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Abstract:

Cities are complex organisms, it can be conceptually considered that cities are locally and regionally specific. Pristina in 1486-1487 had only 392 houses and 10 neighborhoods, while in 1689 it was spatially developed with 4000 houses. Pristina became Kosovo's administrative center in 1947, where it had begun to be developed with institutional and urban infrastructure. The cardinal changes that occurred after 1999 and the beginning of the new millennia were many! The study presented in this paper investigated the Prishtina City, focusing on urban planning issues, traffic issues, and urban data. The research methods consist of empirical observation, with an accent to the urban traffic structure. The lack of a sustainable urban mobility plan for the city of Pristina and its linkage to spatial plans in the future will bring serious problems for the city, which will have a negative impact on the quality of life and wellbeing of every citizen living and visits Prishtina. With the enormous number of gravitated vehicles and the lack of parking spaces and facilities, almost every neighborhood in Pristina is in the mental state of protecting the parking space. There is a conceptual urban strategy to offer a variety of public parking spaces and parking garages, also

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# Humongous Traffic Rhythm: Urbane Fulmination for Parking Spaces in Prishtina

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**Abstract:**

Cities are complex organisms, it can be conceptually considered that cities are locally and regionally specific. Pristina in 1486-1487 had only 392 houses and 10 neighborhoods, while in 1689 it was spatially developed with 4000 houses. Pristina became Kosovo's administrative center in 1947, where it had begun to be developed with institutional and urban infrastructure. The cardinal changes that occurred after the 1999, and beginning of the new millennia was many! The study presented in this paper investigated the Prishtina City, focusing on urban planning issues, traffic issues and urban data. The research methods consist of empirical observation, with an accent to the urban traffic structure. The lack of a sustainable urban mobility plan for the city of Pristina and its linkage to spatial plans in the future will bring serious problems for the city, which will have a negative impact on the quality of life and wellbeing of every citizen living and visits Prishtina. With the enormous number of gravitated vehicles and the lack of parking spaces and facilities, almost every neighborhood in Pristina is in the mental state of protecting the parking space. There is a conceptual urban strategy to offer a variety of public parking spaces and parking garages, also there is need that those type of buildings blend in within an urban composition. As from urban planning concepts we stand that in those situations, a more suitable are open air structures. Prishtina like the other cities must consider to implement a strategy of underground building structures as a whole functional urban system. The current degraded state of environment and urban health in Prishtina, requires specific environment activities.

**Key words:** Prishtina, Traffic, Parking Spaces, Urbane Fulmination, Architecture

## INTRODUCTION

### Prishtina: Human and Spatial Development

Pristina in 1486-1487 had only 392 houses and 10 neighborhoods, all these houses were builded only with one storey. In the years 1569-1570 Prishtina began to expand with 29 neighborhoods and with 629 houses of the same type, while in 1689 it was spatially developed with 4000 houses.

The oldest neighborhoods of the city of Prishtina was: Hynilerëve, Çekliqëve, Kacallarëve, Llokaqit, Kollaçit, Pozderës, Katër Llullave, Xhamisë së Llapit, Tophanës, Muhaxherëve, where some of them are still known today, with the same name, but obviously the structure of construction and exploitation has changed [1]. The city of Prishtina after World War II had won the most important economic and administrative-political function, where this city was declared as the capital of Kosovo in 1946, hence, Pristina became Kosovo's administrative center in 1947, where it had begun to be developed with institutional and urban infrastructure. While with the city plan in 1953 the town had plagued entire neighborhoods along with downtown, where was the center of the city of Prishtina, furthermore those actions had led to the destruction of the urban old structure [1].

The cardinal changes that occurred after the 1999, and beginning of the new millennia was many! The city before 2000, had reached the maximal growth of population in 1991, approximately 200,000 inhabitants, according to registration. The traffic worked quite well with the existing infrastructure, and was not such a big problem for the community until the number of motor vehicles were increased at the beginning of the new millennium [2]. The planning department of the municipality of Prishtina came up with different ideas and concepts in terms of resolving or addressing traffic problem, by converting existing roads into one-way drive. However, with insufficient funding the idea became part of the history. The city of Prishtina always lacked parking places, as such parking garages were more than needed. Moreover, there were too many conceptual challenges, and in 2005 the Department of Urban Planning and Construction of the Municipality of Prishtina, decided to bid an open public parking garage, located near the campus of the Clinical Hospital Centre of Prishtina [3]!

