

MORTALITY TRENDS IN SERBIA DURING THE 1990s

*Goran PENEV**

Great social, economic and political changes taking place in the ex-communist countries in Europe, at the end of the 20th century, did not bypass Serbia. However, the extraordinary circumstances in this region were mostly the result of the disintegration of the former Yugoslavia and ferocious armed conflicts that followed (first in Croatia and then in Bosnia and Herzegovina, ending with the armed rebellion in Kosovo and Metohija and the NATO bombing of the Federal Republic of Yugoslavia). Those are the basic reasons why the 1990s are a unique period in Serbia's demographic history in the second half of the 20th century. This uniqueness is primarily reflected in very intensive migration and significant changes in the population structures (especially with respect to age and ethnic affiliation). Significant changes also occurred in natural population movement, especially with respect to its mortality component (Penev, 2001).

Although the armed conflicts did not take place in the territory of Central Serbia and Vojvodina until 1999, they certainly exerted influence on an increase in mortality and, in particular, in the mortality of the younger adult male population. This is especially evident in some smaller regions (some municipalities), but it must be emphasized that there are no full statistical data on deaths due directly to operations of war.

A very unfavourable economic situation brought about an abrupt decrease in gross domestic product (GDP), massive impoverishment of the majority of the population and, in some years, a real collapse of the public health system. During 1990s, and especially in 1999, the situation was also considerably aggravated in the sphere of environmental protection due to a frequent incidence of pollution which, not rarely, assumed the proportions of an ecological disaster. All this inevitably resulted in the deterioration of the health condition of the population, considerable slowdown in favourable mortality trends and the occurrence of numerous unfavourable mortality trends.

* Demographic Research Center of the Institute of Social Sciences, Belgrade.

Trends in the Number of Deaths

In Serbia (excluding Kosovo and Metohija – in the future referred to as excluding Kosovo) the last year of the 20th century was characterized by the greatest number of deaths in the past half a century. In 2000, as compared to 1990, the annual number of deaths rose by about 18.5 thousand (from 85.5 thousand to 104.0 thousand), or by about 22% (Table 1). During the 1990s, an upward trend in the annual number of deaths also continued which exceeded 100,000 for the first time in 1999 and 2000. Such a trend in this region was recorded during the mid-1960s already, but the highest annual mean rate of increase in the number of deaths was recorded in the last decade. The data for 2001 show that the number of deaths is lower than 100,000 once again. The preliminary results of the vital statistics for 2002 point out that this decrease was only a short-term trend and not the beginning of new trends in the annual number of deaths.

Table 1.

Deaths by sex. Serbia (excluding Kosovo), 1990-2001

Year	Serbia (excluding Kosovo)			Central Serbia			Vojvodina		
	Total	Males	Females	Total	Males	Females	Total	Males	Females
1990	85515	45543	39972	60287	32241	28046	25228	13302	11926
1991	89072	47764	41308	62523	33584	28939	26549	14180	12369
1992	93475	50093	43382	65569	35329	30240	27906	14764	13142
1993	95121	50214	44907	67131	35729	31402	27990	14485	13505
1994	93011	48504	44507	65493	34382	31111	27518	14122	13396
1995	93933	48445	45488	66756	34682	32074	27177	13763	13414
1996	98370	50812	47558	69218	36096	33122	29152	14716	14436
1997	98068	51105	46963	69422	36403	33019	28646	14702	13944
1998	99376	51738	47638	70125	36919	33206	29251	14819	14432
1999	101444	52432	49012	72173	37541	34632	29271	14891	14380
2000	104042	53751	50291	73966	38512	35454	30076	15239	14837
2001	99008	51060	47948	70491	36604	33887	28517	14456	14061

Source: Official statistical data

Like in the case of the annual number of deaths, the upward trend is also recorded in the crude death rate. So, during the 1990s, the crude death rate was constantly above 11 per 1000 (Table 2), while in 2000 it reached 13.8 per 1000, which was the highest value of this indicator in the past 50 years.

If large regions in Serbia (excluding Kosovo) are observed (Central Serbia and Vojvodina), it can be concluded that there are no great regional differences in the crude death rates. In Central Serbia and Vojvodina, the mortality trends and crude death rates are very similar. In both regions, the number of deaths is on the increase (the maximum yearly number of deaths was recorded in 2000) and the same applies to the annual crude death rate. Otherwise, the crude death rate in Vojvodina is constantly higher than in Central Serbia, but that difference has been decreasing over the past years (Table 2).

Table 2.

Standardized and empirical crude death rates. Serbia (excluding Kosovo), 1991-2001

Year	Standardized CDR (per 1000)			Empirical CDR (per 1000)		
	Serbia	Central Serbia	Vojvodina	Serbia	Central Serbia	Vojvodina
1991	11.24	10.71	12.72	11.38	10.76	13.19
1993	11.66	11.11	13.26	12.18	11.55	13.98
1996	11.37	10.69	13.38	12.64	11.93	14.69
1999	11.56	11.22	12.51	13.37	13.06	14.20
2001	11.01	10.44	12.00	13.17	12.86	13.99

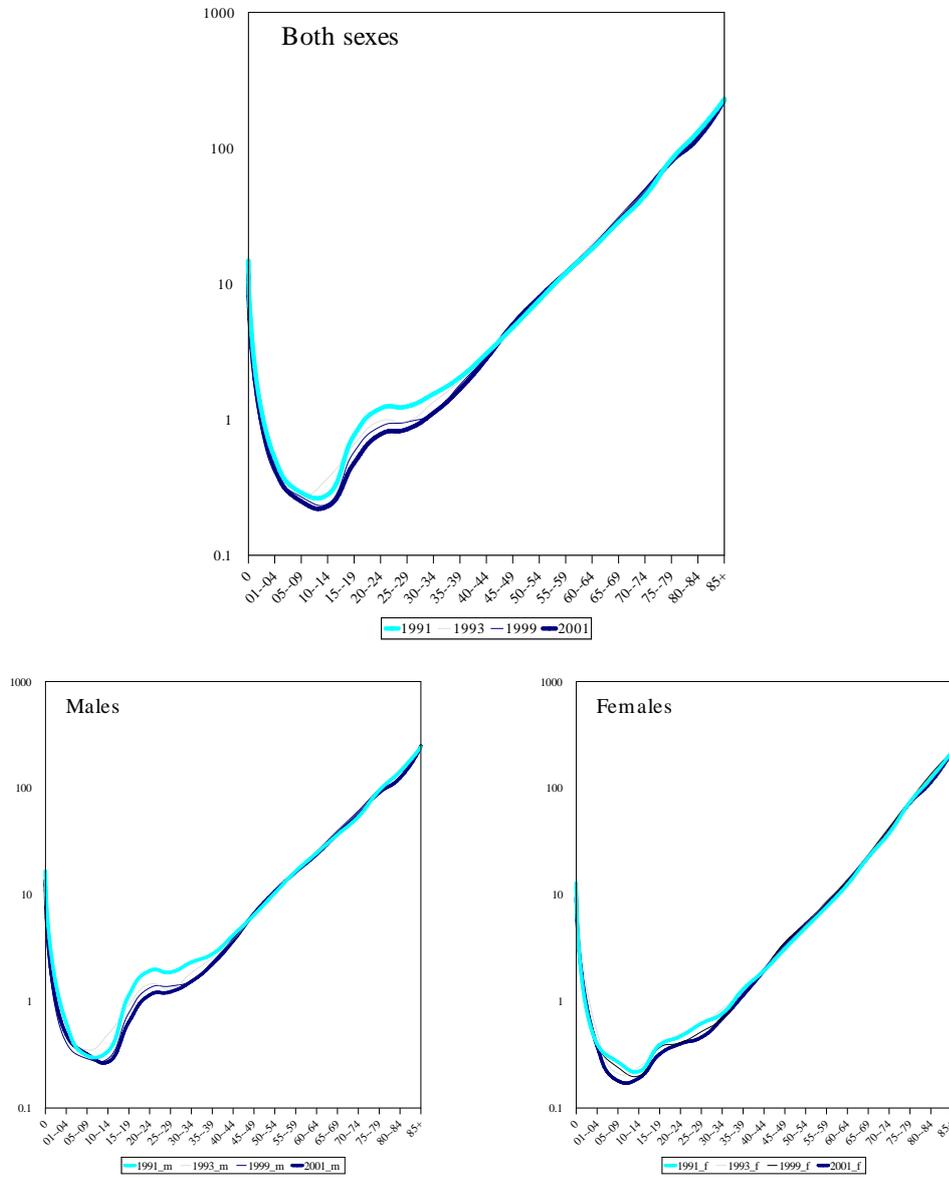
Note: The European standard population is selected as a standard.

