



Study on Risk Tolerance of Passenger Car Drivers Aged 18–25



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ABSTRACT

A universal problem of the impact of behaviour of less experienced young drivers on the rate of road accidents referring to the Russian Federation in comparison to other countries.

In the Russian Federation, in recent years, there has been a decrease in the total number of road accidents and in the number of deaths in them. This speaks of the effective preventive work of the traffic police and other related services, but at the same time, a fairly large number of car accidents persists.

One problem is the high incidence of accidents among inexperienced young drivers. According to research conducted in different countries, the likelihood of road accidents is especially high during the first year after obtaining a driver's license. The overwhelming majority of drivers responsible for road accidents with less than six months of driving experience belong to the age category of 18–25 years. One of the main reasons for the increased likelihood of road accidents is their excessive risk inclination.

It is obvious that risky driving is common in young people, which also affects the operation of the car. Risk inclination is directly

related to the number of errors made, which significantly increases the likelihood of an accident.

Objective of the work was to assess the risk tolerance among drivers aged 18–25 years. Research methods comprise a survey of young people of the indicated age and the analysis of the results obtained. The figures obtained during the survey indicate that the majority of respondents (82 %) have a «mean level of risk tolerance». But there are also quite a few «risky drivers» (15 %). Moreover, these 15 % are in the youngest age group from 18 to 21 years old.

Based on the results of the work, it is proposed: during training at a driving school, the future driver should receive not only theoretical knowledge and practical driving lessons, but also undergo a psychological analysis to determine his fitness to participate in road traffic; introduce certain restrictions «for young and novice drivers» into the Road Traffic Regulations. It is necessary to limit the permitted power of the car and the permissible speed (adoption of a multiplying coefficient for fines for speeding), prohibit the use of the car in the dark and in difficult road conditions, as well as passenger transportation.

Keywords: road traffic accident, driver, risk tolerance, risk inclination, test, accident rate, driver behaviour, young driver, traffic safety.

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INTRODUCTION

The level of motorisation in Russia is increasing every year. If in 2016 the number of registered passenger cars owned by citizens in the Russian Federation was 43 million units, then as of January 1, 2021, this figure has increased to about 45 million, which is about 76 % of the total number of registered vehicles. Commercial cars account for 7,1 % of the total volume, the trucks account for about 6,4 %, and about 0,7 % of the Russian fleet belong to buses¹. The problem of a large number of accidents on Russian roads is still relevant. Although over the past few years, there was a clear decrease in the number of accidents and deaths in them, which indicates the competent preventive work of the traffic police and other services [1, p. 52]. The mortality rate in road traffic accidents in the Russian Federation is 11,5 cases per 100 thousand of the population². In the safest countries in terms of road safety in Europe (Great Britain, the Netherlands, Switzerland), this figure is about three cases per 100 thousand population [2, p. 4].

At the same time, in recent years, the number of young and inexperienced drivers in the age group from 18 to 25 has been growing. They often become the culprits of road accidents. In 2020, such drivers committed 17753 accidents³ (Pic. 1).

Studies that are regularly conducted in developed countries confirm that the risk of an accident during the first year after obtaining a driver's license is especially high [3, p. 89]. According to these studies, it is possible to identify factors that clearly increase this risk: driving style and technical condition of the car; psychological characteristics (for example, thirst for thrills and too high self-confidence); increased (in comparison with older people) influence of alcohol [3]. Overspeeding or mismatching the speed limit of the overall speed of the traffic flow [3] is the most common violation among inexperienced drivers. Also, the cause

of serious accidents for such drivers is «driving in the dark» [3].

The overwhelming majority of those responsible for accidents with up to six months of driving experience belong to the youngest category³. For example, in the city of Volzhsky, Volgograd region (population about 324 thousand), from 2013 to 2019 the share of road accidents committed by inexperienced young drivers varied from 15 to 37 % (Pic. 2). According to foreign studies, young drivers become victims of accidents more often than older drivers [4].

Road accidents fatality is one of the most common causes of death among young people. Controlling a complex mechanism like a car is not an easy task. And the car itself is known to be dangerous. Therefore, every person who decides to get behind the wheel must understand that he is responsible not only for himself, but also for those around him. The irreparable consequences of accidents in which young and inexperienced drivers are to blame, and their number, have induced researchers to pay attention to the factors leading to such road accidents.