## MATERIALS and METHODS

The study presented in this paper investigated the Prishtina City, focussing on Urban Planning issues, traffic problems and urban data. The research methods consist of empirical observation through field, with an accent to the urban traffic structure. In order to receive a clearer data and information's, research is made within spatial system, shapes of architectural models, focusing on the traffic features regarding to the morphology of the city of Prishtina, urban planning,

environmental pollution, and humongous traffic rhythm with Urbane Fulmination for parking spaces. Case study were investigated through literature review, urban city documentations and drawings. Graphic documentation contains photos, handmade drawings of the urban composition. The data collected include maps, composition of urban structure, bioclimatic features and attributes of space, dimensions of location and traffic activities. The additional data for this paper is based on the analysis of the Municipality of Prishtina archives.

Table 1. Type of roads - Kosovo 2005-2010 [4].

| Type of street level of Kosovo | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|---|
| International | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |
| Highways | 630,4 | 630,4 | 630,4 | 630,4 | 630,4 | 630,4 |
| Regional | 1.294,7 | 1.294,7 | 1.294,7 | 1.294,7 | 1.294,7 | 1.294,7 |
| Total | 1.925,1 | 1.925,1 | 1.925,1 | 1.925,1 | 1.925,1 | 1.925,1 |
| Asphalted | 1.666,2 | 1.666,2 | 1.666,2 | 1.666,2 | 1.666,2 | 1.666,2 |
| Without Asphalting | 258,9 | 258,9 | 258,9 | 258,9 | 258,9 | 258,9 |
| Total | 1.925,1 | 1.925,1 | 1.925,1 | 1.925,1 | 1.925,1 | 1.925,1 |

Table 2. Type of roads - Kosovo 2011-2017 [4].

| Type of street level of Kosovo | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|
| International | 38.0 | 60.4 | 80.4 | 80.4 | 78.0 | 98.0 | 108.0 |
| Highways | 630,4 | 630,4 | 630,4 | 630,4 | 629.0 | 629.0 | 630.4 |
| Regional | 1.294,7 | 1.294,7 | 1.294,7 | 1.294,7 | 1305.0 | 1305.0 | 1305.0 |
| Total | 1.963,1 | 1.985,5 | 2.005,5 | 2.005,5 | 2.012,0 | 2.032,0 | 2.043,4 |
| Asphalted | 1.843,0 | 1.865,4 | 1.885,4 | 1.885,4 | 1.922,0 | 1.942,0 | 1.953,4 |
| Without Asphalting | 120,1 | 120,1 | 120,1 | 120,1 | 90,0 | 90,0 | 90,0 |
| Total | 1.963,1 | 1.985,5 | 2.005,5 | 2.005,5 | 2.012,0 | 2.032,0 | 2.043,4 |

Table 3. Vehicle registration of 2014-2017- Kosovo [5].

| | 2014 | 2015 | 2016 | 2017 | Grow 2014-2017 |
|---|---|---|---|---|---|
| Vehicles | 236145 | 281847 | 260291 | 273862 | +8% |
| Trans vehicle, 3.5 and over 3.5 Mt | 15769 | 18330 | 17963 | 2735 | -73% |
| Trans truck, under 3.5 Mt | 26949 | 30846 | 31285 | 288 | -935% |
| Minibus | 3161 | 3212 | 2841 | 1690 | -47% |
| Buses | 1697 | 2124 | 1916 | 523 | -60% |
| Motorcycles | 1540 | 1849 | 1790 | 2535 | +64% |
| Tractors | 1036 | 941 | 613 | 1949 | +88% |
| Trailer under 3.5 Mt | 250 | 286 | 288 | 32299 | +1290% |
| Trailer 3.5 and above 3.5 Mt | 2281 | 2707 | 2628 | 18559 | +813% |
| Total | 288828 | 342142 | 319615 | 334440 | +86% |