In these two regions in Serbia, the crude death rate is above the European average rate (12 per 1000), while in Vojvodina (14.0 per 1000 in 2001) it is about the same (Belarus - 14.1, Bulgaria - 14.2, Latvia - 14.0, Hungary - 13.0 per 1000) or slightly lower than in the countries with the highest crude death rates (Ukraine - 15.4, Russia - 15.6 per 1000).

Mortality by Age and Sex

The dynamics, level and regional differences (especially noticeable on the small area level) in the trends in the number of deaths and crude death rates are directly conditioned by the level and trends in mortality by age and sex, as well as by the age-sex distribution of the population or, more exactly, by the intensity and progress of the process of population ageing. As for mortality by age and sex at the end of the 20th century, the population in Serbia has the distinct characteristics of the contemporary mortality patterns, but there is still significant scope for the further approachment to the countries that have achieved the best results in reducing the mortality on the European and world scale.

Figure 1. Age-specific death rates by sex (per 1000). Serbia (excluding Kosovo), 1991, 1993, 1999, 2001



If the analysis is limited only to the 1990s, then it can be stated that relatively small changes in age-specific mortality pattern were recorded during the observed period. Such a conclusion can also be derived from the results of calculating age-standardized death rates. Namely, between 1991 and 2001, age-standardized death rates in Serbia (excluding Kosovo) changed just slightly (i.e. they ranged in the interval from 11.0 to 11.7 per 1000 - table 2). Thus, from the aspect of age-specific mortality, the major characteristics recorded in Serbia since the 1970s have mostly been preserved.

The curves of the age-sex specific death rates point to a relatively high, yet steadily declining infant mortality, very low child mortality and the mortality of persons under 20 years of age, as well as a low and declining mortality of the younger adult population (Figure 1, Table 3).¹ Beginning with the older adult population (older than 40), the curve of the age-specific death rate is at a considerably higher level, reaching its maximum in the case of the oldest population.

It should be noted that, in most cases, the trends recorded during the period 1991-2001 were not the same. The mortality rates were decreasing or increasing which, in large measure, depended on the situation in the country (social, political and economic).

The relatively great decrease was recorded in the mortality of children under one year of age (age-specific death rate declined from 14.8 per 1000 in 1991 to 11.7 per 1000 in 2001), thus continuing the perennial downward trend in infant mortality. For example, the age-specific rate for the group under 1 year of age in 1971 was 37.5 per 1000, as contrasted to over 100 per 1000 in the early 1950s (112.1 per 1000 in 1951). It should be noted that a decrease of the death rate among infants in the period 1991-2001 was achieved under very unfavourable conditions as regards the functioning of health care of the youngest population, which applies especially to the early 1990s (Macura, 1994). Therefore, it is not surprising that a slow increase in infant mortality rates was recorded in the first years of the observed period (1991-1993) (Table 4).

¹ Considering the significant differences in the total population of Serbia and its age structure according to the Census 2002 (31 march) and the estimates for 2002 (1 january), it is evident that the values of the demographic indicators (and especially the mortality indicators), calculated according to the available postcensal estimates, were significantly different from their real values. Therefore, it was needed to calculate intercensal estimates, or at least the census adjustments. In this article, all demographic indicators for the years 1999-2001 are calculated on the base of 2002 census adjusted population estimates.

Table 3.

Age-specific death rates by sex (per 1000). Serbia (excluding Kosovo), 1991 and 2001

Age	1991			2001		
	Serbia (excluding Kosovo)	Central Serbia	Vojvodina	Serbia (excluding Kosovo)	Central Serbia	Vojvodina
Both sexes						
All ages	11.38	10.76	13.18	13.17	12.86	13.99
0	14.85	15.65	12.50	11.66	12.10	10.47
1-4	0.52	0.54	0.46	0.44	0.42	0.50
5-9	0.29	0.29	0.29	0.25	0.25	0.27
10-14	0.28	0.26	0.35	0.23	0.23	0.24
15-19	0.77	0.73	0.91	0.48	0.48	0.48
20-24	1.21	1.16	1.37	0.78	0.76	0.83
25-29	1.25	1.15	1.54	0.85	0.89	0.72
30-34	1.55	1.39	2.01	1.12	1.07	1.23
35-39	2.05	1.84	2.66	1.68	1.57	1.96
40-44	3.07	2.83	3.74	2.81	2.69	3.09
45-49	4.77	4.19	6.37	5.03	4.75	5.79
50-54	7.59	6.77	9.89	7.98	7.56	9.11
55-59	12.03	11.06	14.91	12.10	11.44	13.84
60-64	18.15	16.99	21.67	18.28	17.35	20.78
65-69	28.56	27.00	33.31	29.27	27.88	33.31
70-74	44.55	42.10	51.20	47.62	45.97	52.59
75-79	82.66	80.23	88.42	79.80	77.10	88.09
80-84	131.53	127.79	142.02	118.04	115.18	125.88
85+	229.77	225.35	242.76	229.61	227.63	234.54
Males						
All ages	12.43	11.73	14.46	13.96	13.72	14.63
0	16.70	17.48	14.39	13.75	14.67	11.25
1-4	0.63	0.63	0.64	0.49	0.48	0.53
5-9	0.31	0.32	0.27	0.32	0.30	0.37
10-14	0.34	0.29	0.48	0.27	0.27	0.30
15-19	1.14	1.08	1.32	0.64	0.65	0.60
20-24	1.94	1.82	2.29	1.15	1.13	1.20
25-29	1.88	1.71	2.36	1.23	1.27	1.11
30-34	2.33	2.04	3.11	1.54	1.50	1.66
35-39	2.78	2.44	3.77	2.23	2.05	2.68
40-44	4.18	3.79	5.29	3.69	3.47	4.23
45-49	6.46	5.53	9.05	6.66	6.23	7.80
50-54	10.40	9.11	14.07	10.77	10.13	12.45
55-59	16.61	15.04	21.37	16.38	15.27	19.35
60-64	24.62	22.85	30.22	23.91	22.44	28.01
65-69	36.66	34.06	45.23	37.30	35.08	44.05
70-74	54.00	49.88	66.14	58.53	55.97	66.76
75-79	95.22	91.15	105.71	90.79	87.42	102.70
80-84	143.10	137.61	160.74	125.02	121.45	136.17
85+	243.25	236.43	267.51	249.25	244.15	264.39

