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## **DEMOGRAPHIC LOSSES OF SERBIA IN THE FIRST WORLD WAR AND THEIR LONG-TERM CONSEQUENCES\*\*\*,\*\*\*\***

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**ABSTRACT:** *Proportional to the total population, Serbia was the country with the highest number of casualties in the First World War. According to the first estimates presented at the Paris Peace Conference of 1919, total Serbian casualties were 1,250,000, over 400,000 of which were military losses while the rest were civilian deaths. Besides direct losses, which include casualties in war events and deaths resulting from military operations, the Serbian population also suffered significant indirect losses originating from the reduced number of births during the war and post-war years, increased death rate after the war as a consequence of war events, and*

*more intensive emigration. The paper analyses some of the most-quoted estimates of demographic losses (the Paris Peace Conference, Đurić, Notestein et al.), which differ in the methodology applied, the territory covered, and the obtained results. Moreover, the paper specifies the long-term demographic consequences of the First World War, primarily on the population size of Serbia and its age and gender structure. Generations that suffered the biggest losses and those whose sex structure was disrupted the most are indicated.*

**KEY WORDS:** *war losses, Serbia, First World War, demographic consequences*

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## **1. THE IMPACT OF WAR ON POPULATION**

Many factors can disrupt the regular development of demographic processes; the history of human populations records their presence in all periods and virtually no population has remained unaffected. In certain periods epidemics led to very high fatalities, contributing to an increase in total mortality as well as a decrease in the number of births. A lack of basic sources of nutrition as well as famine, which often appeared in tandem with contagious diseases, had a similar impact on mortality rates. In addition to these factors, populations and their development have also been significantly impacted by wars. Depending on their dimension, length, and severity, the consequences of war for populations can extend several decades after the conflict. The impact of World War I on the population of Europe caused an almost seismic shift (Livi-Bacci, 2001). The latest estimates state that 74 million men were mobilized, of which 10 million or 14% lost their lives (Héran, 2014), including approximately 8% of all male workers. In addition to those who died on the battlefield, there were a large number of wounded soldiers. It is estimated that 7 million men were permanently disabled and a further 15 million were seriously wounded (Aldcroft, 1977, p.13). There were also human casualties among the civilian population: bombings, imprisonment, epidemics, hunger, and difficult living conditions led to an increase in mortality. Military and civilian losses, along with other indirect losses caused by the Great War, determined the demographic situation in Europe, especially in specific countries, of which Serbia is one. A large number of victims as well as overall demographic losses, especially in relation to the total population at the time, place Serbia in the lead in terms of the number of lives lost.

In demographic research, the relation between human populations and war is usually observed through war's consequences for the population. These consequences are also the most evident part of the relationship. Wars directly impact the size of the population because they impact all three dynamic components of population growth: deaths, births, and migrations. The composition of populations impacted by war is also significantly changed, with the greatest changes happening in the age and sex structures. The consequences of large changes in the age structure, as a rule, last for a long time and have a long-term effect on demographic development.

Wars directly impact the overall mortality level. The number of deaths significantly surpasses the regular mortality level. In addition to military deaths related to soldiers who are killed, died, or disappeared, civilians. Military casualties are primarily younger middle-aged men who are at the optimal age for human

reproduction as well as economic activity, which increases the effect of the losses. The reliability of data on military losses, especially on the battlefield, which are based on war reports, is significantly greater than for civilian casualties. Forced migration of civilian populations, refugees, and sometimes also an unclear separation of civilian and military casualties, all impact the reliability of civilian estimates.

An indirect effect of war on the population and its development relates to births. In times of crisis and difficulty brought on by war, births decrease as a result of lowered nuptiality as well as the decisions of couples to postpone births in war circumstances. The consequences of war on births are evident during war but their effect extends to many years later: the deficit of live births in one period will be reflected in a reduced number of fertile women participating in reproduction 25 years later. Even if the fertility rates of these women do not change, the number of live births will be lower. Thus the demographic losses of war include population losses due to increased mortality and losses in the number of births during the war. Estimates state that demographic losses in Europe (excluding Russia) during World War I equalled 7% of the total pre-war population (Aldcroft, 1977, p. 15).

On the other hand, after a relatively long period of lowered birth rates, as was the case in both world wars, a so-called compensation period usually follows. The number of live births increases, which does not coincide with an increase in fertility rates of the generations participating in reproduction. Gradually, regularity in natural processes is established in the direction which existed before the war. Of particular interest for demographers is the question of the amount of time that it takes for this happen. How long will it take for the population to reach pre-war numbers? Or, even more importantly, how long will it take for the population to reach the size it would have reached if there had been no war?

Wars also impact changes in migratory movements. Forced migrations and displacement of civil populations during war are unavoidable. These are often permanent migrations with a significant impact on population size. Migration gains a new, and maybe even more important, dimension after the war ends. This is especially true for conflicts such as a world war, after which borders are usually re-defined. The consequences can be massive emigration from certain territories, usually ethnically motivated. At the same time, by adding new territories, newly formed states can experience a significant population increase, as happened at the end of the Great War. In November 1918 the regions of Banat, Bačka, and Baranja (in Vojvodina) were joined to the Kingdom of Serbia, and under the 1919 Treaty of Neuilly certain Bulgarian territories were also added (Map 1).

In addition to their impact on population dynamics, wars also have a marked effect on demographic structures. Age and sex structures are directly affected. Military losses in wars are primarily among the male population. Thus, immediately after wars a certain deficit of men appears and the usual sex ratio in the population changes. This deficiency of men is especially pronounced in age groups that are the most numerous among mobilized, military-capable men. However, the deformation of the age structure as a consequence of wars is a result of both the direct and indirect effects of war. The deficit in certain generations (so-called depleted cohorts) is a consequence of direct military casualties and is expressed in the male population of those generations who suffered the most. However, numerically smaller generations are also a consequence of a deficit in live births in wartime. Such generations are evident in both male and female populations. Immediately after war, the deficit in live births impacts the population deficit in the first age group (0-4). For precisely this reason, the consequences of wars on age structure are long-term and examining them requires long-term observation.

## **2. ESTIMATES OF WAR LOSSES IN THE POPULATION OF SERBIA**

So far there has been no census of Serbia's human losses in World War I. Certain records exist, especially those relating to military victims, but they are incompletely and insufficiently systematized. Therefore, to explore Serbia's losses it is necessary to take into account estimates that were mostly made between the two World Wars, especially in the first several years after the truce of November 11th, 1918.

