

SPATIAL DISTRIBUTION OF THE POPULATION IN THE TERRITORY OF MOUNT ZHEDEN IN TERMS OF TRAFFIC INFRASTRUCTURE

Mireme RUSHITI¹, Niagara XHEMAILI¹, Jehona IBISHI¹

¹*Department of Geography, Faculty of Natural Sciences and Mathematics, University of Tetova, MK*

^{*}*Corresponding author e-mail: mireme.rushiti@unite.edu.mk*

Abstract

The subject of this paper is the spatial distribution of the population in the territory of Zheden in terms of traffic infrastructure. The development of the population of the settlements depends on the influence of the different characteristics and conditions of the space where they are located. The paper analyzes the geographical distribution of the population in the settlements in Zheden in terms of traffic infrastructure, including the distance from the nearest cities, the distance from the headquarters of the municipalities belonging to the territory of Zheden etc. The descriptive, analytical, comparative method, statistical and cartographic method were used in the preparation of this paper. The analyzes and conclusions are based on the processing of the data from the State Statistical Office of North Macedonia, from previous researches and the literature on the studied area and field researches. The traffic is realized through highways, regional roads, local roads and railways. The obtained results indicate that the road network system provides efficient external and internal traffic. This shows the importance of the traffic network, through which the population communicates with other countries, and that in the future it is necessary to improve the situation in terms of interconnection of rural traffic. The purpose of this paper is to study the population of Zheden according to the traffic infrastructure as an important prerequisite for the development of the space, because it provides a connection between the settlements and their population, through which they can develop their economic activities.

Keywords: Zheden, population, traffic, municipalities, settlements.

1. Introduction

From the very title of this paper arises the subject of the research, which is the displacement of the population on the territory of Mount Zheden in terms of traffic infrastructure, emphasizing the relationship between the natural-geographical characteristics of the settlements and the territorial distribution of the population within the study area.

The territory of Mount Zheden is located in the northwestern part of the Republic of North Macedonia, it lies between the Skopje Valley in the east and the Polog Valley in the west, Sharr Mountain in the north, Skopska Crna Gora in the northeast, field of Bojana and Kopanitsa in the southeast and the Kaldermi Bogaz in the south. In administrative-territorial terms it belongs to three municipalities: Jegunovtse, Zhelino and Saraj, with 13 settlements, with a total area of 167.6km², which differ from each other according to several features and characteristics. According to the geographical position, we can see that the territory of Mount Zheden is a clearly separated whole on all sides.

According to the 2002 census, a total of 13 768 inhabitants lived in the 13 settlements, i.e the average size of the villages was 1 059 inhabitants. The density of settlements in Zheden is 7.15 villages per 100km², with an average area of 14km² per village. In terms of traffic infrastructure, it is noted that 37,4% of the population are on local roads, 23,2% on local roads and near the railway line Tetovo – Skopje, 27,6% of the population are not far from the old road Tetovo-Skopje, 7% not far from the highway Tetovo-Skopje and along the old road Tetovo – Skopje. Regarding the distance from the nearest cities, most of the settlements from the two urban

settlements are at a distance of 20 km to 29 km with 51.2% of the population. According to the size of the area, larger settlements are: Radusha, Bojane, Rashche and Kopanitsa, while larger settlements according to the population number are: Rashche and Bojane. In these two settlements over the years the population grows, and from 1948 to 2002 in Rashche the population increased by 1 223 inhabitants, while in Bojane by 1 102 inhabitants. In 1948 Rashche had 1 474 inhabitants, while in 2002 it had 2 697 inhabitants. There was also an increase in the population of Bojane, where from 1948 to 2002 the population increased from 1 128 to 2 230 inhabitants. The research on the population and settlements is of great importance for economic and social development in the region, where the main factor for their development are the conditions where they are located. The purpose of this paper is to study the population of Zheden in relation to traffic infrastructure as an important prerequisite for the development of space, because it provides a link between settlements and their population, through which the population can develop various economic activities.

