

Competencies of Court Experts for Road Traffic Accidents and Capacity of States to Perform Needed Expertise

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Submitted: 2024-04-22 • Accepted: 2024-05-30 • Published: 2024-08-12

Abstract: Court expert plays important role in the road traffic accident expertise. The question is how to select an appropriate court expert and what guarantees the quality of expertise. A road traffic accident expertise requires expert competencies and a comprehensive court expert register. The analysis of expert competencies in the road traffic area is performed by surveying the available data from the registers of Serbia, Montenegro, Bosnia and Herzegovina, and North Macedonia (non-EU states) and Croatia and Slovenia (the EU states). A comparative review of legal solutions in the observed states was done in order to consider the legal bases for expertise. Proposal for improvement is made. The capacity indicators of states for performing expertise were defined and an analysis was carried out showing the highest load was on the Slovenian experts (1 day per expertise), while in Bosnia and Herzegovina – District of Brčko the indicator amounted to 34 days per expertise.

Keywords: court expert, competency, expert witness, expertise, register, road traffic accidents.

INTRODUCTION

During 2019, there were over 3.6 million road traffic accidents with serious consequences, i.e. those involving injured persons, in 56 states of Europe and North America (United Nations Economic Commission for Europe, 2021). As a rule, these traffic accidents are subject to appropriate judicial procedure aimed at establishing the important circumstances of the occurrence of the road traffic accident, and especially the failures that contributed to the occurrence of the accidents and their consequences (Lipovac et al., 2019). These circumstances are determined through the process of technical analysis carried out by court experts upon orders of the prosecutor's office or the court. A traffic expert can help in determining the facts and clarifying the traffic accident. For example, in a complex situation when a driver overtaking a vehicle across the full line caused an accident in which the driver of a vehicle from the opposite direction was injured, who committed a violation himself because he was not wearing a seat belt (Jakulin, 2014).

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Citation: Bjelovuk, I., Nešić, M., & Kesić, T. (2024). Competencies of court experts for road traffic accidents and capacity of states to perform needed expertise. *NBP. Nauka, bezbednost, policija, 29*(3), 202–214. https://doi.org/10.5937/ nabeno29-50604



eISSN 2620-0406 nabepo29-50604

Experts should be adequately educated, professionally trained and registered in the appropriate Register of Court Experts (RCE). In order to create a basis for the implementation of necessary expertise the states form RCE from which judicial authorities select experts in accordance with their competencies, workload, and a number of other criteria. The number of accidents to analyse defines the required professional capacities (the number of experts of a certain profile in the RCE for road traffic accident analysis) and the specific circumstances of the road traffic accident define the competencies. However, there is no criterion for establishing the required number of experts in the RCE, so that experience varies from state to state, and there are different approaches to determining the necessary competencies for performing traffic and technical analyses. No indicators have been defined in terms of assessment and monitoring the situation in this area.

The paper included an analysis of the current situation in the field of road traffic accident expertise in a number of selected European states that are candidates for the EU membership (Serbia, Montenegro, Bosnia and Herzegovina, and North Macedonia), and two EU member-states (Croatia and Slovenia), whose legal systems belong to the continental legal doctrine and that share a common legal heritage of the former Yugoslavia. In order to establish the current situation, the authors have analysed the capacities, for which they proposed specific indicators, legal provisions and the contents of the RCEs.

An analysis of the role of a court expert in the judicial systems of the Western Balkan countries, conducted by the World Bank, showed that laws regulating this profession are often vague or inconsistently enforced (Senderayi et al., 2019). Efforts to improve the quality of expertise in criminal matters by involving an expert advisor in the process of establishing and evaluating facts during the proceedings have been recognized (Žarković et al., 2014). Some authors analysed the RCE of the Serbian Ministry of Justice and raised an issue regarding the usefulness of data on competence, such as the data regarding the general educational profile (traffic engineer, mechanical engineer, etc.), without details on study program or specific specialization (road traffic, waterborne traffic, road traffic safety, motor vehicles, etc.) (Žarković et al., 2015).