The first estimates of Serbian military losses appeared in the first year after the signing of the truce. Later, especially in the years before World War II, other estimates of Serbia's human losses in the Great War were published, but these too were arbitrary and unscientific, insufficiently argued, and very rarely based on reliable data, despite the greater time distance. Estimates differed in terms of the applied method, scope (military, civil, or demographic losses), territory (e.g., all of Serbia, but with different borders; part of Serbia together with Montenegro), and period that the estimates refer to (if dealing with estimates of overall demographic losses). Therefore it is not surprising that existing estimates differ significantly, but it is nevertheless surprising that the ratio between minimal and maximal estimates of the number of deaths in Serbia during World War I reaches 1:18 (Grčić, 2007).

## 2.1. Official estimate of the Delegation of the Kingdom of SCS at the Paris Peace Conference of 1919

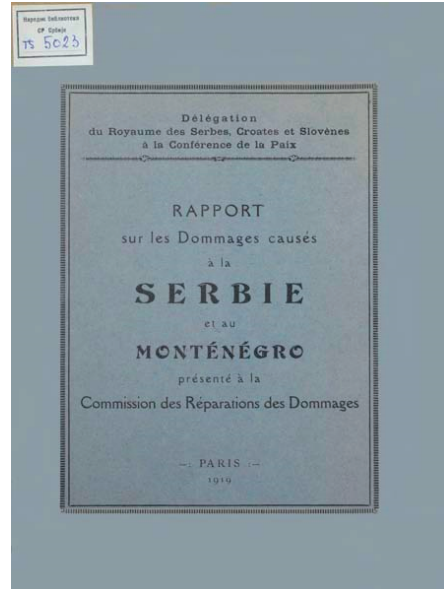
On March 31st, 1919, i.e., less than five months after the war, the Kingdom of Serbs, Croats and Slovenes (Kingdom of SCS) presented the official estimates of Serbia's military and civil population losses and overall demographic losses caused by World War I, relating to the period January 1st, 1914 to April 1st, 1919.

These estimates were presented as part of the *Report on War Damage Caused to Serbia and Montenegro*, submitted by the Delegation of the Kingdom of SCS to the Reparation Commission at the Peace Conference held in Paris from January 18th, 1919 to January 21st, 1920. Although the introduction to the *Report*

states that the estimate of damages refers to Serbia and Montenegro, damages related to human losses refer exclusively to Serbia's population losses without Montenegro, and only to those within the pre-war borders - the territory of the Kingdom of Serbia at the beginning of the First Balkan War (1912) together with the territory annexed at the end of the Second Balkan war (according to the Bucharest treaty of 1913 - Map 1).

In the *Report* of the Delegation of the Kingdom of SCS, all direct human losses are classified into two large groups: military and civil (Délégation du Royaume des Serbes, Croates et Slovènes, 1919). Data is also presented on the number of invalids and prisoners. Estimates of overall demographic losses, which include a hypothetical decrease in the number of live births during war years, are also included.

Direct military losses comprise soldiers killed, died, and disappeared during military operations, soldiers who were killed or died in captivity, and deceased, wounded, and ill soldiers who remained in Serbia after the retreat of the Serbian army across Albania. The military losses are also presented by period.



**Map 1.** Serbia in 1919 (after the Treaty of Neuilly) and territorial changes since 1804



Source: Vrućinić (2007), p.76

Data on military losses is very precise, but the *Report* does not specify data sources or their trustworthiness. The *Report* also does not specify whether overall Serbian military losses include Yugoslav volunteers from abroad (mostly from the USA), a total of 55,800.

**Table 1.** Military losses of Serbia, according to the *Report of the Delegation of the Kingdom of Serbs, Croats and Slovenes at Paris Peace Conference 1919-1920*

	Causes	Time	Number of deaths
1	Killed, dead and missing	Up to September 1915	172,508
2	Killed, dead and missing during retreat through Albania	(Oct. 1915 - Jan. 1916)	77,455
3	Killed and missing during 1916-1918	(Feb. 1916 - Nov. 1918)	36,477
4	Killed and dead in captivity	(July 1914 - Nov. 1918)	81,214
5	Deaths among men, wounded or sick, remained in the country after the retreat of the Serbian army	(Oct. 1915 - Dec. 1916)	34,781
	<b>Total</b>	<b>July 1914 - Nov. 1918</b>	<b>402,435</b>

**Source:** *Rapport sur le Dommages de Guerre causés à la Serbie et au Monténégro présenté à la Commission des Réparations des Dommages*, Paris, 1919.

Additional data listed in the *Report* testifies to the enormous losses of the Serbian army, and points out that Serbia mobilized 712,005 men during World War I (not including volunteers from abroad). This means that Serbian military deaths in the Great War of 1914-1918 amounted to over 50% (56.5% not including volunteers, or 52.4% including volunteers from abroad).

The *Report* also lists civilian losses, but not as precisely as in the case of military deaths. Civilians were victims of bombings, occupiers' crimes (mass executions), infectious diseases, lack of medicine, deportation and difficult conditions in concentration camps, forced mobilizations, hunger, etc. For example, it is noted that in 1917 Bulgarian occupiers massacred 20,000 civilians in Toplica district alone (p. 10); that during three years of occupation of Serbia, approximately 182,000 persons were interned or deported to Bulgaria, Austro-Hungary, or Germany, and that of these, 80,000 died during transportation or were killed in concentration camps (p. 22). Especially large losses were caused by the epidemic typhus which in 1915 alone killed 350,000 civilians (p. 5). Concrete estimates of civilian deaths by cause, year, sex, and age are presented in Table 2.