Table 3. (continuation)

Age-specific death rates by sex (per 1000). Serbia (excluding Kosovo), 1991 and 2001

Age	1991			2001		
	Serbia (excluding Kosovo)	Central Serbia	Vojvodina	Serbia (excluding Kosovo)	Central Serbia	Vojvodina
Females						
All ages	10.37	9.81	11.97	12.42	12.05	13.38
0	12.89	13.70	10.54	9.45	9.39	9.64
1–4	0.40	0.44	0.28	0.38	0.35	0.46
5–9	0.27	0.26	0.31	0.18	0.19	0.17
10–14	0.22	0.22	0.22	0.19	0.20	0.18
15–19	0.39	0.35	0.48	0.32	0.30	0.35
20–24	0.47	0.50	0.41	0.40	0.38	0.44
25–29	0.62	0.59	0.70	0.46	0.52	0.32
30–34	0.77	0.73	0.89	0.69	0.65	0.80
35–39	1.30	1.24	1.50	1.14	1.10	1.25
40–44	1.94	1.87	2.16	1.94	1.94	1.94
45–49	3.11	2.86	3.78	3.41	3.29	3.75
50–54	4.90	4.52	5.97	5.29	5.08	5.85
55–59	7.72	7.29	8.96	8.16	7.88	8.87
60–64	12.47	11.78	14.49	13.32	12.81	14.67
65–69	22.50	21.51	25.32	22.56	21.76	24.81
70–74	37.70	36.26	41.42	39.46	38.28	42.84
75–79	73.93	72.30	77.55	72.97	70.32	80.44
80–84	123.51	120.57	131.03	113.86	111.21	120.60
85+	217.74	213.33	229.41	219.23	218.22	221.52

This means that the overall decrease was achieved exclusively from 1994 onwards. However, despite the outstanding results achieved in the post-war period, as well as the unexpected trends during the 1990s, insofar as infant mortality is concerned, Serbia is considerably lagging behind many European countries in which it has been reduced to a very low level – to less than 5 per 1000 live births (Council of Europe, 2002).

An abrupt increase in the number of deaths of the younger adult population is linked to 1991 and 1992 and, partly, to 1993. In view of the fact that this trend is mostly the result of an increased number of deaths due to violence (i.e. due mostly to operations of war), it is understandable that this refers primarily to the conscripts and first call-up (the male population aged 18–34). During that period, when the armed conflicts linked to the forceful disintegration of the former Yugoslavia were especially intensive, there was a considerably higher increase in the number of deaths in that age group. In the case of some cohorts, this increase was manifold, not only in comparison with any year during the past decade, but also in comparison with the

subsequent years (1994-2001). This trend was recorded in both large regions in the country under observation, especially if those killed outside Serbia's borders were in question.

Table 4.

Number of deaths under 1 year and infant mortality rate. Serbia (excluding Kosovo), 1991-2001

Year	Serbia (excluding Kosovo)			Central Serbia			Vojvodina		
	Total	Males	Females	Total	Males	Females	Total	Males	Females
Deaths under 1 year									
1991	1322	763	559	1039	597	442	283	166	117
1992	1399	791	608	1094	607	487	305	184	121
1993	1476	850	626	1142	675	467	334	175	159
1994	1311	758	553	1000	566	434	311	192	119
1995	1193	659	534	955	534	421	238	125	113
1996	1207	699	508	930	537	393	277	162	115
1997	965	569	396	718	436	282	247	133	114
1998	882	499	383	689	389	300	193	110	83
1999	792	458	334	602	350	252	190	108	82
2000	785	473	312	587	358	229	198	115	83
2001	799	484	315	607	378	229	192	106	86
Infant mortality rate (per 1000 live births)									
1991	14.6	16.4	12.7	15.4	17.2	13.5	12.3	14.2	10.4
1992	16.1	17.7	14.4	16.9	18.2	15.5	13.8	16.2	11.3
1993	16.8	18.6	14.8	17.3	19.8	14.7	15.2	15.2	15.1
1994	15.4	17.2	13.4	15.7	17.1	14.2	14.4	17.4	11.3
1995	13.8	14.8	12.8	15.0	16.1	13.7	10.6	10.8	10.3
1996	14.6	16.4	12.8	15.3	17.0	13.4	12.8	14.4	11.1
1997	12.1	13.8	10.3	12.2	14.3	9.9	12.0	12.5	11.4
1998	11.6	12.7	10.3	12.2	13.4	10.9	9.7	10.8	8.6
1999	11.0	12.2	9.6	11.2	12.6	9.8	10.2	11.1	9.2
2000	10.6	12.4	8.7	10.7	12.6	8.6	10.5	11.9	9.1
2001	10.2	12.0	8.3	10.4	12.6	8.1	9.5	10.2	8.8

An abrupt increase in the mortality of this young population can certainly be regarded as a heavy loss to Serbia, especially to their families. However, it should be pointed out that, from a demographic viewpoint, such unfavourable trends did not have any more significant influence on changes in the total number of deaths and life expectancy.

If the first and last year of the observed period (1991 and 2001) are considered, it can be stated that the mortality of the older adult population

(40-59) remained mostly at the same level. The same trend was also recorded in the mortality of the old population (aged 60 and over), while the mortality of the elderly population (aged 75 and over) was either slowly declining (75-84) or was stagnant (for the age group 85 and over).

Such trends in the mortality of the old population are characteristic not only of the 1990s. Rather, they represent the continuation of the trend that was recorded in Serbia during the 1970s already. However, these trends are different than in many developed countries in which very significant results were achieved during the past few decades as regards a decrease in the mortality of the old population (Radivojević, 2002).

Considered as a whole, at the end of the 20th century, the population in Serbia was mostly approaching the contemporary mortality pattern by age and sex. However, the death rate points to the need and potentials for the further approachment to the countries that have achieved the best results in decreasing mortality.

If the mortality by age is also observed by sex, then the rule on the lower mortality of the female population also applies to Serbia, just like to other countries characterized by the modern mortality patterns. During the whole period under observation, in both large regions in Serbia, the male population accounted for over 50% of the total number of deaths; the crude death rates for the male population were also constantly higher and the same applies to all age-specific death rates. However, considered as a whole, the recent changes were mostly directed towards decreasing mortality differences by sex.

It should be noted that, insofar as the mortality of the older adult and elderly population is concerned, changes were considerably more favourable in the case of the male population than the female one. To some extent, such trends represent a change as compared to the trends recorded during the 1980s.

Life Expectancy

The level of and tendency in the mortality by age also have a direct influence on life expectancy. In Serbia, according to the abridged life tables for 2001, life expectancy at birth was 69.7 years for males and 75.1 years for females (Table 5). As compared to 1991, the expectation of life at birth was extended for both sexes, i.e. by 1.15 year for males and 0.38 year for females.

Table 5.