As a result of such studies, conducted, for example, in New Zealand, several factors have been identified that increase the risk of death from road traffic accidents: deliberate speeding; non-use of passenger restraints; alcohol consumption. One of the main reasons is the increased risk appetite of young drivers [5]. The propensity to take risks depends «on age and can significantly affect the operating conditions of the vehicle» [5]. Risky driving is directly related to the number of errors made, which, of course, significantly increases the likelihood of an accident. This behaviour is «common» among young drivers [6]. The degree of high risk appetite is due to youth and inexperience.

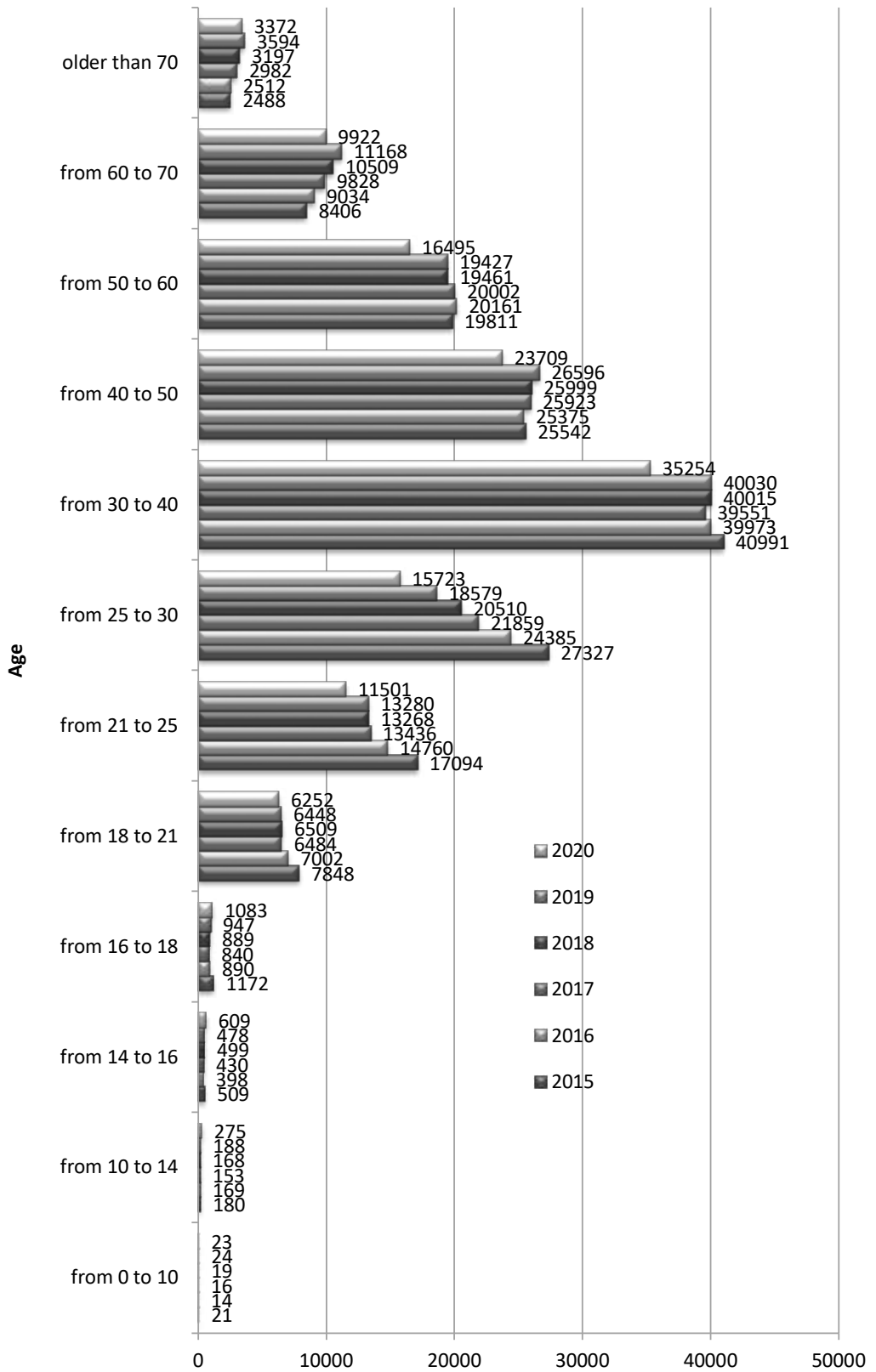
Besides, for young drivers, the level of risk has an exponential relationship with the number of passengers. «Drivers aged 18–25 show a particular disregard for the rules, trying to realise their thirst for «thrills» and self-confidence» [3, p. 89; 7]. «Young people can be more risky than adults. They are more susceptible to the influence of their peers who are equally inclined to risk» [8; 9]. Although young drivers themselves deny that «peers affect traffic safety» [8; 9], the researchers noted that they provided «hidden social

¹ Structure of vehicle fleet in Russia. January 2021. [Electronic resource]: <https://universeofcars.ru/skolko-mashin-v-rossii/>. Last accessed 11.03.2021.