**Table 2.** Civilian deaths in Serbia, according to the *Report of the Delegation of the Kingdom of Serbs, Croats and Slovenes at the Paris Peace Conference 1919-1920*

	Causes	Period	Number of deaths		
			Total	Males aged 15 or over	Others
1	Killed and dead during the first and second invasions	1914	15,000	6,000	9,000
2	Killed and dead during retreat through Albania and during return to Serbia	(Oct. 1915 - Jan. 1916)	140,000	60,000	80,000
3	Killed by enemies in Serbia	(July 1914 - Oct. 1918)	70,000	25,000	45,000
4	Killed and dead during deportation to concentration camps and during forced labour in enemy countries	(July 1914 - Nov. 1918)	80,000	30,000	50,000
5	Deaths caused by epidemic diseases	1914, 1915	360,000	130,000	230,000
6	Deaths caused by famine during the occupation of Serbia	(Oct. 1915 - Oct. 1918)	180,000	60,000	120,000
	<b>Total</b>		<b>845,000</b>	<b>311,000</b>	<b>534,000</b>

**Source:** Rapport sur le Dommages de Guerre causés à la Serbie et au Monténégro présenté à la Commission des Réparations des Dommages, Paris, 1919

In addition to direct and indirect military and civilian losses, the *Report* also estimates so-called total demographic losses caused by World War I. According to the *Report*, Serbia had 3,300,000 inhabitants in the spring of 1919<sup>1</sup>. It is also estimated that at the start of World War I (mid-1914) Serbia had 4.5 million within the borders defined by the Bucharest peace of 1913. This means that at

<sup>1</sup> The *Report* is dated March 31st, 1919.



the end of March 1919, Serbia had 1.2 million fewer inhabitants than in 1914. However, the *Report* also notes that Serbia's (direct and indirect) demographic loss due to World War I totalled 1.9 million persons. This number was based on the assumption that, had there not been a war, Serbia would number 5.2 million persons in 1919. Clearly, even though this is not mentioned in the *Report*, this difference should represent not only direct military and civilian losses (1,247,435) but also demographic losses due to a decrease in the birth rate, an increase in mortality, as well as, probably, a negative net migration.

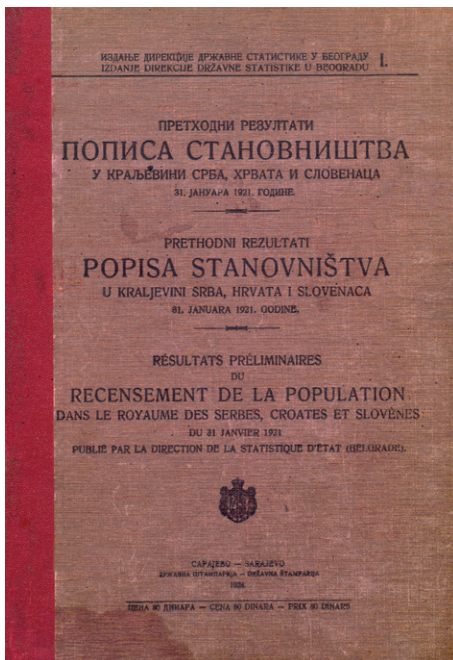
Data on direct military and civilian losses are difficult to comment on or question due to the lack of data sources and to the starting criteria used to determine the number of deaths, especially for civilians. This is, however, not the case with estimates of overall demographic losses due to war. First of all, it is not clear how the estimate was made that Serbia had 3.3 million people in 1919 (1.2 million less than in 1914), if we accept the mentioned estimate that overall direct losses amounted to 1.25 million persons. Such a result implies that the increase in population due to the birth rate in the period 1914-1918, which would represent the difference between the number of live births in the war years (not less than 300,000 – Njegić, 1957, p. 52) and the number of 'normally' deceased individuals that were not direct war mortalities, could only be 50,000 people. Such a small residual growth could be explained by the net emigration (of at least 100,000-150,000 persons), but this is not mentioned in the *Report*.

However, even if the estimate of 3.3 million Serbian inhabitants in the spring of 1919 is accepted, the question remains of the basis on which it is presumed that Serbia would have had 5.2 million persons by 1919 in normal, peaceful circumstances. If the estimate is true, it follows that in the period of August 1914 - March 1919 the 'normal' population growth would be 700,000 persons, and the average annual growth rate would be a very high 31.5 per 1,000. As an example, the average annual rate of population growth of former Northern Serbia in the period 1895-1910 was only 15.5 per 1,000, and in the period of 1905-1910 it was 16.1 per 1,000.

The aim of this paper is not the creation of new estimates of the demographic losses of Serbia's population caused by World War I, but the number of 1.9 million does appear to be overestimated. If we presume that the data on direct military and civilian deaths listed in the *Report* is accurate, the actual number most likely would not exceed 1.575 million.

## 2.2. Estimates of the State Statistics of the Kingdom of SCS

In February of 1921, less than two and a half years after the end of World War I, a population census was conducted in the newly formed Kingdom of Serbs, Croats, and Slovenes. This was the first complete demographic inventory of the new state, which also allowed for the creation of a demographic balance of the Great War, not only on territory of Serbia but also in other areas of the Kingdom of SCS which had previously belonged to the defeated Austro-Hungarian Empire (Slovenia, Croatia and Slavonia, Dalmatia, Bosnia and Herzegovina, Banat, Bačka and Baranja).



In his signed article published as the Introduction to the book of preliminary results of the 1921 Population Census, Dragiša Đurić, Director of the State Statistics of the Kingdom of SCS, calculated the population decrease of the former provinces in the period 1910-1921 using census results. For Serbia (provinces of North Serbia and South Serbia) and Montenegro he also estimated demographic losses that he called “pure war victims” (Đurić, 1924, pp. xiv-xv). Đurić created estimates for the population of the territory of the Kingdom of Serbia and the Kingdom of Montenegro within 1914 borders (i.e., not including the areas awarded to Serbia in 1919). He accepted the simple assumption that, at the end of 1920 and in that territory, Northern Serbia’s

population would increase in the intercensal period of 1914-1921 at an identical rate to the rate of population growth in the period between the Census of 1890 and the Census of 1910, as well as in the intercensal period of 1905-1910. Đurić states that the annual increase in both periods was 1.7%.

According to Đurić’s calculations, had there not been a war, in 1921 ‘pre-war’ Northern Serbia would have 3.4 million people, while it actually had 2.6 million according to the 1921 Census (Table 3). Based on this, Đurić concluded that Northern Serbia had 811,000 “pure war victims”.

Considering that precise census data on the population dynamics in the period before 1910 was not available for South Serbia and the Kingdom of Montenegro, Đurić accepted the assumption that those two provinces of the Kingdom of SCS had the same average annual growth rate in the period 1910-1921 as Northern Serbia (1.7%). Based on this assumption, Đurić got the result of 392,000 losses for Southern Serbia and 63,000 for Northern Serbia. This means that Serbia's total losses add up to 1.2 million persons.

