

Issues of road safety in Russia The problems and means of their solving

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Abstract

Accident rate in cities and on the roads of Russia is one of the serious social and economic problems. Around one million of road accidents took place for the period from 1995 to 2002, resulting in over one million and two hundred thousand dead and injured. Approximately 30 thousand people are killed on the road in Russia annually, over 170 thousand people get injured, and of these, more than ten thousand become permanently disabled. There are around 450 road accidents that take place daily on the roads of the country, and in these accidents more than 80 people get killed and some 500 people are injured. Around 60% of those killed represent the most active portion of the population, aged from 16 to 40 years. The Russian Federation Government endorsed in June of 1996 a target program, entitled "Federal Program of improving safety of road traffic on Russia's roads for the period of 1996-1998". The basic objective of the Program was reducing the number of those killed in road accidents by 10-20% (which meant 3.2 to 6.5 thousand lives saved). And, indeed, introducing the Program measures made it possible to attain some positive tendencies for main parameters of accident rate during 1996-1999. The Program activities were prolonged further on, up to 2000. 1996-2000 As a result of this reduction in accident rate, more than 18 thousand lives had been saved during compared to the virtual total number of fatal casualties, if the annual accident rate of 1995 would have remain unchanged for the same period of time. And, besides, the degree of severity of accident consequences diminished by 7%. Bearing in mind the fact that Russia stands out against a background of economically developed countries for its level of the road accident traumatism, number of killed per 10 thousand vehicles approximately three times exceeds similar parameters in other countries. Number of killed per 100 thousand of population is 1.5 to 2 times higher than that in the countries with developed motorization. Currently, a second Program of improving safety of road traffic in Russia has been worked out and it is in the process of being implemented. This Program is intended to cover the period from 2002 to 2010.

Keywords – road safety; Russia, accidents

1. The state of the accident rate problem on the Russian roads

According to the latest social statistics the population of Russia amounts to 148.3 mln. The increase of road traffic volume in Russia has left behind the development of the r

oad network since the end of World War Two. Thus, for the last twenty years number of vehicles (fleet of vehicles) has increased five times (and particularly during last three years). For the same period of time total length of the network of roads with hard rigid pavement that ensures all-year-round traffic increased only twofold. Total number of vehicles of all possible types that

are registered in Russia at present amounts to around 30 mln. 70% of these are privately owned vehicles. Volume of traffic on some of the roads 1.3-3.0 times exceeds the figure that can be considered permissible for a given road category. Average speed of traffic drops down to 35-40 km/h, and number of road transport accidents (RTA) continues to rise.

Accident rate in cities and on the roads of Russia is one of the serious social and economic problems. Around one million of road accidents had taken place for the period from 1995 to 2002, resulting in over one million and two hundred thousand dead and injured. Approximately 30 thousand people are killed on the road in Russia annually, over 170 thousand people get injured and of these, more than ten thousand become permanently disabled (Fig. 1).

Around 450 road accidents take place daily on the roads of the country, more than 80 people get killed in them and some 500 people are injured. Around 60% of those killed represent the most active portion of the population, aged from 16 to 40 years. It should be noted that it is drivers who are immediately to blame for the accidents. The drivers who violate the Rules of the road (ROR) comprise a smaller part of those killed and injured in road accidents, 75% of the casualties are the other participants of traffic – the passengers and pedestrians. The tragic nature of this situation lies in the fact that large number of children aged from 7 to 14 are victims of RTA, and road accidents where children are involved comprise 13% of the total number of RTA. 21305 children (all of them younger than 16) were injured in RTA during 2001, and 1586 children were killed. More than 70% of RTA take place in cities, towns and other inhabited localities. However, the severity of accidents there is two times lower than on the out-of-town roads. The heaviest severity of accidents (more than 20 people killed per 100 that were involved in RTA) has been registered on the federal trunk roads.

Here are the results of situational analysis of the Russian roads from the following points of view: WHO was involved in RTA, WHERE the RTA took place, and WHEN it took place.

