

young drivers, injuries, accident risks

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INJURY RISK TO YOUNG CAR DRIVERS IN TRAFFIC ON TERRITORY OF REPUBLIC OF SERBIA

Summary. Percentage of young drivers who were involved in traffic accident with fatalities and injuries is very high. In nearly each fourth accident with fatalities was participated one driver younger than 25 years. Young drivers take part in 26% of all accident with serious consequences (died and serious injuries).

In the paper we prepared analysis of casualty among the young car drivers 18-24 years old who participated in traffic on the territory of the Republic of Serbia during the period of 2002. to 2006. According to collected data of casualties we carried out analysis by time and type of accident in which young car drivers were involved. The main aim is to give some traffic safety measures to reduce the accident risks of young car drivers on the road in Serbia.

ОЦЕНКА РИСКА ТРАВМИРОВАНИЯ МОЛОДЫХ ВОДИТЕЛЕЙ ПРИ ДВИЖЕНИИ ПО ТЕРРИТОРИИ РЕСПУБЛИКИ СЕРБИЯ

Аннотация. Процент молодых водителей, которые попадают в дорожные происшествия с несчастными случаями и травмами, очень высок. В почти каждом четвертом несчастном случае с увечьями участвовал один водитель моложе 25 лет. Молодые водители принимают участие в 26 % среди всех несчастных случаев с серьезными последствиями (смертельными или серьезными травмами).

В статье представлен анализ несчастных случаев среди молодых шоферов в возрасте 18-24 лет, которые участвовали в движении на территории республики Сербии в период с 2002 до 2006 года. Согласно собранным данным о жертвах был проведен анализ относящийся ко времени и типу несчастного случая, в который были вовлечены молодые шоферы. Главная цель работы состоит в том, чтобы выработать некоторые транспортные мероприятия по обеспечению безопасности, чтобы уменьшить риски несчастных случаев среди молодых шоферов на дорогах Сербии.

1. INTRODUCTION

Injuries inflicted in road traffic are the leading cause of death among young people in the European Union countries, and increase of that number is anticipated in poor and developing countries once the motorisation rate increases there [1]. Young people can be found in all categories of participants in

traffic, although drivers of passengers' vehicles¹ are exceptionally threatened group, as it has been shown by a number of researches [2-5].

Young drivers lack driving experience and skills that would enable them to make evaluations that are more efficient and be more resourceful in more complex traffic situations. Furthermore, young people are usually more impulsive, often emotionally tense, they do not plan sufficiently in advance, they are risk prone and think less about the consequences. They can show the disharmony between the level of biological and psychological maturity. There is also the problem of insufficiently developed social responsibility. Very often young drivers introduce youthful unrest, defiance, passion, and enthusiasm in driving much more than it is the case with older drivers. The need for emphasising and affirmation conditions the resistance towards the authority of the elders, social standards, and social circumstances in one's own community. The incapability of personal and social adjusting increases aggressiveness, speed, and risk. Young drivers drive more during the night and it is not rare that their journeys are accompanied by alcohol, drugs, and fatigue.

In the previous period, no systematic researches of casualties among young people in traffic have been carried out in the territory of Serbia. In order to set up the strategic approach to improvement of safety of young drivers it is necessary to determine the characteristics of consequences of car accidents in the first stage. For that purpose, we have initiated a comprehensive research on casualties among young drivers in traffic in the territory of Serbia and this paper will present the most significant results.

There are certain limitations in the paper due to the current social-political situation at Kosovo and Metohija so that this Province has not been included in the research.

2. METHOD OF WORK

The target group in the research included the casualties among young drivers aged 18 to 24. We collected the data on all the casualties in the period from 2002 to 2006 based on the police reports on registered car accidents.

We applied the following methods during the research:

- Statistical method
- Analytical method
- Classification method (finding of sets with similar properties) and
- Method of comparison (comparison of the same or similar facts, phenomena or processes, namely finding of their similarities in behaviour and differences);

All the data were systematised in the data base (17 indicators) on casualties among participants in traffic in the territory of Serbia in MICROSOFT ACCES programme software. We used MICROSOFT EXCEL software programme for processing and graphical presentation of data.

3. THE OUTLINE OF THE MOST SIGNIFICANT RESEARCH RESULTS

Young participants in traffic (aged 18 to 24) represent the most threatened age group of participants in traffic in the territory of Serbia. During the analysed period, 24.7 persons belonging to the age group from 18 to 24 were killed per 1,000 inhabitants of that age group (Fig. 1). According to the threat rate, this age group is followed by persons aged 25 to 34 (16.1), 15 to 17 (15.6) while the age group with the lowest threat rate are children up to the age of 9 (6.1).

