[13] Rothman, D.S. (1998) „Environmental Kuznets curve – real progress or passing the buck?:A case for consumption-base approaches, Ecological Economics, 25 p.186
[14] Serbia Approaching the Summit on Sustainable Development – Johannesburg 2002, Preliminary Seminar, Ministry for the Protection of Natural Resources and the Environment, Belgrade
[15] Xing,Y. And Kolstad, C. (2002) „Do lax environmental regulations attract foreign investment?“ Environmental and Resource Economics, p.21

INQUESTS OF TRAFFIC ACCIDENTS IN THE AREA OF THE CITY OF ZAGREB AND SAFETY OF ROAD TRAFFIC

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Summary: The investigation and investigation of traffic accidents, especially criminal ones, by police officers and other entities handling such events require both explicit and tacit knowledge. This is especially important if the accident was caused by an unknown driver, whether he or she was moving away from the scene with or without a vehicle. In cases where the driver escapes from the scene of the accident, in addition to the quality of the investigation, a quality criminal investigation is required by police officers and the competent State Attorney's Office. The primary objective is to determine all the circumstances of the event and the consequences at the scene as well as to identify the driver. In this paper, in addition to processing the statistics of traffic accidents with unknown drivers, the manner in which police officers acted during such an investigation is presented and the process of criminal investigation of a traffic accident caused by an unknown driver, who left the scene arbitrarily. On the basis of the collected data and the analyzes of traffic accidents, guidelines for action have been proposed for the purpose of better performing the inspection and improving the safety of road traffic.

Keywords: car accident, investigation, unknown driver, criminal investigation.

1. INTRODUCTION

Road safety has undoubtedly become part of the global policy of all countries. While highly developed countries have made major shifts, medium-developed and underdeveloped countries are lagging behind in such processes, regardless of the fact that they continuously implement measures to improve the current situation through various forms of action. In this direction, the Government of the Republic of Croatia in 2011 adopted the "National Road Safety Program for the Axis 2011-2020"[36] with the aim of reducing the number of traffic accidents and persons killed in these accidents by 50% by 2020, in which they are defined concrete measures. Every single occurrence that grows into a mass phenomenon is a security problem for all security services, and especially for police officers dealing with it. In terms of safety, the total number of traffic accidents is a major problem, especially if they have resulted in death, serious injury and major material damage, and the very process of conducting the investigation and criminal investigations in such cases is very demanding. In the last few years, the number of traffic accidents and the number of injured persons in these accidents have been increasing in the City of Zagreb and Zagreb County [1]. However, these figures are assumed to be higher due to the fact that road accident participants in certain situations can agree without police investigation and treatment. Also interesting is the data on the number of road accidents published in the Road Traffic Safety Bulletin [2], which indicates that in 2016, 24.4% of all road accidents in the Republic of Croatia occurred in the Zagreb County.

In 2017, in the territory of the Zagreb Police Directorate (PUZ), there were 267 traffic accidents that were recorded as criminal offenses, of which seven were traffic accidents involving unknown drivers, ie drivers who fled the scene of a car accident. Such traffic accidents, in addition to being of great interest in policing, are also of great public opinion, which is why pressure is exerted on the police through the media and other channels of communication in order to identify the unknown driver as soon as possible. The goal of fleeing a driver from a car accident is to seek to keep their identity unknown or at least temporarily unknown. The reasons for escaping can be different: driving under the influence of alcohol or narcotic drugs, guilty of a car accident, concealing a previous crime, driving without a driver's license, avoiding unpleasant situations due to the person in the vehicle or the scene of the accident, and similar to [1].

When it comes to escaping or leaving the scene of an accident, two common forms can be distinguished: when the driver leaves the scene of a car accident and when the driver leaves the scene of an accident without a vehicle. From the standpoint of the strategy of conduct in criminal investigations of identifying an unknown driver in the first case, that is, after fleeing a driver with a vehicle, such investigation is more demanding and complicated because of the small amount of data available to the police. When a driver leaves the vehicle at the scene, police officers conducting the investigation and criminal investigation have certain information that can be used in the process of identifying an unknown driver, making it easier to identify.

[36] The National Road Traffic Safety Program of the Republic of Croatia from 2011 to 2020 was published in Official Gazette 59/2011. from 30.05.2011. years.