Involvement of the road users in RTA

- more than 30% of those killed in RTA are the drivers;
- 37.6% that were injured in RTA are people aged from 27 to 41, about 8% of injured are children aged from 7 to 16.

Involvement of vehicles in RTA

- 63% of the total number of vehicles that were involved in RTA are of private use, while 11% of vehicles involved in RTA are buses.

Impact of road conditions and of environment

- 60% of all RTA take place in cities and towns, 40% are out-of-town. Around 60% of the dead were killed in RTA on the out-of-town roads;
- 45% of the total number of RTA that are registered annually occur during June-September period, and 44% of those killed and 47% of those injured are casualties of the same period of the year.

Variation of the degree of accident severity (i.e. number of those killed per 100 injured) shows the following tendencies:

- for the last 2 years the RTA severity was on the rise, and it reached the level of 14.1 in 2001;
- the level of accident severity on the out-of-town roads was two times higher than on urban roads.

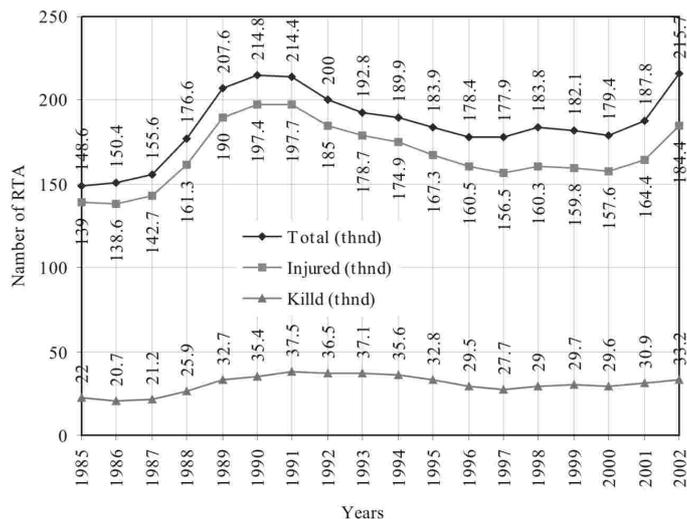


Fig. 1. – Number of road transport accidents (RTA) in Russia from 1985 to 2002

According to official statistics of 2001, the following were primary causes of RTA:

- violation of Rules of the road by drivers (70%) and by pedestrians (30%);

Drunk driving was the cause of 19.3% of RTA, speeding violation caused 7.8% and entry to the roadway of oncoming traffic caused 16% of RTA

The following are the main causes of accidents in which the pedestrians were involved:

- roadway crossing at unauthorized places – 59.7%;
- sudden entry to the roadway from out of an obstruction – 15.8%;
- various degree of the pedestrian's drunkenness – 24.0%.

Of the unfavourable road conditions, the following should be mentioned primarily:

- slipperiness of the pavement – 70% of the accidents;
- unevenness of the pavement – 5-8%;
- unpaved shoulders – 6% of RTA.

Number of casualties resulted from RTA exceeds by many fold the number of casualties from all other means of transportation. On the average, the number of those killed on the road for three-day period only, exceeds the number of annual fatal casualties as a result of transport accidents in air, railroad, sea and river put together.

Road accident rate causes tremendous damage to Russia's economy. According to economists' calculations the total loss from RTA during only 2000 amounts to 4-5% of the gross national product of the country.

To a certain extent, Russia stands out against a background of economically developed countries for its level of the road accident traumatism. Number of killed per 10 thousand vehicles approximately three times exceeds similar parameters in other countries. Number of killed per 100 thousand of population is 1.5 to 2 times higher than that in the countries with developed

motorization. Particularly unfavourable situation developed in connection with the severity of RTA consequences, which is three times higher than in developed countries.

