

Analysis of the Main Characteristics of the Population in the Mariovo Region as Part of the Crna Reka Basin in the Republic of Macedonia*

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In the scientific paper, the demographic discharge is treated as the main problem where the Mariovo region is located in the South-eastern part of the Republic of Macedonia, a region that covers an area of 828 km², in which the Municipality of Vitoliste covers a total area of 495 km² and the Municipality of Staravina with a total area of 333 km², a region in which there are 25 village settlements, the Municipality of Vitolishte has 14 villages and the Staravina Municipality has 11 villages, a region that lost more than 95% of its population in the period from 1961 to 2002, through various migrations to the closer cities in the state and part left as economic migrants in other countries. The purpose of this scientific paper is to provide answers to questions as how to stop the devastation of this region and how to revitalize this region and make people return to live in this space again. Methods of study used include: geographical methods, statistical-mathematical methods, cartographic methods, information methods, cabinet-laboratory methods, and field researches that were made in the period from May to June 2003. The paper deals with the following: the numerical and natural movement of the population, migrations, population by age and gender, territorial distribution of the population, national structure, and educational characteristics of the population. At the end of the research, the findings include the reasons, consequences and measures for its revitalization in the next 10 years of the Mariovo region as part of the Crna Reka basin in the Republic of Macedonia.

Keywords: numerical movement, birth rate, mortality, migration, age, sex, prevalence

Introduction

Mariovo is located in the South-eastern part of the Republic of Macedonia, a region that covers an area of 828 km², in which the Municipality of Vitoliste covers a total area of 495 km² and the Municipality of Staravina with a total area of 333 km², a region with 25 villages, the Municipality of Vitolishte has 14 villages and the Staravina Municipality has 11 settlements. Mariovo region is selected for research, because it is the only region in the country that lost its population in the period from 1961 to 2002. Demographic discharge occurred in two critical periods between 1961-1981 and 1981-2002. The reason why we undertook detailed research in this

* **Acknowledgements:** This scientific paper was published as part of the research project "Possibilities and Perspectives for the Development of Tourism in the Black River Basin" funded by Goce Delcev University - Stip, Macedonia (Contract No. 0206-151/16, 0201-545/9 and 0307-98/77 from 01.11.2017).

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region was great: In the period of 2000-2003, we have been intensively investigating on this region, wanting to provide detailed and scientific answers to some questions, why this wonderful region has been left without people, what we can do today to revitalize this beautiful natural and clean ecological space, and how to give a human soul again. The motivation for the realization of this more annual research was primarily personal, as professors working for the goal of education, primarily as geographers, we want to help state institutions to seriously deal with their work and to respect the scientific results of the researchers. For the field research of the Mariovo region, we were assisted by the Ministry of Education of the Republic of Macedonia. Interesting problems in the Mariovo region in the Republic of Macedonia have been studied in the scientific research: population dynamics by settlements in Mariovo in the period from 1961 to 2003, gender structure of the population in Mariovo in 2000, age structure of the population by age groups, components of the natural movement: fertility and mortality in Mariovo in 2003, natural increase in Mariovo in the period from 1961 to 2002, population 10 years old and more according to literacy and school preparation in 1994, strong migrations and the population in Mariovo in the period from 1961 to 2003, persons of temporary work in the country from Mariovo in 2003, the national structure of the population in Mariovo in 2002, the population by marital status in Mariovo in 2002, the population by activity in Mariovo in 2002, active, agricultural, non-agricultural population, persons with personal income and dependent population in Mariovo in 2003, and numerical movement of households in Mariovo in the period from 1961 to 2002. The goal of this research was to prove to the state institutions, with the obtained scientific results, that one should return the man in this space, to live, to manage and to survive in the geographical area. After 50 years, the state finally decided in this region to build two huge hydro power plants on the Crna River: Chebren and Galishte. The government decided that the two hydroelectric power plants would be built by domestic construction companies with several thousand workers for a period of seven years. This project will finally begin to be realized and many young couples who come from this region are expected through various programs for revitalization, subsidizing, granting state land, irreversible financial assistance for a longer period of housing, construction of small farms, and purchase of small and large cattle for a period of 5-10 years, this region finally revives (Dimitrov & Koteski, 2015, pp. 288-316).

Demographic Structure of the Population in Mariovo

The demographic structure of the population in Mariovo is an important indicator of the dynamics of the population in the region. The population is a leading factor that makes rapid transformation and regulates and plans the development of the environment and tourism. The evolution of the population is closely related to the social-historical conditions in the investigated region. The various factors in the past also affected the demographic changes of the population, demographic elements, and revealed the basic changes related to the social, economic, ethnic and other characteristics of the population, which is the main force in the occurrence of mass migrations.

The emigration of the population from the Mariovo region is a result of the phenomenon of mass migrations of the village-town relation and going abroad. This phenomenon has lasted uninterruptedly for 50 years. The region of Mariovo occupies a large territory and is part of three Municipalities of Prilep, Bitola, and Kavadarci and unfortunately, after 50 years, the state did not find an appropriate solution concerning how to revive this region.

The origin of the population is assumed to be the old Peonian tribes who lived in tribal communities that began to disintegrate in the 5th and 6th centuries before the new era.