2. Distribution of the Population and Households in Relation to the Traffic Infrastructure

The traffic infrastructure is an important precondition for the development of a space because it provides a connection between the settlements and their population, through which they can develop their economic activities.

Regarding the traffic system, the micro-location of the villages according to the traffic infrastructure can be quite different, as it follows: villages lay next to highways or along highways, regional roads or along regional roads, local roads and villages outside the traffic system. Other classifications can be made too (Даскаловски & Маџевиќ, 2008).

The table shows the villages on the territory of Mount Zheden in terms of traffic infrastructure. Only on local roads there are 5 settlements or 38.5% of the settlements of Zheden, they are: Rashche, Raotintse, Tudence, Sirichino and Kopantse. But on local roads and near which the railway line Tetovo-Skopje passes, are: Jegunovtse, Dvortse, Radusha and Rudnik Radusha, which cover 21.4% of the territory. The settlements Bojane, Kopanitsa and Cerovo are not far from the old road Tetovo – Skopje (Панов, 1998), they cover 33.8% of the territory, with a total area of 56.6 km². While the settlement that is not far from the highway and the old road Tetovo-Skopje is the village Grupchin which covers an area of 6.7 km².

Table 1. Distribution of the population according to traffic infrastructure, 1994 and 2002

Distribution of the population depending on the micro-location of the settlements according to the traffic infrastructure								
Traffic infrastructure	on local roads		in local roads / near the railway line Tetovo - Skopje		not far from the old road Tetovo-Skopje		not far from the highway Tetovo-Skopje / along the old road Tetovo - Skopje	
	1994	2002	1994	2002	1994	2002	1994	2002
Number of population	4761	5147	3130	3198	3823	3800	876	968
% of population	37,8%	37,4%	24,9%	23,2%	30,4%	27,6%	6,9%	7,0%
Number of households	1125		669		963		170	
% of households	38,4%		22,8%		32,9%		5,8%	
Number of settlements	5		4		3		1	
% of settlements	38,5%		30,5%		23,1%		7,7%	

Total area in km²	68,5	35,8 ⁴	56,6	6,7
% of the territory	40,9%	21,4%	33,8%	4,0%
Settlements	Rashche, Raotintse, Tudence, Sirichino and Kopantse	Jegunovtse, Dvortse, Radusha and R.Radusha	Bojane, Kopanitsa and Cerovo	Grupchin

Source: MakStat database/Censuses/Census of population 1948 – 2002/Censuses of population 1948-2002 by settlements. Field research and processed by the author.

According to this determinant, the distribution of the population is as follows: on local roads is the largest part of the population, the average size of the villages is 927 inhabitants, who participate with 60.6% of the total population of Zheden. The number of households is 1 794 with an average of 4.7 members per household, close to the railway line are 23.2% of the population and 22.8% of households, not far from the old road Tetovo-Skopje are 27.2% of the population and 32,9% of the households and not far from the highway Tetovo-Skopje are 7.0% of the population and 5.8% of the households.

The table shows that almost all settlements have access to local roads. This shows the importance of the transport network, through which the population communicates with other countries. In the future, it is necessary to improve the situation in terms of interconnection of traffic in the villages.

3. Distribution of the population according to the distance from the nearest cities

The nearest cities to the settlements on Mount Zheden are the capital Skopje and the city of Tetovo and therefore we will show the distance from these cities. The settlements of the researched area according to the distance from the nearest cities are classified in 5 groups: under 10km, 10-19.9km, 20-29.9km, 30-39.9km and over 40km. Regarding the distance of the settlements to the city of Skopje and Tetovo, it can be seen that almost all settlements are closer to the city of Tetovo than to Skopje, except the village Rashche, Kopanitsa, Bojane and Radusha. The settlements that belong to the municipality of Jegunovtse are at a greater distance from the city of Skopje, while those of the municipality of Saraj are at a greater distance from Tetovo.

