Modern Civil Engineering (ISSN 2470-4180)
October 2022, Volume 2, No. 3, pp. 19-24
Doi:10.15341/mce(2470-4180)/03.02.2022/003
Academic Star Publishing Company, 2022
www.academicstar.us

Urban Planning and Traffic Safety

Aleksandar Pavlovic, and Darija Pavlovic
CIS Engineering Ltd, Republic of Serbia

Abstract: The purpose of this paper is to point out the interdependence of urban planning and traffic safety. In order to reflect the mutual dependence between urban planning and traffic safety the survey and analysis of the state of traffic safety in local communities and the analysis of urban documentation were performed. After the conducted analyses the dependence between urban planning and the traffic safety was established. Recognition of this mutual relationship can have the huge benefit to the local community and the traffic safety because through the improvement of urban documentation, we can also improve traffic safety.

Key words: traffic safety, urban planning

1. Introduction

Does a mutual dependence between urban planning and traffic safety exist? It does! Regardless whether the problem is pushed under the rug, whether we conduct various research, or not, whether anybody cares about it…. The mutual dependence does exist.

Urban planning and traffic safety are independently vast areas and bringing them into the mutual relationship is a huge business.

As potential problems in the research we can quote the previously mentioned scale of the subject areas, and also problems that appear under the circumstances of non-spotting and non-defining a large number of irregularities and deficiencies, as well as the non-existence or an insufficient number of research on the subject of the relationship between urban planning and traffic safety.

By taking an insight into the areas of the space planning, urbanism, construction and traffic in the legal framework of The Republic of Serbia, we can see numerous problems related to the implementation and conduction of the above mentioned in the everyday practice.

Corresponding author: Aleksandar Pavlovic, M.Sc., Traffic Engineer; research area/interests: urbanism, traffic safety. E-mail: aleks.pavlovic@gmail.com.

With regard to the scale of the subject areas and large number of visible problems it would be impossible to pay undivided attention to each of the problem within this work. Therefore, for the purpose of this work a single problem is addressed to, and that is the problem of the technical documentation that affects urban planning and traffic safety. As a part of the major, visible problem, the expert team of traffic engineers employed at the preparation of urban documentation that is observed. Other deficiencies of the technical documentation are valued in the terms of its content, type, scale, quality, and of course the other experts that deal with it, the experts who control who control and conduct have already been partially mentioned, but their existence was not brought into the direct connection to the urban planning and traffic safety.

2. Methods

In order to define methodology for establishing the influence of the urban planning to the traffic safety it is necessary to examine all the constituent facts-systems that are mutually connected. Generally we can single out two systems:

- Urban planning documentation.
- The state of the traffic safety.

After defining all the important factors the methodology was adopted that was used for:

- Analysis of the urban documentation in the local municipality units (LMU);
- Traffic safety state analysis of the LMU.

In the frame of the first step the analysis of the urban planning and project documentation was conducted based on the publicly available documents of the LMUs on the sample of 152 LMUs at the territory of The Republic of Serbia. During the analysis of the planning documentation of the each LMU the valid planning document was chosen that within itself contains planning of at least one roadwork. Being chosen in this way, it is further observed whether traffic engineer was involved in the creation of the planning document.

In order to make analysis easier and representing the parallel data, the territory of The Republic of Serbia was classified according to NSTJ 1 as Serbia-North and Serbia South (Sumadija and Western Serbia, southern Serbia and Eastern Serbia and Kosovo and Metohija[1]. The data from Kosovo and Metohija are not available, and that is the reason why they are not the content of the analysis.

In this step the analysis of the planning documentation was conducted at the level of The Republic of Serbia, separately according to the adopted regions, and finally the parallel survey of the completed planning documentation without the participation of the traffic engineer, respectively according to regions.

