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Juraj HUDEC¹, Barnislav ŠARKAN², Jacek CABAN³, Ondrej STOPKA⁴

THE IMPACT OF DRIVING SCHOOLS' TRAINING ON FATAL TRAFFIC ACCIDENTS IN THE SLOVAK REPUBLIC

Summary. This paper deals with fatal traffic accidents in the period 2017-2019, caused by drivers who have held driving licenses for less than five years. Specifically, it examines an interconnection between these accidents and the driving schools being completed by these drivers. Furthermore, it analyses whether the perpetrators of traffic accidents with short driving experience are graduates of the same driving schools, and thus, whether the occurrence of serious traffic accidents is directly related to the quality of training in specific driving schools.

Keywords: road transport, road safety, accident rates, drivers with short driving experience

¹ Ministry of Transport and Construction of the Slovak Republic, Námestie slobody 6, 810 05 Bratislava, Slovak Republic. Email: juraj.hudec@mindop.sk. ORCID: <https://orcid.org/0000-0003-4078-2775>

² Faculty of Operation and Economics of Transport and Communications, University of Zilina, Univerzitná 1, 01026, Zilina, Slovak Republic. Email: branislav.sarkan@fpedas.uniza.sk. ORCID: <https://orcid.org/0000-0002-5036-9223>

³ Faculty of Mechanical Engineering, Lublin University of Technology, Nadbystrzycka 36, 20-618 Lublin, Poland. Email: j.caban@pollub.pl. ORCID: <https://orcid.org/0000-0002-7546-8703>

⁴ Faculty of Technology, Department of Transport and Logistics, Institute of Technology and Business in České Budějovice, Okružní 517/10, 37001 České Budějovice, Czech Republic. Email: stopka@mail.vstecb.cz. ORCID: <https://orcid.org/0000-0002-0932-4381>

1. INTRODUCTION

Every year, the number of registered vehicles and traffic intensity increases, more and more people get behind the steering wheel and become direct participants in road traffic. Except for undoubted advantages, this causes a great growth of traffic volume of the road network and a constantly increasing demand on traffic and its safety [20,29,32]. Possession of a driving license and active utilisation of a motor vehicle becomes an essential part of an individual's daily life. However, this is closely related to the increased risk of traffic accidents, and unfortunately also those resulting in death. Road safety depends on many factors, including the efficiency of the technical system and the behaviour of the driver of the vehicle. Therefore, traffic accident rates represent a serious societal problem with a huge impact on people's lives and their property, hence, requires special attention [6,7,22]. Therefore, road transport safety is a very complex issue, including the following factors: technical [12,13,25], environmental [18,37,38], psychological [10,31], legal [14] and socio-economic [17,23,33,35]. Besides, road transport safety is the subject of activities of many states, social and international institutions.

Numerous scientific publications have been devoted to the above-mentioned factors. For example, Skrúčaný and Gnap [36] investigated dangers related to heavy goods vehicle transportation under different loads and in varying conditions of operating as well as during the braking process. In [12,13] presents selected aspects of maintenance and reliability of vehicles safety systems during its operation in a chosen transport company. Cernický et al., [5] suggest that one of the possibilities of reduction of the number of traffic accidents in the Slovak Republic is the implementation of ITS on selected parts of the road network. Jurecki et al., [18] investigated the behaviour of car drivers in simulated surrounding situations of road traffic accidents. During these tests, the simulation concerned a road traffic accident risk situation involving pedestrians and passenger cars intruding into the road area. Ellison et al., in work [16] identified drivers' behaviours and their relationship to the occurrence of a road traffic accidents risk. These (individual) behavioural measures correctly predicted 68% of crash-involved drivers (26 drivers) and 87% of non-crash-involved drivers (141 drivers) [16]. Road transport safety issues can be referred to as threats in the workplace, especially in the case of professional drivers [24,30].

Alispahić et al., [4], investigated the impact of young drivers training in the function of road traffic safety. The education of drivers, especially younger ones, can significantly affect road traffic safety and could contribute to environmental protection as well as reduction of external costs [4]. Subsequently, an accident rate of drivers with short driving experience has become a substantial problem. According to statistics published by the Presidium of the Police Force of the Slovak Republic [26-28], in a comparison of drivers depending on the length of practice, showed that drivers holding driving licenses for less than five years cause considerable fatal traffic accidents. The minimum limitation for obtaining a driving license in the Slovak Republic is the age of 17. Nevertheless, after obtaining a driving license, drivers do not have sufficient experience in driving a motor vehicle, thus, becoming one of the riskiest groups of drivers in the field of road safety [34]. In emergencies, driver needs to make the right decision in a fraction of a second, which is related to the reaction time. Such research was conducted, among others, by [15,19].