Research has so far focused on analysing the RCE and competencies of experts for the field of fire and explosions and concluded that formal education of experts is not a prerequisite for their appointment (Žarković et al., 2015). A great diversity has been noted in formal education among experts in the observed area (Bjelovuk et al., 2021). By analysing previous research, it has been noted that police officers can also find themselves in the role of a court expert in road traffic accidents area (Rolison, 2020).

MATERIAL AND METHODS

A comparative analysis of legal solutions that regulate the conditions for performing expertise and the RCE, and RCE itself in the field of traffic in the following countries: Serbia, Montenegro, Bosnia and Herzegovina (entities of the Republic of Srpska, Brčko District and Federation of B&H), North Macedonia, Croatia and Slovenia, was performed. Benchmarking and comparative analysis were conducted on the basis of the offered indicators for assessing the capacity of the states for traffic accident expertise.



LEGAL PROVISIONS

The legal provisions on requirements for performing expertise are determined by laws and codes of practice, for Serbia: Law on Court Experts (LCE/S) (2010); Montenegro: Law on Court Experts (LCE/ME) (2016), Code of practice on the manner and programme of assessing professional knowledge and practical experience for a particular field of expertise (COPMPA/ME) (2017), Bosnia and Herzegovina – District of Brcko: Code of Practice on Permanent Court Experts (COPPCE/BD) (2020); North Macedonia: Law on Expertise (LE/NM) (2010–2018); Bosnia and Herzegovina – Federation of Bosnia and Herzegovina: Law on Court Experts (LE/B&H) (2005–2008); Bosnia and Herzegovina – Republic of Srpska: Law on Court Experts (LCE/RS) (2017); Republic of Croatia: Law on Courts (2013–2023), Code of practice on Permanent Court Experts (2014–2019) and for Republic of Slovenia: Law on Courts (1994–2023), Law on Court Experts, Authorized Appraisers and Court Interpreters (2018–2022) and Code of practice on Court Experts (2010–2018). A summary of the legal requirements to become a court expert is shown in Table 1.

	its	Education		£.	Verification of professional competence			
State	General requirements for state service	University ¹	University ¹ Exception ²		Conduction of exams/testing	Other requirements		
Serbia	+	+	+	5	-	Published papers, participation in training, opinions or recommendations from courts, professional associations		
Montenegro	+	+	+	5	+	Results achieved in the profession and opinions or recommendations from courts, prosecutor's offices		
North Macedonia	+	+	+	5	$+^4$	1		
Federation of B&H	+		? ⁵	? 6	+	Published papers, participation in training, recommendations from courts, prosecutor's offices, scientific and other institutions		
Republic of Srpska	+	+	+	5	$+^4$	1		
District of Brčko	+	+	+	5	-	Opinion of a relevant state body, institute or other professional institution for certain scientific fields, professional development and opinion on work and professional qualities from entities for which he previously performed expert work		
Croatia	+	+	+	8	_	Successfully completed professional training in the professional association of court experts		
Slovenia	+	+	+	6	+	Expert opinion of the Council of Experts		

 Table 1. A Summary of the Main Legal Requirements for Becoming Court Experts

¹Minimum 4 years • ²Lower level of education with additional conditions • ³In the area of expertise • ⁴Except for Doctor of Science, Master's degree • ⁵Stated: appropriate educational qualifications • ⁶Stated: appropriate working experience.



Unlike other countries where only a citizen can be a court expert, in Croatia and Slovenia a court expert can also be an individual who is a citizen of any member state of the EU, or a citizen of a state that is a signatory to the Agreement on the EEA.

Analysing normative solutions in the field of expertise, we noticed that the EU countries have found a common interest in the formation of the organization EuroExpert, which brings together individual and legal entities engaged in expertise with the aim to develop a standard for documentation which is understandable and acceptable to all experts, and which will be internationally recognized. When an expert opinion is expressed in such a way that it is evident that the procedures have been applied in accordance with the quality control system, then the exchange of evidence in court proceedings is also enabled (Milošević et al., 2009).

Council of Europe European Commission for the Efficiency of Justice offers guidelines for expertise in judicial proceedings pertaining to the criteria for the appointment of court experts, the requests for producing expertise, duties of the court expert, effects of the expert opinion on the trial, etc.