During the 4th century BC, this region was under the rule of the ancient Macedonian state, followed by the Romans from 168 years. Before the new era until 395 of the new era, the old population was Romanized whose descendants today are the Vlachs (Panov, 1984, pp. 36-38).

There are numerous archaeological sites in the region, such as the villages Beshishte and Rapesh, Vitolisht, Staravina, and Dunje.

During the 6th and 7th centuries, the Slavic tribes Berziti moved in, part of the population was slaughtered, and part of the refugees fled the mountains.

During the 14th century, Macedonia was conquered by the Turks, but they did not show great interest in conquering Mariovo.

The movements of the demographic structure of the population date from the second half of the 15th and the early 16th centuries, such as the "Taputahyr Deftern", which speaks of the numerical situation of the population and households.

Similar data exist since 1900 and 1921, since the time of the Kingdom of Serbs, Slovenes, and Croats.

Comprehensive data on the demographic structure of the population in Mariovo are from the censuses after the Second World War that were conducted in 1948, 1953, 1961, 1971, 1981, 1991, 1994, and 2002. The most complete population and demographic structure data exist from the censuses conducted in the period of 1961-2002.

In the period of 1996-1997, Mariovo is divided into two new municipalities, Vitolishte and Staravina, which do not exist today. In all newly created municipalities, there are statistical services that regularly monitor population changes and the overall social economic development of the region.

Population surveys will be targeted for the period from 1961-2002/2003.

Population Dynamics by Settlements in Mariovo and Raecka Valley in the Period of 1961-2003

The observation of the dynamics (numerical movement) of the population is the basic demographic component, resulting in numerous changes in other demographic elements (Panov, 1984, pp. 38-52).

Under the influence of various factors in past periods, the dynamics of the population shows positive or negative changes.

The main reason why the period of 1961-2002 was taken is that in this period the first wave of discharge of the Mariovo region begins and lasts until 1981 and the second wave of large migrations starts in the period of 1981-2002. Also, in this period, official state census of population was held: 1961, 1971, 1981, and 1991 began the census and did not finish until the end, the census was repeated in 1994 and the last census held in the Republic of Macedonia was in 2002. In 2003, a large field survey was conducted in the Mariovo region by us and several other fellow geographers and tourismologists to see once again all the problems on the spot in all rural settlements.

The dynamics of the numerical movement of the population in the period of 1961-2003 can be seen from the data given in Table 1.

Table 1

Population Dynamics in Mariovo in the Period of 1961-2003

Municipality	Number of settlements	1961	1981	2002	Field surveys 2003
Vitoliste	14	7,305	2,383	499	472
Staravina	11	4,559	2,057	325	301
Total	25	11,864	4,440	824	773

Notes. In the Republic of Macedonia, the census of population and households was not made from 2002 to 2018. Source of data: Republic Institute for Statistics of Macedonia; census of population in 1961, 1981, and 2002. The data from the 2002 census were used as raw non-processed by the Republic Institute for Statistics of Macedonia. Data for 2003 were collected during field surveys in the months of May and June 2003. The calculations were made by the authors.

According to the analysis of the table on the population movement in Mariovo, we can safely conclude that the total number of the population is significantly reduced, all settlements have a negative population balance, and they are small both by the number of households and the number of inhabitants.

The area of Mariovo resides in the least populated areas in the Republic of Macedonia. Most of the population migrated to the cities of Prilep, Bitola, Kavadarci, and abroad which is considered a very strong migration movement, resulting in a huge demographic wasteland in this area.

In the period from 1981 to 2002, the villages were completely displaced: Vrpsko, Gudjakovo, Zhivovo, and Petalino. If such a process of migration to the population continues in a few years, many of the rural settlements in the region will be extinguished, at the moment when it invests most in: Postal Telegraph and Telephone Services, settlement infrastructure and road network modernization, for better visibility of the dynamics, the total number of population in settlements will consider the period of 1961-2003 after the census years.

Table 2

Population Dynamics by Settlements in Mariovo in the Period of 1961-2003

Municipality of Vitoliste	1961	1981	2002	Field surveys 2003
Besiste	1,171	238	22	18
Veprcani	367	62	13	10
Vitoliste	1,291	664	171	167
Vrpsko	137	5	-	-
Gudjakovo	132	4	-	-
Dunje	778	333	78	75
Zivovo	250	7	-	-
Kalen	336	110	18	18
Kokre	266	53	7	7
Krusevica	637	284	88	82
Manastir	232	19	4	2
Pestani	210	63	18	18
Polciste	824	193	31	31
Caniste	674	348	49	44
Total	7,305	2,383	499	472

Notes. In the Republic of Macedonia, the census of population and households was not made from 2002 to 2018. Source of data: Republic Institute for Statistics of Macedonia; statistical yearbooks of the population census in 1961 and 1981. The data for 2002 are used crude not processed by the Republic Institute for Statistics of Macedonia. The data for 2003 were obtained with their own surveys during the field surveys in the months of May-June 2003. The calculations were made by the authors.

According to the data from Table 2, it is noticeable that the number of the population in the rural settlements and the census periods is significantly reduced in all settlements, only their intensity is different.

The general conclusion for the past 42 years in Mariovo is that there are intense migrations and a huge outflow of population.