**Table 3.** Net war victims of Serbia (Northern Serbia and Southern Serbia) and Montenegro, according to Đurić

Census year	Northern Serbia		Southern Serbia		Montenegro	
	Real population	Hypothetical population	Real population	Hypothetical population	Real population	Hypothetical population
1890	2,161,961					
1905 (Dec. 31)	2,688,025					
1910 (Dec. 31)	2,911,701					
1914			1,664,807		238,423	
1921 (Jan. 31)	2,595,430	3,406,600	1,442,208	1,834,617	199,857	262,712
<b>Net war victims</b>	<b>811,170</b>		<b>392,409</b>		<b>62,855</b>	

**Source:** D. Đurić got the data for 1914 related to Southern Serbia from: *Rečnik mesta u oslobođenoj oblasti Stare Srbije: po službenim podacima izradio Mil. Ant. Vujičić, U Beogradu: Državna Štamparija Kraljevine Srbije, 1914.* He got the data for Montenegro from: *Jože Rus, Glavni statistički podaci o državi Srba, Hrvata i Slovenaca (prema stanju od 1910, odnosno 1914. godine), Ljubljana: Natisnila učiteljska tiskarna, 1920.*

Dragiša Đurić does not claim that these estimates refer to Serbia's human losses in World War I. He exclusively uses the expressions "losses" or "pure war victims." It is obvious that this is a rudimentary estimate of the increase in the number of inhabitants of Northern Serbia in 1911-1921 had there been no wars (the First and Second Balkan Wars and World War I). For Southern Serbia and Montenegro the period is shorter (1914-1921) and does not include the years of the Balkan wars. Of course, the assumption that the population growth rates in 1911-1921 in Northern Serbia and in 1914-1921 in Southern Serbia and Montenegro would be identical to the average annual growth rate of the population of Northern Serbia in 1905-1910 could hardly be described as realistic, especially when bearing in mind the differences at the time in the demographic development of the population

of Northern Serbia on the one hand and Southern Serbia and Montenegro on the other. However, even if we accept Đurić's assumption about the "peace-time growth rate", the overall difference between the actual number of inhabitants in 1921 and the hypothetical number could not be ascribed entirely to the direct and indirect influence of wars, because the observed period also included years with no war (from January 1911 until October 1912, from June 1913 until July 1914, and from November 1918 until the end of January 1921). Additionally, such an estimate can only refer to total demographic losses, and not direct military and civilian victims of war.

As a curiosity we can also note that there are a significant number of mistakes in Đurić's mathematical calculations (e.g., the annual growth rates for 1890-1910 and 1905-1910 were miscalculated) and he also wrongly determined the hypothetical rate of population growth in the period December 31 1910 - January 31 1921 for Northern Serbia and in the period 1914-1921 for Southern Serbia and Montenegro. An exact calculation would provide greater "losses" (1.8% for Northern Serbia, 7.6% for Southern Serbia, and 6.8% for Montenegro).

### **2.3. Estimates of Notestein and associates from Princeton University**

During World War II a group of demographers from the Office of Population Research at Princeton University, under the leadership of the American demographer Frank W. Notestein, performed an extensive study of the demographic future of post-war Europe and the Soviet Union until 1970 (Notestein et al., 1944). In one of the introductory chapters, the demographic effects of World War I and II and their relation to European population projections are discussed. In relation to World War I, they estimated direct and overall demographic losses for almost all European countries (17 European countries and Russia), within pre-war borders. The study lists joint estimates for Serbia and Montenegro, even though these were two different countries at the start of the war. Although it is not explicitly mentioned, it is also evident from the estimated pre-war population (3.4 million)<sup>2</sup> that the data refers only to Northern Serbia (Serbia without territories gained according to the Treaty of Bucharest of August 1913) and Montenegro.

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<sup>2</sup> According to our estimates, there were 4.6 million people within Serbia's pre-war borders in mid-1914, of which approximately 2.9 million lived in Northern Serbia and 1.7 million in Southern Serbia. Montenegro had approximately 240,000 inhabitants in mid-1914.

**Table 4.** Estimated population losses in Europe resulting from the First World War, by country, according to Notestein and associates (in thousands)

Country (pre-war boundaries)	1914 Popula- tion	Mili- tary losses	Excess of the civil- ian deaths over age 1	Defi- cit of births	Esti- mated reduction of infant deaths	Total deficit	
						Persons (thou- sands)	Per cent of pre-war popula- tion
	1	2	3	4	5	6	7
United Kingdom	46,085	744	402	709	67	1,788	3.9
France	39,800	1,320	240	1,686	172	3,074	7.7
Belgium	7,662	40	102	311	37	416	5.4
Italy	35,859	700	800	1,426	191	2,735	7.5
Serbia and Montenegro	3,400	325	450	336	47	1,064	31.3
Romania	7,771	250	430	505	97	1,088	14.0
Greece	4,732	25	100	200	30	295	6.2
Portugal	6,155	4	157	121	18	264	4.8
Germany	67,790	2,000	737	3,158	459	5,436	8.0
Austro-Hungary	53,018	1,100	963	3,600	600	5,063	9.5
Bulgaria	4,852	70	98	317	41	444	9.2
Norway	2,486	-	26	-	-	26	1.0
Sweden	5,680	-	57	26	2	81	1.4
Denmark	2,866	-	18	1	-	19	0.7
Netherlands	6,240	-	86	8	1	98	1.5
Switzerland	3,897	-	28	59	5	77	2.0
Spain	20,578	-	321	133	20	434	2.1
<b>Europe (excluding Russia)</b>	<b>318,871</b>	<b>6,578</b>	<b>5,010</b>	<b>12,596</b>	<b>1,787</b>	<b>22,397</b>	<b>7.0</b>

Source: Notestein et al. (1944), p. 75.

Notestein and associates reached their estimate of overall demographic losses in Europe mainly by taking the results of existing estimates of war losses (especially the estimates of Liebmann Hersch from 1925 and 1927) and then forming their own estimates of excess civilian mortality due to war. Their estimates were created as the difference between the warring countries' official reports on overall mortality during the war and the expected peace-time mortality, calculated as the average of mortality rates in the years immediately preceding (1910-1913) and immediately following (1920-1924) World War I. The net deficit in births, i.e., the lower number of births due to war, was reached similarly (by subtracting the expected number of deceased infants).