The Russian Federation Law "On safety of road traffic" states that one of the basic principles of road accident prevention consists of a targeted program approach. Foreign countries' experience shows that the use of a targeted program approach in solving safety problems of road traffic allows a sustained reduction in number of fatal casualties in RTA amounting, on the average, to 4-8%. In pursuance of the above Law and on instruction of the Government of Russian Federation, Ministry of Transport of Russian Federation with participation of MADI State Technical University (MADI GTU), State Enterprise GP RosdorNII, and NIIAT, as well as with co-operation of experts from Russia's Ministry of Internal Affairs, Ministry of Health, Ministry of Education and other organizations concerned, has developed a target program "Federal Program of improving safety of road traffic on Russia's roads for the period of 1996-1998", that was endorsed by the Russian Federation Government in June of 1996. The basic objective of the Program was reducing the number of those killed in road accidents by 10-20% (which meant 3.2 to 6.5 thousand lives saved).

The Program comprised four pilot Projects, they are as follows:

1. Project "Organization of public support of measures on increasing safety of road traffic".
2. Project "Identification of and eliminating road sections with concentrated RTA. Improving control over speed limit compliance and drivers' behavior at places of increased hazard".
3. Project "Development of informational system of RTA detection".
4. Project "Improving the system of rescue and evacuation of RTA victims".

Sources of the Program financing were the following: 3.2% came from Federal Budget; 8% - from Federal Road Fund; 80.6% were allocated from Regional Road Funds; 6.4% - from municipal budgets, and 1.8% came from insurance companies.

Implementation of the Program measures during 1996-1999 resulted in reaching positive tendencies for the principal parameters of accident rate (See Table 1).

Reviewing the data contained in Table 1 shows that implementation of the Program measures during 1996-1999, practically speaking, saved the lives of 15292 people, 1987 children including. The Table shows the dynamics of change in basic parameters of accident rate on the roads of Russia during the period when the first Federal Program of 1996-1999 was realized. This Program was afterwards extended for up to 2000.

By and large, as a result of reduction in accident rate for the period from 1996 to 2000, as compared to 1995, more than 18 thousand lives were saved. The severity of RTA consequences diminished for the period by 7%.

It is necessary to stress that a definite negative impact upon the effectiveness of the accident rate reduction activity on the Russian roads is induced by the following factors:

- underinvestment of the federal and regional programs of improving the road traffic safety;
- low level of penalty sanctions imposed for violation of Rules of the road;
- insufficient work with the participants of the road traffic on road accident prevention.

2. Principal directions of work and measures to improve safety of traffic on Russia's roads

Taking into consideration a grave state of accident rate that currently is forming on the roads of Russia; a second Program of improvement of traffic safety, planned for the period from 2002 to 2010, has been developed. This Program incorporates further upgrading the State system of control and management of traffic safety, as well as improvement in the system of drivers training. Greater attention is drawn to making more effective the children traffic safety education.

Tab. 1 – Dynamics of principal parameters of accident rate during the period of Federal Program implementation from 1996 to 1999

		1995	1996	96 to 95	1997	97 to 95	1998	98 to 95	1999	99 to 95
				[%]		[%]		[%]		[%]
Total	RTA	167280	160523	-4.04	156515	-6.44	160300	-4.17	159823	-4.46
	Killed	32791	29468	-10.13	27665	-15.63	29021	-11.50	29718	-9.37
	Injured	183926	178378	-3.02	177924	-3.26	183846	-0.04	182123	-0.98
Children's traumatism	RTA	25359	24767	-2.33	23574	-7.04	23065	-9.05	22161	-12.61
	Killed	2262	2008	-11.23	1748	-22.72	1697	-24.98	1608	-28.91
	Injured	24804	24392	-1.66	23364	-5.81	22985	-7.33	22024	-11.21
Due to violation of ROR	RTA	125386	120697	-3.74	117437	-6.34	120829	-3.63	119409	-4.77
	Killed	26807	24082	-10.17	22599	-15.70	23875	-10.94	24026	-10.37
	Injured	146685	142748	-2.68	142530	-2.83	148192	+1.03	145909	-0.53

A special section of the Program deals with organization and management of road traffic in large cities. Construction of grade-separated junctions is planned on the rural sections of the federal roads, and first of all at areas of residential development. Central reservation will be introduced on trunk roads with heavy traffic and at junction at grade. Flyovers and bridges will be widened, railroad crossings will be provided with protective equipment that improves safety of vehicle crossing, etc.