Since the quality of training in driving schools is one of the factors affecting the behaviour of this risky group of drivers and the occurrence of road traffic accidents, the authors examine in this paper, the possible impact of driving schools on road traffic accidents resulting in death.

2. DATA AND METHODS

Driving schools represent training and educational facilities registered under Act no. 93/2005 Coll. on driving schools (Act 93/2005 Coll., on driving schools) and on the amendment of certain acts as amended [3]. Each driving school is registered specially to provide education and training of participants in preparation for an examination of professional competence for issuance of a license to drive motor vehicles. A driving school is registered by the locally-competent district office after fulfilling the stipulated legal conditions.

Such a school must have a particular space at its disposal in which the driving school operates, an office, a classroom, a training ground or a simulator, training vehicles designed and approved to conduct courses for the group of driving licenses for which the driving school is approved for [8].

Training vehicles and driving school classrooms to ensure transparent training and teaching (course) must be equipped with a permanently-mounted device enabling data records on identity of the course participant and driving instructor participating in practical training and theoretical course, and on journeys, routes and driving times, times in classrooms as well as on the simulator. This data is automatically transmitted from the devices to the Unified Road Traffic Information System [1].

Every single applicant for a driving license must undergo training in a driving school to the extent being required. The scope and content of the course are set out in the curriculum of driving courses issued by the Ministry of Transport and Construction of the Slovak Republic [11]. The course is divided into theoretical and practical parts. The duration of a driving course depends on the group of driving licenses for which the training is being conducted. For instance, for the most requested group of driving license B (passenger car), it is mandatory to complete 32 teaching hours in terms of theoretical lessons and 39 teaching hours of practical driving experience (in cases that a driving school disposes of a training ground). One lesson lasts 45 minutes.

2.1. Traffic accidents in the Slovak Republic in the period 2017-2019

Given the observed period of 2017, 2018 and 2019, accident rates in the Slovak Republic and their consequences were as follows (Table 1) [26,28]:

Tab. 1

Traffic accidents in the Slovak Republic in terms of severity of consequences during the period 2017-2019

Traffic accidents / period	2017	2018	2019
Total number of traffic accidents	14,013	13,902	13,741
Number of traffic accidents resulting in death or affecting health	5,317	5,287	5,101
Number of dead persons	250	229	245
Number of severely injured persons	1,127	1,052	1,050
Number of slightly injured persons	5,757	5,623	5,515

The major causes of fatal accidents are very similar and reoccur every year, they are as follows [14,24,28]:

- violation of driver's duties (that is, failure to pay full attention to driving and negligence of road traffic situations; not giving priority to pedestrians who enter the road and passes a pedestrian crossing; driving under reduced ability due to accident, illness, nausea or fatigue),
- speeding,
- inappropriate driving method (style),
- violation of special provisions on pedestrians,
- improper overtaking,
- violation of the road traffic user's obligation,
- wrong turn,
- incorrect driving through an intersection,
- incorrect turning and reversing,
- incorrect entry into the road.

2.2. Analysis of the impact of driving schools' training on fatal traffic caused by drivers with short driving experience in the period 2017-2019

For this study, data was requested from the Presidium of the Police Force of the Slovak Republic, regarding drivers with driving experience of up to five years who caused traffic accidents resulting in death in 2017, 2018 and 2019. Subsequently, all the accident perpetrators underwent an investigation to determine the driving school they completed their driving training. Specific input data was recorded and consequently listed in Table 2-4. Due to personal data protection, only data necessary for the examination was summarised in the tables. For the sake of proper distinction, individuals who completed their driving training in a driving school located in one district, have their schools marked with particular letters within one table. However, If the symbol † appears next to any of the data value, it means that the accident perpetrator died in the accident.

Tab. 2

Traffic accidents resulting in death caused by drivers with
driving experience up to five years in 2017

No.	Year of birth of the traffic accident perpetrator resulting in death	Year of obtaining the driving license of the traffic accident perpetrator resulting in death	The seat of the driving school (district) in which the perpetrator underwent driving training
1.	1979	2015	Senica (Driving school A.)
2.	1980	2016	Lučenec (Driving school A.)
3.	1981	2013	Žiar nad Hronom
4.	1984	2017	Nitra
5.	1984	2017	Nové Zámky
6.	1987	2015	Liptovský Mikuláš
7.	1988	2012	Trnava (Driving school A.)