This situation is certainly due to the socially historical conditions in the past, as well as the economic conditions today of the existing municipalities and the industrial development of the neighboring cities: Prilep, Bitola, and Kavadarci.

Gender Structure of the Population in Mariovo in the Period of 1961-2000

Changes that occur in terms of population reduction are reflected on all other demographic structures.

Such is the gender structure of the population, these changes are very important primarily for the biological development of the population, that is, reproductive power (Panov, 1984, pp. 52-55). In Mariovo, the number of both male and female population is reduced, which was reflected in the natural increase.

Table 3

The Male and Female Population in Mariovo in the Period of 1961-2000

Year	Total population	Male	Female	Difference (%)
1961	11,863	6,082	301	2.53
1981	4,440	2,345	250	5.63
2000	1,132	612	92	8.12

Notes. In the Republic of Macedonia, the census of population and households was not made from 2002 to 2018. Source of data: Republic Institute for Statistics; statistical anniversaries of the population census in 1961 and 1981; and the population forecast in 2000. Calculations are made by the authors.

According to the data from Table 3, we can see that in all census years the male over the female population prevails.

If we make an analysis of the relationship between the male and female population in municipalities of Vitoliste and Staravina, we will receive the following data, which can be seen in Table 4.

Table 4

The Population by Sex in Mariovo and the Municipalities of Vitoliste and Stravina in the Period of 1961-2000

Year	Male	Female	Total	Municipality of Vitoliste			Municipality of Staravina		
				Male	Female	Total	Male	Female	Total
1961	6,082	5,781	11,863	3,725	3,580	7,305	2,357	2,201	4,558
1981	2,345	2,095	4,440	1,273	1,110	2,383	1,072	985	2,057
2000	612	520	1,132	390	345	735	222	175	397

Notes. In the Republic of Macedonia, the census of population and households was not made from 2002 to 2018. Source of data: Republic Institute for Statistics; statistical anniversaries of the population census in 1961 and 1981; and the population forecast in 2000. The calculations are made by the authors.

According to the data from Table 4, we can see that in all censuses the male over the female population prevails.

Age Structure of the Population by Age Groups of: 0-19, 20-59, and Over 60 Years in Mariovo in the Period of 1961-2000

The age structure reflects the dynamic power of the population in a particular geographical area (Panov, 1984, pp. 55-61). The age structure plays an important role in the development of the economy, agriculture, and tourism.

The ratio between the working age and the dependent population depends on age groups and their interrelation.

The age structure is quite important for population reproduction, i.e., the natural increase and whether the population ages or rejuvenates and represents the main condition for the development of the economy in the region.

In order to be able to plan the development of the economy and farming, we must take into account the age structure of the population. The various social and economic conditions that existed in the past period and today show great changes in their development.

We can divide the population in Mariovo as: younger than 0-19 years old, matured from 20 to 59 years old, and an older population over 60 years old.

Table 5

The Age Structure of the Population by Age Groups in Mariovo in the Period of 1961-2000

Year	1961			1981			2000		
	0-19	20-59	Over 60	0-19	20-59	Over 60	0-19	20-59	Over 60
Vitoliste	3,458	3,305	689	537	1,241	560	66	327	489
Staravina	1,916	2,072	469	584	1,091	373	29	165	262
Total	5,374	5,377	1,158	1,121	2,332	933	95	492	751

Notes. In the Republic of Macedonia, the census of population and households was not made from 2002 to 2018. Source of data: Republic Institute for Statistics of Macedonia; statistical yearbooks of the population census in 1961 and 1981; and population forecasts in 2000. The calculations are made by the authors.

According to the data from Table 5, in Mariovo in the past 40 years, they have been quite busy with fast and dynamic migration, in which the youngest and working population are mostly involved, which depends on the population reproduction and the survival of the settlements in the investigated region.

With each subsequent census, the participation of the old population is increasing compared to the previous census, which means that the population has problems. The reasons for the migration of the young population and the declining birth rate are the natural increase. Due to the aforementioned problems in a few years, a greater number of rural settlements will cease to exist.

Components of the Natural Movement

For the complete perception of the natural movement of the population, it is necessary to separately analyze its components, that is, the movement of the birth rate and mortality rate from which the natural increase of the population arises (Panov, 1984, pp. 61-63).

Natality is a positive component of the natural movement that affects the growth and population size (Panov, 1984, pp. 63-71). From the analysis of the birth rate as the basic demographic component of the natural population movement, we can see that the region investigated, i.e., Mariovo, enters the category of areas that are affected by a demographic waste that intensely decreases the demographic structure.

Table 6

Movement of the Live Birth Rate in Mariovo in the Period of 2000-2003

Municipality	Living born				2000		2003		Born in a healthy institution	Nationality
	2000	%	2003	%	Male	Female	Male	Female		
Vitoliste	3	0.4	1	0.2	1	2	1	-	4	Macedonians
Staravina	2	0.5	2	0.7	1	1	1	1	4	Macedonians
Total	5	0.9	3	0.9	2	3	2	1	8	Macedonians

Notes. In the Republic of Macedonia, the census of population and households was not made from 2002 to 2018. Source of data: Republic Institute for Statistics; statistical overview 2.4.1.09. Skopje 2001; natural movement of the population in the Republic of Macedonia in 2000, field research in May-June 2003. The calculations are made by the authors.