¹ Depending on legislation in certain countries, the minimum age necessary to acquire the right to drive a motor vehicle is 16, 17 or 18.

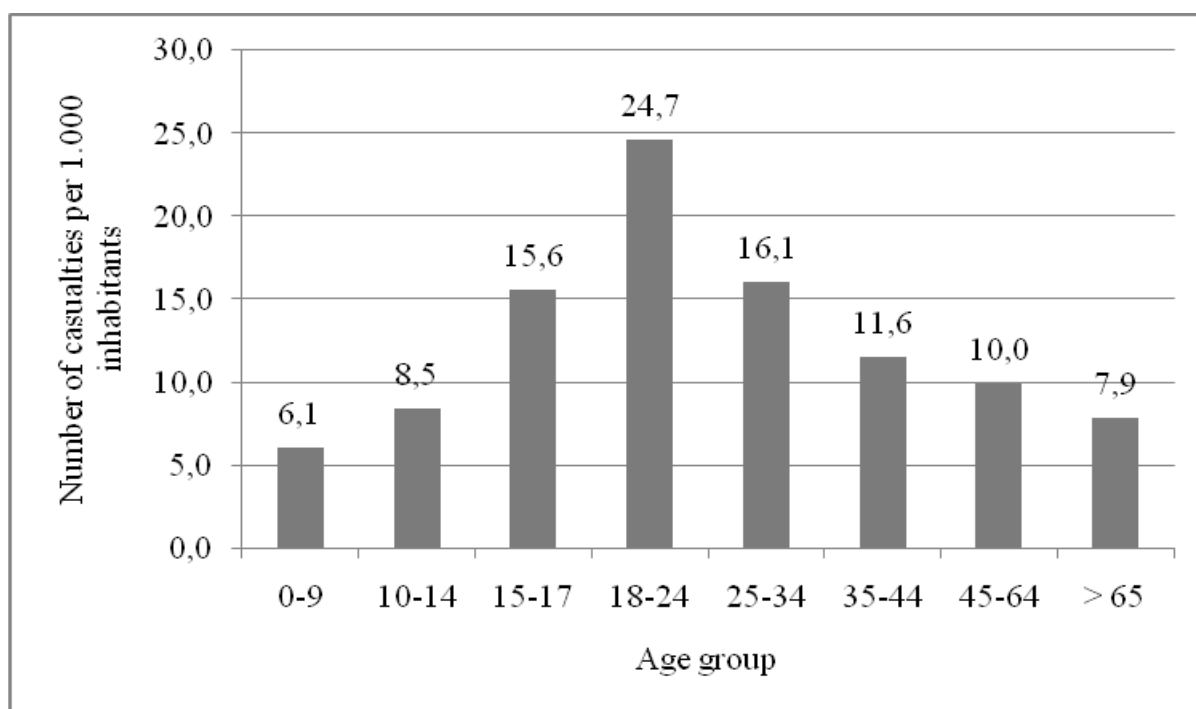


Fig. 1. Number of casualties per 1,000 inhabitants per age groups, Serbia, 2002-2006

Рис. 1. Число жертв на 1 000 жителей в соответствии с возрастными группами, Сербия, 2002-2006