Life expectancy at certain ages by sex.
Serbia (excluding Kosovo) and several European countries, 1990-2001

	Year	0		1		15		45		65	
		M	F	M	F	M	F	M	F	M	F
Serbia (excluding Kosovo)	1990	69.4	75.0	69.7	75.1	56.0	61.4	28.2	32.5	13.2	15.4
	1991	68.6	74.8	68.7	74.7	55.1	61.0	27.8	32.2	13.0	15.1
	1993	68.4	74.0	68.7	74.1	55.1	60.4	27.4	31.5	12.5	14.7
	1996	69.1	73.9	69.2	73.8	55.5	60.1	27.4	31.2	12.5	14.3
	1999	69.1	74.3	69.0	74.1	55.3	60.3	27.4	31.4	12.7	14.6
	2000	69.0	74.5	69.0	74.2	55.3	60.5	27.3	31.2	12.7	14.6
	2001	69.7	75.1	69.7	74.9	56.0	61.1	28.0	32.1	13.2	15.3
Central Serbia	1990	70.2	75.3	70.5	75.4	56.8	61.7	28.8	32.7	13.6	15.5
	1991	69.5	75.1	69.7	75.1	56.1	61.4	28.6	32.5	13.4	15.3
	1993	69.2	74.4	69.6	74.5	56.0	60.8	28.1	31.9	12.9	15.0
	1996	69.8	74.4	70.0	74.4	56.3	60.7	28.2	31.7	13.0	14.7
	1999	69.7	74.6	69.6	74.3	55.9	60.6	28.0	31.7	13.0	14.7
	2000	69.5	74.7	69.5	74.5	55.8	60.8	27.9	31.8	12.9	14.8
	2001	70.2	75.4	70.3	75.2	56.6	61.4	28.5	32.4	13.6	15.5
Vojvodina	1990	67.5	74.4	67.6	74.3	53.9	60.6	26.4	31.7	12.2	15.0
	1991	66.1	73.9	66.1	73.7	52.4	60.0	25.7	31.2	11.9	14.6
	1993	66.5	72.8	66.5	72.9	53.0	59.2	25.5	30.5	11.4	14.1
	1996	66.9	72.7	66.9	72.5	53.3	58.8	25.4	30.0	11.2	13.5
	1999	67.8	73.8	67.5	73.5	53.8	59.7	26.0	30.7	11.9	14.2
	2000	67.6	73.7	67.5	73.5	53.9	59.7	25.9	30.8	11.9	14.2
	2001	68.4	74.4	68.1	74.1	54.5	60.3	26.5	31.3	12.3	14.7
Sweden	1990	74.8	80.4	74.3	79.8	60.5	66.0	32.0	36.8	15.3	19.0
	2000	77.3	82.0	76.7	81.2	62.8	67.3	34.0	37.9	16.7	20.0
France	1990	72.8	80.9	72.4	80.4	58.6	66.6	31.1	37.7	15.5	19.8
	2000	75.2	83.1	74.7	82.5	60.9	68.6	33.1	39.6	17.2	21.6
Czech Republic	1990	67.6	75.5	67.5	75.2	53.8	61.4	25.9	32.4	11.7	15.3
	2000	71.5	78.2	70.9	77.6	57.1	63.8	28.9	34.6	13.8	17.1
Bulgaria	1990	68.0	74.7	68.1	74.6	54.7	61.1	27.3	32.3	12.7	15.1
	2000	67.4	74.9	67.6	74.9	54.1	61.4	26.5	32.6	12.5	15.6
Greece	1990	74.6	79.4	74.4	79.1	60.6	65.3	32.4	36.1	15.6	17.9
	2000	75.4	80.8	74.8	80.2	61.0	66.3	32.7	37.0	15.9	18.6

Source: For Serbia, life tables calculated in the Demographic Research Center of ISS (Belgrade); for European countries for 1990 Council of Europe (2002), and for 2000 WHO (2001).

If considered in terms of time, it should be noted that this upward trend in the expectation of life at birth of the male population was not continuous. It was recorded mostly until 1995. Thereafter, during the next five years, its level was rather stable or was slowly declining (1999 and 2000). It should be

noted that the increase of 0.7 year was recorded 2001 as compared to the previous year, 2000, but it is still early to conclude whether this is the result of a considerable improvement of the economic situation and stabilization of the political situation in the country, or only a short-term trend.

Changes in the life expectancy for female population were considerably less intensive and, during the 1990s, their level varied mildly, i.e. from 73.9 (1996) to 75.1 (2001). As a result of the unequal dynamics of changes by sex, the difference in the expectation of life at birth between women and men decreased (from 6.2 in 1991 to 5.4 in 2001). Thus, during the observed period, and especially between 1991 and 1996, a decades-long increase in the difference between the male and female population in the expectation of life at birth was interrupted.

The regional differences in life expectancy show in a very illustrative way that there are still relatively significant regional changes in this area, which is mainly homogeneous from a demographic viewpoint. According to the data for 2001, the expectation of life at birth for males in Central Serbia was 70.2 years, or longer by 0.70 year than at the beginning of the period (69.5 in 1991). In Vojvodina, in 2001, the life expectancy of the male population was 68.4 years, which is a relatively significant extension as compared to the beginning of the period (2.3 years). Thus, in 2001, despite the most intensive average annual increase in the expectation of life at birth of the male population in Vojvodina during the past decade, it was considerably shorter than in Central Serbia (1.88 year). The common characteristic of both regions is that, after a significant decrease in 1992 (the abrupt aggravation of an economic and political situation in the country), the expectation of life at birth for male population reached its maximum in 1995. During the next 2-3 years, the earlier favourable trends were either stopped (Central Serbia) or abruptly interrupted and reversed (Vojvodina). Only the data for 2001-2006 will show whether the improvement made in 2001 can be regarded as a real change in the trend in the mortality of the male population in these regions.

As for the life expectancy for female population, it is also longer in Central Serbia than in Vojvodina, while the difference, which was recorded at the beginning of the period (1.16 year in 1991), was also preserved in 2001 (1.09 year in 2001).

Life expectancy at birth is determined by the age-specific mortality from the first to the last year of life. In Serbia (excluding Kosovo), during the period of the most intensive increase in the duration of human life (during the

1950s and 1960s), about two-thirds of it could be attributed to a decrease in the mortality of infants and children under 5 years of age.

During the period 1991-2001, a decrease in the mortality of infants and children aged 1-4 contributed to the 1.2 year extension of the life expectancy for male population in Serbia by less than 20%. However, what is especially significant and, one might say, new in comparison with the previous trends is that the almost exclusive contribution to the extension of the life expectancy for ages 1 and over was made by a decrease in the mortality of the younger adult population (under 40) and the older ages (80 and over). Although the increase is not significant in absolute terms (0.8 year) and is limited to a relatively short period of time, it is important to note that such changes in the mortality of the old male population in Serbia are consistent with changes in the developed European countries in which, especially during the recent decades, the mortality of the old population was significantly decreased..

During the period 1991-2001, in Serbia, the life expectancy at birth for female population was slightly extended (0.4 year), which was mostly achieved thanks to a decrease in infant mortality (about two-thirds of total decrease) and in mortality of women aged under 30 years. On the other hand, an increase in the mortality of the adults and ages 60-75 prevented the further extension of life expectancy at birth for females to a significant extent.

As for life expectancy by age, the greatest differences between Central Serbia and Vojvodina are recorded as regards the population aged 45. According to the life tables for 2001, the male population aged 45 in Central Serbia could expect to live for another 28.5 years and in Vojvodina even two years less (26.5). The difference between the female populations of the same age is almost two times smaller (1.1 year), again in favour of Central Serbia (Table 5). As for the old population, the differences are smaller, which means that the situation concerning the age-specific mortality of the female population in Vojvodina is less favourable, which especially applies to the female population aged 45-64.