8.	1989	2016	Dunajská Streda (Driving school A.)
9.	1990	2012	Dunajská Streda (Driving school B.)
10.	1991	2012	Michalovce
11.	1992	2012	Trnava (Driving school B.)
12.	1992	2016	Košice
13.	1992	2012	Trnava (Driving school C.)
14.	1992	2014	Žilina
15.	1992	2013	Senica (Driving school B.)
16.	1994	2015	Košice-suburb
17.	1994†	2016	Čadca (Driving school A.)
18.	1995†	2014	Banská Bystrica
19.	1995	2013	Ružomberok
20.	1995	2014	Poprad
21.	1995	2012	Čadca (Driving school B.)
22.	1995	2013	Kežmarok
23.	1996	2016	Veľký Krtíš
24.	1996	2014	Topoľčany
25.	1996	2014	Nové Mesto nad Váhom
26.	1996	2014	Považská Bystrica
27.	1996	2014	Humenné
28.	1996	2015	Trenčín
29.	1996	2015	Senec
30.	1997	2016	Prešov
31.	1997	2015	Zvolen
32.	1997†	2016	Lučenec (Driving school B.)

Table 2 shows that in 2017, 32 drivers with driving experience less than five years caused traffic accidents resulting in death. However, none of the perpetrators was a graduate of the same driving school; that is, each of them completed driver training in different driving schools.

Tab. 3

Traffic accidents resulting in death caused by drivers with driving experience up to five years in 2018

No.	Year of birth of the traffic accident perpetrator resulting in death	Year of obtaining the driving license of the traffic accident perpetrator resulting in death	The seat of the driving school (district) in which the perpetrator underwent driving training
1.	1979	2015	Prešov (Driving school A.)
2.	1984	2015	Žilina (Driving school A.)
3.	1986†	2015	Nitra (Driving school A.)
4.	1988	2015	Trnava
5.	1990†	2015	Nové Zámky
6.	1993	2014	Žilina (Driving school B.)

7.	1993	2013	Dunajská Streda (Driving school A.)
8.	1993	2014	Prešov (Driving school B.)
9.	1994†	2016	Michalovce
10.	1995†	2017	Nitra (Driving school B.)
11.	1995	2013	Žilina (Driving school C.)
12.	1995	2013	Spišská Nová Ves
13.	1995	2015	Partizánske
14.	1996	2014	Nové Mesto nad Váhom
15.	1996	2015	Považská Bystrica
16.	1997	2015	Galanta
17.	1997	2015	Žiar nad Hronom
18.	1997	2014	Zvolen (Driving school A.)
19.	1997†	2015	Topoľčany
20.	1998	2016	Žilina (Driving school D.)
21.	1998	2015	Myjava
22.	1988	2017	Komárno (Driving school A.)
23.	1998	2017	Humenné
24.	1998	2015	Zvolen (Driving school B.)
25.	1998	2016	Malacky
26.	1998†	2016	Dunajská Streda (Driving school B.)
27.	1999	2017	Snina
28.	1999	2016	Komárno (Driving school B.)
29.	1999	2016	Kežmarok
30.	1999	2016	Košice-suburb

From the table above, it is clear that in 2018, 30 drivers with driving experience of up to five years caused traffic accidents resulting in death. Nonetheless, in analogy to the previous year, none of the perpetrators was a graduate of the same driving school. Each completed driver training in different driving schools.

Tab. 4

Traffic accidents resulting in death caused by drivers with driving experience up to five years in 2019

No.	Year of birth of the traffic accident perpetrator resulting in death	Year of obtaining the driving license of the traffic accident perpetrator resulting in death	The seat of the driving school (district) in which the perpetrator underwent driving training
1.	1980	2018	Banská Bystrica
2.	1981†	2015	Zvolen
3.	1982	2014	Partizánske
4.	1983	2018	Bratislava
5.	1987	2017	Dolný Kubín
6.	1988	2018	Levice (Driving school A.)
7.	1989	2018	Kežmarok