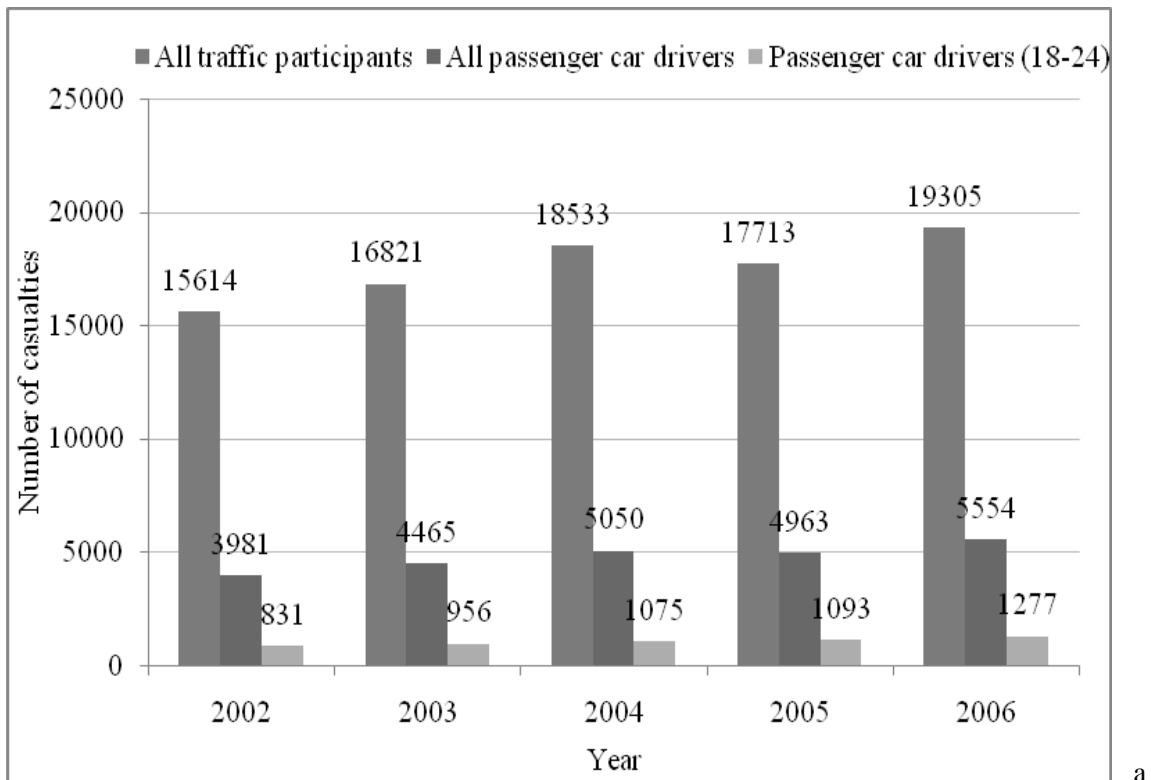
Out of the total number of casualties (87,986) among participants in traffic in the territory of Serbia, the number of casualties among car drivers was 24,013, i.e. 27.3% (Fig. 2.a). Out of the total number of casualties among drivers of passengers' vehicles, 5,232 are young people aged 18 to 24, which makes 21.8% of all the casualties among drivers of passengers' vehicles. The casualty trend among participants in traffic is highly unfavourable in the territory of Serbia and it has been increasing year in year out (Fig. 2.b). The noted trend is exceptionally unfavourable for drivers of passengers' vehicles aged 18 to 24 in relation to the baseline research year (2002) as well, since their number has increased by 54% during the last research year.

According to the length of driving experience², within the analysed age group, there is an emphasised number of casualties among young drivers with up to 2 years of driving experience. The largest number of casualties is recorded among persons with 1 year of driving experience (1,298), and they are followed by those with less than one year of driving experience (930), while the number of casualties is the lowest among persons who, in this case, have the longest driving experience of 6 years (185) (Fig. 3). Young drivers with up to 2 years of driving experience make 43.2% of casualties within this age group.

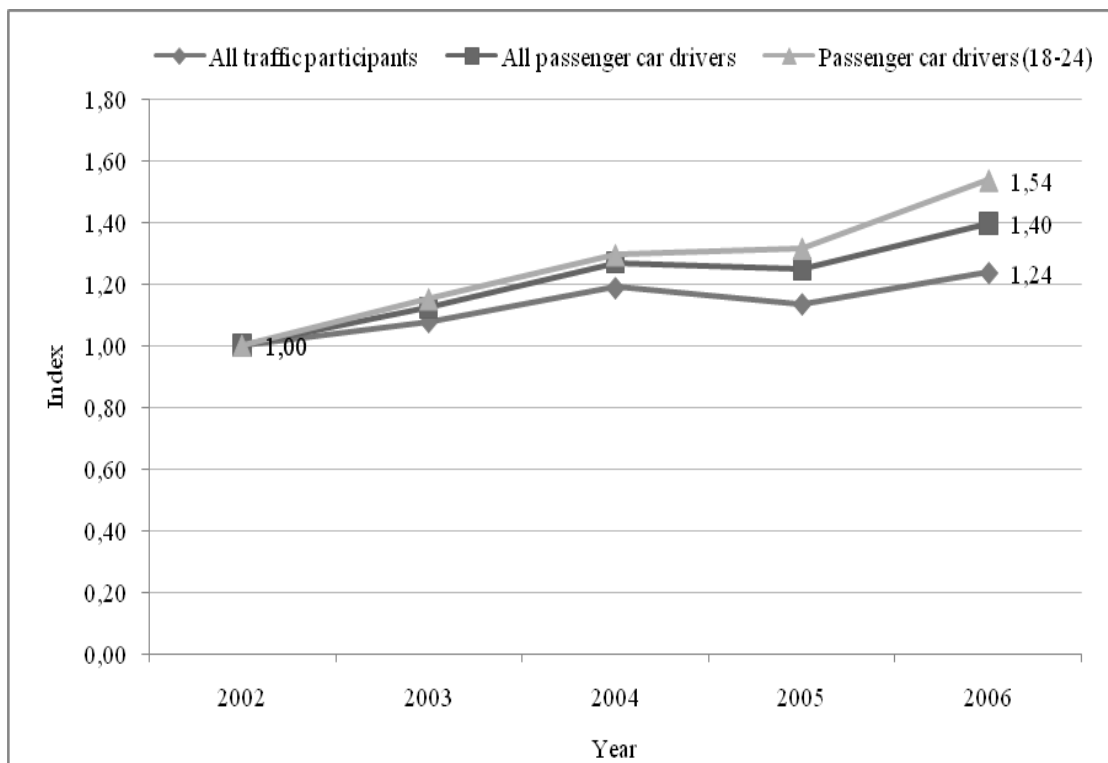
Number of casualties among young drivers is the most emphasised in the second half of the calendar year and most of them get injured during July (560) and August (551) (Fig. 4).