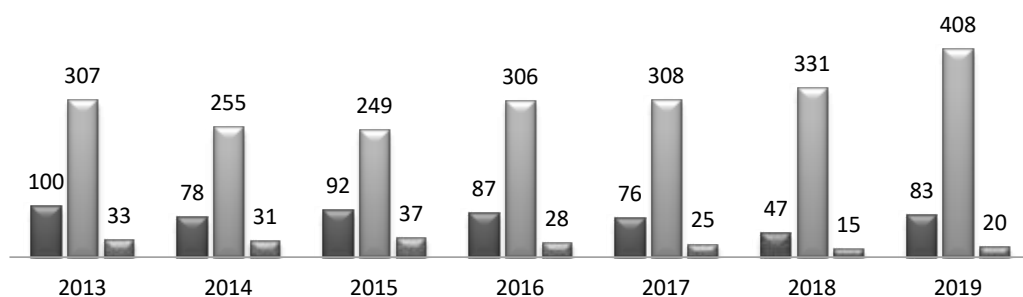
² Number of people, died in road accidents per 100 thousand of the population. [Electronic resource]: <https://www.fedstat.ru/indicator/36230>. Last accessed 20.10.2020.

³ Indicators of the state of road safety. [Electronic resource]: <http://stat.gibdd.ru/>. Last accessed 10.03.2021.





Pic. 1. Distribution of drivers responsible for road accidents per age group over the past six years in the Russian Federation (compiled by the author based on³).



Pic. 2. The number of accidents where drivers of 0–5 years of experience became the culprits, in the city of Volzhsky (compiled by the author).

approval of unsafe and risky driving» [10; 11].

That is why, since the 80s of the last century, in many countries there has been a «stage-by-stage admission of persons to drive a vehicle» [3]. For example, such rules have long been in force in Canada and the United States, which provide for gradual access to obtaining a full-fledged driver's license for novice drivers who drive cars and two-wheeled vehicles. Such restrictions were introduced to reduce the very likelihood of an accident (to which beginners, inexperienced drivers are exposed [3; 12]) due to the period of a sort of internship, during which a novice driver undergoes a special practical driving course under the guidance of a mentor, an instructor. The system might be called the «period of internship with the award of the right to drive under the guidance of a mentor» [3; 12–15]. Upon completion of the internship, the future driver receives a temporary license, which provides for certain restrictions on driving without a mentor. Typically, these restrictions include «a ban on driving at night, a restriction on the number of passengers who can be in the car, and a ban on driving after drinking any amount of alcohol, even if the rules stipulate an acceptable level of alcohol in the blood or breath air». As young drivers acquire the necessary experience and upon reaching the established age, all these restrictions are removed, and they receive a full-fledged certificate. The conditions for passing these three stages of obtaining a driver's license – student, temporary and standard – differ in different countries, but everywhere they are the basis for creating a favourable environment while novice

drivers receive the necessary experience. The above measures have long been proven effective. Studies in Canada, New Zealand and the United States have shown that the number of accidents by novice drivers decreased by 9–43 %. Since an increased level of risk of accidents among novice drivers is observed in all countries, the system of phased obtaining of a standard driver's license can significantly reduce this risk [3, p. 128; 12–15].