The data show that most of the settlements of Zheden have a distance of 20km to 29.9km from the two nearest cities, and thus the population. From the capital Skopje in 1994 50.1% of the population of Zheden were at a distance of 20km to 29.9km, where the average size was 1 260 inhabitants, while in 2002 it was 1 272 inhabitants, with a share of 46.2% in the total population and 1 419 households with an average of 4.5 members per household. At a distance of 20km to 29.9km from the city of Tetovo in 1994 were 52.1% of the population, with an average size of settlements of 820 inhabitants, while in 2002 it was 881 inhabitants, with a share of 51.2% in the total number of population and 1 479 households with an average of 4.8 members per household.

⁴ The area of the village of Dvortse is not included in this number, because no cadastral records have been kept for the settlement.

Table 2. Distribution of the population by distance from the nearest cities, 1994 and 2002

Distribution of the population in Zheden according to the distance from the nearest cities										
City	Skopje									
Distance	10-19,9 km		20-29,9 km		30-39,9 km		40-49,9 km		над 50 km	
Number of population	1994	2002	1994	2002	1994	2002	1994	2002	1994	2002
		2363	2697	6301	6360	1095	1155	1962	1842	869
% of population	18,8%	19,6%	50,1%	46,2%	8,7%	8,4%	15,6%	13,4%	6,9%	7,7%
Number of households	561		1419		261		470		216	
% of households	19,2%		48,5%		8,9%		16,1%		7,4%	
Number of settlements	1		5		3		3		1	
% of settlements	7,7%		38,5%		23,1%		23,1%		7,7%	
Total area in km ²	23,4		77,3		22,1 ⁵		34,4		10,4	
% of territory	14%		77,3%		13,2%		20,5%		6,2%	
Settlements	Rashche		Kopanitsa, Bojane, Radusha, R.Radusha and Grupchin		Dvortse, Cerovo and Sirichino		Tudence, Jegunovtse and Raotintse		Kopantse	
City	Tetovo									
Distance	10-19,9 km		20-29,9 km		30-39,9 km		40-49,9 km		над 50 km	
Number of population	1994	2002	1994	2002	1994	2002	1994	2002	1994	2002
	1757	1794	6560	7047	4273	4927				
% of population	13,9%	13,1%	52,1%	51,2%	33,9%	35,8%				
Number of households	381		1479		1067					
% of households	13,0%		50,5%		36,5%					
Number of settlements	3		8		2		/		/	
% of settlements	23,1%		61,5%		15,4%					
Total area in km ²	25,6		93 ⁶		49					
% of territory	15,3%		55,5%		40,6%					
Settlements	Sirichino, Grupchin and Tudence		Cerovo, Jegunovtse, Kopantse, Raotintse, Dvortse, Kopanitsa, Radusha and R. Radusha		Bojane and Rashche					

Source: <https://www.google.com/maps>,
As table no.1. Processed by the author.

⁵ The area of the village of Dvortse is not included in this number, because no cadastral records have been kept for the settlement.

⁶ As reference number 2.