The largest number of casualties among young drivers of passengers' vehicles was recorded during the weekends, i.e. on Saturdays and Sundays, when 1,147, namely 1,142 young drivers were injured (Fig. 5). Within those two days, 43.8% of the total number of casualties among young drivers was registered.

² No researches on risk exposure in traffic have been carried out in Serbia so that driving experience is validated here according to the period of driving license holding.



a



b

Fig. 2. Number of casualties in car accidents (a) and injury index (b), Serbia, 2002-2006

Рис. 2. Число жертв в автомобильных катастрофах (а) и индекс травматизма (б), Сербия, 2002-2006

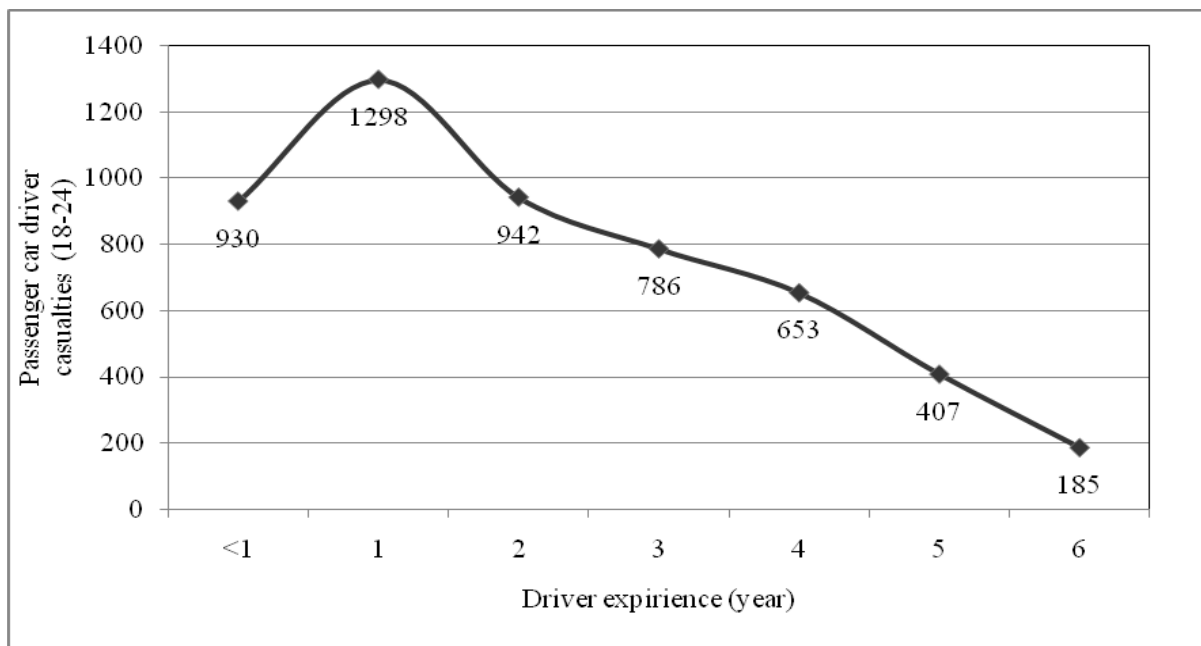


Fig. 3. Structure of casualties among drivers of passengers' vehicles (aged 18 to 24) according to the length of driving experience, Serbia, 2002-2006

Рис. 3. Количество жертв среди водителей пассажирских транспортных средств (в возрасте 18 – 24 лет) в зависимости от опыта вождения в годах, Сербия, 2002-2006