2. ACCIDENT INDICATORS IN THE ZAGREB AREA

In order to provide a better overview of the state of road safety in the City of Zagreb and Zagreb County, statistical data on the total number of traffic accidents were obtained and analyzes of the most common causes and consequences were carried out. Also, statistics were obtained on the number of traffic accidents involving unknown drivers, whether they left the scene or are unknown on any other basis, Table 1.

Table 1. View of the number of traffic accidents in the area of Zagreb and Zagreb County [1]

Day of the week	Accidents			Died		Injured	
	2016.	**2017.**	**+/- %**	2016.	**2017.**	2016.	**2017.**
Monday	1.200	**1.239**	+3,3	8	**9**	472	**486**
Tuesday	1.168	**1.206**	+3,3	3	**2**	466	**452**
Wednesday	1.159	**1.212**	+4,6	5	**4**	411	**439**
Thursday	1.189	**1.254**	+5,5	13	**5**	452	**474**
Friday	1.306	**1.471**	+12,6	12	**6**	541	**558**
Saturday	1.133	**1.149**	+1,4	12	**14**	483	**477**
Sunday	808	**851**	+5,3	5	**8**	355	**355**
TOTAL	**7.963**	**8.382**	**+5,3**	**58**	**48**	3.180	**3.241**

Table 1 shows that the highest number of traffic accidents in the observed period in the week occur most on Fridays, as well as the number of injuries, while the number of deaths varies by year. It is also evident from Table 2 that the total number of traffic accidents in 2017 increased by 5.3% compared to 2016. Furthermore, the total number of deaths in 2017 is lower than in 2016, while the number of injured persons is increasing.

Table 2. Comparison of traffic accidents and causes of occurrence [1]

Year	Total traffic accidents	Speed inappropriate to conditions	Disrespecting the benefits of passing	Other driver errors
2016.	7.569	1.276	1.206	1.375
2017.	**7.921**	**1.229**	**1.239**	**1.545**

Table 2 shows statistically the data on traffic accidents that cause the driver's behavior, that is, his mistakes and actions. Consequently, in 2016, there were 7,559 such cases, while in 2017, 7,921 cases were recorded, an increase of 4.7%. Still, the main cause of traffic accidents is speed inappropriate for conditions as an individual factor and disregard for the benefits of passing.

The basic factors of road safety, man, vehicle and road, are not the only ones that affect the safe flow of traffic. Therefore, two more important factors are needed, road traffic and incident factor. With this approach, it can be concluded that the risk of road accidents becomes a function of the five factors that make up the road safety system, namely: man, vehicle, road, road traffic and incident factors [3]. If one of the main causes of traffic accidents is cited in all research so far, it is necessary that most activities aimed at preventing traffic accidents and reducing their consequences are done through the same, and this can primarily be achieved by improving the quality of education and training. Through any form of education, two forms can be distinguished: preventive and repressive. It is difficult to determine which form should be favored, but the opinion of different authors is that preventive education should be given priority because it is more acceptable and does not encourage the dissatisfaction of those to whom it is directed.

As the City of Zagreb and the County of Zagreb make up a large number by population, (City of Zagreb according to the 2011 census has 790 017 inhabitants

and Zagreb County has 317 642 inhabitants), because together they have over one million inhabitants, data on the number of drivers were obtained and registered vehicles for 2016 and 2017, Table 3.

Table 3. Display of the number of registered drivers and vehicles in the PUZ area [1]

Balance per day	**DRIVER**			**VEHICLE**		
	31.12.2017.	**31.12.2016.**	**+/-**	**31.12.2017.**	**31.12.2016.**	**+/-**
RH	**2.337.087**	**2.325.157**	**11.930**	**2.094.529**	**2.032.743**	**61.786**
PUZ	607.372	601.578	5.794	524.720	507.515	17.205
PUZ FROM RH (%)	25,99	25,87	0,12	25,05		0,08
CITY OF ZAGREB	**436.349**	**432.250**	**4.099**	**370.504**	**358.202**	**12.302**

Table 3 shows that in 2017 the number of registered vehicles and drivers increased in the territory of the Republic of Croatia as well as in the City of Zagreb and Zagreb County. It is also evident that the total number of registered drivers in the City of Zagreb and Zagreb County is 26%, and the registered number of vehicles is 25% in relation to the entire territory of the Republic of Croatia. Table 4 shows data on road traffic offenses for 2017, by months, showing that there were 267 such events, of which 34 were the most recorded in November. Out of the total number of these events, seven crimes were committed by an unknown perpetrator, two of which remained unsolved.