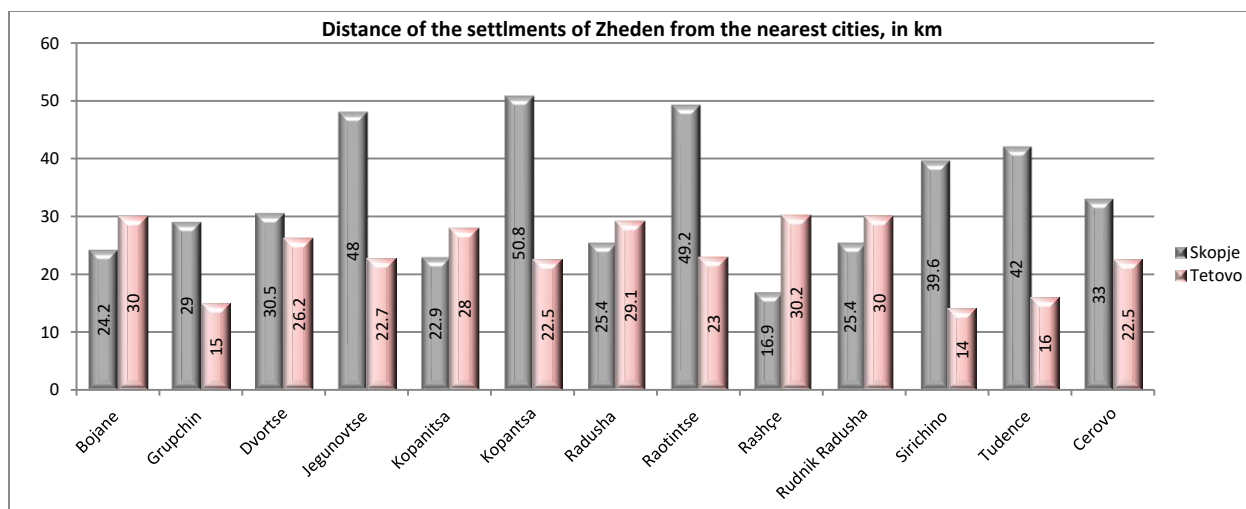


Fig 5. Distance of the settlements of Zheden from the nearest cities, in km

At a distance of over 30km from the city of Skopje are 7 settlements, including about 30% of the population, while from the city of Tetovo are 2 settlements and 35% of the population. As for the closest settlements to the cities, the village Rashche is 16.9 km from the city of Skopje, thus 19.6% of the population, while the villages Sirichino, Grupchin and Tudence are at a distance of 14-16km from the city of Tetovo, which occupy 13.1% of the population and 13% of the households with an average of 4.7 members per household.

From the analysis made with Pearson correlation for the distance of the population from the capital Skopje, we notice that the correlation is significant at the level of 0.01 and is negative with a value of - 399 which shows how far from the capital Skopje, the population reduces. While from the analysis made with Pearson correlation for the distance of the population from the city of Tetovo, we notice that the correlation is significant at the level of 0.01 and is negative with a value of -420 which indicates that the furthest from Tetovo the population decreases. This shows that some settlements that are closer to the cities have advantages over other settlements, because the proximity to the cities affects the development of the economy of the settlements, as well as increasing the living standard of the population, so the proximity to the city offers a better life for residents, through various opportunities for employment, education, easier movement and communication with other regions, etc.

4. Distribution of the Population And Settlements According to the Distance from the Seat of the Municipalities to Which the Settlements Belong

The settlements, whose territories are located on the mountain Zheden, belong to three administrative units: the municipality of Zhelino, the municipality of Jegunovtse and the municipality of Saraj. The settlements of the surveyed area according to the distance from the headquarters of the municipalities to which they belong are classified into 5 groups: under 10km, 10-19.9km, 20-29.9km, 30-39.9km, and over 40km. Regarding the distance of the settlements from the seat of the municipalities, it can be seen that the closest municipality to all settlements is the municipality of Zhelino with the greatest distance up to 29.9 km.

Table 3. Distribution of the population according to the distance from the seat of the municipalities, 1994 and 2002