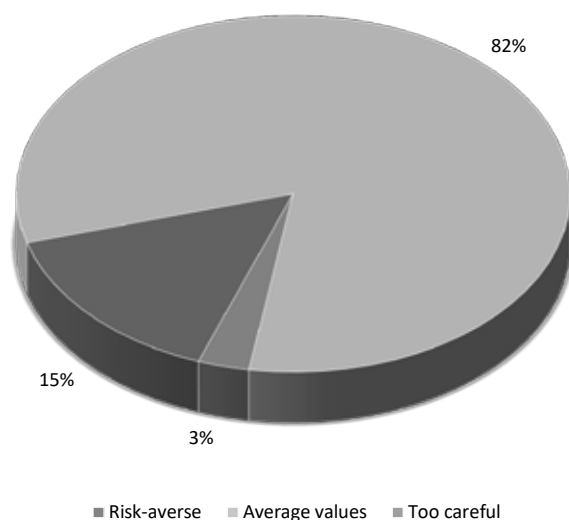
The *objective* of the work was to determine the percentage of «risk-inclined drivers» [16; 17] in the age group from 18 to 25 years old. Research *method* was a survey, as a result of which 200 young students of Volgograd State Technical University (VSTU) and Volzhsky Polytechnic Institute (branch of VSTU) were interviewed (January 2016–February 2020). All participants at the time of the survey had a driver's license and used a personal car. The questionnaire survey was based on A. M. Schubert test «Risk appetite» [16; 17].

RESULTS

The respondents were asked to answer the following questions:

1. Would you exceed the set speed to quickly provide the necessary medical assistance to a seriously ill person?
2. Would you agree to participate in a dangerous and long expedition for the sake of good money?
3. Would you stand in the way of an escaping dangerous burglar?
4. Could you ride on the footboard of a freight wagon at speed over 100 km/h?
5. Can you normally work the next day after a sleepless night?





Pic. 3. General results of the study of risk inclination among drivers aged 18–25 years (compiled by the author).

6. Would you be the first to cross a very cold river?

7. Would you lend a large amount of money to a friend, being not entirely sure that he will be able to return this money to you?

8. Would you, along with the tamer, enter the cage with lions when he assured you that it was safe?

9. Could you, under the guidance of the outside, climb a tall factory chimney?

10. Could you sail a sailboat without training?

11. Would you risk grabbing a running horse by the bridle?

12. Could you ride a bike after drinking ten glasses of beer?

13. Could you do a parachute jump?

14. Could you, if necessary, travel without a ticket from Tallinn to Moscow?

15. Could you make a car trip if your acquaintance, who recently was a participant in a serious road traffic accident, was driving?

16. Could you jump from a ten-meter height onto the fire brigade's tent?

17. Could you, to get rid of a lingering illness with bed rest, undergo a life-threatening operation?

18. Could you jump off the steps of a freight train traveling at a speed of 50 km/h?

19. Could you, as an exception, take seven other people in an elevator designed for only six?

20. Could you cross a busy street intersection blindfolded for a large sum of money?

21. Would you take on a life-threatening job if you paid well for it?

22. Could you calculate the percentage after drinking ten shot glasses of vodka?

23. Could you, following instruction of the chief, take up the high-voltage wire, if he assured that the wire is de-energised?