As further step an analysis was made on the state of traffic safety in the LMUs. As the main indicator in this analysis the number of people killed in traffic accidents in the local municipalities in the Republic of Serbia for the period of 2011-2015 was shown. The given data are also represented according to the adopted regions Serbia-North and Serbia-South not taking the data for Belgrade and Kosovo and Metohija. The city of Belgrade was not the part of the analysis because it represents a single unity, and therefore should be analyzed separately, while the Autonomous Province of Kosovo and Metohija are not taken into the consideration because the previous analyses were made without the data from that particular area.

In order to establish the relationship between urban planning and the state of the traffic safety in the LMUs, in the final step of the methodology the parallel analysis of the urban planning and the existing planning documentation was made only without the participation of the traffic engineer and the number of people killed in accidents was made observing the regions of Serbia-North and Serbia-South.

3. Results and Discussion

3.1 State and the Analysis of the Urban Documentation of the LMUs

Based on the acquired data of the LMUs a survey has been made, with the participation of traffic engineers, as well as the analysis of the part of the urban planning documentation on the sample of 152 LMUs at the territory of The Republic of Serbia (for the purpose of the analysis within the work the publicly available data from the official web sites of the LMUs at the territory of The Republic of Serbia were used. Because of the size of the material that needs to be quoted as the source, the author finds it impossible to make this within this work. For any additional information about the way of obtaining those data, also the sources of information, please contact the author).

Using the observed sample it is established that 72 LMUs (47%) made the technical documentation without an engagement of the traffic engineer, 62 LMUs (41%) made the documentation with the engagement of the traffic engineer, whilst for the 18 LMUs (12%) data are not available (Fig. 1).

By further analysis it is established that 45 LMUs are situated in the region of Serbia-North, whilst 107 LMUs are situated in the region of Serbia-South.

[1] Available online at: https://sr.wikipedia.org.wiki/%D0%9d%D0%A1%D0%A2%D0%88.

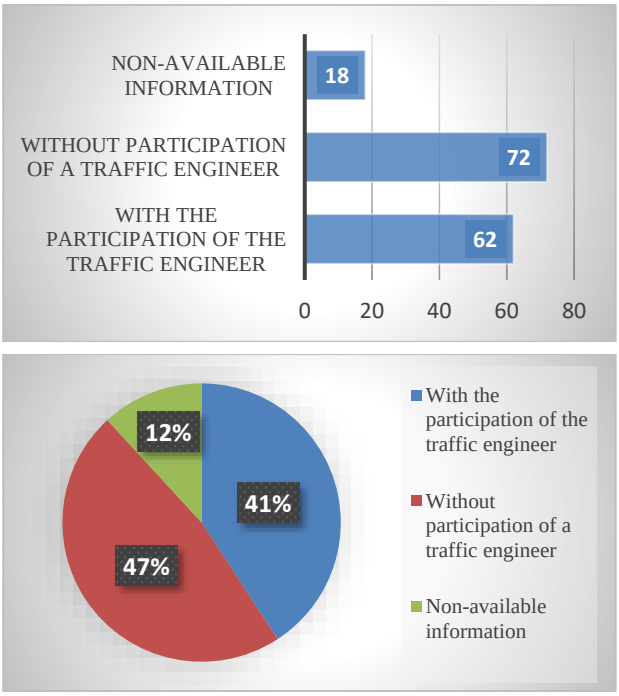

Fig. 1 Presentation of the made urban-planning documentation at the area of The Republic of Serbia.