According to the data presented in Table 3, it is clear that the number of registered vehicles is increasing every year. Lack of additional data such as the year of production, combustion model, producer, origin of the state, does not allow us to find out why this growth trend is happening. Also, it is not clearly known what is the role of Law no. 05 / L-132 for vehicles published on 11.05.2017 no: 15/2017 *where it cites the registration of vehicles older than 10 years*. Furthermore, in relation to the traffic safety: Existing road infrastructure in Kosovo, age and working condition of the vehicles, non-adapting with traffic regulations, low awareness of the consequences of accidents, insufficient number of traffic police officers to cover all key traffic points, have increased significantly the number of accidents in Kosovo, and especially with drastic increase in fatal accidents. The data from the "Road Safety Strategy and Action Plan" drafted by the Ministry of Infrastructure presents the real increases in accidents in Kosovo. However, it is worth mentioning that from 2014 when this document has been drafted there is an increase in the number of fatalities. According to oficial sources in 2017 there were 119 fatality cases caused by accidents and an increase of 20% compared to 2016 where there were 100 fatalities. Year 2015 is recognized as the year with most cases of fatality in the last four years with a total of 129 people.

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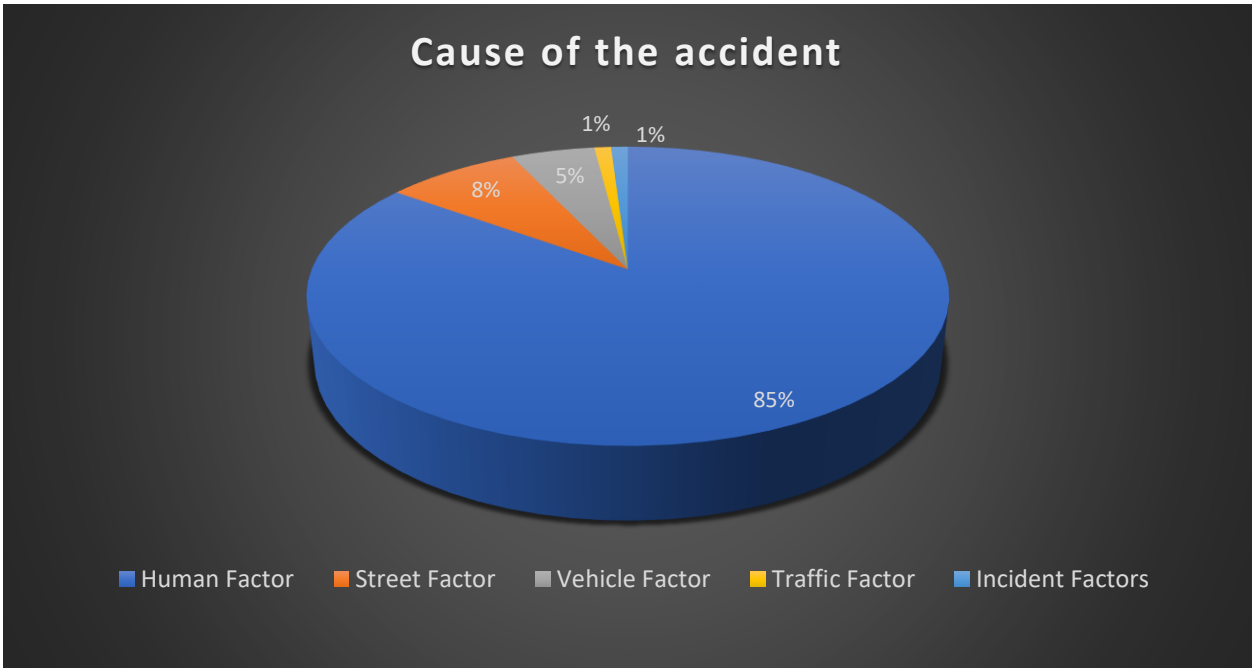
Table 4. Vehicle registration of 2014-2017- Kosovo. Cause of accident Chart [6].