Table 4. Summary of the total number of road traffic offenses in 2017 [1]

Crimes by months in 2017 road accidents													
Crimes / months		1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
Total	**Total criminal offenses**	**15**	**12**	**20**	**19**	**23**	**24**	**26**	**20**	**28**	**24**	**37**	**19**
	Crimes by perpetrator	0	2	1	0	1	1	0	0	1	0	1	0
	Subsequently discovered perpetrator of KD by NN	0	2	1	0	1	0	0	0	1	0	0	0
	Unsolved criminal offenses under NN	0	0	0	0	0	1	0	0	0	0	1	0
	KD "furious driving" Art. 226 of the CC	0	0	1	0	1	0	0	0	0	0	0	0
Fatalcasualties	Total KD with fatalities	2	3	2	1	1	2	4	3	5	2	3	3
	KD with fatalities per NN perpetrator	0	0	0	0	0	0	0	0	1	0	0	0
	A KD perpetrator was subsequently discovered with NN fatalities	0	0	0	0	0	0	0	0	1	0	0	0
	Unsolved KD with ND deaths	0	0	0	0	0	0	0	0	0	0	0	0

Table 5 shows that the number of traffic accidents involving recidivists is increasing, which requires that targeted measures and activities, both preventive and repressive, be implemented against such groups in the future. It is not uncommon for recidivists to participate in car accidents as drivers of a person leaving the scene because of additional sanctions. Also, actions against this category of driver would have an effect on preventive action

both in reducing the number of traffic accidents and the consequences.

Table 5. View of the number of traffic accidents with recidivists [4]

Traffic accidents of recidivists	2017.	2016.
With fatalities	0	1
With injured people	21	16
With material damage	40	37
Total	**61**	**54**

3. PROCEEDINGS OF POLICE OFFICERS IN ACCORDING TO A TRAFFIC ACCIDENT

In most cases, traffic accident reports are received from the participants themselves or from eyewitnesses, most often by telephone at 192 at the Police Operational Communication Center (OKC) or at 112 of the National Protection and Rescue Directorate (DSZS) whose staff they are trying to get as much information about the event as possible from the person reporting the events. The first important step in dealing with traffic accidents is to receive the traffic accident events by telephone or otherwise. This step is most important in the follow-up of police officers and other entities, primarily medical personnel, to provide emergency medical assistance.

Another important step in handling it properly is securing the scene. The main objective is the protection of clues and objects that may be related to the event, as well as the collection of first notifications of any witnesses, perpetrators and injured persons, as well as other measures and actions that may contribute to the quality of the overall treatment. More recently, the installation and refinement of technical and technological devices as part of securing the venue requires increased activities in collecting data stored on such devices that are directly or indirectly related to the venue. Securing a venue means all activities from the moment of arrival to the scene, the process of gathering useful information until the end of police proceedings, or if the investigation is done until the end of the incident and, if necessary, further. Ultimately, such police activity is of great importance in further police action, especially when it comes to criminal offenses as a consequence of a car accident in the criminal investigation process, appreciating the attitude of "today is irrelevant information tomorrow crucial to solving the problem", which is why access to the scene must be undertaken in a responsible and professional manner. . Event venues are all venues associated with an incriminating event, a venue where something happened, as well as a venue for eventual planning and "post actions after the event," such as a venue for discarding event related items, changing the state of the means of execution (for a car repair experience), etc. Experience from previous practice shows that from the "retrospective" of analyzed events from earlier periods, police officers are wrong about such actions.

The third important step in the process is the quality marking, fixation and photographing of the traces found at the scene, Figure 1. Labeling means using numbers and assigning a unique mark to each material trace found.

Figure 1. Fixing general event locations [5]

Fixing means documenting the current

state, position, size and appearance of material traces, objects, objects, relationships and distances, as well as other important facts identified during the examination. All traces found must be photographed (fixed) at their location so that it can subsequently be determined where the trace was located and in what relation it was to other objects and traces at the scene. When photographing, starting from point 1, it should be photographed so that the height of that point in relation to the ground, as well as its distance from the sideline of the vehicle, viewed from the direction of the pedestrian, is visible.