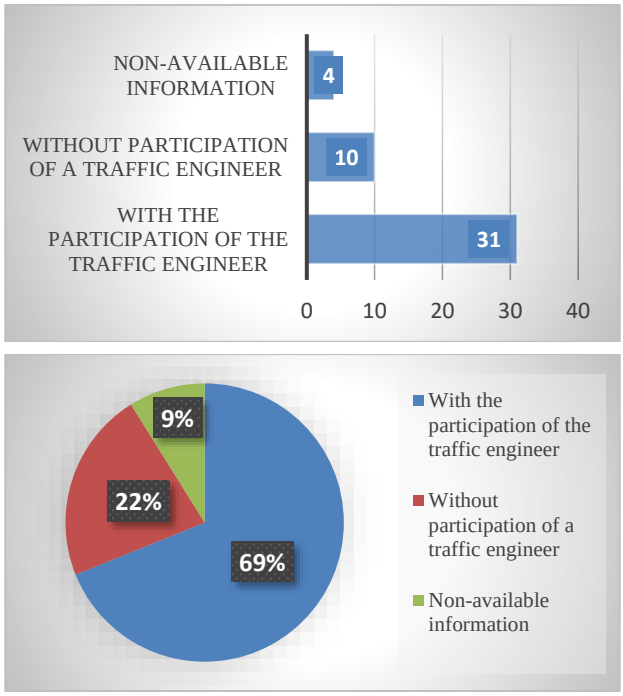

Fig. 2 Presentation of the made urban-planning documentation at the region of Serbia-North.

If we make an analysis of the data of the Serbia-North region we find out that 10 LMUs (22%) possesses an adopted urban-planning documentation without the engagement of a traffic engineer; 31 LMUs (69%) possess urban-planning documentation without an engagement of a traffic engineer, while 4 LMUs (9%) represents LMUs where the information were unavailable (Fig. 2).

By analyzing the Serbia-North region we can see that 62 LMUs (58%) possesses the urban-planning documentation that has been made without the engagement of a traffic engineer; 31LMUs (29%) posses urban-planning documentation that has been made by an engagement a traffic engineer, whilst 14 LMUs (9%) do not have available information (Fig. 3).

By analyzing the region of Serbia-South, we can see that 62 LMUs (58%) possess the urban-planning documentation that has been made without the engagement of a traffic engineer; 31 LMUs (29%) possess the urban-planning documentation that has been made with the engagement of a traffic engineer, whilst 14 LMUs (9%) do not have any available information (Fig. 3).

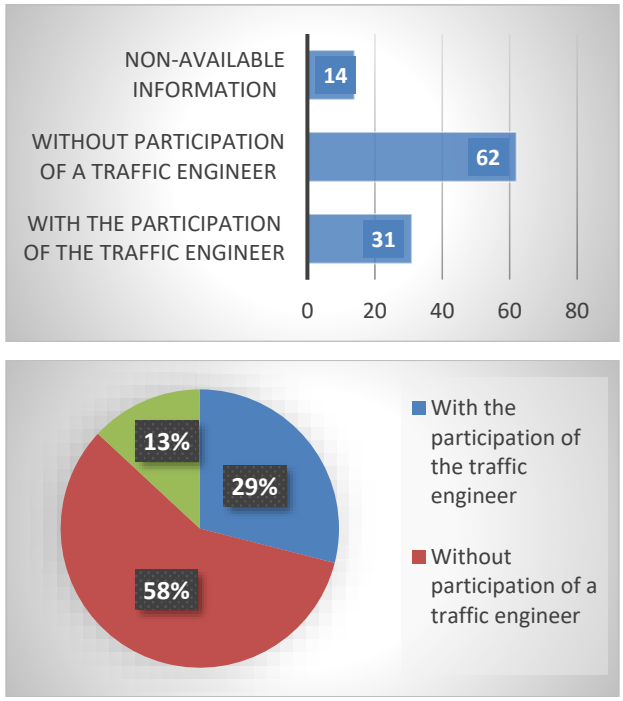

Fig. 3 Presentation of the made urban-planning documentation in the region of Serbia-South.

Based on the analysis of the data we can make a conclusion that in regard of the completed urban-planning documentation the situation is not so

favourable in the region of Serbia-South, due to the fact that this region has a higher percentage of the urban-planning documentation that has been made without the engagement of a traffic engineer.

If we compare the data between the regions observed we can see that in the overall number of LMUs that have completed the urban-planning documentation without the engagement of a traffic engineer (72 of them), the region of Serbia-North has 10LMUs, or 14% while the region of Serbia-South has 652 LMUS, or 86% of the total number (Fig. 4).