Work is envisaged to improve the systems of active and passive safety of the vehicles manufactured by the Russian motor car industry.

During coming years the Program stipulates to solve the following issues:

- upgrading and matching national standards and legal documents with international standards and regulations;
- creating road traffic data bank and upgrading the system of data collection on accident rate and the system of transmitting this information;
- improving the system of population awareness of road traffic safety problems;
- improving the system of drivers' training;
- raising the level of active and passive safety in design of cars, trucks and buses according to the Rules of UN EEC;
- improving traffic conditions, including enhancement of road conditions;
- upgrading the system of traffic organization and management;
- improvement of the system of medical first aid on the road.

3. Conclusion

In order to provide sustainable improvement of road traffic safety, the State support is necessary in implementing the programmed measures, as well as conducting integrated scientific and research works in the area of road traffic safety. At present, the works are carried on to implement the Program of 2002-2010. Thus, MADi (GTU) in particular conducted research on the effectiveness of the requirements of the Rules UN EEC No. 104 "Uniformed directions concerning the official endorsement of retroreflection marking for long and heavy vehicles".

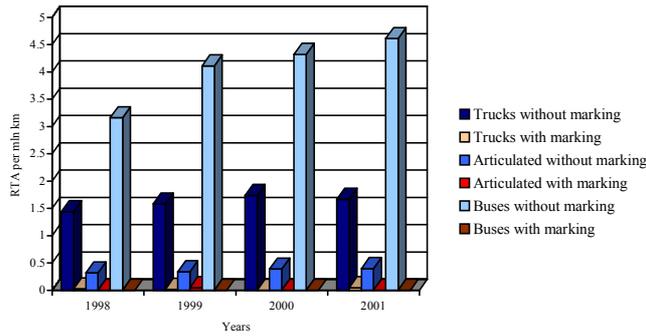


Fig. 2 – Intensity of RTA (Number of RTA per 1 mln kilometers of vehicle journey)

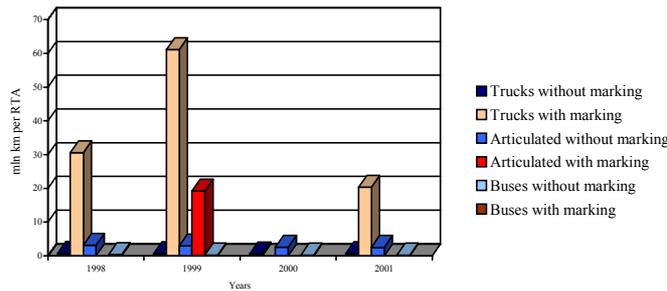


Fig. 3 – Average trouble-free life of the vehicle prior to RTA (Million kilometres of vehicle journey prior to RTA)

Starting from 2003, all long and heavy vehicles over Russia’s territory shall be marked with light reflecting tape in accordance with those Rules.

Bearing in mind the fact that the light reflecting tape has been applied to vehicles since 1998, the data were collected on road transport accidents to analyse the impact of this tape upon accident rate, in which vehicles belonging to enterprises were involved during the period from 1998 to 2001.

49 enterprises of various form of ownership took part in the above research. They were located in 13 subjects of Russian Federation: Republics of Tatarstan and Komi, Regions of Astrakhan, Briansk, Vologda, Moscow, Murmansk, Nizhniy Novgorod, Novgorod, Perm, Sverdlovsk and Tver, and Sankt-Petersburg.

All in all, 5520 vehicles were inspected, among them 3559 trucks, 964 articulated vehicles and 997 buses.

The results of the research are shown in Figures 2 and 3.

Study of the accident state of marked and unmarked vehicles and their established parameters clearly showed the positive impact of the light reflecting marking upon improving the level of road traffic safety.

At present a scientific study is coming to an end dealing with effectiveness of introduction of seasonal speed limitations of traffic on Russia’s roads. As expected, they will introduce limits on maximum permissible speeds during winter and summer periods for various types of vehicles.