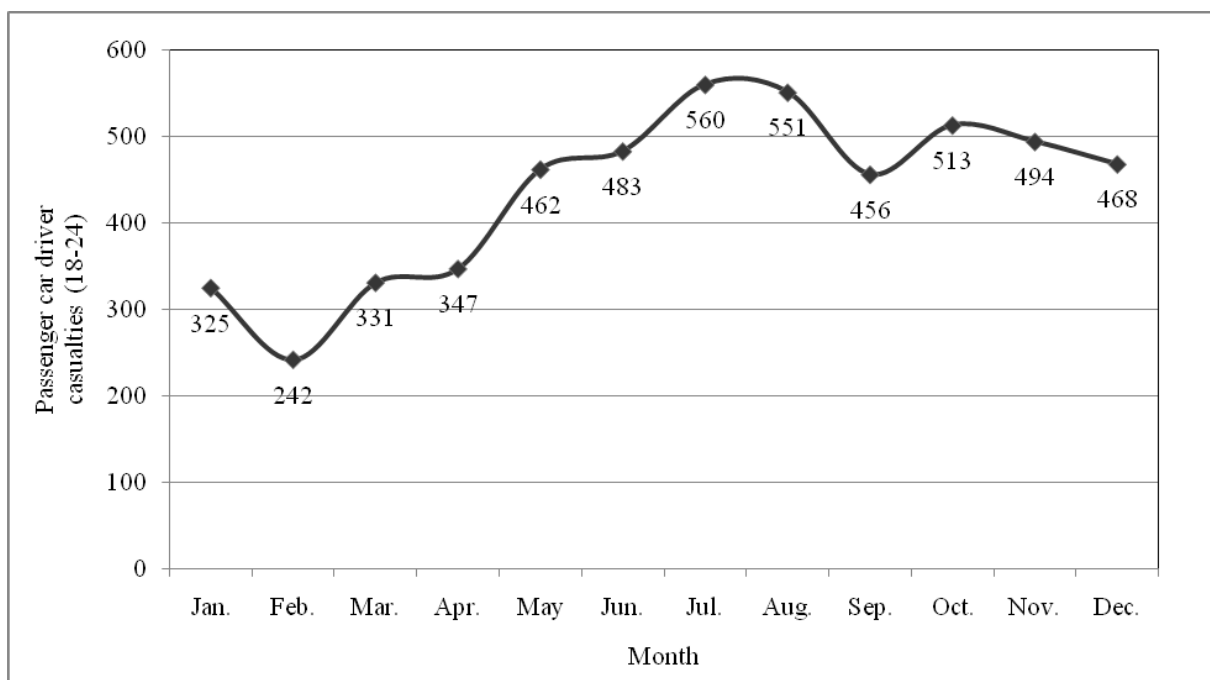


Fig. 4. Monthly distribution of casualties among drivers of passengers' vehicles (aged 18 to 24), Serbia 2002-2006

Рис. 4. Месячное распределение жертв среди водителей пассажирских транспортных средств (в возрасте 18 – 24 лет), Сербия 2002-2006