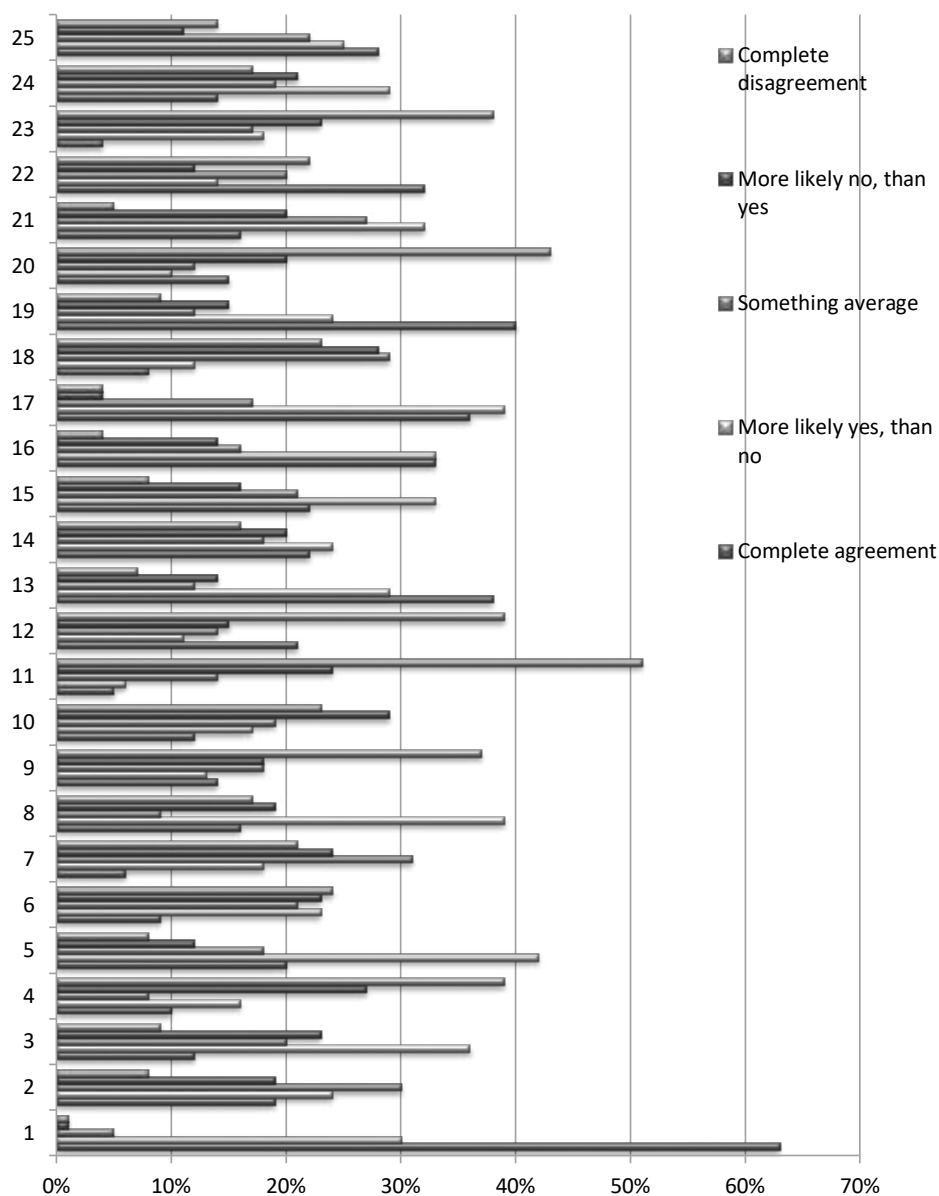
24. After some preliminary explanations, could you fly the helicopter?

25. Could you, having tickets on hand, but without money and food, go from Moscow to Khabarovsk?⁴

The test includes the following gradation: «too careful, mean, risk-averse». The majority of survey participants (82 %) showed a mean level of «risk appetite», but the number of drivers with a «high risk appetite» is quite large (15 %) (Pic. 3). Moreover, all 15 % of those «inclined to risk» belong to the youngest group from 18 to 21 years old [18].

It will be interesting to consider the distribution of answers to each of the questions offered to drivers. According to the diagram (Pic. 4), the distribution of answers is fairly even, in 15 out of 25 questions the

⁴ Methodology for diagnosing the degree of risk readiness by Schubert. [Electronic resource]: <https://psylist.net/praktikum/38.htm>. Last accessed 12.03.2021.



Pic. 4. Distribution of answers to the test questions (compiled by the author).

share of answers «More likely no than yes» and «Complete disagreement» does not exceed 40 %.

Thus, the data obtained indicate that the number of young drivers inclined to risk is quite large (15 %). Risky driving, along with «the widespread among young people idea of their superiority in performance and reaction speed, knowledge of the car» [3; 12], becomes the cause of road accidents, including those with the dead and wounded.

CONCLUSIONS AND SUGGESTIONS

From practical perspective, some conclusions can be highlighted, and some suggestions can be developed to increase road safety in Russian Federation.

The President of the Russian Federation approved a number of instructions following an expanded meeting of the Presidium of the State Council, held on September 28, 2020, «according to which, within the framework of the implementation of the national project



«Safe and High-Quality Highways», the death rate in road accidents by 2024 should be 8,4 per 100 thousand of the population, and by 2030 – 4 per 100 thousand of the population»⁵.

For the fastest achievement of the established indicators, considering the research results presented in the work, the following measures might be proposed:

1. To adopt practices of analysing the psychological qualities of a student at a driving school to determine his fitness to participate in road traffic. Based on the results of such an analysis, it will be possible to inform the future driver about his potentially dangerous qualities and suggest possible options for their containment and control.

2. To secure in the Traffic Regulations some restrictions on driving a car for inexperienced and young drivers. It is necessary to set a limitation on the power of the car and the permissible speed of movement, by introducing a multiplying coefficient for fines for speeding; a ban on passenger transportation before the expiration of a certain period of driving; driving in the dark, in difficult road conditions.

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⁵ Expanded meeting of the Presidium of the State Council. [Electronic resource]: <http://www.kremlin.ru/events/state-council/64105>. Last accessed 10.03.2021.

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