As compared to the European average, Serbia is lagging behind it as regards life expectancy at birth for both sexes. In the case of the male population, the difference is about 2.6 years, while in the case of the female population, it is considerably higher and amounts to almost 5.3 years. However, the differences are considerably greater if one makes a comparison with the countries that have achieved the best results in decreasing mortality. So, for example, early in 2000, in 15 or so European countries (excluding the so-

called micro-states), the life expectancy at birth for males was over 75 years,² while in Sweden, Switzerland and Iceland, it was over 77 years. At the same time, in every second European country the life expectancy at birth for females exceeded 80 years (in Sweden, Switzerland, Spain and France, it reached over 82 years). Nevertheless, there are many countries in which life expectancy is lower than in Serbia and this refers especially to the male population. As for the life expectancy for female population there are only a few countries³ lagging behind Serbia. Thus, if one considers the expectation of life, Serbia is much closer to the ex-communist countries than to other, West European countries.

The differences in the European trends in life expectancy or, to be more precise, in the trends in most European countries are reflected not only in their level, but also in the dynamics of changes. During the 1990s, in Serbia, only a minimum extension of life expectancy at birth was recorded (somewhat more intensive in the case of the male population than the female one), while in Europe, considered as a whole, this increase was about 3 years (in the case of both the male and female population). Namely, a significant increase in mortality was recorded in several countries (primarily in Russia, Belarus and Ukraine), while for other countries it can be stated that the improvements with respect to life expectancy are considerably greater than in Serbia. Among such countries, Poland and the Czech Republic especially distinguish themselves (Council of Europe, 2002). Namely, in these countries, between 1990 and 2001, the life expectancy at birth for males rose by 3.7 (Poland - from 66.5 to 70.2) and 4.5 (the Czech Republic - from 67.6 to 72.1) and that for the female population by 2.8 (Poland - from 75.5 to 78.3) and 3.1 (the Czech Republic - from 75.5 to 78.6).

In view of the fact that an increase in life expectancy, which was recorded in Serbia during the 1990s, is considerably below the European average, its place on the European LE ranking list changed as well. This refers, above all, to the male population that dropped from the centre to the bottom part of the list of European countries. On the other hand, although the improvement in the case of the female population is almost insignificant, Serbia did not change its place on the list as regards life expectancy at birth, i.e. it is still in

² The top 10 group includes the North, West and South European countries, among which there are no ex-socialist countries.

³ The sex differential in life expectancy at birth was not reduced in only seven countries. It is solely the question of the ex-communist countries, including specifically Russia, Ukraine and Moldova.

the group of 10 countries with the shortest life expectancy. During the observed period, the decades-long upward trend in the difference between the male and female population in the expectation of life at birth was terminated (between successive periods 1970-1972 to 1990-1992, the difference increased by one year every ten years). In that sense, Serbia is following the trends recorded in most European countries. It should be noted, however, that this difference is either decreasing or is maintained at the same level, especially in the West European countries, while the trend in the East European countries is just reverse.⁴

In this regard, it should be noted that a decrease in the sex difference in life expectancy, which was recorded in Serbia during the 1990s, is surprising at first sight, especially if one bears in mind the frequency of armed conflicts in this territory. In any case, such a trend deserves additional research.

The Causes of Death

In Serbia, during the 1990s, there were also no more significant changes with respect to the causes of death (Tables 6a and 6b). At the end of the observed period (1999-2001), more than a half of deaths (56.1%) was attributed to the diseases of the circulatory system. During the same three-year period, neoplasms were the cause of death of almost every sixth person (17.6%). At the beginning of the period (1990-1992), the share of diseases of the circulatory system as the cause of death was almost identical (56.3%), while the share of neoplasms was lower by one percentage point (it amounted to 16.6%).

It can be stated that in a certain sense, the mentioned changes follow the mortality trends in the most advanced European countries in which, during the past ten or so years, there was a noticeable decrease in the share of deaths caused by diseases of the circulatory system, as contrasted to the share of neoplasms. In this regard, it should be noted that in Serbia, in the late 1990s, the share of deaths caused by diseases of the circulatory system was higher than in the EU countries, where it amounts to about 40%. At the same time, the share of neoplasms, as the cause of death, is lower (in the EU it is about 23%).

⁴ In Russia, for example, the expectation of life at birth was extended significantly during the 1980s (the maximum was reached in 1987 – 65.0 years for men and 74.6 years for women) thanks largely to the severe measures against alcoholism. The abandonment of the prohibition policy, as well as the consequences of the fall of the communist regime (degradation of the health condition of the population and its impoverishment in general) resulted in the fact that only in 3 years (between 1991 and 1994), the life expectancy at birth for males was reduced by more 6 years (from 63.5 to 57.3 years) and for females by more than 3 years (from 74.3 to 71.1 years).

Table 6-1a.

Distribution of deaths by cause and sex. Serbia (excluding Kosovo), around 1991

Cause of death	Number			Percent			
	1990	1991	1992	1990	1991	1992	1990-1992
	Both sexes						
All causes	85515	89072	93474	100.0	100.0	100.0	100.0
Certain infectious and parasitic diseases: A00-B99 (001-033, 034.1-134, 136-139, 771.3)	471	484	550	0.6	0.5	0.6	0.6
Neoplasms: C00-D48 (140-239)	14472	14761	15372	16.9	16.6	16.4	16.6
Endocrine, nutritional and metabolic diseases: E00-E88 (240-278)	1912	1994	2086	2.2	2.2	2.2	2.2
Diseases of the blood and bloodforming organs and certain disorders involving the immune mechanism: D50-D89 (135, 279-289)	81	80	82	0.1	0.1	0.1	0.1
Mental disorders: F00-F99 (290-319)	661	710	583	0.8	0.8	0.6	0.7
Diseases of the nervous system: G00-G98 (320-359, 435)	665	700	745	0.8	0.8	0.8	0.8
Diseases of the ear and mastoid process: H60-H93 (380-389)	1	-	5	0.0	0.0	0.0	0.0
Diseases of the circulatory system: I00-I99 (390-434, 436-459)	48239	49563	53144	56.4	55.6	56.9	56.3
Diseases of the respiratory system: J00-J98 (034.0, 460-519)	4103	4294	4290	4.8	4.8	4.6	4.7
Diseases of the digestive system: K00-K92 (520-579)	2414	2508	2564	2.8	2.8	2.7	2.8
Diseases of the genitourinary system: N00-N98 (580-629)	1495	1688	1650	1.7	1.9	1.8	1.8
Pregnancy, childbirth and the puerperium: O00-O99 (630-676)	10	14	8	0.0	0.0	0.0	0.0
Diseases of the skin and cellular tissue: L00-L98 (680-709)	1	4	7	0.0	0.0	0.0	0.0
Diseases of the musculoskeletal system and connective tissue: M00-M99 (710-739)	29	34	34	0.0	0.0	0.0	0.0
Congenital malformations, deformations and chromosomal abnormalities: Q00-Q99 (740-759)	324	276	318	0.4	0.3	0.3	0.3
Certain conditions originating in the perinat. period: P00-P96 (760-771.2, 771.4-779)	779	757	807	0.9	0.8	0.9	0.9
Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified: R00-R99 (780-799)	5249	5615	5888	6.1	6.3	6.3	6.2
Injuries: V01-X39, X50-X59 (800-849, 880-929)	2779	3326	3113	3.2	3.7	3.3	3.4
Poisoning, searing, complications of medical and surgical care, and certain other consequences of external causes: X00-X09, X40-X49, X40-X49, X60-X99, Y00-Y99 (850-879, 924.1, 930-999)	1830	2264	2228	2.1	2.5	2.4	2.4

Note: Codes in bold are according to ICD-10 and codes in italics are according to ICD-9.

Table 6-1b.