3.2 Analysis and the representation of the state of traffic safety in the LMUs

By analyzing the number of people killed in traffic accidents for the period of 2011-2015, observed by the regions of Serbia-North and Serbia-South, we can establish that the number of people killed in traffic accidents in the region of Serbia-South is 1234, while the number of people killed in traffic accidents in the region of Serbia-South amounts 2900 (results obtained based on the data of ABS, The State of traffic safety in the local municipalities for the period of 2011-2015, the year of 2016).

By comparing these relations we can establish that the region of Serbia-North occupies 31% in this analysis, while the region of Serbia-South occupies 69% in the overall number of people killed in accidents (Fig. 5).

Using the parallel observation of the obtained results of the urban-planning documentation that was completed without the engagement of a traffic engineer (Fig. 4) and the results on the number of traffic accidents with killed people as an outcome according to regions (Fig. 5), we can see that the region of Serbia-North has a higher percentage of the urban-planning documentation that was made with the engagement of traffic engineers, with the smaller number of traffic accidents, while, the region of Serbia-South has a higher percentage of the urban-planning documentation that was made without

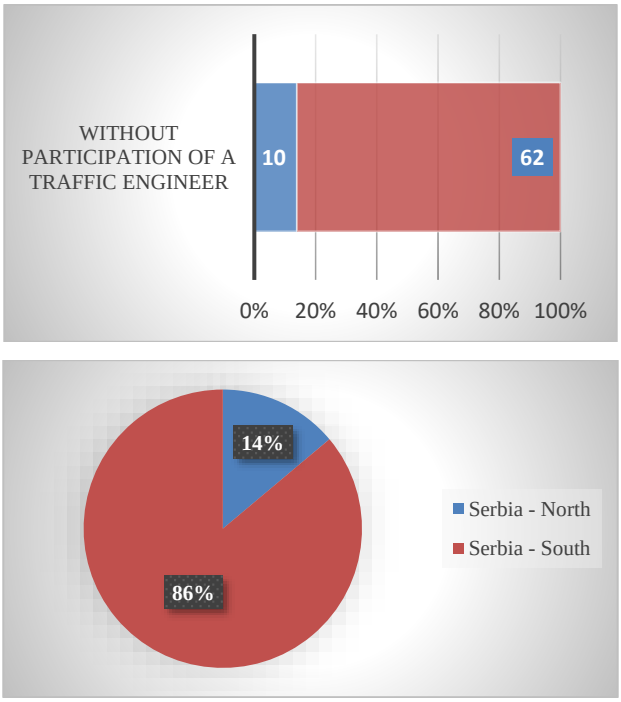

Fig. 4 Presentation of the relations of the made urban-planning documentation without the engagement of a traffic engineer between the regions of Serbia-North and Serbia-South.

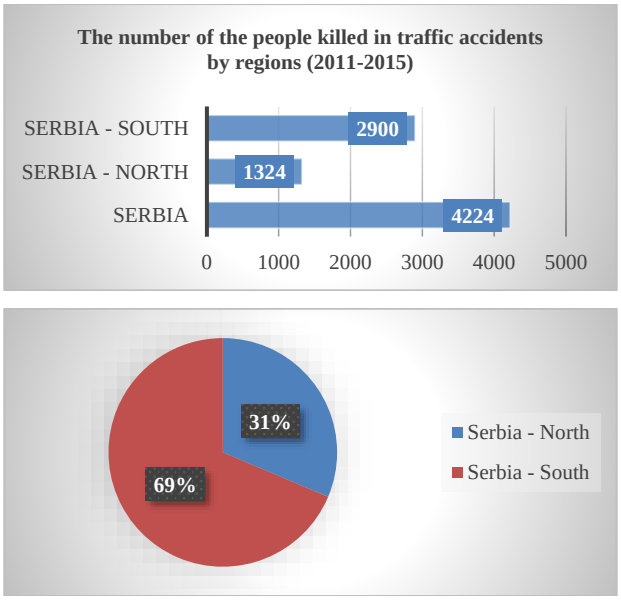

Fig. 5 The representation of the ratio of the people killed in traffic accidents in the regions of Serbia-North and Serbia-South for the period of 2011-2015.

an engagement of a traffic engineer, and higher number of traffic accidents, accordingly.