| Year | Accidents with material damage | Accidents with injuries | Fatality Accidents | Dead Persons | Injured people |
|---|---|---|---|---|---|
| 2004 | 5,097 | 1,326 | 141 | 170 | 2,053 |
| 2005 | 10,963 | 2,506 | 145 | 155 | 4,206 |
| 2006 | 11,436 | 3,013 | 156 | 178 | 4,789 |
| 2007 | 12,987 | 3,901 | 127 | 139 | 6,264 |
| 2008 | 11,313 | 3,850 | 118 | 133 | 6,427 |
| 2009 | 14,330 | 4,730 | 152 | 176 | 7,984 |
| 2010 | 12,594 | 4,327 | 158 | 175 | 7,731 |
| 2011 | 18,888 | 4,490 | 130 | 157 | 8,321 |
| 2012 | 19756 | 4555 | 116 | 121 | 8561 |
| 2013 | 13878 | 4960 | 104 | 119 | 9817 |
| 2014 | 10333 | 4876 | 111 | 127 | 9713 |
| 2015 | 17,722 | - | 109 | 129 | - |
| 2016 | 18, 541 | - | 100 | 110 | - |
| 2017 | 16,422 | - | 119 | 137 | 5789 |



Indicators for the number of deaths are calculated for every 100,000 inhabitants, and for every 100,000 vehicles. In Kosovo up to now, for every 100,000 inhabitants are 9 dead, and for every 100,000 vehicles are 47 dead for the total number of 297,392 registered vehicles in Kosovo. Disturbing are the numbers of pedestrians, dead and injured. For 2015, 2016, 2017, and 2018 year there are missing final data for the number of dead pedestrians, but if we refer to the data from the traffic safety strategy, the situation by 2014 is as below:

Table 5. Pedestrians, Injuries and Death - 2014 [6].

| Age | Dead | Injured |
|---|---|---|
| 0-12 Age | 7 | 327 |
| 13-18 Age | 2 | 149 |
| Over 19 Age | 30 | 740 |
| Total | 39 | 1216 |

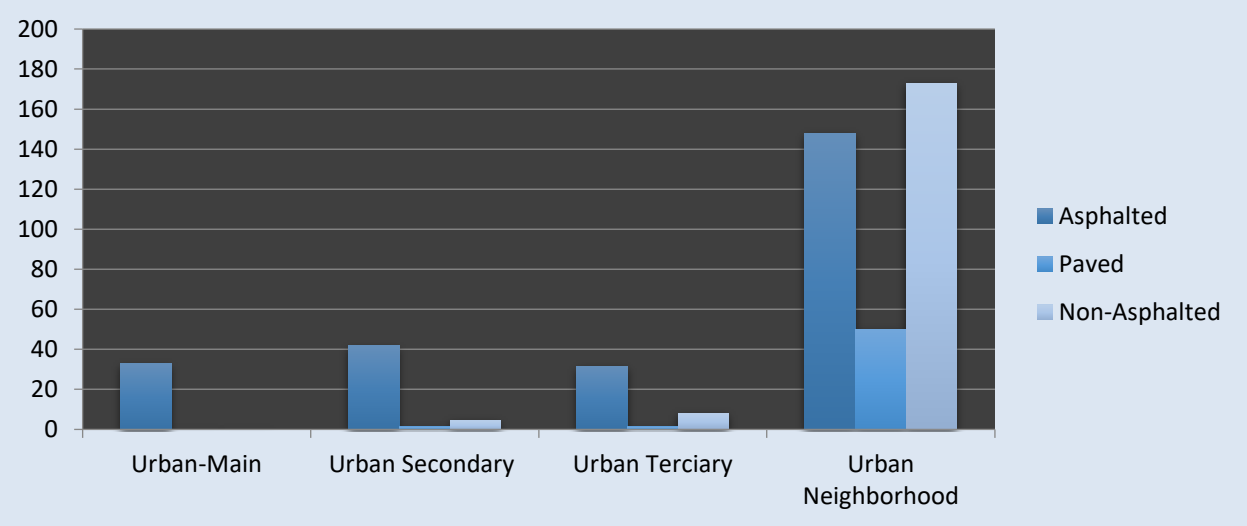



Figure 1. Traffic – Urban roads level in Prishtina Municipality [6].