Distribution of deaths by cause and sex. Serbia (excluding Kosovo), around 1991

Cause of death	Number			Percent			
	1990	1991	1992	1990	1991	1992	1990-1992
	Males						
All causes	45542	47764	50093	100.0	100.0	100.0	100.0
Certain infectious and parasitic diseases: A00-B99 (001-033, 034.1-134, 136-139, 771.3)	301	299	364	0.7	0.6	0.7	0.7
Neoplasms: C00-D48 (140-239)	8270	8400	8813	18.2	17.6	17.6	17.8
Endocrine, nutritional and metabolic diseases: E00-E88 (240-278)	797	839	876	1.8	1.8	1.7	1.8
Diseases of the blood and bloodforming organs and certain disorders involving the immune mechanism: D50-D89 (135, 279-289)	40	36	41	0.1	0.1	0.1	0.1
Mental disorders: F00-F99 (290-319)	575	617	452	1.3	1.3	0.9	1.1
Diseases of the nervous system: G00-G98 (320-359, 435)	368	381	421	0.8	0.8	0.8	0.8
Diseases of the ear and mastoid process: H60-H93 (380-389)	-	-	5	0.0	0.0	0.0	0.0
Diseases of the circulatory system: I00-I99 (390-434, 436-459)	23361	24042	25868	51.3	50.3	51.6	51.1
Diseases of the respiratory system: J00-J98 (034.0, 460-519)	2463	2640	2589	5.4	5.5	5.2	5.4
Diseases of the digestive system: K00-K92 (520-579)	1563	1661	1673	3.4	3.5	3.3	3.4
Diseases of the genitourinary system: N00-N98 (580-629)	878	948	963	1.9	2.0	1.9	1.9
Pregnancy, childbirth and the puerperium: O00-O99 (630-676)	-	-	-	0.0	0.0	0.0	0.0
Diseases of the skin and cellular tissue: L00-L98 (680-709)	-	1	5	0.0	0.0	0.0	0.0
Diseases of the musculoskeletal system and connective tissue: M00-M99 (710-739)	6	9	7	0.0	0.0	0.0	0.0
Congenital malformations, deformations and chromosomal abnormalities: Q00-Q99 (740-759)	172	147	170	0.4	0.3	0.3	0.3
Certain conditions originating in the perinat. period: P00-P96 (760-771.2, 771.4-779)	456	465	463	1.0	1.0	0.9	1.0
Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified: R00-R99 (780-799)	2898	3031	3268	6.4	6.3	6.5	6.4
Injuries: V01-X39, X50-X59 (800-849, 880-929)	2156	2647	2559	4.7	5.5	5.1	5.1
Poisoning, searing, complications of medical and surgical care, and certain other consequences of external causes: X00-X09, X40-X49, X60-X69, Y00-Y99 (850-879, 924.1, 930-999)	1238	1601	1556	2.7	3.4	3.1	3.1

Note: Codes in bold are according to ICD-10 and codes in italics are according to ICD-9.

Table 6-1c.

Distribution of deaths by cause and sex. Serbia (excluding Kosovo), around 1991

Cause of death	Number			Percent			
	1990	1991	1992	1990	1991	1992	1990-1992
	Females						
All causes	39973	41308	43381	100.0	100.0	100.0	100.0
Certain infectious and parasitic diseases: A00-B99 (001-033, 034.1-134, 136-139, 771.3)	170	185	186	0.4	0.4	0.4	0.4
Neoplasms: C00-D48 (140-239)	6202	6361	6559	15.5	15.4	15.1	15.3
Endocrine, nutritional and metabolic diseases: E00-E88 (240-278)	1115	1155	1210	2.8	2.8	2.8	2.8
Diseases of the blood and bloodforming organs and certain disorders involving the immune mechanism: D50-D89 (135, 279-289)	41	44	41	0.1	0.1	0.1	0.1
Mental disorders: F00-F99 (290-319)	86	93	131	0.2	0.2	0.3	0.2
Diseases of the nervous system: G00-G98 (320-359, 435)	297	319	324	0.7	0.8	0.7	0.8
Diseases of the ear and mastoid process: H60-H93 (380-389)	1	-	-	0.0	0.0	0.0	0.0
Diseases of the circulatory system: I00-I99 (390-434, 436-459)	24878	25521	27276	62.2	61.8	62.9	62.3
Diseases of the respiratory system: J00-J98 (034.0, 460-519)	1640	1654	1701	4.1	4.0	3.9	4.0
Diseases of the digestive system: K00-K92 (520-579)	851	847	891	2.1	2.1	2.1	2.1
Diseases of the genitourinary system: N00-N98 (580-629)	617	740	687	1.5	1.8	1.6	1.6
Pregnancy, childbirth and the puerperium: O00-O99 (630-676)	10	14	8	0.0	0.0	0.0	0.0
Diseases of the skin and cellular tissue: L00-L98 (680-709)	1	3	2	0.0	0.0	0.0	0.0
Diseases of the musculoskeletal system and connective tissue: M00-M99 (710-739)	23	25	27	0.1	0.1	0.1	0.1
Congenital malformations, deformations and chromosomal abnormalities: Q00-Q99 (740-759)	152	129	148	0.4	0.3	0.3	0.3
Certain conditions originating in the perinat. period: P00-P96 (760-771.2, 771.4-779)	323	292	344	0.8	0.7	0.8	0.8
Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified: R00-R99 (780-799)	2351	2584	2620	5.9	6.3	6.0	6.1
Injuries: V01-X39, X50-X59 (800-849, 880-929)	623	679	554	1.6	1.6	1.3	1.5
Poisoning, searing, complications of medical and surgical care, and certain other consequences of external causes: X00-X09, X40-X49, X60-X69, Y00-Y99 (850-879, 924.1, 930-999)	592	663	672	1.5	1.6	1.5	1.5

Note: Codes in bold are according to ICD-10 and codes in italics are according to ICD-9.

Table 6-2a.

Distribution of deaths by cause and sex. Serbia (excluding Kosovo), around 2000

Cause of death	Number			Percent			
	1999	2000	2001	1999	2000	2001	1999-2001
	Both sexes						
All causes	101444	104042	99008	100.0	100.0	100.0	100.0
Certain infectious and parasitic diseases: A00-B99 (001-033, 034.1-134, 136-139, 771.3)	566	578	512	0.6	0.6	0.5	0.5
Neoplasms: C00-D48 (140-239)	17508	18077	18112	17.3	17.4	18.3	17.6
Endocrine, nutritional and metabolic diseases: E00-E88 (240-278)	92	89	94	0.1	0.1	0.1	0.1
Diseases of the blood and bloodforming organs and certain disorders involving the immune mechanism: D50-D89 (135, 279-289)	2595	2560	2406	2.6	2.5	2.4	2.5
Mental disorders: F00-F99 (290-319)	432	407	372	0.4	0.4	0.4	0.4
Diseases of the nervous system: G00-G98 (320-359, 435)	979	896	788	1.0	0.9	0.8	0.9
Diseases of the ear and mastoid process: H60-H93 (380-389)	-	-	-	0.0	0.0	0.0	0.0
Diseases of the circulatory system: I00-I99 (390-434, 436-459)	58002	58098	54747	57.2	55.8	55.3	56.1
Diseases of the respiratory system: J00-J98 (034.0, 460-519)	3893	4752	3526	3.8	4.6	3.6	4.0
Diseases of the digestive system: K00-K92 (520-579)	2882	3006	2817	2.8	2.9	2.8	2.9
Diseases of the genitourinary system: N00-N98 (580-629)	21	45	36	0.0	0.0	0.0	0.0
Pregnancy, childbirth and the puerperium: O00-O99 (630-676)	125	106	115	0.1	0.1	0.1	0.1
Diseases of the skin and cellular tissue: L00-L98 (680-709)	1565	1570	1389	1.5	1.5	1.4	1.5
Diseases of the musculoskeletal system and connective tissue: M00-M99 (710-739)	7	7	7	0.0	0.0	0.0	0.0
Congenital malformations, deformations and chromosomal abnormalities: Q00-Q99 (740-759)	486	475	486	0.5	0.5	0.5	0.5
Certain conditions originating in the perinat. period: P00-P96 (760-771.2, 771.4-779)	216	239	232	0.2	0.2	0.2	0.2
Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified: R00-R99 (780-799)	7534	9015	9063	7.4	8.7	9.2	8.4
Injuries: V01-X39, X50-X59 (800-849, 880-929)	1875	1685	1868	1.8	1.6	1.9	1.8
Poisoning, searing, complications of medical and surgical care, and certain other consequences of external causes: X00-X09, X40-X49, X60-X99, Y00-Y99 (850-879, 924.1, 930-999)	2666	2437	2438	2.6	2.3	2.5	2.5