Distance of the population in Zheden from the seat of the municipalities										
Municipality	Saraj									
Distance	under 10 km		10-19,9 km		20-29,9 km		30-39,9 km		over 40 km	
Number of population	1994	2002	1994	2002	1994	2002	1994	2002	1994	2002
	2363	2697	6301	7015	660	760	2397	2237	869	1095
% of population	18,8%	19,6%	50,1%	50,9%	5,2%	5,5%	19,0%	16,2%	6,9%	7,7%
Number of households	561		1419		160		571		216	
% of households	19,2%		48,5%		5,5%		19,5%		7,4%	
Number of settlements	1		5		2		4		1	
% of settlements	7,7%		38,5%		15,4		30,5%		7,7%	
Total area in km ²	23,4		94		11,9 ⁷		44,6		10,4	
% of territory	13,9%		56,1%		7,1%		26,6%		6,2%	
Settlements	Rashche		Grupchin, Radusha, R. Radusha, Bojane and Kopanitsa		Cerovo and Dvortse		Sirichino, Jegunovtse Tudence and Raotintse		Kopantse	
Municipality	Jegunovtse									
Distance	under 10 km		10-19,9 km		20-29,9 km		30-39,9 km		over 40 km	
Number of population	1994	2002	1994	2002	1994	2002	1994	2002	1994	2002
	2623	2699	2037	2103	5584	6406	1478	1714		
% of population	20,8%	19,6%	16,2%	15,3%	44,4%	46,5%	11,7%	12,4%		
Number of households	617		393		1344		350			
% of households	21,1%		13,4%		45,9%		11,9%			
Number of settlements	6		2		4		1			
% of settlements	46,1%		15,4		30,8%		7,7%			
Total area in km ²	55 ⁸		25,9		67,6		19,1			
% of territory	32,8%		15,4%		40,3		11,4%			
Settlements	Jegunovtse, Raotintse, Kopantse, Sirichino, Tudence and Dvortse		Radusha and R. Radusha		Grupchin, Cerovo, Rashche and Bojane		Kopanitsa			
Municipality	Zhelino									
Distance	under 10 km		10-19,9 km		20-29,9 km		30-39,9 km		over 40 km	
Number of population	1994	2002	1994	2002	1994	2002	1994	2002	1994	2002
	1757	1794	4730	5211	6103	6763				
% of population	13,9%	13,0%	37,6%	37,8%	48,5%	49,1%				
Number of households	381		1189		1357					
% of households	13,0%		40,6%		46,4%					
Number of settlements	3		5		5					
% of settlements	23,1%		38,5%		38,5%					
Total area in km ²	25,6		73,6		68,4 ⁹					
% of territory	15,3%		43,9		40,8%					
Settlements	Grupchin, Sirichino and Tudence		Cerovo, Jegunovtse, Kopantse, Raotintse and Bojane		Dvortse, Radusha, Rashche, R. Radusha and Kopanitsa					

Source: <https://www.google.com/maps>
As table number 1. Processed by the author.

⁷ The area of the village of Dvortse is not included in this number, because no cadastral records have been kept for the settlement.

⁸ As reference number 4.

⁹ As reference number 4.

At a distance of less than 10km, from the municipality of Saraj is the village Rashche for 8.3km, where 2 697 inhabitants were registered, from the municipality of Jegunovtse are: Jegunovtse as the seat of the municipality, Raotintse (3.3km), Kopantse (5km), Sirichino (9.9km), Tudence (7.7km) and Dvortse (9.5km) which occupy 38.5% of the settlements in Zheden, while from the municipality of Zhelino are the settlements: Grupchin (6.8km), Sirichino (5.7km) and Tudence (8.2 km) which cover 23.1% of the settlements in the surveyed area. They have 381 households and a total population of 794 inhabitants.