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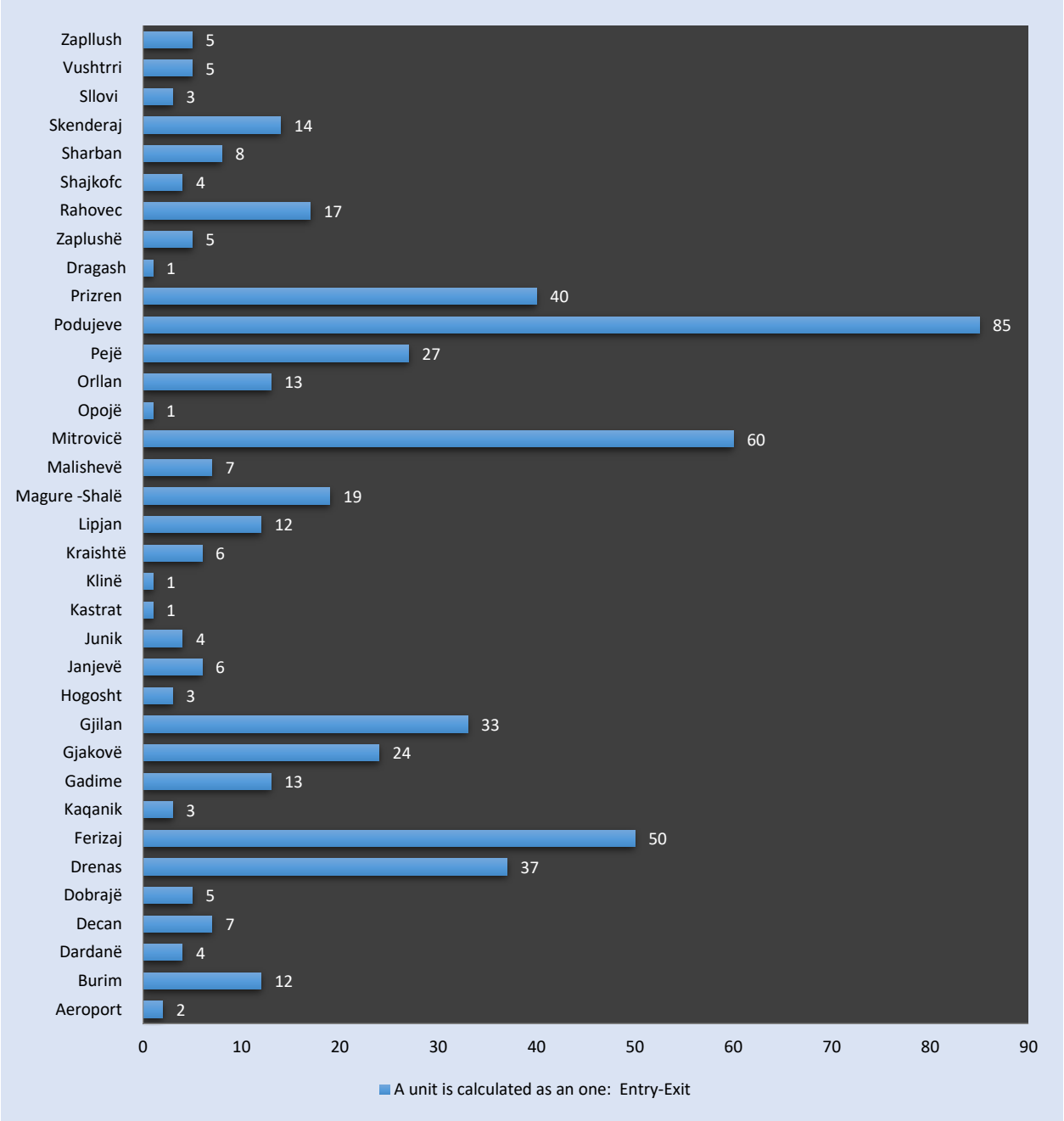


Figure 2. Traffic – The Bus Station operations in Prishtina [6].