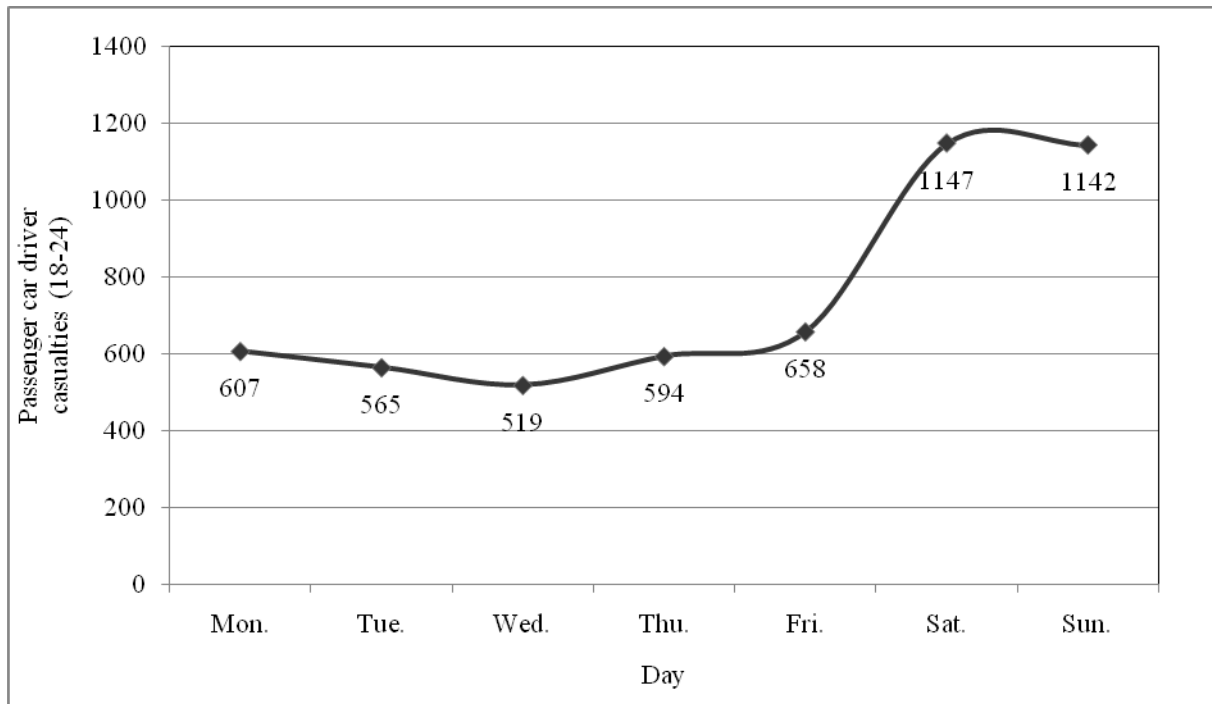


Fig. 5. Daily distribution of casualties among drivers of passengers' vehicles (aged 18 to 24), Serbia, 2002-2006
 Рис. 5. Ежедневное распределение жертв среди водителей пассажирских транспортных средств (в возрасте 18 – 24 лет), Сербия, 2002-2006

Accidents with young drivers are highly emphasised during the night. In the period from midnight to 5 o'clock in the morning, there were 1,688 casualties among young drivers, which makes 32.3% of all the casualties among young drivers. The periods from 3.00 to 4.00 and from 2.00 to 3.00 o'clock in the morning are exceptionally dangerous since 422, namely 416 young drivers were casualties in car accidents that happened during that period (Fig. 6).

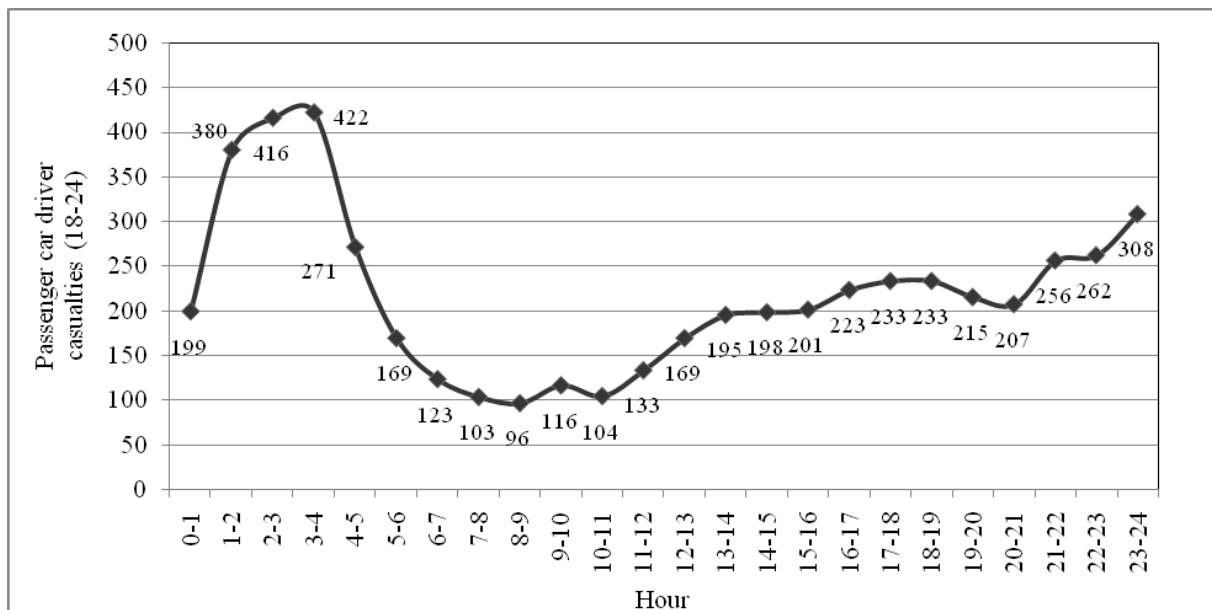


Fig. 6. Hourly distribution of injuries among drivers of passengers' vehicles (aged 18 to 24), Serbia, 2002-2006
 Рис. 6. Почасовое распределение травматизма среди водителей пассажирских транспортных средств (в возрасте 18 – 24 лет), Сербия, 2002-2006

Young drivers get injured mostly due to slipping of cars from the road (2,045) and direct collisions with other motor vehicles (1,112) (Fig. 7). Those two types of car accidents are linked with 60.3% of injured young drivers.

