

## Traffic safety in Vladivostok and its estimation

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**Abstract-** In the last decade an accident rate on the vehicles has become a grave problem on account of lack of correspondence of road traffic infrastructure to the safe traffic needs of society and state, insufficient effectiveness of road safety management system and extremely low discipline of road users.

**Keywords:** Traffic accident, road-traffic safety, actions, accident rate, injury rate.

### Introduction

Every year children and adolescents under the age of 16 years are killed on the roads of Vladivostok. In addition, as shown in world statistics of public health, more than 5% of injured in traffic accidents remain disabled children lifelong, more than 90% get prolong psychic trauma.

The main types of road accidents in the city are a pedestrian running-down accident, a collision, dumping, head-on crash, hitting the stationary vehicles. More than three-quarters of all traffic accidents are related to violation of traffic rules by drivers of vehicles. Every eighth incident to blame the driver is intoxicated. About a third of all incidents connected with the wrong choice of speed. Every seventh driver of a traffic accident, are not allowed to drive the vehicle. Due to the exit into oncoming traffic occurs about 13% of road accidents. Accident rate increases caused by drivers of vehicles belonging to individuals. The proportion of these accidents is more than 80% of incidents committed because of the fault of drivers. Two thirds of all accidents happen due to violations of traffic rules by drivers and committed by drivers of passenger cars.

### Literature review

The most numerous and most vulnerable group of participants of traffic are pedestrians. Traffic accidents traumatism is one of the leading reason of death among children and youth aged from 5 till 25 years. Perish, lose health and those who treats the most active, able-bodied part of the population are crippled that leads to irreplaceable losses for the future of the country, undermines its demographic reserve. The large number of traffic accidents are connected both with the wrong behavior of pedestrians,

and with the most rough traffic rules violations by drivers. For example, for the last year in Russia more than one million drunk drivers was detained.

Besides the statistics shows that every fourth traffic accident is connected with the wrong choice of movement speed (usually it is about excess of speed), every fifth – with departure on a strip of oncoming traffic and non-compliance with sequence of journey of cars at the intersection. Every third of (30,2%) traffic accidents happen because of "young" drivers noted discrepancy of speed to specific conditions of the movement, the reason of every seventh (14,6%) of incident – non-compliance with sequence of journey, owing to departure on a strip of oncoming traffic there was every ninth (10,6%) road accident, and every fifteenth (6,7%) road accident is made by them in a state of intoxication. And, on all these indicators growth is observed. Another important problem is children's traffic traumatism. The problem of children's traumatism on roads is only a component of our common problem – low culture of behavior on roads, the most rough violations of the rules of traffic by drivers of vehicles. While each citizen doesn't realize a personal responsibility for observance of traffic regulations, we will still lose on roads the most expensive – our children [3].

### Methods and materials

The major factors defining the reasons of high level of accident rate in the city are following: shortcomings of system of public administration, regulation and control of activities for the traffic safety (TS), lack of effective mechanisms of realization of a state policy, funding mechanisms and stimulation of activities for increase of TS at the federal and regional levels; mass neglect requirements of TS from participants of traffic, insufficient understanding and support of actions from society, absence of due responsibility at heads of all levels; the poor quality of training of drivers leading to mistakes in an assessment of a road situation, unsatisfactory discipline, a carelessness and negligence of drivers at control of vehicles; shortcomings of technical ensuring actions for TS, first of all, discrepancy to modern requirements of a technological level of vehicles, the lag in communication systems leading to untimely detection of road accident and first-aid treatment by the victim.

In the city, at various levels of public administration the understanding of importance and need of an urgent solution of the problem of traffic safety is reached. Annually in the city 6500 people die on average as a result of traffic accident, more than 3 thousand people get wounds. In 2014 on city roads of Vladivostok there were 78300 traffic accidents with participation of children (38 children were killed, 806 children were differently traumatized. The quantity of traffic accidents with participation of children and teenagers increased by 6,4% which were lost – for 72,7%, wounded – for 4,5% [1].