Prishtina Municipality, as the capital of Kosovo, in addition to the existing number of vehicles, it simultaneously gravitates to a large number of vehicles from other municipalities of Kosovo. The Bus Station in Pristina is known as a public company, with its position in the western part of

Prishtina, also known as the largest bus station in Kosovo. According to the data provided by the company, the total number of buses entering at the national level is 534. Data on the circulation of vehicles in the main arteries that gravitate towards the city and vice versa (ie in both directions) are as follows:

1. Direction Fushë Kosovë 40 000 - 50 000 vehicles / 12 hours;
2. Direction Mitrovica / Kastriot 20 000 - 30 000 vehicles / 12 hours;
3. Direction Podujevë 10 000 - 20 000 vehicles / 12 hours;
4. Direction Ferizaj 20 000 - 30 000 vehicles / 12 hours;
5. Northeast traffic on the 'B' road 20 000 - 30 000 vehicles / 12 hours.

Actually, in total, approximately 135,000 vehicles are circulating in these roads within 12 hours.

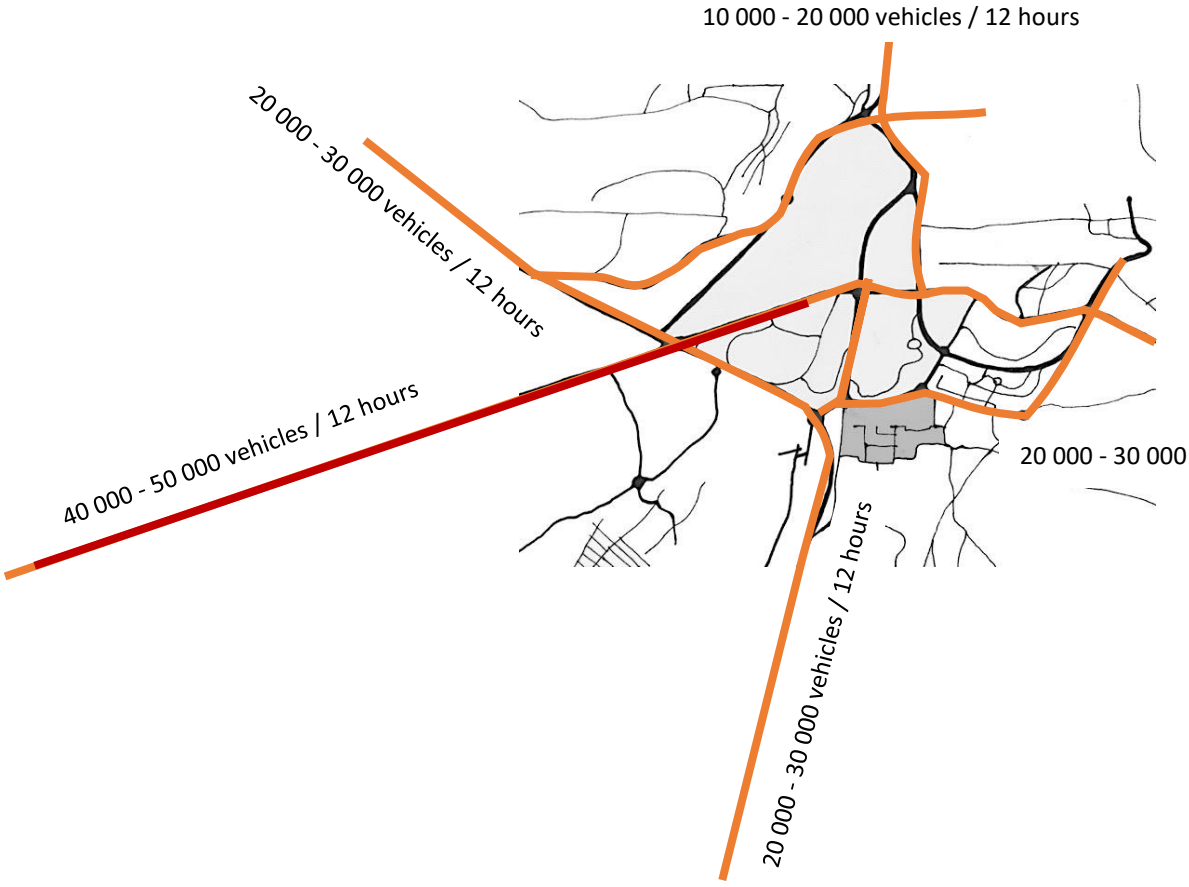


Figure 3. Traffic – Main road arteries and Humongous Traffic Rhythm, Prishtina

According to Urban Development Plan - Pristina 2012-2022, in Prishtina there are a total of 3650 parking lots which are distributed in 31 locations. Compared to the number of the vehicles which gravitates the city of Prishtina those parking spaces does not meet nearly the necessary parking spaces of the city of Pristina. Urban Regulatory Plan - Prishtina - Center has foreseen the required amount for parking spaces depending on the source of traffic ranging from homes, where a parking space is foreseen for a residential unit and continuing with larger buildings such as hotels where there is a minimum of 3 parking spaces for one bed.

| | |
|---|---|
| 1. Homes for a family, residential buildings | 1Parking/Unit |