In the zone of distance from 10km to 19.9km, from the municipality of Saraj are: Grupchin (19km), Radusha (18km) and Rudnik Radusha (17km), Bojane (14km) and Kopanitsa (13km), or 38.5% of the settlements in Zheden, from the municipality of Jegunovtse are: Radusha (12km) and Rudnik Radusha (13km), with 15.4% of the settlements in Zheden, while from the municipality of Zhelino are the settlements: Cerovo (14km), Jegunovtse (14km), Kopantse (17km), Raotintse (15km) and Bojane (16km) cover 38.5% of the settlements of Zheden. Regarding the population, at a distance of 10km to 19.9km from the municipality of Saraj are registered 7 015 inhabitants, ie 1 419 households, from the municipality of Jegunovtse are 2 103 inhabitants, ie 393 households, while from the municipality of Zhelino are 5 211 inhabitants, ie 1189 households. At a distance of 20km to 29.9km, from the municipality of Saraj are: Cerovo and Dvortse, while at a distance of 30-39.9km are the settlements: Sirichino, Jegunovtse, Tudence and Raotintse, which cover 26.6% of the territory of Zheden. Distance from 20km to 29.9km with the municipality of Jegunovtse have the settlements: Grupchin, Cerovo, Rasche and Bojane, while from the municipality of Zhelino are: Dvortse, Radusha, Rashche, Rudnik Radusha and Kopanica, which occupy 38.5% of the settlements of Zheden. The farthest from the municipality Saraj is the village Kopantse with 41km, while from the municipality Jegunovtse is the farthest is the village Kopanitsa with 33km. As for the population, at a distance of 20km to 29.9km from the municipality of Saraj are 760 inhabitants, i.e 160 households, from the municipality of Jegunovtse are 6,406 inhabitants, i.e 1,344 households, while from the municipality of Zhelino are 6763 inhabitants, i.e 1357 households.

In the following table we will analyze the distance of the settlements from the headquarters of the municipalities to which they belong. Our research does not cover all the settlements of the municipalities, but only those that are part of the territory of Mount Zheden. In the municipality of Saraj are included six settlements, Bojane, Kopanitsa, Rashche, Radusha, Rudnik Radusha and Dvortse, in the municipality of Jegunovtse are covered five settlements, Jegunovtse, Kopantse, Sirichino, Raotintse and Tudence and in the municipality of Zhelino are included two settlements Grupchin and Cerovo.

In Zheden, the furthest settlement from the headquarters of its municipality is the settlement Dvortse, municipality of Saraj, where 1.8% of the population live, with a total number of households of 53 with an average of 4.3 members per household.

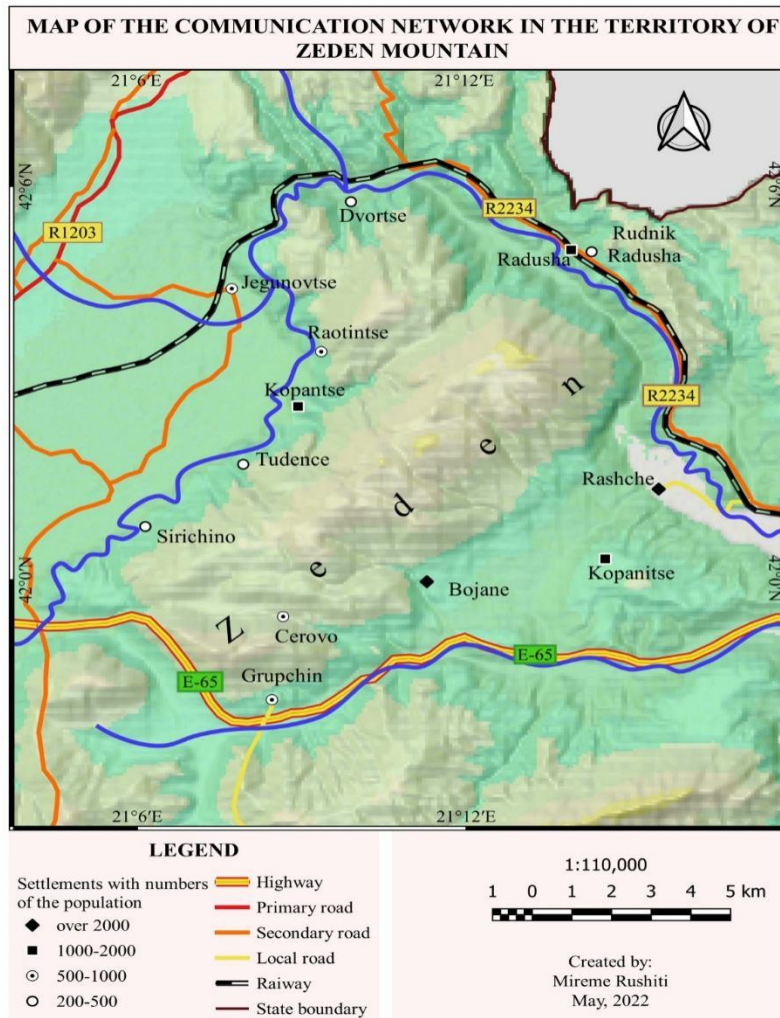
Table 4. Settlements by distance from the headquarters of the municipalities to which they belong, 1994 and 2002