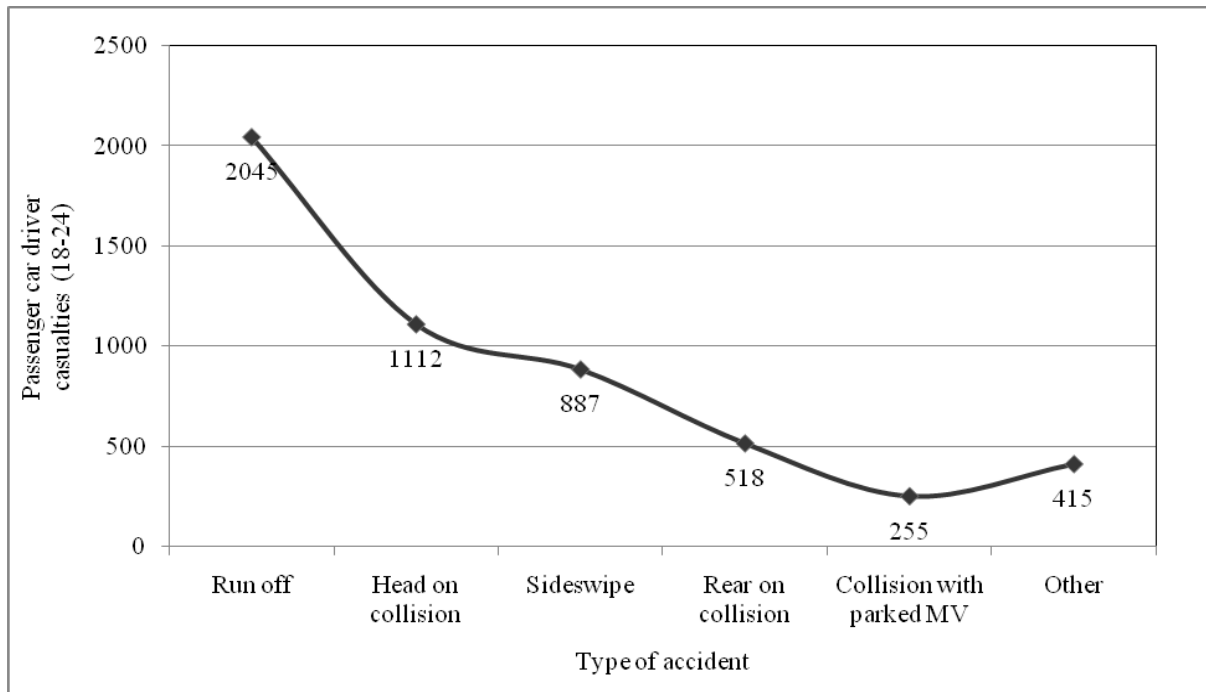


Fig. 7. Structure of injured drivers of passengers' vehicles (aged 18 to 24) according to the type of car accidents, Serbia, 2002-2006

Рис. 7. Количество травмированных водителей пассажирских транспортных средств (в возрасте 18 – 24 лет) согласно типу автомобильных катастроф, Сербия, 2002-2006

4. DISCUSSION

Expert interpretation of the presented characteristics (Chapter 3) can be linked with certain risk factors to young drivers in traffic.

The main injury risk factors to young drivers are linked with new drivers, drivers' inexperience, weekend and night time. The above-mentioned factors have been singled out in the research of risk related to participation of young drivers in traffic accidents in the territory of Greece [6]. In addition to the above-mentioned factors, Yannis et al. have also found factors related to participants' gender, non-residential zones, and high power vehicles, which was not possible in our researches due to non-availability of necessary data.

Inexperience is one of primary problems of young drivers who are beginning to drive. To learn how to drive is a complex task and it requires a longer period for learning and extended practice aimed at accomplishment of the appropriate readiness. Acquiring of experience requires training and practical acquiring of driving skills, as well as perceptual and cognitive capacities, including perception, attention, processing memory, long-term memory, diagnose, anticipation and decision making. Based on the realised studies, many authors warn that there is a significant connection between driver's age and risk of occurrence of car accidents, and they link that with their inexperience [7-9].

The results of temporal analysis conducted in many studies on injuries among young drivers of passengers' vehicles in traffic shows that there is a much higher risk rate to young people from accidents during the night driving in comparison to day driving, in particular during the weekends [10-11]. On the one hand, visibility is reduced at night, which imposes increased traffic demands on

all its participants, while, on the other hand, the factors (alcohol, drugs, fatigue etc.) that reduce psycho-physical capacities for safe driving are frequently present. Young drivers have limited, namely insufficient experience in night driving. The motives of car use during the night are different from motives of older drivers, and very often young drivers show aggressiveness and adventurous spirit, in particular male ones.