Based on these data we can make a conclusion that there is a relationship between traffic accidents and

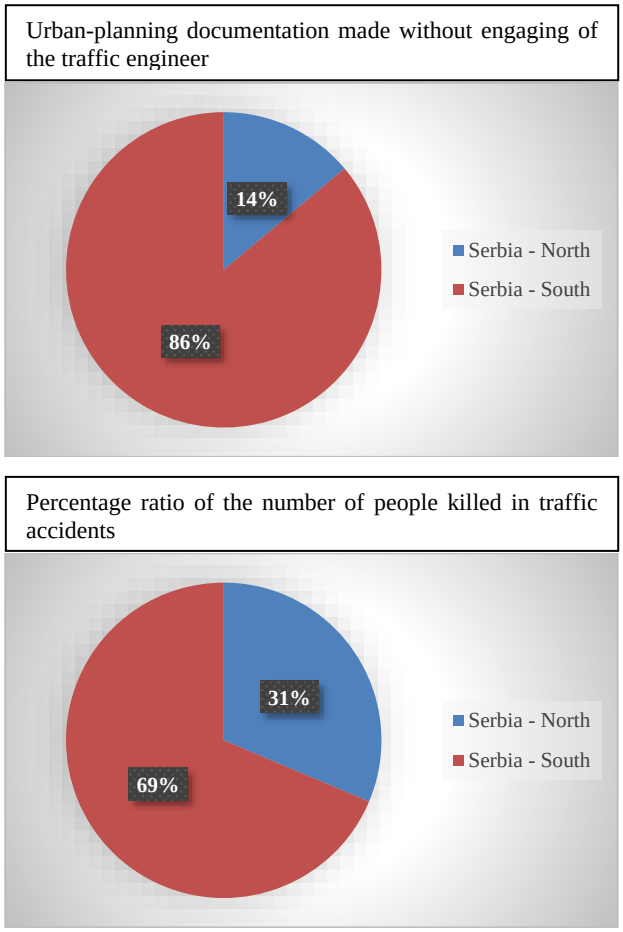

Fig. 6 Parallel percentage presentation of the completed urban-planning documentation without the engagement of a traffic engineer and the number of people killed in traffic accidents according to the regions of Serbia-North, and Serbia-South.

urban-planning documentation as one of the indicators of the urban planning. This relationship is natural in the sense if it is not paid enough attention about the traffic safety during the urban planning and projecting, all the deficiencies will be shown, as well as enlarge during the building, or exploitation of the project.

4. Conclusion

During the research, and for the needs of this work, publicly available documents were used, as well as the valid data in the area of urban planning and traffic safety. These data enabled the analysis of the large number of LMUs and creation of the appropriate sample. The matter of seriousness and exactness of the obtained data is on the high level. As a deficiency in research, a small number of analyzed planning documentation within LMUs can be taken into account taking into the consideration of small number of indicators of the urban documentation observed by the side of traffic safety.

Besides conclusion, there is also a mutual dependency between the traffic safety and urban planning and it can be concluded that there is not an obligation to hire traffic engineers in the creation of urban documentation. Judging from the above, we can make a conclusion that sub-legal together with legal regulative that regulate the area of urban planning and traffic safety do not recognize, nor define the area of traffic enough. Due to the situation there are different interpretation of legal and sub-legal regulative, which, as a consequence has a non-engagement of traffic engineers in the process of making, and also in the process of implementation of technical documentation.

Improvement of the urban planning can be achieved by higher employment of experts in the area of traffic in making and improvement of the urban documentation, but also in the parallel making and improvement of legal and sub-legal acts that define the subject areas together with the support of the Ministry in charge.