Note: Codes in bold are according to ICD-10 and codes in italics are according to ICD-9.

Table 6-2b.
Distribution of deaths by cause and sex. Serbia (excluding Kosovo), around 2000

Cause of death	Number			Percent			
	1999	2000	2001	1999	2000	2001	1999-2001
	Males						
All causes	52432	53751	51060	100.0	100.0	100.0	100.0
Certain infectious and parasitic diseases: A00-B99 (001-033, 034.1-134, 136-139, 771.3)	356	383	347	0.7	0.7	0.7	0.7
Neoplasms: C00-D48 (140-239)	9949	10290	10273	19.0	19.1	20.1	19.4
Endocrine, nutritional and metabolic diseases: E00-E88 (240-278)	44	35	44	0.1	0.1	0.1	0.1
Diseases of the blood and bloodforming organs and certain disorders involving the immune mechanism: D50-D89 (135, 279-289)	1072	1081	936	2.0	2.0	1.8	2.0
Mental disorders: F00-F99 (290-319)	341	308	293	0.7	0.6	0.6	0.6
Diseases of the nervous system: G00-G98 (320-359, 435)	555	497	414	1.1	0.9	0.8	0.9
Diseases of the ear and mastoid process: H60-H93 (380-389)	-	-	-	0.0	0.0	0.0	0.0
Diseases of the circulatory system: I00-I99 (390-434, 436-459)	27317	27340	25691	52.1	50.9	50.3	51.1
Diseases of the respiratory system: J00-J98 (034.0, 460-519)	2369	2859	2177	4.5	5.3	4.3	4.7
Diseases of the digestive system: K00-K92 (520-579)	1803	1848	1732	3.4	3.4	3.4	3.4
Diseases of the genitourinary system: N00-N98 (580-629)	8	28	13	0.0	0.1	0.0	0.0
Pregnancy, childbirth and the puerperium: O00-O99 (630-676)	29	25	25	0.1	0.0	0.0	0.1
Diseases of the skin and cellular tissue: L00-L98 (680-709)	927	843	777	1.8	1.6	1.5	1.6
Diseases of the musculoskeletal system and connective tissue: M00-M99 (710-739)	-	-	-	0.0	0.0	0.0	0.0
Congenital malformations, deformations and chromosomal abnormalities: Q00-Q99 (740-759)	284	286	310	0.5	0.5	0.6	0.6
Certain conditions originating in the perinat. period: P00-P96 (760-771.2, 771.4-779)	118	124	111	0.2	0.2	0.2	0.2
Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified: R00-R99 (780-799)	3972	4794	4806	7.6	8.9	9.4	8.6
Injuries: V01-X39, X50-X59 (800-849, 880-929)	1415	1310	1416	2.7	2.4	2.8	2.6
Poisoning, searing, complications of medical and surgical care, and certain other consequences of external causes: X00-X09, X40-X49, X60-X99, Y00-Y99 (850-879, 924.1, 930-999)	1873	1700	1695	3.6	3.2	3.3	3.4

Note: Codes in bold are according to ICD-10 and codes in italics are according to ICD-9.

Table 6-2c.

Distribution of deaths by cause and sex. Serbia (excluding Kosovo), around 2000

Cause of death	Number			Percent			
	1999	2000	2001	1999	2000	2001	1999-2001
	Females						
All causes	49012	50291	47948	100.0	100.0	100.0	100.0
Certain infectious and parasitic diseases: A00-B99 (001-033, 034.1-134, 136-139, 771.3)	210	195	165	0.4	0.4	0.3	0.4
Neoplasms: C00-D48 (140-239)	7559	7787	7839	15.4	15.5	16.3	15.7
Endocrine, nutritional and metabolic diseases: E00-E88 (240-278)	48	54	50	0.1	0.1	0.1	0.1
Diseases of the blood and bloodforming organs and certain disorders involving the immune mechanism: D50-D89 (135, 279-289)	1523	1479	1470	3.1	2.9	3.1	3.0
Mental disorders: F00-F99 (290-319)	91	99	79	0.2	0.2	0.2	0.2
Diseases of the nervous system: G00-G98 (320-359, 435)	424	399	374	0.9	0.8	0.8	0.8
Diseases of the ear and mastoid process: H60-H93 (380-389)	-	-	-	0.0	0.0	0.0	0.0
Diseases of the circulatory system: I00-I99 (390-434, 436-459)	30685	30758	29056	62.6	61.2	60.6	61.5
Diseases of the respiratory system: J00-J98 (034.0, 460-519)	1524	1893	1349	3.1	3.8	2.8	3.2
Diseases of the digestive system: K00-K92 (520-579)	1079	1158	1085	2.2	2.3	2.3	2.3
Diseases of the genitourinary system: N00-N98 (580-629)	13	17	23	0.0	0.0	0.0	0.0
Pregnancy, childbirth and the puerperium: O00-O99 (630-676)	96	81	90	0.2	0.2	0.2	0.2
Diseases of the skin and cellular tissue: L00-L98 (680-709)	638	727	612	1.3	1.4	1.3	1.3
Diseases of the musculoskeletal system and connective tissue: M00-M99 (710-739)	7	7	7	0.0	0.0	0.0	0.0
Congenital malformations, deformations and chromosomal abnormalities: Q00-Q99 (740-759)	202	189	176	0.4	0.4	0.4	0.4
Certain conditions originating in the perinat. period: P00-P96 (760-771.2, 771.4-779)	98	115	121	0.2	0.2	0.3	0.2
Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified: R00-R99 (780-799)	3562	4221	4257	7.3	8.4	8.9	8.2
Injuries: V01-X39, X50-X59 (800-849, 880-929)	460	375	452	0.9	0.7	0.9	0.9
Poisoning, searing, complications of medical and surgical care, and certain other consequences of external causes: X00-X09, X40-X49, X60-X99, Y00-Y99 (850-879, 924.1, 930-999)	793	737	743	1.6	1.5	1.5	1.5

Note: Codes in bold are according to ICD-10 and codes in italics are according to ICD-9.