COMPARATIVE ANALYSIS OF COURT EXPERT REGISTERS: ANALYSIS OF PROFESSION, VOCATION AND SPECIALITY

The RCE in the selected states were analysed, focusing on the experts in the field of road traffic. It was noticed that different names of the field are used: "traffic-transport-safe-ty" (Serbia); "mechanical engineering and traffic" (Montenegro); "traffic" (Slovenia and North Macedonia); "traffic engineering" (Federation B&H, Republic of Srpska); "traffic" (District of Brčko); "mechanical engineering, transport and vehicles" (Croatia); "traffic" (Slovenia). All other data related to the profession/field of expertise are given in an unclassified form (the levels of education, profession, vocation, etc. are not defined in advance), so these data in the registers are often mixed with each other.

	0	20	40	60	80
Grad. Traff. Eng. Undergrad. Traff. Eng. Magister of Tech. Sci. Grad. Mech. Eng. Grad. Traff. Eng MSc MSc Doctor of Tech. Sci. No data Doctor of Sci. Undergrad. Road Traff. Eng. Vocational Traff. Eng. Magister of traff. Vocational Traff. Eng. Stad. MilitaryTraff./Transp. Eng. Other	%, 4.8 %, 4.3 %, 3.9 %, 3.4 %, 3.1 %, 2.2 %, 1.7 %, 1.7 %, 1 %, 0.7 %, 0.7 %, 0.7 %, 0.5			*	6, 62.3

Fig. 1. Vocations of Court Experts in Serbia



The RCE in Serbia is in the form of a database that is available on the website of the Ministry of Justice of the Republic of Serbia (https://www.mpravde.gov.rs/registar-sudskih-vestaka/registar-sudskih-vestaka.php), with 414 court experts in the field of expertise "traffic-transport-safety", which have been distributed by vocations as shown in Fig. 1. It is noticeable that the dominant individual vocation is a graduate traffic engineer (62.3%). Traffic profession as a whole has a share of 74.9%.

When applying for the position of court expert in the area of "traffic-transport-safety", the experts reported their narrow specializations in the application form and they are shown in Fig. 2, with percentage of share. The figure clearly indicates that the dominant narrow specialization in the area of "traffic-transport-safety" is that of traffic accident analysis/traffic accident expertise (38%).

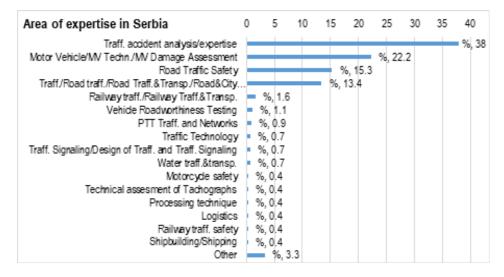


Fig. 2. Narrow Specializations of Court Experts in Serbia

The RCE in Montenegro (https://www.gov.me/cyr/dokumenta/79c5affb-1dde-423c-87d9bf515f44f8d7) is in the form of *Excel* table, with 48 court experts in the field of expertise "mechanical engineering and traffic". Available data on vocations (Fig. 3) show that the dominant individual vocation is denoted as "traffic profession/road traffic" – 65.3%. The overall share of traffic profession is 69.3%.

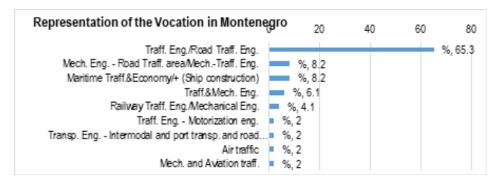


Fig. 3. Vocations of Court Experts in Montenegro



The RCE in North Macedonia (https://www.pravda.gov.mk/veshtaci) in the field of expertise "traffic" contain basic data of 68 court experts, with contact data, the date of issue of the licence and previously issued licence and the note if someone has been deleted from RCE. There is no data on the years of work experience, the age structure of the expert, as well as data on the vocation, i.e., the degree and type of school qualifications.

Given that Bosnia and Herzegovina consists of three entities, the research encompassed the RCEs in the Federation of B&H, Republic of Srpska, and Brčko District.