The authors accepted the estimate that overall military losses in Europe (excluding Russia<sup>3</sup>) were 6.6 million; that the increased mortality of the civilian population directly caused by war was 5.0 million; and that the net deficit in births was 10.8 million. Overall demographic losses caused by World War I were estimated at 22.4 million or 7% of the pre-war population of those countries.

Notestein and associates accepted the estimate of 325,000 deaths in military losses for Serbia and Montenegro. They distance themselves in several places regarding the reliability of Serbian statistics, but they conclude that the known facts imply that, among European countries, Serbia proportionally had the highest military losses. The authors were aware that civilian deaths due to war are much more difficult to estimate because they include not only deaths due to infectious diseases, hunger, and deportations to concentration camps, but also civilians who died during war activities and those killed by occupying forces. The American demographers estimate Serbia and Montenegro's civilian victims at 450,000, but they find that data to also be insufficiently verified. Nevertheless, they believe that the Serbian population also suffered the proportionally greatest civilian losses. Serbia's overall human losses (military and civilian) are estimated at 20% of the total pre-war population, which is by far the largest share in Europe. By including the 'net' deficit in births (289,000), the estimated overall demographic losses for Serbia and Montenegro reach over 1 million or 31.3% of the pre-war population.

The complete picture of Serbia's demographic loss was arrived at through an estimate of the deficit in births in 1915-1919. The authors estimated the decrease in births in that period at 335,000, although they found the net deficit in births to be 289,000. To sum up, the demographic losses of Serbia and Montenegro as a result of World War I were estimated at 1,064,000 persons or 31.3% of the pre-war population. According to these estimates, given the number of inhabitants, Serbia's demographic losses are almost 5 times larger than the average for other European countries (excluding Russia), which is estimated at 6.8%. Additionally, Serbia's losses would be more than twice those of Romania (14.0%), the second country in terms of the highest percentage of loss in World War I.

#### **2.4. Estimates of Serbia's war losses - recapitulation**

All three analysed estimates of Serbia's war losses during World War I differ significantly according to method, assumptions, pre-war territory and population, and the time period they relate to, and therefore the results are not

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<sup>3</sup> Military losses of tsarist Russia were estimated at 1.5 to 2.0 million, excluding losses during the civil war period (Notestein et al., p. 77).

entirely comparable. At the same time, each of the three estimates can be strongly criticized due to methodological shortcomings, which is not unexpected as all three were performed under extraordinary circumstances and, with the exception of the American demographers, had no pretensions of fulfilling scientific criteria.

**Table 5.** Results of three estimates of Serbia's war losses due to the First World War

Estimate (institution / author)	Pre-war popu- lation (in 000)	Terri- tory	War losses				Total deficit	
			Mili- tary deaths (in 000)	Civil- ian deaths (in 000)	Total (in 000)	Per cent of pre-war popula- tion	Numbers (in 000) / period	Per cent of pre-war popula- tion
Delegation of the Kingdom of SCS at the Paris Peace Conference 1919	4,500	Serbia	402	845	1,247	27.7	1,900 (Aug 1914 - March 1919)	42.2
State Statistics of the Kingdom of SGS (Đurić)	4,577 <sup>1)</sup>	Serbia	-	-	-	-	1,204 (Jan. 1, 1911- Jan. 31, 1921)	26.3
Office of Population Research at Princeton University (Notestein et al.)	3,400	Serbia (North- ern) and Monte- negro	325	450 <sup>2)</sup>	775	22.8	1,064 (1915- 1919)	31.3

**Note:** <sup>1)</sup> The sum of number of population of Northern Serbia according to the census results (Dec. 31, 1910) and population of Southern Serbia according to the enumeration in liberated territories by Serbian military authorities after the Second Balkan War (in summer 1913). <sup>2)</sup> Excess of the civilian deaths over age 1.

The only elements that the three estimates have in common are the number of the pre-war population and the estimate of total demographic losses. The estimates of the total population deficit due to World War I range between 1.1 and 1.9 million, or between 26.3% and 42.4% of the total pre-war population (Table 5).

The differences in base-year population are not very large, bearing in mind that Serbian estimates refer to the territory of pre-war Serbia and American estimates to the territory of pre-war Northern Serbia and the Kingdom of Montenegro. If the 1910 Census data for Northern Serbia (2,911,701) and statistical data on the population of Montenegro in 1914 (238,423) are accepted as accurate, the

population of that area could not number more than 3,300,000. In Serbian estimates the differences in pre-war population numbers are less than 2% (77,000), but it should be noted that according to the estimates of Dragiša Đurić (State Statistics), the base year for Northern Serbia is 1911 and for Southern Serbia 1914.

Military losses estimated in the *Report* presented at the Paris Peace Conference in 1919 and in the book by the American demographers Frank W. Notestein and associates state that, for their estimates of war losses, the authors used official Serbian statistical data, so we can presume that that difference (77,000) is the result of the different territories that the estimates refer to. Bearing in mind the existing estimates of military losses in Montenegro (no more than 15,000-20,000), the difference of approximately 100,000 military losses could be explained by the military losses in Southern Serbia. It should also be kept in mind that the *Report* most likely includes the deaths of volunteers from abroad in Serbia's total military losses. According to the *Report*, the Serbian army included a total of 56,000 foreign volunteers, and it is known that of the total number of mobilized soldiers, every second soldier was killed, died, or disappeared.

The differences in the estimates of civilian losses are far greater. The *Report* states that there were 845,000 civilian deaths due to World War I, and in the American demographers' book this number is estimated at 450,000 (Tables 2 and 4). The difference cannot be explained by the different territories that the estimates refer to, but it can be explained by different definitions of a civil victim. According to the *Report*, civil victims comprise those killed by the enemy and those who died due to infectious diseases, hunger, or poor health conditions. Notestein and associates arrived at the number of civilian deaths indirectly, through the difference between the number of total civilian deaths and expected mortality for the period 1915-1919, excluding the mortality of children younger than 1 year. Without entering into a debate about the validity of this approach, it is certain that the excess of civilian deaths arrived at by this calculation would be lower than the total civilian mortality during the war. That the approach of Notestein and associates is controversial is also illustrated by the question of how, for example, they would treat seriously ill patients who died in the bombing of a hospital and who would have probably died of natural causes by the end of the war. In this hypothetical case, the number of excess civilian deaths would equal zero.