According to the data from Table 6 for live births in Mariovo in the period of 2000-2003, we can freely give a general conclusion that in all settlements, there is a very low birth rate, since the young and working-age population has long migrated and in this region the largest number comprises nursing households.

Mortality is a negative phenomenon in the natural and total movement of the population in Mariovo.

Mortality directly affects the decrease in the total number of population. The degree of action of the economic, social and biological factors depends on it. This means that the mortality is lower, so the impact of these factors is less pronounced and vice versa (Panov, 1984, pp. 71-76).

The movement of the mortality rate for 2000 and 2003 can be seen in Table 7.

Table 7

Tabular Presentation of the Mortality in Mariovo in the Period of 2000-2003

Municipality	Totally dead				Died in 2000		Died before May-June 2003		Nationality
	2000	%	2003	%	Male	Female	Male	Female	
Vitoliste	25	-3.4	27	-3.6	16	9	14	13	Macedonians
Staravina	18	-4.5	24	-7.9	6	12	12	12	Macedonians
Total	43	-2.4	51	-4.6	22	21	26	25	Macedonians

Notes. In the Republic of Macedonia, the census of population and households was not made from 2002 to 2018. Source of data: Republic Institute for Statistics of Macedonia; statistical overview 2.4.1.09. Skopje 2001; natural movement of the population in the Republic of Macedonia in 2000, and field researches in May-June 2003. The calculations are made by the authors.

According to the data from Table 7, we can easily conclude that mortality has a high coefficient in the whole researched region, especially in the elderly groups of 60 years on the top. The share of newborn babies in the total number of deaths almost does not exist, given that the number of young and able-bodied population in the past 40 years has been significantly reduced.

Natural increase is the most important demographic element for the total movement of the population in Mariovo toast for its dynamics and reproduction.

Natural growth is the difference between birth and mortality and directly depends on the movement of these two components (Panov, 1984, pp. 79-84).

Today we can conclude that the birth rate, mortality rate and natural growth too vary considerably in the negative sense due to reasons as large migrations that occurred in the period from 1961-2002/2003, the migration movement of young and able-bodied population that led to the demographic ruin of the region.

Table 8

The Rate of Population Growth in the Period of 1961-2002 (Growth Rate Per 100 Inhabitants)

Municipality	1961	2002	Growth rate	%
Vitoliste	7,305	499	-6,806	-93.1
Staravina	4,559	325	-4,234	-92.8
Total	11,864	824	-11,040	-93

Notes. In the Republic of Macedonia, the census of population and households was not made from 2002 to 2018. Source of data: Republic Institute for Statistics of Macedonia; statistical anniversaries of the population census in 1961 and raw data from the census in 2002. The calculations are made by the authors.

According to the data from Table 8, in the period of 1961-2002, the population growth rate drastically decreases in the investigated region of Mariovo as part of the Crna Reka basin in Macedonia.

Table 9

The Birth Rate and Mortality of the Population in the Republic of Macedonia and the Mariovo Region in 2000 (Per Inhabitants in %)

Municipality	Living born		Fleshly dead		Dying infants		Natural increase	
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
Macedonia	29,308	1.4	17,253	0.9	346	0.01	12,055	0.5
Vitoliste	3	0.4	25	3.4	-	-	-22	-3.0
Staravina	2	0.5	18	4.5	-	-	-16	-4.0

Notes. In the Republic of Macedonia, the census of population and households was not made from 2002 to 2018. Source of data: Republic Statistical Office of Macedonia; natural movement of the population in the Republic of Macedonia in 2000; statistical overview 2.4.1.09. Skopje 2001 and statistical overview 2.4.1.14. Skopje 2001, Macedonia. The calculations are made by the authors.

According to the data from the tables, we can freely conclude that the birth rate in the Mariovo region is less than 1%, while the mortality is greater than 20%. If we go back a bit in 1961, we will see that then the natural increase was 23%, in 1981 9.4%, and from the inventory to the census the natural increase reached the lowest level of existence of this region. The villages that have a small rate of natural increase in Mariovo are: Beshishte, Vitolishte, Dunje, Makovo, and Staravina.

Monitoring the natural movement of the population is of great importance, primarily due to the wonderful conditions that exist for the development of agriculture, livestock, mining, hunting, fishing, tourism, and other economic activities.

Population Aged 10 and Over According to Literacy and Schooling in the Period of 1961-1994

The analysis of literacy and school preparation of the population is a very important factor for the tourist and economic development of Mariovo.

The better the educational structure, the more favorable the opportunities for rapid development of the economy (DNU, 1987, pp. 423-424). In the past, the educational structure was not favorable as a result of the unfavorable social and economic conditions in the region.

In the period from the Second World War until 1980, great progress was made in improving the education of the population (Stojanoski, 1989, pp. 83-84).

With the opening of primary school and compulsory attendance, the number of illiterate people decreased, and the number of literate population increased.

To note the dynamics in improving literacy among the population, we will look at the data from the population censuses conducted in the period of 1961-1994 in the Mariovo region.