The RCE in Federation of B&H (https://www.fmp.gov.ba/bs/lista-stalnih-sudskih-vjestakau-federaciji-bih.html) with 109 court experts in the field of expertise "traffic profession", include basic contact data and education info (department of studies). Fig. 4 shows the percentage of representation share of vocations among court experts. The figure shows a noticeable prevalence of graduated traffic engineers (30.3%) as the dominant individual occupation of court experts listed in the register of the Federation of B&H and the traffic professions are represented with 100%.

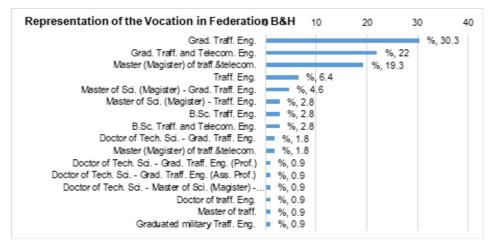


Fig. 4. Vocations of Court Experts in Federation of B&H

The RCE in the Republic of Srpska (https://portalfo1.pravosudje.ba/vstvfo-api/vijest/ download/35529) has 97 court experts in the field of expertise entitled "traffic". By examining the Fig. 5 which shows the percentage of share of vocations among court experts, it can be concluded that the dominant individual occupation is graduate traffic engineer (76.3%). The transport/traffic profession is represented by 91.8%.

Representation of the Vocatior	0	10	20	30	40	50	60	70	80	90
Grad. Traff. Eng. Undergrad. Road Traff. Eng. Doctor of Tech. Sci. Grad. Traff. Eng MSc Magister of traff. Doctor of Tech. Sci. in the field of Traff. Magister of Tech. Sci. Grad. Mech. Eng. Grad. Military Traff. Eng. MSc Traff. Eng.	9	%, 5.2 %, 4.1 %, 4.1 %, 2.1 %, 2.1 %, 2.1 %, 2.1 %, 2.1 %, 1	2						■ %,7 ¹	6.3

Fig. 5. Vocations of Court Experts in the Republic of Srpska



In the RCE in the District of Brčko (https://pravosudje.ba/vstvfo-api/vijest/download /78884) with 22 court experts in the field of expertise entitled "traffic", no information on professional qualifications and level of education is provided, but information on narrow area of expertise and contact information is provided.

The RCE in Croatia (https://www.sudski-vjestaci.hr/Adresar-sudskih-vjestaka) with 149 experts in the field of expertise entitled "mechanical engineering, transport and vehicles" is designed so as to include the basic data on the experts (occupation, narrow area of expertise and contact info). Fig. 6 shows that the dominant individual occupation is graduate mechanical engineer (30.9%). The mechanical engineering occupation is represented by a total of 43.1% while the traffic engineering profession accounts for 34.3%. Fig. 7 shows the areas of expertise cited by court experts in the field of "mechanical engineering, transport and vehicles". The most common individual area of expertise is "Road traffic, vehicles assessment" (18.8%).

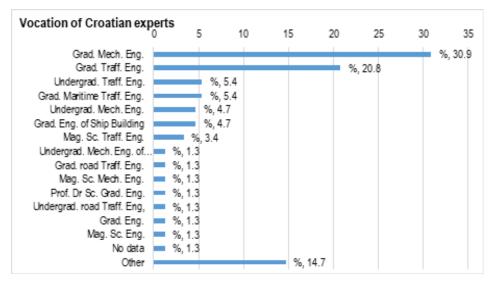


Fig. 6. Vocations of Court Experts in Croatia

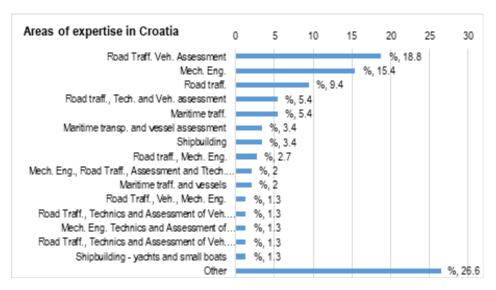


Fig. 7. Area of Expertise of Court Experts in Croatia



In the RCE in Slovenia (https://spvt.mp.gov.si/izvedenci.html), there are 26 experts in the field of expertise entitled "transport". Fig. 8 shows that the most common individual occupation among experts is that of a graduate mechanical engineer (45.5%). Traffic is represented by a total of 27.2%.



