transport infrastructure with the decrease of the share of private vehicle fleet and increase of the share of public transport.

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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: car density; traffic infrastructure; safety goals

1. Introduction

Road traffic accident (RTA) fatality remains one of the most pressing problems in the modern world. For example, according to the data of the Association for Safe International Road Travel, yearly worldwide in RTAs about 1.3 mln persons die and from 20 to 50 mln persons are injured and lose work capacity on the average; the consequent economic loss is evaluated approximately at USD 518 bln. Losses of developing countries are evaluated

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at USD 65 bln, which significantly exceeds the economic aid received [Association for Safe International Road Travel (2016)]. One of the key reasons of traffic hazard growth is the growth of the motorization level (a number of vehicles per 1000 residents), especially in countries with the average GNI per capita.

2. Main text

2.1. On the correlation between the traffic safety level in Russia and the national income growth

Middle-income countries are those having GNI ranged from 1 to 12 thous. USD annually per person [Worldbank (2016)]. According to the data of the World Health Organization (WHO), such countries account for 53% of the world car fleet and 74% of death toll in RTAs [WHO (2015)]. Though Russia falls under the countries with high income (about USD 23 thous. yearly per person considering the purchasing power index (PPI)), its traffic safety lags far behind the level provided today in many European countries. For comparison, in European countries, car density per 1000 residents fluctuates from 480 to 600, and the fatality rate (per 100 thous. residents) fluctuates from 2.9 (the Great Britain) to 6.1 (Italy) [WHO (2015)]. In Russia, this coefficient is 18.9 which is the level of such countries as China (18.8), Morocco (18.0) and Ecuador (20.1), though these countries fall under the middle-income ones. As for car density per 1000 residents, in Russia this index is 302 almost as in China (297), but twice as less than this index is in European countries [European Union (2011)].

Fig. 1. shows regression between the number of RTA fatalities (per 100 thous. of the population) and GDP per capita (current USD rate) for G20 countries.

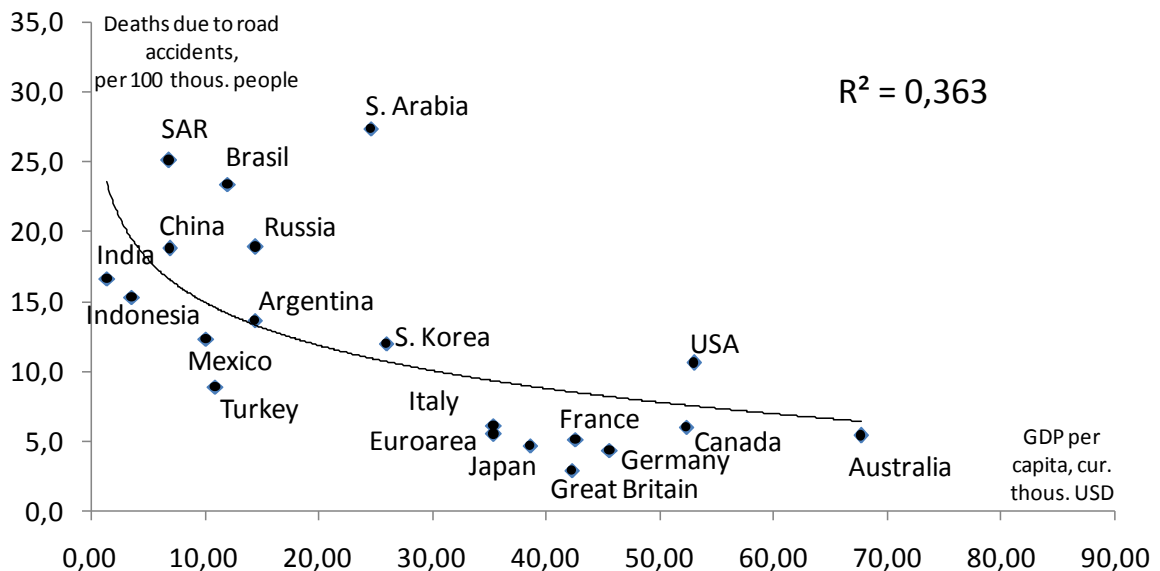


Fig. 1. Regression between the number of RTA fatalities depending on the living standard in G20 countries (as of 2013).

Fig. 1 shows that such countries as Turkey, Mexico, and Argentina (leaving alone more developed countries in the euro region), at the living standard comparable to the Russian one, have significantly lower RTA fatality rates — 8.3, 12.9 and 13.6 persons a year per 100 thous. people, respectively. It means that the potential for efficient traffic safety organization in the Russian Federation is not fully used and there are hidden resources which could help decreasing the RTA fatality rate in Russia. The study undertaken as long ago as in 1985 based on the RTA data in the USA and Great Britain [Rumar (1985)] showed that 57% of RTAs were exclusively due to driving mistakes, 27% of RTAs were due to the combination of driving mistakes and unsatisfactory road conditions (URC), 4% of RTAs were due to the combination of URC and vehicles' breakdown, 3% of RTAs were due to URC only. Thus, up

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