Estimates of total demographic losses or total population deficit were derived using different methods, and the periods that they refer to also differ (Table 5). In the Serbian estimates, total demographic losses represent the difference between a hypothetical number of inhabitants that Serbia would have had if



there had been no war and the real number of inhabitants (based on an estimate or census) at the end of the war. It has already been mentioned that the *Report* does not explain why such a high hypothetical peacetime growth rate was used, and it is also unclear why Đurić extended the period for which he estimated the demographic losses of World War I for North Serbia to 1911-1921. Notestein and associates estimated the total deficit by adding up military losses, the excess of civilian deaths, and the presumed deficit of births (excluding the reduction of infant deaths as a result of birth deficits).

The methods for estimating demographic losses raise the question of how and if migrations are included in the overall deficit. The method used in the estimates presented in the *Report* and in the publication of the State Statistics of the Kingdom of SCS implies that migrations were included, although this is never explicitly stated. A separate question can be asked regarding how realistic the assumptions used are. On the other hand, in the estimates of Notestein and associates, the migratory component was not taken into consideration.

The estimated total population deficit is lowest in the estimates of the American demographers (1,064,000) and highest in the Delegation of the Kingdom of SCS' *Report* (1,900,000). As estimates of the pre-war population differ so does the proportion of losses in the overall population. Nevertheless, despite all these shortcomings, it can be concluded that demographic losses due to World War I of the small country of Serbia were proportionally the greatest in all of Europe.

### **3. THE MAIN SHORT-TERM AND LONG-TERM DEMOGRAPHIC CONSEQUENCES OF THE FIRST WORLD WAR**

The very first estimates of demographic losses presented at the 1919 Paris Peace Conference indicated huge Serbian war losses due to World War I. Preliminary results of the first post-war population census in 1921 enabled the State Statistics of the newly formed Kingdom of SCS to have a more precise insight into total demographic losses, not only of Serbia but also of the other provinces which had previously been part of the Austro-Hungarian Empire. However, it was only after the final census results (1932) had been published, which contained data on total population by sex and age, that the structural deformations of the population caused by demographic changes brought about by the First World War also became statistically obvious. These demographic disruptions were enormous, and the demographic consequences, direct and indirect, were not only visible in the first years after the Great War but also extended into the succeeding decades.

In this paper we use the final results of the 1921 Census to point to changes in population size in the intercensal period that covers the war years, and the results of the 1910 and 1921 censuses to examine the basic characteristics of the sex and age structure. The data refer to the population of three provinces: Serbia, specifically Northern Serbia and Southern Serbia (which were part of the Kingdom of Serbia until the end of the First World War), then Montenegro (until the end of the First World War known as the Kingdom of Montenegro, and then unified with the Kingdom of Serbia in November 1918), and the provinces of Banat, Bačka and Baranja (regions which were part of the Austro-Hungarian Monarchy until the end of the Great War and became part of the Kingdom of Serbia in November 1918). The territories are not completely comparable, as the data for Northern Serbia (1910 Census) and Southern Serbia (1914 Census) differ from the regions attached to Serbia<sup>4</sup> on the basis of the Treaty of Neuilly (Map 1).

Our examination of the long-term consequences covers almost a century, 1921-2011, using the results of the population censuses carried out during that period. The analysis refers to the population of present-day Serbia, namely Central Serbia and Kosovo and Metohija (Kosovo), because the previously analysed estimates of Serbia's demographic losses (in the *Report* of the Delegation of the Kingdom of SCS and the estimates of the Directorate of State Statistics) refer to the territory of Northern Serbia, which mainly comprised the region of present-day Central Serbia, and Southern Serbia, which mainly comprised the region of Sandžak, Kosovo, and the present-day Republic of Macedonia. As Macedonia ceased to be part of Serbia after the Second World War and has been an independent country since 1991, the population of that region has been excluded from the analysis of the long-term demographic consequences of the First World War. Furthermore, the population of the region of the present Autonomous Province of Vojvodina has been excluded (the region of Banat and Bačka, without Baranja, but also Srem, which was part of the province of Croatia, Slavonia, Međumurje, Krk and Kastav). What is even more important is that there were no armed conflicts in this region during the First World War but only mobilization of the Austro-Hungarian army.

The greatest absolute population decrease occurred in Northern Serbia (255,000 or 315,000 persons without the counties attached in 1919), while in Southern Serbia the decrease was 188,000, 220,000 if Strumica County is not taken into consideration. It should also be pointed out that the intercensal period for Northern Serbia included the period of the Balkan Wars (1912 and 1913).

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<sup>4</sup> The counties of Caribrod and Bosiljgrad in Northern Serbia and the county of Strumica in Southern Serbia, with a total of approximately 92,000 people, according to the 1921 Census.

## DEMOGRAPHIC LOSSES OF SERBIA IN WORLD WAR I

The population in Montenegro decreased by 39,000, according to the 1921 Census, but the decrease was highest (16.5%) in relation to the pre-war population (1914).

The smallest decrease occurred in Banat, Bačka, and Baranja, not only absolutely (6,000) but also relatively (by 0.5% less than in 1910).

**Table 6.** Total population before and after the First World War: Serbia, Montenegro, and Banat-Bačka-Baranja, 1910/1914 and 1921

Census / indicator	Sex	Serbia			Montenegro	Banat, Bačka and Baranja
		Total	Northern Serbia	Southern Serbia		
1910/1914						
	Total	...	2,911,701 <sup>a)</sup>	1,664,807 <sup>b)</sup>	238,423 <sup>b)</sup>	1,352,844 <sup>a)</sup>
	Males	...	1,503,511 <sup>a)</sup>	-	-	671,677 <sup>a)</sup>
	Females	...	1,408,190 <sup>a)</sup>	-	-	681,167 <sup>a)</sup>
1921						
(Census - Dec. 31, 1921: final results)	Total	4,133,478	2,656,731	1,476,747	199,227	1,346,527
	Males	2,010,401	1,274,066	736,335	99,067	657,178
	Females	2,123,077	1,382,665	740,412	100,160	689,349
1921						
(Census - Dec. 31, 1921: final results - same territory as in 1914)	Total	4,041,427 <sup>c)</sup>	2,597,155 <sup>c)</sup>	1,444,272 <sup>c)</sup>	199,227	1,346,527
	Males	1,964,098 <sup>c)</sup>	1,244,147 <sup>c)</sup>	719,951 <sup>c)</sup>	99,067	657,178
	Females	2,077,329 <sup>c)</sup>	1,353,008 <sup>c)</sup>	724,321 <sup>c)</sup>	100,160	689,349
Increase/decrease in the intercensal period (same territory)	Total	...	-314,546	-220,535	-39,196	-6,317
	Males	...	-259,364	...	...	-14,499
	Females	...	-55,182	...	...	8,182
Population in 1921 (previous census = 100.0)	Total	...	91.2	88.7	83.6	99.5
	Males	...	84.7	...	...	97.8
	Females	...	98.2	...	...	101.2
Sex ratio (males per 1,000 females)						
1910/1914			1067.7	...	...	986.1
1921			921.5	994.5	989.1	953.3