8.	1990	2017	Humenné (Driving school A.)
9.	1991	2015	Humenné (Driving school B.)
10.	1992	2014	Partizánske
11.	1994	2018	Levice (Driving school B.)
12.	1994	2018	Žilina (Driving school A.)
13.	1950	2014	Hlohovec
14.	1995	2014	Nové Mesto nad Váhom
15.	1995	2015	Nitra (Driving school A.)
16.	1995	2015	Nitra (Driving school B.)
17.	1995	2019	Žilina (Driving school A.)
18.	1995	2014	Žilina (Driving school B.)
19.	1995	2015	Michalovce (Driving school A.)
20.	1996	2014	Prešov (Driving school A.)
21.	1996	2015	Prešov (Autoškola B.)
22.	1996	2014	Košice
23.	1997	2015	Tnava
24.	1997	2014	Trenčín
25.	1997	2015	Michalovce (Driving school B.)
26.	1998	2016	Považská Bystrica
27.	1998	2018	Košice-suburb (Driving school A.)
28.	1998	2016	Košice-suburb (Driving school B.)
29.	1998	2019	Krupina
30.	1999	2017	Galanta
31.	1999	2019	Dunajská Streda
32.	1999	2019	Nové Zámky
33.	1999	2017	Hlohovec
34.	2000	2019	Skalica
35.	2000	2019	Rimavská Sobota
36.	2001	2018	Trstená
37.	2001	2019	Revúca

Table 3 presents 37 drivers with driving experience less than five years caused traffic accidents resulting in death in 2019. Only two of these perpetrators were graduates of the same driving school (marked in red).

The data above confirms that from 2017 to 2019, a total of 99 traffic accidents were caused by drivers with less than five years of driving experience. Each of the perpetrators of these accidents was a graduate of a distinct driving school, except for two of them who graduated in the same driving school. This involved the district of Zilina; with one person graduating from this driving school in 2018 and the other in 2019. Both fatal traffic accidents occurred in 2019.

On the one hand, from the examined sample of drivers with driving experience of up to five years who caused traffic accidents resulting in death in 2017-2019, it was almost not detected that they were graduates of the same driving schools; therefore, some driving schools educate drivers who cause fatal traffic accidents to an increased extent than others. On the other hand,

the examined data does not verify the quality of training in driving schools in the Slovak Republic to be at a sufficient level or whether the reason for the high incidence of fatal accidents among drivers with short driving experience needs to be sought in driving schools. Given the fact that the perpetrators of these accidents are mostly from different driving schools, the results of an analysis being conducted may also indicate that there is a systemic lack in the training quality [18].

Lastly, in this context, it should be noted that the investigated sample of traffic accident perpetrators are composed of respondents from the whole Slovak Republic and was quite low compared to the total number of registered driving schools in the Slovak Republic as well as the number of driving licenses being issued. For illustration, the following table (Table 5) summarises the data on the number of registered driving schools and the issued driving licenses in the period of 2017-2019 [27].

Tab. 5

Number of registered driving schools and issued driving licenses (2017-2019)

Year	Number of registered driving schools	Number of driving licenses being issued
2017	615	147 042
2018	609	144 873
2019	603	149 322

3. RESULTS AND DISCUSSION – QUALITY OF TRAINING IN DRIVING SCHOOLS

Each participant who has undergone a driving school course training for driving a motor vehicle receives a document from the driving school called “Certificate of Completion of the Course”. This certificate is one of the documents to apply with in an examination of professional competence of applicants for a driving license [2,9]. There is no formal difference among the certificates issued by the individual driving schools, however, there may be huge differences among individual driving training on which the certificates are issued. This lies in the quality of training the driving school graduate paid for.

The quality of driving school training cannot be formally measured. Rather, it is a kind of abstract concept, which may be described by either individual preferences or general interest. For example, from a driving course participant standpoint, a good driving school is one, which has the lowest possible price, which he/she does not have to attend and will provide him with a driving license. On the contrary, in terms of the state, a good driving school is one that complies with generally binding legal regulations, has its own suitable technical base curriculum with experienced instructors, physically engaging participants in driving courses where they receive full-featured driving training [18]. However, these preferences tend to be ambivalent. Participants cannot receive high-quality training for a suspiciously low price for the course and vice versa. Unfortunately, many participants are not aware of this simple rule, so they prefer driving schools with a low-price course, even at the cost of the negative consequences that may emerge from such a wrong choice [21]. Driving schools are willing to meet their requirements and compete with each other in not only prices, but also in the fact that the participant in the driving course does not have to complete training at the driving school in full-range, or even attend it at all. The low price of a driving course is usually connected with non-participation in

this training, which of course is illegal. The results of the control activities of the Ministry of Transport and Construction of the Slovak Republic in driving schools have constantly proven this phenomenon.

For instance, in 2019, in driving schools, inspections for teaching the theoretical background were conducted, discovering that 15 of 18 inspected classrooms of driving schools, in which teaching the theory was supposed to take place, had no participant present in them, and no full-participation was recorded in the remaining 3 classrooms. Of the total number of driving schools being inspected, in four classrooms, no identification device was available, that is, participants were fictitiously identified by driving school instructors from different non-approved areas without their presence in the theoretical course of these driving schools. From the conducted inspections, the total number of identified persons was 169, while 160 of them were not present in the classrooms during the inspection. These were random inspections of driving schools throughout the Slovak Republic.