**Tab. 1. Traffic accidents statistics due to a fault of children during last 12 month from year to year**

Traffic accidents statistics	2009	2010	2011	2012	2013	2014
Total number of traffic accidents with children under the age of 16	602	667	730	725	736	783
Among these accidents caused by children	266	230	254	229	243	229
Percentage of traffic accidents caused by children from total amount of accidents with children	44.2 %	34.5 %	34,8 %	31,6 %	33 %	29 %

Health and safety of people are the most important life qualities in Vladivostok.

Now in Vladivostok the extent of the main internal roads makes 1261 km, including 621 km in the city. Regulation of traffic in the city is carried out by 33 traffic lights, 3445 road signs and 204 indexes.

The social and economic development of the city of Vladivostok, population growth, increase in the territory and quantity of transport, expansion of the area of inhabited massifs put forward a solution of the problem of TS in a row of paramount tasks. The transport system of Vladivostok is one of largest according to its development, volumes of passenger and freight transportation.

As on 01.01.2014 633270 units of transport are registered in Vladivostok, 88,5% are personal cars.

**Tab. 2. Number of vehicles in Vladivostok**

Year	2010	2011	2012	2013	2014
Total	76599	76446	75688	62711	63270
State	8249	8185	7723	7620	7292
Private	68350	68261	67965	55091	56035

Today there is a very tensely relationship between drivers and pedestrians. In large part road accidents lead to deadly outcomes. A main type of road accident to Vladivostok are accidents of running-down of vehicles pedestrians - about 55% of all road accidents (till 2002 – about 85%). The greatest number of violations of the rules of traffic by pedestrians makes transition of the carriageway in an unspecified place (65%) [1].

**Tab. 3. Gravity of traffic accidents over the past five years (assuming 100 injured in traffic accidents)**

Year	2010	2011	2012	2013	2014
Traffic accidents	3170	3370	3180	3180	3640
Killed	35	35	34	36	36
Injured	394	429	423	414	453
	8,2%	7,6%	7,4%	8,0%	7,4%

Children's traumatism on city roads remains to be one of the most urgent. 2012 and 2013 showed high mortality among children in recent years.

It should be noted that all tragedies happened outside the city. These a lot of things to be explained. In city line numerous crews of traffic police constantly keep watching, there are traffic lights, restrictive signs, humps are installed on roads. All these constrains drivers – fans of a fast driving. Behind city boundaries drivers "relax", forget about elementary safety requirements, sometimes start feeling the impunity. Forget about danger which proceeds from the road, and pedestrians. The tragedy result.

Traffic police of traffic police of Regional Department of the Ministry of Internal Affairs of Russia across Vladivostok together with administration of municipality realize the complex of the actions directed on increasing of traffic safety in the city, caring out the measures for prevention of children's road and transport traumatism, increasing of level of safety of passenger traffic. [1-4]

**Tab. 5. Registered traffic accidents**

Number of registered traffic accidents				
3370	3180	3180	3640	3440
2010	2011	2012	2013	2013

During 12 months of 2014 it recorded 3420 traffic accidents, which killed 310 and injured 4020 man. Compared to last year the number of accidents decreased by 22 cases (6%), the number of deaths decreased by 5 persons (-13.8%), the number of victims has decreased by 51 persons (-14.9%) [4-5].

## Results and discussion

The reasons of the main number of traffic accident are [5, 6]:  
 - violation of traffic regulations by pedestrians;  
 - violation of a technical tool of the high-speed mode by drivers;

- departure on a strip of oncoming traffic.

Over 2014 staff members of traffic police Internal Affairs of Russia in Vladivostok in 2590 crime was disclosed, compared to the same period last year, less than 900 identified crime. The proportion of solved crimes is 10.1%, the city of Vladivostok through SAI - 6.9%.

On the work of the inspectors of the road patrol service affects their workload. The traffic police department to date on the state - 117 people.

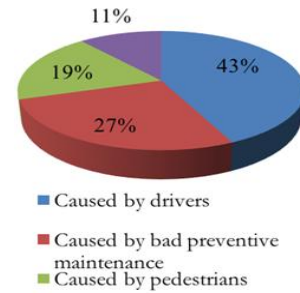
The order number 263 of 03/23/02 Interior Ministry established norms of regular number of employees of the Interior Ministry traffic police, according to which 265 units of vehicles relies 1 unit inspector DPS (ie, in the department of traffic police Vladivostok must be at least 239 inspectors DPS ), and 1 unit inspector execution of administrative law at 2-5 thousand for administrative materials per year (an average of 96,000 a year is considered to be material, respectively, at least 20 employees, today there are only 12).