Alcohol is a significant factor in a large number of accidents among young drivers, in particular in combination with other factors (drug, fatigue speed). There are different reasons because of which alcohol affects the driving capacities of young drivers in such a negative way. First, the tolerance of young drivers to alcohol is much lower than the tolerance of older drivers because their organism is not used to alcohol. Second, the driving task is much more demanding for drivers who begin driving than it is the case with older and more experienced drivers. Even with a relatively low alcohol concentration, most people can divide their attention in a less rational and cautious way. Since drivers who begin driving need to allocate more resources necessary for attention in executing the driving task than more experienced drivers, the effects of alcohol on driving performances are much higher among drivers who begin driving than among more experienced drivers. The third possible explanation is that after alcohol consumption (even in small quantities), the social restrictions are reduced and a person starts feeling and reacting more emotionally. This is the case with persons of all age groups, but mechanisms of self-control are less sufficiently developed among young people, which means that alcohol acts more strongly on emotions and motivation so that young drivers under the influence of alcohol can become more euphoric and impulsive and exposed more to risky behaviour than older drivers. Young people who drive under the influence of alcohol do that most often during weekends, at night and this result with the fact that young people most frequently participate in accidents that are linked with alcohol at that time. Several studies showed that the combination of fast driving and alcohol makes a significant and crucial factor in accidents with one vehicle, in particular among younger men [12-14].

Accidents of young drivers are linked significantly with slipping of the vehicle from the road and direct collisions with other motor vehicles. During the night driving, young drivers tend to drive fast and there is often the presence of alcohol and drugs, which increases the possibility of loss of control over the vehicle and slipping off the road. Young drivers take over a higher risk in traffic and they also lack skill in spotting dangerous situations in traffic so that very often the most complex actions, such as overtaking, are not resolved successfully and result with direct collisions with vehicles coming from the opposite direction.

5. CONCLUSION WITH PROPOSALS OF MEASURES

The basis of any activity related to increase of traffic safety, namely prevention of traffic accidents and reduction of their consequences, has to rely on precisely diagnosed status and clearly defined conditions in which those phenomena occur. Regular monitoring and expert analysis of spatial and temporal distribution of traffic accidents, namely casualties in traffic accidents, enables more efficient planning and implementation of measures and activities aimed at their prevention.

Young people most often dispose with the appropriate physical pre-conditions but they still lack life and traffic experience, traffic maturity that would provide those pre-conditions with the most favourable form for accomplishment of objectives. They dispose with good perception and reaction capacities, but it is not sufficient for safe driving. Young people very often show the disharmony between self-confidence, actual psycho-physical capacities, and technical potentials of their vehicles. Due to the undefined self-feeling, insufficiently developed self-consciousness, and self-criticism, absence of knowledge on one's own limits, it is often the case at this age the subjective potentials are over-estimated.

An emphasised number of accidents among young people in traffic is not the problem in Serbia alone, but also in many developed countries of the world so that this phenomenon can be seen as the problem that the society has to treat as the issue of high priority. However, contrary to Serbia, many countries have developed a range of strategic activities for successful reduction of number of accidents of young drivers in traffic. In the future development, Serbia has to take much more conscientious and

serious attitude towards the work in enhancement of traffic safety, all participants in traffic and in particular of young drivers in order to get closer to the results accomplished by the most successful countries.

The above-mentioned objective can be accomplished via introduction of measures and activities that have proven to be efficient in many countries, such as [15-18]:

- Graduated Driver License Program (GDL³)
- Upgrading of methods and technologies of work of training centres
- Introduction of supplementary traffic education through organisation of different courses.
- Protection measures for drivers-beginners
 - Prohibition of driving under the influence of alcohol (0 ‰)
 - Prohibition of night driving (in the period from 23.00 to 05.00 o'clock)
 - Driving without passengers of the same age
 - Power/weight ratio of the vehicle
 - Speed limits
 - Prohibition of use of all types of mobile phones
- Public campaigns aimed at building of awareness on significance of traffic safety, as well as at upgrading of knowledge, attitudes and behaviour
- Application of updated technology in vehicles (Smart-cards, Alco-locks, Intelligent Speed Adaptation etc.)
- Building of organisational structure of traffic safety, in particular through participation of non-government organisations, structures at the local level of work, parents etc.

We can point out that none of the above-mentioned measures are implemented or their implementation of brought almost to the minimum.

We are of the opinion that the conducted research and recommendations based on them will create more favourable conditions for quality and successful work of social mechanism in the field of traffic safety in the territory of Serbia and reduce the number of accidents among young drivers in traffic.

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³ Compared to many countries, Serbia has not set this important measure of safety in traffic yet.

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