For the purpose of this work, an image of the general appearance of the scene of a car accident was obtained, showing the way of fixing the scene in the general appearance as a static part of the investigation, while it is too demanding in one paper to describe all possible situations and ways of performing the examination in a static and dynamic procedure. Also illustrated is the method of marking measures and damage to a vehicle involved in a pedestrian crash, Figure 2. This example is shown because pedestrian vehicle crashes are frequent events in major cities, and inspection is required especially when the driver leaves the scene.

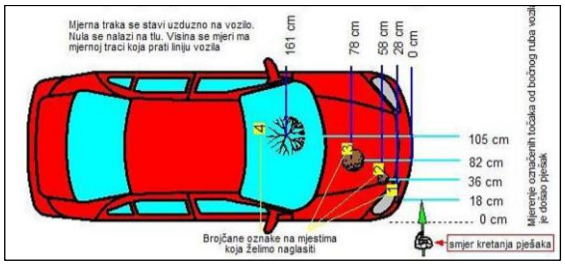

Figure 2. Marking and measuring vehicle damage during pedestrian collisions [5]

In view of previous experience, procedures for taking mandatory parameters, ie conducting all measurements of damage to the vehicle and the traffic surface, are presented in order to determine all the facts of the circumstances of the occurrence and consequences of traffic accidents and the need for eventual reconstruction of the event.

As noted above, apart from the need for quality traffic accident reporting, one of the main problems encountered by police officers is road accidents where drivers have left the scene, requiring a criminal investigation to find an unknown driver. In such a paper, it is demanding to cover and describe all situations and procedures that must be carried out during criminal investigations encountered by police officers in practice. In this sense, based on the already acquired knowledge, experience and analysis of events from a specific issue, a scheme of the process of criminal investigation and criminal investigation in the cases of leaving the scene of unknown drivers was drawn up. Figure 3 shows a flow chart of the actions of police officers and other entities handling traffic accidents from the moment of the event notification to the submission of necessary reports to the competent authorities.