Settlements in Zheden according to the distance from their municipalities														
Municipality	Saraj municipality						Jegunovtse municipality				Zhelino municipality			
Distance	Up to 15km		16-20km		Over 20km		Up to 5km		6-10km		Up to 10km		10-14km	
Number of population	1994	2002	1994	2002	1994	2002	1994	2002	1994	2002	1994	2002	1994	2002
	5751	6641	2037	2103	225	249	2385	2470	881	826	876	968	435	511
% of populat.	45,7%	48,2%	16,2%	15,3%	1,8%	1,8%	19%	18%	7%	6%	7%	7%	3,5%	3,7%
No. of househ.	1573		393		53		576		211		170		107	
% of househ.	53,7%		13,4%		1,8%		19,7%		7,2%		5,8%		3,7%	
No. of settlem.	3		2		1		3		2		1		1	
% of settlem.	23,1%		15,4%		7,7%		23,1%		15,4%		7,7%		7,7%	
Area in km ²	68,1		25,9		/		36,1		18,9		6,7		11,9	
% of territory	40,6%		15,5%		/		21,5%		11,3%		4,0%		7,1%	
Settlements	Rashche, Kopanitsa and Bojane		R.Radusha and Radusha		Dvortse		Jegunovtse,Raotintse dhe Kopantse		Tudence and Sirichino		Grupchin		Cerovo	

Source: <https://www.google.com/maps>.
As table nr.1. Processed by the author.

Most of the population of Zheden, which belong to the municipality of Saraj are located from 8km to 15km away from the seat of the municipality, their average population is 2 213 inhabitants, who participate with 48.2% in the population of Zheden and 1 573 households with an average of 4,3 members per household, while at a distance of 16km to 20km are 15.3% of the population. The distance of the settlements in the municipality of Jegunovtse is grouped into two groups, up to 5km and 6-10km. In the distance up to 5km we cover Jegunovtse even though it is the seat of the municipality, because their population participates in the total number of the population that we analyze in our research. Most of the population of Zheden belonging to this municipality are concentrated at a distance of up to 5km from the seat of the municipality, 19% of the population and 576 households with an average of 4.3 members per household, while from 6-10km are concentrated 6% of population and 211 households with an average of 3.9 members per household. As for the settlements of the municipality of Zhelino, they have a difference in the distance from the seat of the municipality, the farthest from 14km is the village of Cerovo, thus 3.7% of the population of Zheden and 107 households with an average of 4.8 members per household, while the closest with the seat of the municipality of Zhelino is the village Grupchin for 6.8 km, thus 7% of the population of Zheden and 170 households with an average of 5.7 members per household.

From the analysis made with Pearson correlation for the distance of the population from the seat of the municipalities to which they belong, we notice that for all municipalities the correlation is significant at the level of 0.01 and has negative values, which show that it is further away from the seat of the municipalities and that the population decreases. The settlements closer to the municipalities have better infrastructure which is a precondition for easier movement and communication of the population with other regions and for the development of the settlements, which shows the influence of the municipalities on the closer settlements.