<sup>a)</sup> Census in Serbia (Northern Serbia) and Census in Austro-Hungary (Banat-Bačka-Baranja) (Dec. 31, 1910)

<sup>b)</sup> Administrative enumeration 1914 (carried out by police and municipal authorities after the Balkan Wars)

<sup>c)</sup> Total population of Serbia excluding population of the territories attached to Serbia by the Treaty of Neuilly (1919): district of Strumica (Southern Serbia), districts of Bosiljgrad and Caribrod (Northern Serbia) (population according to the final 1921 Census results), and a number of municipalities in the districts of Krajina and Zaječar (population according to authors' estimates).

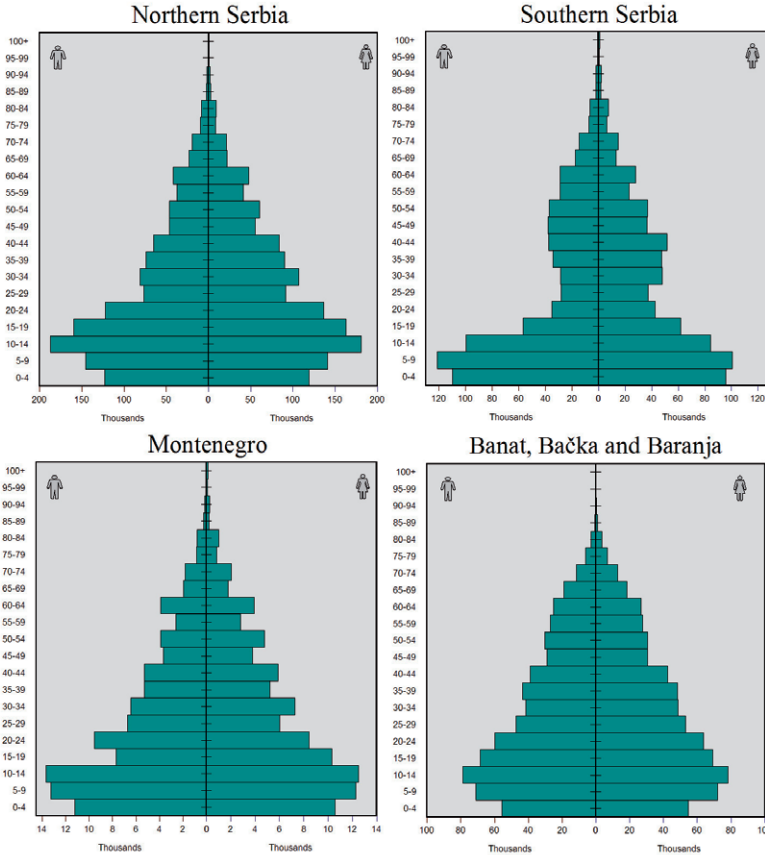
**Source:** According to Đurić (1924) and to the final results of the 1921 Census in the Kingdom of SCS

Even though none of the analysed estimates of Serbian war losses offer data by sex, it is obvious from the 1921 Census data that the losses were much greater among men. Data on the change in the numbers of the male and female populations in the previous intercensal period are available only for Northern Serbia and Banat, Bačka and Baranja. The differences in the population size by sex are very obvious for both regions. In 1921 the male population in Northern Serbia had decreased by 259,000 compared to 1910 (Table 6). This decrease was almost five times greater than the decrease in female population (55,000). The difference in Banat, Bačka, and Baranja is even more pronounced: there was only a decrease in the male population (by 14,000), while the female population increased by 8,000. The difference between the two regions is not unexpected, bearing in mind the differences in the intensity and type of war in the two regions.

The female population was more numerous in all four regions in 1921. The sex ratio varied from 921 per 1,000 (Northern Serbia) to 994 per 1,000 (Southern Serbia). By comparison, in 1910 there were more men than women in Serbia, with a ratio of 1068 per 1,000.

The deformations in the age structure found in the 1921 Census are even more prominent. All four populations (Northern Serbia, Southern Serbia, Montenegro and Banat-Bačka-Baranja) have an exceptionally narrow population pyramid base (age groups 0-4 and 5-9), primarily as a consequence of a deficit of births in the period 1915-1919, as well as increased infant and child mortality during the war years (Figure 1). The greatest difference between the size of the youngest cohort (aged 0-4 years) and the cohort of children born 10 years earlier (10-14 age group) was noted in Northern Serbia and in Banat, Bačka, and Baranja. According to the 1921 Census there were 188,000 children aged 1 to 5-years old, i.e., children born between February 1st, 1915 and January 31st, 1920. At the same time there were 351,000 (or 87% more) children aged 11-15 years, born in the peacetime period (February 1st, 1905 to January 31st, 1910). Similar proportions were registered in the Banat-Bačka-Baranja region: 89,000 children aged 1-5 years as opposed to 151,000 aged 11-15 years (69% more).