Table 10

A Review of the Literacy Degree of the Population in Mariovo in the Period of 1961-1994

	Municipality 1961	Vitliste 1994	Municipality 1961	Staravina 1994
Total	5,458	856	3,409	442
Illiterate	-	230	-	109
Without school preparation and with I-III grade elementary school	2,507	-	1,543	-
IV grade	2,754	-	1,655	-
Elementary school	146	111	186	68
A school for qualified and highly skilled workers	11	-	3	-
With an intermediate handshake	32	61	20	21
High school and higher education	8	4	2	2
Unknown	-	5	-	-

Notes. In the Republic of Macedonia, the census of population and households was not made from 2002 to 2018. Source of data: Republic Institute for Statistics of Macedonia; statistical yearbook of the population survey in 1961 and 1994. The calculations are made by the authors.

According to the data from Table 10, we can see that major changes have been made in the structure of literacy among the population despite the large migrations from the region.

According to the data from Table 10, we can freely conclude on the literacy of the population 10 years old and more in Mariovo that the population has a very low educational level with a high percentage of the illiterate population in 1994 as a reason for the emigration involving the population of other groups which belongs to an educated population. So from the region Mariovo emigrated both the educated and the uneducated population.

Migrations of the Population by Settlements in Mariovo in the Period of 1961-2002

The reasons for the migration movements of the population in Mariovo are diverse, primarily caused by various factors, such as agrarian and raffle structure, socio-economic factors.

Of particular importance is the raffle structure which in the region is predominantly hilly mountain, poor road infrastructure, educational needs of the population, employment of the population for better and more beautiful life of both the young and the working able population, which has contributed to the population emigrating from these areas to the rest parts of the drowsy and pervading.

In the period of 1961-1981, we have a phenomenon of mass emigration from a village in a city, as well as in a panic because of the economic development of the urban settlements and the need for a larger number of labor (Panov, 1984, pp. 118-121), which came from the research region. The consequences of the emigrations are huge because they directly reflected the change in the structure of the population in the rural settlements and the creation of depopulation spaces, and thus, a large number of settlements have a smaller number of inhabitants, and some such as Melnica, Zhivovo, Vrpsko, Gudjakovo, and Petalino are completely displaced. The reasons for the occurrence of the flashings were varied and from here comes the need for studying migrations not only as a phenomenon, but they are quite significant for the social and economic development of Mariovo.

It is necessary to analyze and assess the consequences of the migration process of the population (Darkovski & Gjurovski, 1987, pp. 427-435).

They can be positive if we have a rational distribution of productive forces (i.e., complement the deficit of the active population and other problems). The migrations of the population that engulfed the research region caused the discharge of it, and thus the production forces also weakened.

Accordingly, the ethnic structure, the numerous movement of the population that were conditioned as from the natural, social, historical and socio-economic reasons, contributed to this region becoming a strong emigration area that made demographic wilderness and migration occur very little during the period of 1991-2003.

Table 11

A Survey of Settled Population in Mariovo in the Period of 1953-2002

Municipality	Migration from 1953-1961		Growth from 1953 to 1961	Population in 1961	Migration from 1961-2002		Populated in 2002
	Migration	Resettled			Migration	Evicted %	
Vitoliste	350	1,527	101	7,305	6,826	93.4	499
Staravina	201	1,047	-846	4,559	4,233	93	325
Total	551	2,574	-2,023	11,864	11,059	93	1,028

Notes. In the Republic of Macedonia, the census of population and households was not made from 2002 to 2018. Source of data: Republic Institute for Statistics, Macedonia; statistical yearbook of the population census: 1953-1961. The data for 2002 were used by the census as raw non-processed by the Republic Institute for Statistics of Macedonia. The calculations are made by the authors.

According to the data given in Table 11, we can freely conclude that in the past 50 years from 1953 to 2002, the migration movements in Mariovo have a strong intensity that resulted in the demographic wasteland of the region.

In the daily migration of the population in Mariovo in 2003, about 130 people from the permanently employed population from the region, as well as from Prilep and Bitola, participate in mining, forestry, traffic, trade, crafts and health.

Persons Temporarily Working Abroad for the Period of 1981-2003

In addition to migration villages-city, in Mariovo, there is the emigration of the population abroad. For better visibility and elaboration, we will display the data in Table 12.

Table 12

Persons Who Are Temporarily Working Abroad from Mariovo in the Period of 1981-2003

Municipality	Population in the country		Population abroad			
	1981	2003	1981	%	May-June 2003	%
Vitoliste	2,383	473	108	4.5	234	49.5
Staravina	2,057	303	893	43.4	1,347	444.6
Total	4,440	776	1,001	22.5	1,581	203.7

Notes. In the Republic of Macedonia, the census of population and households was not made from 2002 to 2018. Source of data: Republic Institute for Statistics of Macedonia; statistical yearbook of the population census in 1981 and field research in May-June 2003. The calculations are made by the authors.

It also provides an analysis of the people who are temporarily working abroad in settlements. According to the data from Table 12, in 1981, from Mariovo, there were 1,001 persons or 22.5% of the total population in the region, while in 2003 there were 1,581 people or 203.7% of the total population in the region. The continents are quite interesting for science as well (Panov, 1984, pp. 147-151) and the countries to which our migrant workers moved, for example, the inhabitants of Mariovo went to Australia, Canada, the United States, Sweden, Germany, Switzerland, Austria, Serbia, Montenegro, and Croatia for the most part. According to the obtained data, we can freely conclude that in addition to internal migrations, external migrations from the country were also strongly represented.