| 2. Youth homes | 1Parking/20 Beds. Min 2P |
| 3. Hotel | 1Parking/3 Beds. Min 3P |
| 4. Homes for older adults | 1Parking/10 Beds. Min 3P |
| 5. Office buildings, administration | 1Parking/30 $m^2$ Net usable area |

## DISCUSSION

The lack of a sustainable urban mobility plan for the city of Pristina and its linkage to spatial plans in the future will bring serious problems for the city, which will have a negative impact on the quality of life and wellbeing of every citizen living and visits Prishtina. Lack of a serious and professional approach to sustainable city planning, uncontrolled expansion and without predetermined criteria, non-compliance with the planning hierarchy, lack of synergy between areas of housing blocks, approval of the number of neighborhoods without any study on access, space, environment, social cohesion and services have brought the city to a critical point of development. The concept of ‘road extension is a solution’, ‘one more opening floor to the road’ has led to increasing number of fatality accidents and the lack of space for children's games in the neighborhood. With the enormous number of gravitated vehicles and the lack of parking spaces and facilities, almost every neighborhood in Pristina is in the mental state of protecting the parking space. Therefore, some initiatives known as strong measures, such as placement of metal bars

against illegal parking, are promising but those are short-term solutions. The municipality of Prishtina is now in the public hearing phase for a sustainable urban mobility plan. The scenario for the active city is good because with Prishtina's dynamics it needs to be channeled towards the city for its urbanites, with the promotion of active movement, cycling, sustainable urban transport, parking and a sustainable vehicle movement network.