Objectives of the program are to reduce 1.2 times the number of people killed in traffic accidents, and 10% - the number of traffic accidents with victims in 2009 compared to 2014 year. This will come close to the level of road safety, which is typical for countries with developed motorization of the population, to reduce accident rates and, consequently, reduce social acuteness of the problem.

For the achievement of the Programme is to solve the following problems: the prevention of risky behavior of road users; development of training for drivers and their access to participation in road traffic; reduce child road traffic injuries; improving the organization of traffic and pedestrians in the city; enhancing the effectiveness of aid to victims of road traffic accidents.

The problem of road safety can not be solved without the support of the broad strata of the population, taking into account public opinion. Propaganda and explanatory work with the population should be continuous, from childhood and be aimed primarily at understanding the potential risks associated with the possible negative effects of developments in traffic, the formation of negative attitudes towards the violators of rules, regulations and standards in the field of road safety. On this basis, in determining the direction of formation of legal behavior in traffic should be conducted differentiated propaganda focused on different social and age categories of the population. [6] 60% of respondents said that they had to be members of the accident, of which 55% - and 15% of drivers - pedestrians.

According to respondents, most accidents are caused by drivers (43%), due to poor prevention work carried out among the population on road safety - 27%, due to the fault of pedestrians - 19%, due to lack of technical means traffic regulation Movement - 11% (Fig. 1).



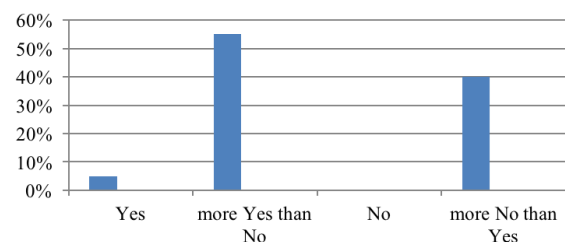
**Fig. 1. Causes of traffic accidents**

The following three main factors of accidents were identified: increase in the number of cars - 50% (35% - and 65% of drivers - pedestrians); lack of technical means of traffic control - 35% (35% - and 35% of drivers - pedestrians); violation of traffic rules by drivers of vehicles - 27.5% (10% - and 45% of drivers - pedestrians).

Discipline road users was evaluated by a 10-point scale, where 0 - this is a good discipline, 10 - a lack of discipline. So, drivers on average estimated the discipline of road users by 5 points, and pedestrians - by 7 points. This suggests that the need to strengthen the work of the traffic police in the direction of increasing legal awareness and prevention of risky behavior of road users. At the same time it should be noted that the drivers are more disciplined on city roads than pedestrians (Rosavtodor from 30.03.2000g).

Interesting in terms of the problem is to identify the most active measures affecting the decrease in the number of offenses on the roads. Most drivers (90%) and only 40% believe pedestrians, reducing the number of offenses on the roads depends on increasing the size of penalties. Most of the walkers said that the municipal government authorities should strengthen work in the direction of development of informatization of the population on road safety in order to strengthen the prevention of traffic violations among pedestrians and drivers, as well as improvement of road traffic and pedestrians, namely an increase in the construction of above-ground and underground pedestrian crossings.

To the question: "Are you satisfied with the level of competence and professionalism of the police?" Respondents was as follows: Yes - 5% (0% - pedestrians, 5% - drivers), more likely than not - 54% (53% - pedestrians 60% - drivers), No - 0%, rather no than yes - 41% (47% - pedestrians, 35% - drivers). At what satisfaction drivers is higher than pedestrians (Fig. 2).



**Fig. 2. Contentment of work level and professional behavior of State Traffic Safety Inspectorate employees**

## Conclusion

In conclusion in Vladivostok safety of traffic demands require additional measures for safety increase. To reduce the accident rate level, human and material losses it is possible only by implementation of the whole complex of actions of legislative, economic, technical and educational character by the state and public organizations with active support of all population.

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