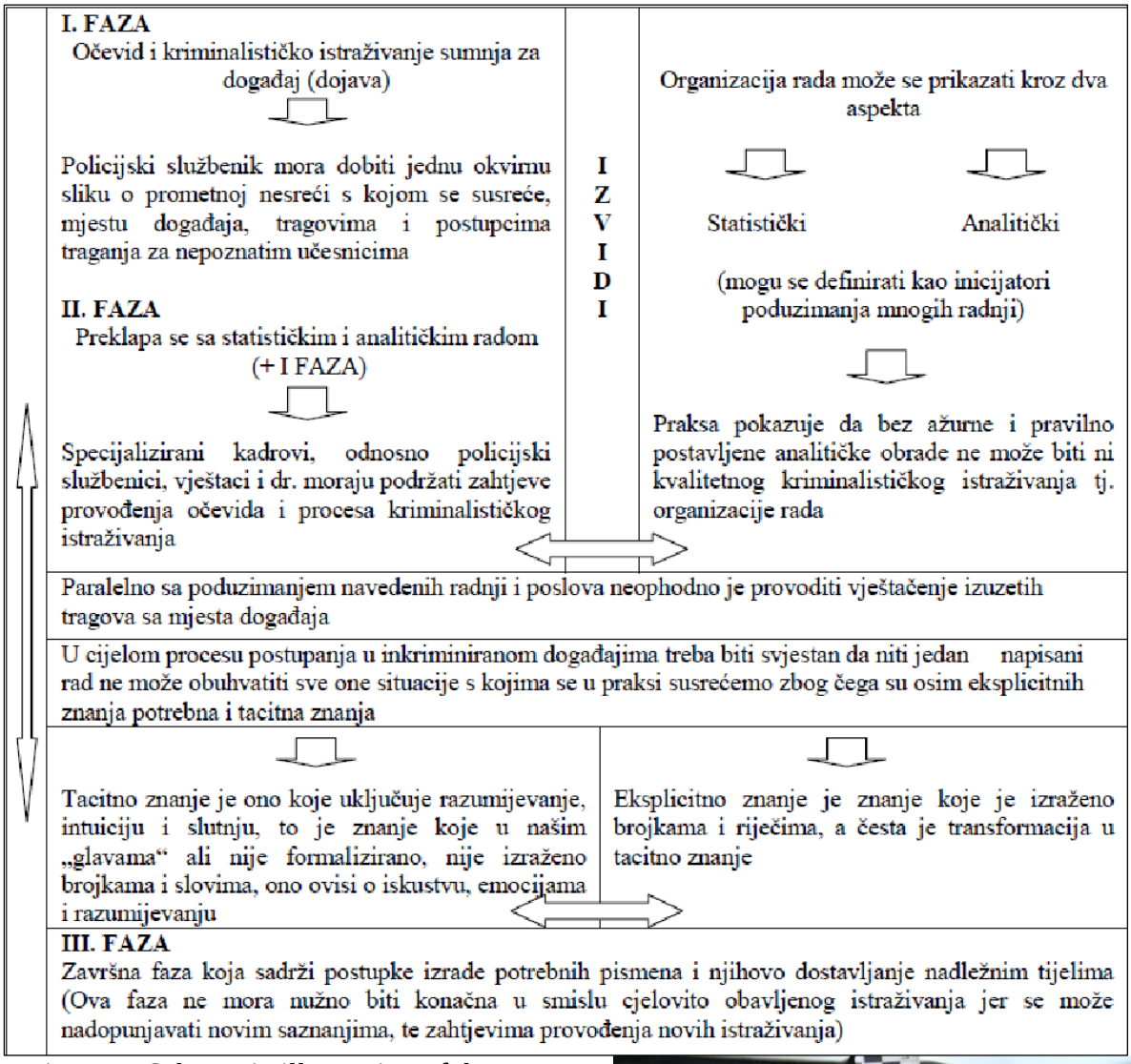

Figure 3. Schematic illustration of the process of criminal investigation of traffic accidents [created by the author]

Figure 4 shows an example of a practice case that identified a vehicle driving a driver away from the scene based on a well-conducted investigation and prompt reaction by police officers.

Figure 4. Removing traces from the vehicle whose driver left the scene [5]

On that occasion, the driver who fled the scene failed to reverse the damage caused to the vehicle, thereby proving his offense

(by comparing parts of the vehicle exempted from the scene with undeniable damage to the vehicle). The material evidence collected in this way is not the only one that police officers collect during criminal investigations, but it is one of the most credible in evidence.

As already stated in this paper, additional knowledge is required from police officers and other entities acting in such situations to perform comprehensive and quality criminal investigations and investigations, especially when it is necessary to identify or identify the unknown driver and vehicle involved. in a car accident. One of the procedures, Figure 3, important for taking actions and actions to identify drivers and vehicles who have left the scene, demonstrates the complexity and comprehensiveness of the required eyewitness actions and activities in detecting an unknown driver.

4. CONCLUSION

Traffic accident reports and criminal investigations in the event of leaving the scene are the specific actions of all entities participating in such activities. Therefore, all those who are engaged in such jobs must, in addition to their previously acquired knowledge, improve themselves on a daily basis, appreciating the fact that such jobs cannot be treated as "template", but each is specific, which is why it is necessary to have a tacit knowledge besides possessing explicit knowledge. Knowledges.

Such work should be carried out by specialist staff who must support the requirements of the investigation and criminal investigation process. Certainly, in the future, the selection of police officers and other staff involved in eyewitness and criminal investigation processes with the necessary knowledge to support the requests should be made. Through training, it is necessary to specialize in a certain number of police officers and other staff who, in addition to theoretical knowledge, will also show examples from practice as undeniable experiential facts.

LITERATURE

1. Zagreb Police Department (2018). Zagreb Police Department Annual Report on Road Traffic Safety 2017, Zagreb.
2. Ministry of the Interior (2017). Road Traffic Safety Bulletin 2016 Zagreb, Republic of Croatia.
3. Cerovac, V. (1997). Traffic Engineering and Safety. University of Zagreb, Faculty of Transportation Sciences, Zagreb.
4. Zagreb Police Department (2018). Road Safety Service, Traffic Accident Data Committed by Recidivists. Zagreb.
5. Traffic Police First Station (2007). Criminal Technical Handbook for Conducting Traffic Accident Records. Zagreb Police Department. Zagreb.
6. Rotim, F., Peran, Z. (2011). Traffic accident forensics. Croatian Scientific Society for Transport. Zagreb.
7. https: /www.mup.hr/User Docslmages / PU-ZG / statistics, page last visited April 30, 2018.