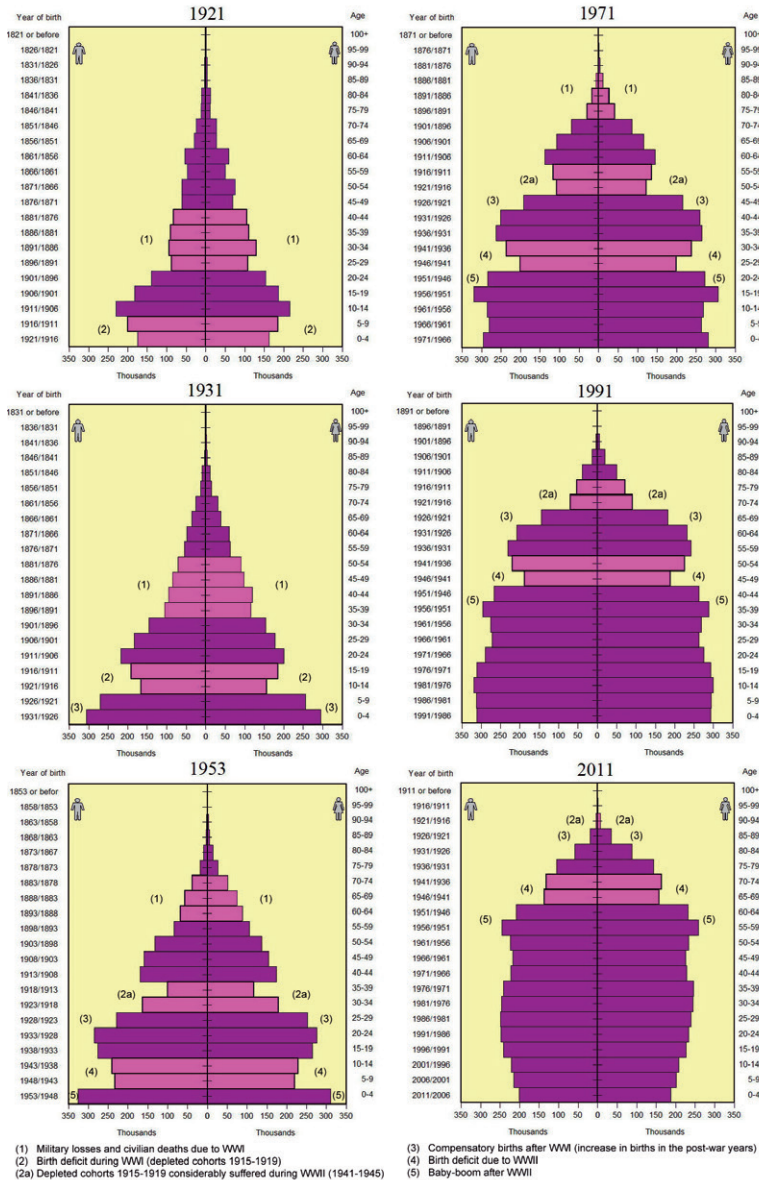
**Figure 1.** Population pyramids of Northern and Southern Serbia, Montenegro and Banat-Bačka-Baranja, 1921



**Source:** According to the final results of the 1921 Population Census of the Kingdom of SCS

The next characteristic of the 1921 population pyramid is the sudden narrowing starting from the 15-19 age group, especially on the male side. This deficit in the young adult population was caused primarily by the considerable war losses of the male population from the so-called first contingent. This was the generation that was economically the most productive. Great military losses are the main reason that in 1921 the largest deficit of men compared to women was in the 30-34 age group (41% on average for all four regions). The deficit of men in the 30-34 age group was the greatest in Southern Serbia (66%), which could be explained by the additional military losses of the Balkan wars.

**Figure 2.** Population pyramids of Serbia (excluding Vojvodina), 1921, 1931, 1953, 1971, 1991 and 2011



**Source:** For 1921, 1931, and 1953 according to data published in Simeunović (1964); for 1971, 1991, and 2011 according to census data (for 2011 censuses conducted in Kosovo on 31 March and in Serbia on 30 Sept.)

These enormous human losses had demographic consequences for Serbia's population development in the following decades that were visible until the end of the 20th century and even at the beginning of the 21st century (Figure 2). This was especially the case because the population deficit from the First World War was redoubled in the Second World War: the depleted generation born during the First World War suffered great losses during the Second World War, when it was 22 to 30-years old.

The deficit in the population of young men was also reflected in the decrease in the extent of births during the 1920s baby boom. As a result, decreased births during the war period were only somewhat compensated for by the boom, regardless of the exceptionally increased fertility rates.

The depleted 1915-1919 birth cohort was at optimal reproductive age after the Second World War, which, along with the decreased fertility rate, contributed to an even greater decrease in births in the war years of the 1940s, just as was the case with the births of their parents (aged 20-34 during the First World War). Furthermore, the depleted 1915-1919 generation was one of the reasons why the increased fertility at the end of the 1940s and in the first half of the 1950s did not result in even more births in that baby boom period. Nevertheless, this consequence is not clearly visible because the increased fertility was exceptionally high.

During the 1960s the consequences of the war losses began to affect population ageing. The entry into old age of the generation that suffered most in 1914-1918 slowed down population ageing at the top of the population pyramid.

During the second half of the 1960s and first half of the 1970s the depleted children of parents from the diminished 1915-1919 generation were at their optimal reproductive age, which further affected decreased births, along with the decreased fertility trend, especially near the end of the 1960s.

Such birth trends intensified the ageing of Serbia's population from the base of the pyramid. However, the simultaneous entry of the depleted war generations into the elderly age group slowed down population ageing from the top of the population pyramid.

Over time the impact of the war losses from the First World War weakened, but they were still indirectly present over the next decades through the deficient 1942-1946 birth cohort. This is most noticeable in the second half of the 2000s

and the beginning of the 2010s through a relatively slower increase in the share of the older population.

#### **4. CONCLUSION**

In the absence of complete and systemized evidence on war victims, the determination of Serbia's demographic losses due to the First World War is based on estimates. Estimates are also the basis for determining the long-term consequences of the war on the Serbian population, and especially on its age and sex structure. Thus, the rationale and hence the reliability of existing estimates becomes a very important question.

The analysed estimates of Serbia's war losses (official estimates of the Kingdom of SCS at the Paris Peace Conference of 1919 and estimates of the State Statistics of the Kingdom of SCS and of Notestein and associates at Princeton University) confirm all the complexities involved in determining the direct and indirect losses of the Great War: the scope of war victims; differentiating military and civilian losses within direct losses, and the definition of civilian victims. The considerable differences in the scope of civilian victims in the presented estimates are precisely due to different definitions. In addition, the boundaries of Serbia changed many times in the 20th century: Serbia entered the war with one territory and ended the war with another, which also affected the differences between the war loss estimates. The situation is similar for the periods for which the estimated demographic losses were carried out. Finally, different methodologies of calculating total demographic losses were applied. Significant methodological drawbacks of the data are the exclusion of migrations during the war and the adopted hypothesis of higher mortality and decreased births during the war. Nevertheless, even though the analysed estimates are not completely comparable, they reveal that the direct and indirect losses, as well as total demographic losses of Serbia in the First World War, were proportionally the highest in Europe.



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