Map 1. Map of the settlements in Zheden according to population number, by the census of 2002 (Rushiti M., 2022)

5. Conclusions

This paper focuses on the distribution of population and households in relation to traffic infrastructure in the settlements of the territory of Zheden Mountain. The territory of Zheden Mountain is located in the northwestern part of the Republic of North Macedonia. Administratively it belongs to three municipalities: Jegunovtse, Zhelino and Saraj. The total area of settlements in the surveyed territory is 167.6 km², with a settlement density of 7.15 villages per 100 km² and an average area of 14 km². There are 13 settlements in the territory, where in 2002 there were a total of 13 768 inhabitants.

Rashche has the largest number of inhabitants with 2 697 inhabitants, whilst the Rudnik Radusha has the lowest number with 211 inhabitants. The total number of households is 2927 with an average of 4.7 members per household, with the largest number of households is the village of Rashche with 561 households with an average of 4.8 members per household.

In Zheden almost all settlements have access to local roads, including the population, while four settlements are close to the Tetovo-Skopje railway line, four settlements are not far from the Tetovo-Skopje old road, and one village is close to the highway and the Tetovo – Skopje old road. This shows the importance of the road

network, through which the population in one country communicates with others. Most of the settlements in Zheden are away from the two cities at a distance of 20 km to 2.99 km and thus 51.2% of the population.

While the closest municipality to all settlements is the municipality of Zhelino with the longest distance up to 29 km. However, the furthest settlement from the seat of the municipality to which it belongs is the village of Dvortse, which belongs to the municipality of Saraj, where only 1.8% of the population are registered.

Proximity to cities and municipal headquarters affects the development of the settlement economy, as well as the increase of the living standard of the population, thus guaranteeing a better life for the inhabitants by offering various employment opportunities, education, movement and a better, easier communication with other regions.

According to the analyzed data and the obtained results, we find that in the researched territory all settlements differ from each other, depending on the researched characteristics, also the population has significant changes depending on the spatial determinants that affect the space of the villages.

Spatial distribution of the population can be used when planning future development, infrastructural equipment, development of certain activities and similar.

Our recommendations aim to pay attention to the development of all settlements, while special attention and additional activities are needed for smaller settlements that are with disadvantaged populations.

References

- [1]. Bakiu, B. 2011. Derveni i Shkupit ndër shekuj. Furkan ISM. Shkup, Maqedonia e V.
- [2]. Даскаловски, В. & Мацевик, М. 2008. Географија на населбите. Скопје, С.Македонија.
- [3]. Ebibi, E. 2020. Radusha, Qytezë nën hijen e historisë. Shkup, Maqedonia e Veriut.
- [4]. Idrizi, Xh. 2019. Toponimia e Dervanit të Shkupit. Shkup. Maqedonia e Veriut.
- [5]. Манаковиќ, Д. 1957. Планина Жеден. Годишен зборник книга 10 томе, Скопје.
- [6]. Мацевик, М. 2011. Динамика и просторна разместеност на самечките домаќинства во Република Македонија. Географски разгледи (44-45) 49-63, УДК: 314.642 (497.7) „1953/2002“. Скопје, Северна Македонија.
- [7]. Мацевик, М. 2012. Географија на население. Скопје, Северна Македонија.
- [8]. Панов, М. 1998. Енциклопедија на селата во Република Македонија (I издание). Скопје.
- [9]. Поповски, В., Селмани, А. & Панов, Н. 2006. Општините во Република Македонија. Скопје, Северна Македонија.
- [10]. Собрание на Република Македонија. 2002. Просторен план на регионот на заштитните зони на изворот Рашче книга 1, текстуален дел.
- [11]. Skenderi, F. 2019. Gjeografia e vendbanimeve. Tetovë, Maqedonia e Veriut.
- [12]. MakStat database/Censuses/Census of population 1948 – 2002/Censuses of population 1948-2002 by settlements.