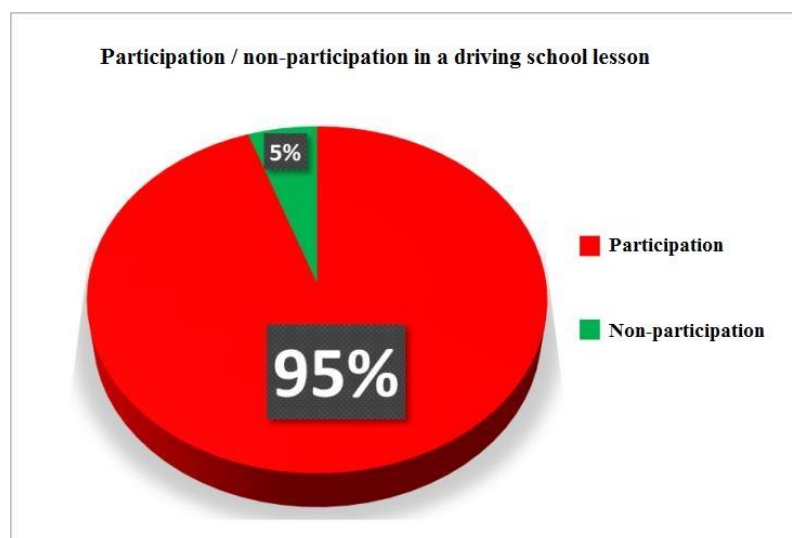


Fig. 1. Graphic illustration of non-participation in driving school lesson found by the Ministry of Transport and Construction of the Slovak Republic

Other negative facts found out during the inspections include: a significant part of driving schools carried out their practical driving courses in road traffic or in a training ground without the physical participation of an identified participant in the vehicle, with the instructor being alone in the driver's seat, or the persons sitting in the vehicle misleadingly identified (the instructor was identified as another instructor or as a course participant, etc.) [26,37].

Furthermore, inspections conducted by the Ministry of Transport and Construction of the Slovak Republic have confirmed that during 2018 and 2019, up to 265 participants in driving courses did not complete training at all in three driving schools; yet, driving licenses were issued to them. Courses and lessons related to teaching the theory and practical training with these people were fictitiously reported and not taught. In most cases, participants in such driving courses never attended any driving school. After reporting the entire training, such "graduates" were subsequently registered for examination of professional competence of applicants for driving licenses. Fictitious courses were conducted for passenger cars, trucks (freight vehicles), tractors, motorcycles, as well as buses [26,28].

The inspections' findings in association with driving schools in the Slovak Republic resulted in a statement that the high incidence of fraud in this field is a long-term issue and, if this is defined as one of the criteria for the quality of driving schools' training, then it is not of a high level from this point of view. Although specific criteria for the quality of driving schools' training are not clearly defined, it generally applies that without the participation of students in driving training, grave consequences would ensue.

4. CONCLUSIONS

The paper aimed to find out whether some driving schools, more than others, produce to an increased extent, drivers who cause fatal accidents, and also whether the occurrence of serious traffic accidents is directly related to the quality of training in particular driving schools. The aforementioned was investigated on 99 perpetrators of traffic accidents resulting in death, caused from 2017 to 2019 by drivers who have held driving licenses for less than five years. An analysis of the data being investigated showed that each of these accidents' perpetrators was a graduate of a distinct driving school, except for two that graduated from the same driving school. Concerning the rest, however, the occurrence of this phenomenon is insignificant.

Following the above, it has not been proven that some driving schools educate more drivers who cause more fatal accidents than others do. Simultaneously, however, the analysis findings may indicate that this involves a systemic shortcoming in the quality of driving schools' training since the perpetrators of fatal traffic accidents are mostly from numerous driving schools throughout the Slovak Republic. This especially applies if the share of drivers with short driving experiences that cause fatal accidents to other groups of drivers is high, as is the incidence and severity of deficiencies identified in the operation of the driving schools.

Many factors affect the occurrence of fatal accidents. By identifying, recognising and analysing them, as well as taking proper actions, it is possible to make some progress towards eliminating their impact. As far as driving schools are concerned, in addition to effective repression for violating legal regulations, one of the measures could be, for example, a change in the curriculum of driving courses with special emphasis on teaching and training in areas where the most common causes of traffic accidents occur.

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