National Structure of the Population by Settlements in Mariovo in the Period of 1961-2002

Regarding the national structure of the population in Mariovo, it is considered as a homogeneous area, which was also the case in the past.

There were few exceptions in the region under study at the end of the 21st and the beginning of the 20th century when there were only a small number of Vlachs, Roma, and Serbs. Today the population of the national composition is mostly Macedonians (Stojanoski & Malceski, 1987, pp. 418-421). The geographical factors in the social historical development that had been isolated in the past by the main road communications, especially Mariovo, were influenced quite significantly in the region. This region was not very interesting for the settlement of other nationalities. To see the national structure of the population in Mariovo, we will look at the data in Table 13.

Table 13

National Structure of the Population in Mariovo in the Period of 1961-2002

Municipality	1961							2002				
	Mac.	Turks	Serbs	Monte.	Croats	Others	Total	Mac.	Serbs	Monte.	Herze.	Total
Vitoliste	7,277	7	29	4	1	6	7,325	496	3	-	-	499
Staravina	4,544	-	10	1	1	-	4,556	324	-	1	-	325
Total	11,821	7	39	5	2	6	11,881	820	3	1	-	824

Notes. Mac. = Macedonians; Monte. = Montenegrins; Herze. = Herzegovinians. In the Republic of Macedonia, the census of population and households was not made from 2002 to 2018. Source of data: Republic Institute for Statistics of Macedonia; statistical yearbook of the population census in 1961, Skopje 1962. The data for 2002 from the census were used raw materials not processed by the Republic Institute for Statistics of Macedonia, Skopje. The calculations are made by the authors.

Also, data on the national structure of the population by settlements in the investigated region in the period of 1961-2002 are given.

According to the data from Table 13, we can easily conclude that in Mariovo in 2002, the population is homogeneously composed of the largest number of Macedonians with 97.5% of the total population in the region, while from the other communities we have a small number of inhabitants: Serbs 3 and Montenegrins 1.

Population by Marital Status by Settlements in Mariovo in the Period of 1961-2002

The analysis of the main characteristics of the population includes the marital status in Mariovo, in order to see how the marital status of the population has moved. We will use the data from Table 14.

According to the data from Table 14, in 1961, 2,780 marriages or 23.4% of the total population were concluded in the surveyed region. While in 2002, only five marriages or 0.5% were concluded. In 1961, there were 850 persons or 7.16% who were not married, while in 2002, there were only 68 persons or 8.25%.

Table 14

Marital Status of the Population in Mariovo in the Period of 1961-2002

Municipality	1961								2002						TP in 1961	TP in 2002
	MA	UMA	UNM	WIR	WID	DIVM	DIVW	Total	MA	UMA	UNM	WIR	WID	Total		
Vitoliste	1,697	526	434	199	146	4	2	1,311	4	35	8	23	47	113	7,305	499
Staravina	1,083	324	266	119	57	12	5	783	1	33	6	26	18	83	4,559	325
Total	2,780	850	700	318	203	16	7	2,094	5	68	14	49	65	196	11,864	824

Notes. MA = Marriages; UMA = Unmarried; UNM = Unmanaged; WIR = Widowers; WID = Widows; DIVM = Divorced men; DIVW = Divorced women; TP = Total population. In the Republic of Macedonia, the census of population and households was not made from 2002 to 2018. Source of data: Statistical yearbook of the population census in 1961. Skopje 1962. The data for 2002 were used raw materials from the Republic Institute for Statistics of Macedonia, Skopje. The calculations are made by the authors.

There were 700 people or 5.9% who were not married in 1961, while in 2002 there were only 14 people or 1.69%. Widowers in 1961 were 318 people or 2.68%, while in 2002 there were only 49 people or 5.94%. In 1961, there were 203 people or 1.71% of widows, while in 2002 there were 65 people or 7.88%. The number of divorced men in 1961 was 16 or 0.13%, while in 2002 there were no divorced men. The number of divorced women in 1961 was 7 or 0.84%, while in 2002 there were no divorced women. We can freely conclude that since 1961-2002, all categories are listed for the marital status of the population in Mariovo (Koteski, 2004, pp. 64-85).

Population by Activity in Settlements in Mariovo in the Period of 1971-2002

The movement of the natural population growth affects not only the total number of the population in Mariovo, but also the other structures such as age, gender and the dynamics of the movement by activity of the population.

The movement of the number of active, dependent and personal income persons is closely related to the movement of the total population, with the scope of migrations and the level of functional regional development of Mariovo (Stojanoski & Malcheski, 1987, pp. 419-420).

The constituents of the dependent population and the people with personal income are closely connected with the contingent of the active population that is the work force which is formed under the influence of numerous demographic, social and economic factors. In different periods of development of the region were the impacts of the numerous factors that were not equally represented and contributed to continuously change a contingent of: active, supported population and people with personal income. Given that Mariovo is an economically underdeveloped area, the number of active, dependent and personal income earners since 1971 has been steadily declining, especially with the emergence of mass migrations and the transformation of this region into one of the largest population zones in the country, the most migrated from them: active population and people with personal incomes caused demographic wilderness in the region. As the number of moves: active, supported population and persons with personal income in Mariovo can be seen from the data in Table 15.