Fig. 8. Vocations of Court Experts in Slovenia

Each expert in the register is given the name of sub-area that describes his competence more closely (Fig. 9). The dominant single specialty is traffic accident investigation (46.9%), and the traffic in total is represented with 81.3% (Fig. 9).

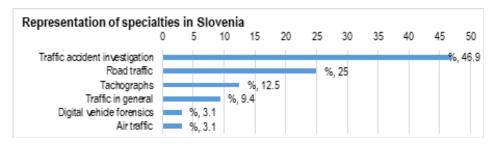


Fig. 9. Narrow Specialties of Court Experts in Slovenia

CAPACITY INDICATORS FOR JUDICIAL EXPERTISE OF ROAD TRAFFIC ACCIDENTS

The number of experts in the RCE in the field of road traffic accident expertise of a state represents a potential for conducting traffic accident analyses in the appropriate procedures within the judicial system. However, the RCEs do not contain data on actual engagement or evaluation of the quality of work performed, so it is not easy to come up with any assessment of the system's effectiveness. Usually, judicial expertise is carried out for road traffic accidents that are subject to criminal legislation (traffic accidents with injured persons – including deadly injuries), so an approximate measure of the need for conducting expertise would be the number of road traffic accidents with injured persons (roughly corresponds to the number of expertise).



(2)

A **Capacity Indicator** (*CI*) that provides information on the potential of a state for performing expertise, has been defined as follows:

 $CI = \frac{RTAI}{TACE} = [Road Traffic Accidents with Personal Injuries per 1 Court Expert]$ (1)

RTAI – Number of Road Traffic Accidents with Personal Injuries in Observed Year TACE – Number of Traffic Accident Court Experts in Observed Year

Based on a *CI* and working days in a year, an indicator **Average Workload of Court Expert (***AW***)** has been calculated as follows:

 $AW = \frac{260}{CI} = [Working days per 1 Expertise]$

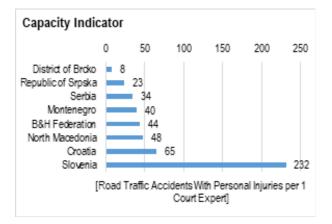


Fig. 10. Capacity Indicator Values

Table 2. Data for Calculating Capacity Indicator and Average Workload of Court Experts

STATE	RTAI (2019)	TACE	CI*	AW**
Serbia	14.244	414	34	7.6
Montenegro	1.924	48	40	6.5
North Macedonia	3.233	68	48	5.5
B&H – B&H Federation***	4.813	109	44	5.9
B&H – Republic of Srpska	2.276	97	23	11.1
B&H – District of Brčko	167	22	8	34.3
Croatia	9.694	149	65	4.0
Slovenia	6.023	26	232	1.1

*Road Traffic Accidents with Personal Injuries per 1 Court Expert • **Working days per 1 Expertise • ***Bosnia and Herzegovina Auto-Moto Club/Sector for Information and Documentation (SID): Information on traffic accidents, their causes and consequences in Bosnia and Herzegovina in 2019, 2020.

The CI values (Fig. 10) vary significantly in the observed countries, and in Slovenia they are extremely high, more than 30 times higher than that in the District of Brčko, which means that a TACE in Slovenia has almost 30 times more work than the TACE in the



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District of Brčko. As there are 260 working days, a TACE in Slovenia has an average of 1.1 working days to produce expertise, which is an extreme workload. In the other states TA-CEs are under significantly less pressure, so that, for instance in Croatia with average of 4 Working Days per Expertise, TACEs seems to be under an acceptable workload (Table 2).

DISCUSSION

In the RCE in the observed states, different names are used for the field that also includes traffic accident expertise: "traffic-transport-safety" (Serbia); "mechanical engineering and traffic" (Montenegro); "traffic" (North Macedonia, Brčko District and Slovenia); "traffic profession" (B&H Federation, Republic of Srpska); and "mechanical engineering, transport and vehicles" (Croatia).