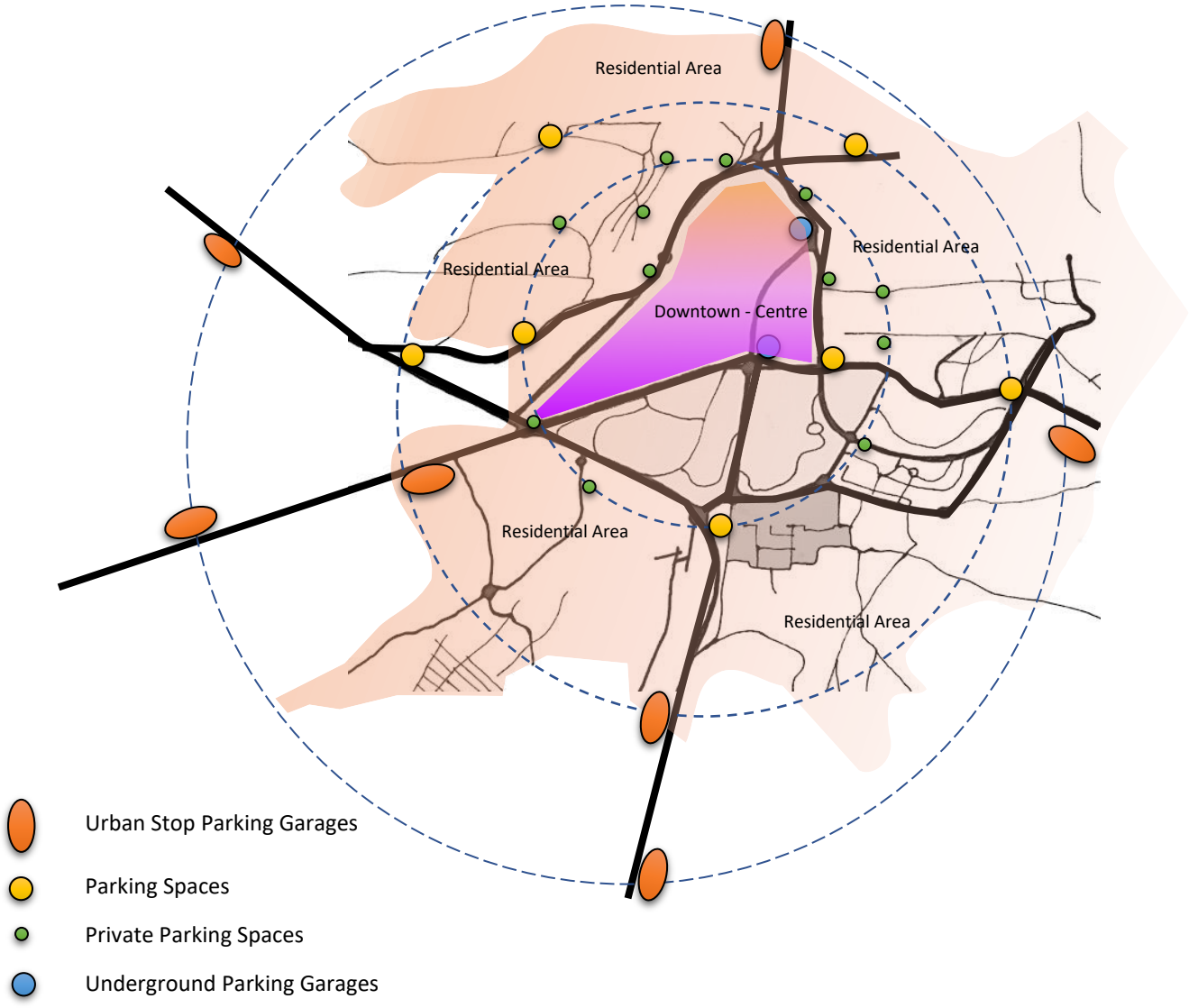


Figure 4. Proposal of Urban Stop Parking Garages, Parking Spaces, Private Parking Spaces and Underground Parking Garages, Prishtina

## CONCLUSION

There is a conceptual urban strategy to offer a variety of public parking spaces and parking garages, instead only one and big architectural structure, also there is need that those type of buildings blend in within an urban composition, preferably incorporated or isolated with a cultivated vegetation. As from urban planning concepts we stand that in those situations, a more suitable are open air structures, moreover, parking garages can be realized underground with a closed type of structure. Naturally, those types of architecture structures demand a heavy mechanical ventilation, urban security, high level of implemented and maintained hygiene, hence, always preferring to implement a new nanotechnology filters as a contemporary technology answer regarding to air pollution. Prishtina like the other cities must consider to implement a strategy of underground building structures as a whole functional urban system, avoiding urban resettlements [7]. The current degraded state of environment and urban health in Prishtina, requires specific responsibilities and activities, especially when the state is directly linked to the quality of life and human development.

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