It is necessary to do so from the reason that urban planning represents one of the starting points in the traffic safety, and only with good planning many of the traffic problems could be overcome, including traffic accidents, that as a result have the increase of the traffic safety.

Furthermore, in order to get a full, actual picture of the interrelated influence of the urban planning to the traffic safety it is by all means necessary to expand this research, but also to do some new research. By expanding this research and also conducting of the new ones that would comprise the gathering and analysis of the remaining constituents some adequate conditions would be made to define the exact ration of the urban planning and traffic safety, having as a result possible raising of conscience about the importance of this problem.

Conducting further research demands the engagement of a larger number of participants and experts and also securing financial means. The limitations that can appear in further research include the securing of experts dealing with this issue, as well as the lack of financial support due to the insufficiently developed conscience of the public in the means of the importance of this issue.

Accurate definition of the mutual relations between urban planning to the traffic safety should, as a consequence have the improvement of the urban planning from the aspect of the traffic safety, improvement of the legal and sub-legal regulative and engagement of a higher number of traffic engineers in the making and implementation of the urban planning and technical documentation. All the activities should bring to the increase of the level of traffic safety.

High level of traffic safety means smaller number of people killed in traffic accidents, smaller number of the injured, smaller number of damages, and smaller number of prequalification etc. All of the above has as a consequence reducing of the number of victims and the injured ones, but also the savings of the finances enabling this way the spending of the same means to the further improvement of the of the traffic safety, new projects and further and faster economic growth.

References

[1] A. Pavlović, Unapređenje planske i projektne dokumentacije kroz dopunu Zakona o planiranju i izgradnji, VIII medjunarodna konferencija: Bezbednost saobraćaja u lokalnoj zajednici, 2019, pp. 101-108.

[2] A. Pavlović, Povećanje bezbednosti saobraćaja u lokalnoj zajednici unapređenjem planske i projektne dokumentacije kroz dopunu Zakona o planiranju i izgradnji, 15. Međunarodna konferencija: Bezbednost saobraćaja u lokalnoj zajednici, 2020, pp. 235-244.

[3] A. Pavlović, Urbanističko planiranje i bezbednost saobraćaja, 2. Konferencija o urbanom planiranju i regionalnom razvoju: Održivi urbani razvoj, 2020, pp. 248-258,

[4] Službeni glasnik RS, br. 41/2009, 53/2010, 101/2011, 55/2014, 32/2013 – Odluka US RS, 96/2015 – drugi zakon, 9/2016 – Odluka US RS, 24/2018, 41/2018, 41/2018 – drugi zakon, 87/2018, 23/2019 i 128/2020, Zakon o bezbednosti saobraćaja na putevima,

[5] Službeni glasnik RS, br. 72/2009, 81/2009, 64/2010 – Odluka US RS, 24/2011, 121/2011, 121/2012, 42/2013 – Odluka US RS, 50/2013 – Odluka US RS, 98/2013 – Odluka US RS, 132/2014, 145/2014, 83/2018, 31/2019, 37/2019 – drugi zakon, 2/2020 i 52/2021, Zakon o planiranju i izgradnji.

[6] Službeni glasnik RS, br. 41/2018 i 95/2018 – drugi zakon, Zakon o putevima,

[7] Službeni glasnik RS, br. 69/2019, Pravilnik o postupku sprovođenja objedinjene procedure elektronskim putem,

[8] Službeni glasnik RS, br. 73/2019, Pravilnik o sadržini, načinu i postupku izrade i način vršenja kontrole tehničke dokumentacije prema klasi i nameni objekta.

[9] Službeni glasnik RS, br. 85/2017 i 14/2021, Pravilnik o saobraćajnoj signalizaciji.

[10] Službeni glasnik RS, br. 63/2019, Pravilnik o proceni uticaja puta na bezbednost saobraćaja.

[11] Službeni glasnik RS, br.115/2020, Uredba o lokacijskim uslovima.