Data on the vocation of court experts can be found in the RCEs of Serbia, Montenegro, B&H Federation, Republic of Srpska, Croatia and Slovenia, while North Macedonia and Brčko District do not have visible data on the vocation of court experts. In addition, the vocations are not predefined but are reported in an open form - at the applicant's own discretion, so they are not directly comparable. For the purposes of this research, the authors, according to their own knowledge, performed the classification in the traffic profession.

The existence of various educational profiles in the field of road traffic accident expertise makes sense given that every profile has their role in the process of establishing the facts of a traffic accident, especially in complex cases. However, the need for comprehensive traffic-technical analyses is prevalent and they are necessary for every accident with injured persons, so that the need for court experts in the field of traffic are the greatest. The court experts of traffic profession should be prevalent in all of the RCEs.

Experts in the field of traffic profession (most often traffic engineers) are prevalent in Serbia (~75%), Montenegro (~69%), Federation of Bosnia and Herzegovina (100%), Republic of Srpska (~92%), while experts in mechanical engineering are prevalent in Croatia (~43%) and Slovenia (~46%). The traffic profession has a share of only 34% in the register of Croatia, and only 27% in Slovenia.

CONCLUSIONS

In order for the parties in the judicial procedure to have a guarantee of the quality of the performed analyses, it is very important that the chosen expert fulfils the necessary competencies. It is necessary that the RCE is designed so as to include all the necessary data on court experts, mainly regarding competence of the expert for a certain area of expertise, or the degree of education, vocation, qualification for the tasks of expertise, work experience and professional development, particularly through the activities of conducting research in the field of competences and publishing findings in relevant publications.

The analysis showed that the prescribed prerequisites are basically similar in terms of degree of education (most frequently university education of the second degree), professional experience (most often 5 years) and vocation (predominantly traffic and mechanical engineering), but also different conditions in respect of qualification assessment, so that a



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test must be taken in North Macedonia, Bosnia and Herzegovina – B&H Federation, Bosnia and Herzegovina – Republic of Srpska and Slovenia, whereas in Serbia, Montenegro, Bosnia and Herzegovina – District of Brčko and Croatia there is no such requirement.

The obligation to take the examination test in a way ensures minimum levels of competencies of the court experts so that it is actually desirable that such a test exists in all of the analysed states, especially in the cases of registers dominated by court expert who have had no education in traffic engineering, as in Croatia, where mechanical engineering is the frequent with 43% of the court experts, and only 34% of traffic engineers. It can be noted that a good example is set in Slovenia where the test for the appointment of court experts is taken before The Council of experts for judicial expertise, which confirms the expertise of court experts every five years (Art. 27, para. 1, LCE/SLO). Croatia constitutes a good example as it requires a court expert to pass professional exam for performing the activities, and is also required to successfully complete professional training in the vocational association of court experts (Art. 126 LCE/C and Art. 2 of PSSV/C).

In terms of vocations and narrow specializations in the RCEs, there is generally no established standard classification but the candidates provided these data at their own discretion (except in the registers of Montenegro, North Macedonia, and District of Brčko, where these data are not included), given that very different phrases were used. That is why there is often an unnecessarily wide range of professions and narrow specializations/ specialties. This could be overcome by aligning the occupations with a uniform nomenclature of occupations in each country, and continuing with the harmonization of these nomenclatures, as well as by defining classifications of narrow specializations in the territories of the analysed entities and their mutual harmonization.

Capacity Indicator (CI) and Average Workload of Court Expert (AW) indicators based on the available data are offered for the purpose of capacity analysis to carry out traffic accident expertise in the analysed countries. The calculated values of the indicators are extremely high in Slovenia, because one expert should perform as many as 232 expertise per year on average, i.e. for each expertise, court expert should allocate an average of 1.1 working days. This may mean that Slovenia relies on the capacities of other countries, but there may be other reasons, the disclosure of which exceeds the scope of this research. The next in terms of load is Croatia with an average of 4 days per expertise, which seems like an acceptable value. In the remaining analysed countries, the values of the AW indicator are 5.5 and above, which certainly allows enough time to conduct quality expertise.

ACKNOWLEDGMENT

There is no conflict of interest in this research, and no special funding was required.

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