Table 15

Active Persons, Persons with Personal Income and Dependents in Mariovo in the Period of 1971-2002

Municipality	Years			1971			1994			2002		
	P in 1971	P in 1994	P in 2002	Active people	Persons with personal income	Supported persons	Active people	Persons with personal income	Supported persons	Active people	Persons with personal income	Supported persons
Vitoliste	5,633	881	499	3,109	68	2,456	289	285	307	90	247	162
Staravina	3,258	456	325	1,858	27	1,403	134	160	162	44	169	112
Total	8,891	1,337	824	4,967	95	3,859	423	445	469	134	416	274

Notes. P = Population. In the Republic of Macedonia, the census of population and households was not made from 2002 to 2018. Source of data: Republic Institute for Statistics of Macedonia; statistical yearbooks of the population census in 1971 and 1994, Skopje 1972, 1995. The data for 2002 were used raw from the census as not processed by the Republic Institute for Statistics of Macedonia. The calculations are made by the authors.

Dependents by settlements. According to the data from Table 15, it can be concluded that data are also provided for: active persons, persons with personal income and the number of active persons in Mariovo in the period of 1971-2002 is constantly declining, so in 1971, there were 4,967 active persons or 55.86% of the total population, while in 2002 there were 134 persons or 16.26%. The number of people with personal income in 1971 was 95 or 1.06% of the total population, while in 2002 there were 416 persons or 50.48%. This high percentage of people with personal income is not due to new employment from the active population, but to the overwhelming number of pensioners who, on various grounds, take a pension. The number of dependents in 1971 was 3,859 persons or 43.40% of the total population, while in 2002 there were 274 persons or 33.25%, which is a high percentage of dependent population, above all, an old population that is incapable of work. All of this points to the huge problems that will arise in a short time that most of the rural settlements will cease to exist as a result of the elderly households and thus will have a huge demographic disaster in the region. If the state wants to maintain the existence of settlements in this region, it should promptly enable the opening of new jobs and attract young unemployed people from the cities that come from that region to return to their long-abandoned hearths.

Active, Agricultural, Non-agricultural Population, Persons with Personal Income and Dependent Population by Settlements in Mariovo and Raacka Valley in the Period of 1961-2003

In the review of agriculture as an economic branch, the contingents of: active, agricultural, non-agricultural population, persons with personal income and subsistence population are very important (Stojanoski & Malceski, 1987, pp. 420-421). In order to analyze this data, we will use the following table (see Table 16).

According to the data from Table 16, we can see that in Mariovo of the total population of 1961, there were 11,884 inhabitants and the number of active population is 5,825 or 49.01%, while in 2003 the number of active population was 134 or 16.26% of the total number of the population. From 1961-2003, the number of active population decreased by 5,691 or 97.3% as a result of intense migration: a village-town and a migration abroad, which created a demographic disaster in the region.

Table 16

Active, Agricultural, Non-agricultural Population, Persons with Personal Income and Dependent Population in Mariovo in the Period of 1961-2003

Municipality	1961						2003					
	TP	ACP	AGP	ANAGP	PPI	DP	TP	ACP	AGP	ANAGP	PPI	DP
Vitoliste	7,325	3,604	3,041	524	19	3,721	499	90	61	29	247	179
Staravina	4,559	2,221	1,942	272	7	2,337	325	44	21	22	169	112
Total	11,884	5,825	4,983	796	26	6,058	824	134	82	51	416	291

Notes. TP = Total population; ACP = Active population; AGP = Agricultural population; ANAGP = Actively not agricultural population; PPI = Persons with personal income; DP = Densely populated. In the Republic of Macedonia, the census of population and households was not made from 2002 to 2018. Source of data: Statistical yearbook of the population census in 1961 Skopje Macedonia. Active population, agricultural, non-agricultural population, persons with personal income and dependent population. Tab. 2-05, sheet 01-09, and field research in May-June 2003. The calculations are made by the authors.

In 1961, there were 4,983 people or 4.93% of the agricultural population, while in 2003, there were 82 persons or 9.95% of the total number of active population.

In the period of 1961-2003, the number of agricultural population decreased by 4,901 persons or 97.8%.

Non-agricultural population in 1961 there were 796 persons or 6.69%, while in 2003, there were 51 persons or 6.18% of the active population in the region.

In the period of 1961-2003, the non-agricultural population decreased by 745 persons or by 90.41%.

The number of people with personal income in 1961 was 26 or 0.21%, while in 2003, there were 416 persons or 50.48% of the total population in the region. This high number of persons with personal income is not due to new employments but to the large number of pensioners.

In 1961, there were 6,058 people in the population of which there were 6,058 persons whose number is lower than the total number of active population for 233 persons or 1.96%, while in 2003 there were 291 persons that the difference between the active and the supported population was 157 persons or 19.05%. In the period of 1961-2003, the number of dependents decreased by 5,767 or 95.19%.

We can freely conclude that the number of active population in all categories drastically decreases at the expense of the old population and pensioners (Koteski, 2009, pp. 135-155).

Number of Movement of Households by Settlements in Mariovo in the Period of 1961-2002

Households play a very important role in the development of rural economies. That structure of households is a very important indicator for the potential values of the entire population, population reproduction, living standards and innumerable societies-economic processes. The numerical movement of the households in Mariovo is closely connected with the migrations that occurred in the past period with which some households completely moved out, the number of household members decreased somewhere, and whole settlements moved somewhere (Panov, 1998, pp. 7-321). In order to follow the dynamics of households, we will analyze the data from Table 17.

According to the data from Table 17, in the past 57 years from 1961 to 2018 in Mariovo, there were intensive migrations of the population that caused demographic ruin in this area and became one of the largest depopulation regions in the country, which is confirmed by the data of the reduction of households from 2,137 in 1961 to 398 households in 2002 or 1,739 households less or 81.37% of the total number of households in the region (Koteski, 2011, pp. 178-241).

Table 17

Numerous Movement of Households in Mariovo in the Period of 1961-2002

Municipality	Number of households				
	1961	1971	1981	1994	2002
Vitoliste	1,338	1,214	687	397	242
Staravina	799	685	445	215	156
Total	2,137	1,899	1,132	612	398

Notes. Source of data: Republic Institute for Statistics of Macedonia; statistical yearbooks of the population census in 1961, 1971, 1981, 1994. Skopje, 1962, 1972, 1982, 1995. Data for 2002 are used raw not processed by the Republic Institute for Statistics of Macedonia, Skopje. The calculations are made by the authors. In the period from 2002 to 2018, there was no population census in Macedonia.

If the process of reducing the households with such intensity in the short period of time continues, a greater number of rural settlements in the investigated region will be extinguished (Republic Institute for Statistics-Skopje, Macedonia: Census of Population in 1961, 1971, 1981, 1994, and 2002).

Therefore, the state must take measures and care for this space urgently in order to sustain life in it. It is interesting to point out that in the period from 2002 to 2018, there was no population census (Koteski, 2009, pp. 172-210).

Conclusion

According to the obtained results from the scientific observation and analysis of the causes and consequences, it is important for the state to undertake measures for the revitalization of the Mariovo region as part of the Black River basin in the Republic of Macedonia. From the scientific analysis of the data in the tables on the dynamics of the population by settlements in the region of Mariovo in the period of 1961-2003, the following statistical results were obtained.

From the gender structure of the population in Mariovo in 2000, the male population over the female population, with a population of 92, prevails. The age structure of the population by age groups of 0-19, 20-59 and over 60 years old in Mariovo in 2000 is dominated by the group with over 60 years. Components of the natural movement: (1) birth rate in Mariovo in 2003 is very small, we have five babies born, of which two were male and one girl; (2) mortality in Mariovo in 2003 has a very high rate of deceased 26 men and 25 women; and (3) the natural increase in Mariovo in the period of 1961-2002 is -93%; Population aged 10 and over according to literacy and school preparation in 1994 is dominated by illiteracy and population with primary school.

We have strong migrations of the population in Mariovo in the period of 1961-2003, 93% of the population has evicted. Persons in temporary work in the country from Mariovo in 2003 were 776, and in 2003, there were 1,581 persons. From the national structure of the population in Mariovo in 2002, the Macedonian population dominated. Regarding the population by marital status in Mariovo in 2002, only five marriages were concluded, 68 were married, 14 unmarried, 49 widows, and 65 widows. According to the population after activity in Mariovo in 2002, we have 134 active persons, 416 persons with personal income, and 274 dependents. Considering active, agricultural, non-agricultural population, persons with personal income and dependent population in Mariovo in 2003, we have active population 124 people, the agricultural population is 82 persons, actively non-agricultural population 51 persons, persons with personal income 416, and dedicated population 291. The numerical movement of households in Mariovo in the period of 1961-2002 decreased from 2,137 to 398.

As a result of the field research and the obtained statistical results, the competent institutions were informed at the local, state and scientific university level. The competent municipalities to which the Mariovo region belongs have started with strong measures for the revitalization of the region in the past five years: investing in the road and communal infrastructure built to every village settlement of asphalt roads; new local waterworks and sewage are being built; the population is provided with organized public transport; uninterrupted supply of electricity to rural settlements; opening of trade companies-shops in the villages; marking all cultural monuments from the past; marking hunting houses because there are requirements for the development of hunting and fishing, as well as their celebration of the events related to culture, ethnology, and gastronomy in the region. Construction of accommodation facilities in villages where there are conditions for development of local rural tourism. Municipalities and the state after the accepted scientific results for this region started with the national program for revitalization and return of the population originating from this region (to young married couples). For all persons aged up to 45 who live in the city and are unemployed, if they return in his native region, they will be offered free state land for use, obtaining housing loans for the construction or reconstruction of houses for living, granting subsidies and loans for construction of small family farms. The Ministry of Agriculture and Water Management has begun to provide subsidies for raising new sour cherries, almonds and walnuts in the Mariovo region. The state has already decided to build two large hydro-power plants on the Crna River Chebren and Galishte. These two hydroelectric power plants will be built by the state as well as by domestic construction companies that are to be engaged in the next seven years by 2,000-3,000 workers in this region. The goal is after the hydro power plants will be built apart from the electricity, in addition to the micro accumulations to sell plots for construction of weekend tourist settlements. With this, we believe that the entire Mariovo region will be revitalized in the next 10 years.

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