It is characteristic that there were no more significant changes in the internal distribution of diseases within these two large groups of diseases either (Table 7). The most significant causes of death in the case of neoplasms are malignant neoplasms of colon, rectum and anus (10.2% in 1990-1992 vs. 11.2% of all deaths caused by neoplasms in 1999-2001) and malignant neoplasms of trachea, bronchus and lung (21.2% and 21.8%). The situation is similar with respect to the diseases of the circulatory system. In the total number of deaths caused by these diseases, the two of them have the dominant share of 40%: acute myocardial infarction and cerebrovascular diseases. During the observed period, the share of deaths caused by myocardial infarction decreased (from 13.5% to 12.8%), while the share of cerebrovascular diseases recorded a relatively significant increase (from 26.4% in the period 1990-1992 to 29.5% in 1999-2001).

The next on the ranking list of the primary causes of deaths in Serbia are deaths due to violence, but they are considerably less significant (their share in the total number of deaths does not exceed 4.3%). Although this period was marked by the NATO armed intervention, which lasted a few months, the share of deaths due to violence remained relatively low, not only in comparison with such a share at the beginning of the period (5.8%), but also in comparison with the European average and, in particular, with some former Soviet republics. A relatively significant share also accrues to the diseases of the respiratory system (4.0%) and diseases of the digestive system (2.9%).

All other causes of deaths, including infectious and parasitic diseases, account for only 6.7%. It should be noted that the share of infectious and parasitic diseases is very low (0.5%) which is, after all, the characteristic of the contemporary cause-specific mortality patterns. On one side, this points out that the worsening of the conditions influencing the general epidemiological situation did not have a direct influence on a significant increase in the number of deaths caused by this group of diseases. On the other side, the share of those suffering from AIDS is low.

It should be pointed out that in Serbia, at the end of the 20th century, there was still a relatively high proportion of so-called symptoms and ill-defined conditions (8.4%), which even increased relative to the situation at the beginning of the period (6.2%). This points to an inadequate quality of the mortality data (in the most developed countries, the share of ill-defined causes of death is about 1%), as well as to the need to regard the results of an analysis of cause-specific mortality just conditionally. Nevertheless, the existing data enable the perception of the basic characteristics of cause-specific mortality.

Table 7. **Certain frequent causes of death due to malignant neoplasms and cardiovascular diseases. Serbia (excluding Kosovo), around 1991**

Cause of death (ICD-9)	Both sexes				Males				Females			
	1990	1991	1992	1990-1992	1990	1991	1992	1990-1992	1990	1991	1992	1990-1992
Malignant neoplasms (140-208, 210-239)	14472	14761	15372	14868	8270	8400	8813	8494	6202	6361	6559	6374
Malignant neoplasms of colon, rectum and anus (153; 154)	1452	1478	1619	1516	764	822	897	828	688	656	722	689
Malignant neoplasms of trachea, bronchus and lung (162)	3056	3072	3308	3145	2529	2537	2710	2592	527	535	598	553
Malignant neoplasms of breast (174; 175)	1132	1135	1244	1170	17	12	12	14	1115	1123	1232	1157
Malignant neoplasms of prostate (185)	487	427	528	481	487	427	528	481	-	-	-	-
<i>Share of all deaths due to malignant neoplasms (in %)</i>												
Malignant neoplasms of colon, rectum and anus (153; 154)	10.0	10.0	10.5	10.2	9.2	9.8	10.2	9.7	11.1	10.3	11.0	10.8
Malignant neoplasms of trachea, bronchus and lung (162)	21.1	20.8	21.5	21.2	30.6	30.2	30.8	30.5	8.5	8.4	9.1	8.7
Malignant neoplasms of breast (174; 175)	7.8	7.7	8.1	7.9	0.2	0.1	0.1	0.2	18.0	17.7	18.8	18.1
Malignant neoplasms of prostate (185)	3.4	2.9	3.4	3.2	5.9	5.1	6.0	5.7	0.0	0.0	0.0	0.0
Diseases of the circulatory system (390-434; 436-448; 451-459)	48239	49563	53144	50315	23361	24042	25868	24424	24878	25521	27276	25892
Acute myocardial infarction (410)	6186	6731	7465	6794	4004	4361	4845	4403	2182	2370	2620	2391
Cerebrovascular diseases (430-434; 436-438)	12789	13570	13464	13274	5955	6276	6266	6166	6834	7294	7198	7109
<i>Share of all deaths due to diseases of the circulatory system (in %)</i>												
Acute myocardial infarction (410)	12.8	13.6	14.0	13.5	17.1	18.1	18.7	18.0	8.8	9.3	9.6	9.2
Cerebrovascular diseases (430-434; 436-438)	26.5	27.4	25.3	26.4	25.5	26.1	24.2	25.2	27.5	28.6	26.4	27.5

There are no sex-specific differences in the sequence of the first two major causes of death (diseases of the circulatory system and neoplasms), which applies to both the beginning and the end of the observed period. The existing differences refer, above all, to the percentage share of these two leading causes of death.

Table 7. (continuation) **Certain frequent causes of death due to malignant neoplasms and cardiovascular diseases. Serbia (excluding Kosovo), around 2000**

Cause of death (ICD-10)	Both sexes				Males				Females			
	1999	2000	2001	1999- 2001	1999	2000	2001	1999- 2001	1999	2000	2001	1999- 2001
Malignant neoplasms (C00-D48)	17508	18077	18112	17899	9949	10290	10273	10171	7559	7787	7839	7728
Malignant neoplasms of colon, rectum and anus (C18-21)	1950	2072	2005	2009	1129	1202	1163	1165	821	870	842	844
Malignant neoplasms of trachea, bronchus and lung (C33-34)	3760	4008	3964	3911	2996	3151	3113	3087	764	857	851	824
Malignant neoplasms of breast (C50)	1453	1470	1458	1460	20	26	25	24	1433	1444	1433	1437
Malignant neoplasms of prostate (C61)	627	556	595	593	627	556	595	593	-	-	-	-
<i>Share of all deaths due to malignant neoplasms (in %)</i>												
Malignant neoplasms of colon, rectum and anus (C18-21)	11.1	11.5	11.1	11.2	11.3	11.7	11.3	11.5	10.9	11.2	10.7	10.9
Malignant neoplasms of trachea, bronchus and lung (C33-34)	21.5	22.2	21.9	21.8	30.1	30.6	30.3	30.3	10.1	11.0	10.9	10.7
Malignant neoplasms of breast (C50)	8.3	8.1	8.0	8.2	0.2	0.3	0.2	0.2	19.0	18.5	18.3	18.6
Malignant neoplasms of prostate (C61)	3.6	3.1	3.3	3.3	6.3	5.4	5.8	5.8	0.0	0.0	0.0	0.0
Diseases of the circulatory system (I00-I99)	58002	58098	54747	56949	27317	27340	25691	26783	30685	30758	29056	30166
Acute myocardial infarction (I21-I22)	7301	7413	7138	7284	4648	4639	4477	4588	2653	2774	2661	2696
Cerebrovascular diseases (I60-I69)	16702	17159	16520	16794	7494	7575	7238	7436	9208	9584	9282	9358
<i>Share of all deaths due to diseases of the circulatory system (in %)</i>												
Acute myocardial infarction (I21-I22)	12.6	12.8	13.0	12.8	17.0	17.0	17.4	17.1	8.6	9.0	9.2	8.9
Cerebrovascular diseases (I60-I69)	28.8	29.5	30.2	29.5	27.4	27.7	28.2	27.8	30.0	31.2	31.9	31.0

In 1999-2001, they accounted for 70.5% of the deaths of the male population and for 77.2% of the deaths of the female population. The sex differences are especially evident in the share of the primary cause of death. During the 1990s, in Serbia (excluding Kosovo), 51% of men and even 62% of women died of the diseases of the circulatory system. It should be noted that the percentage share of this cause of death is almost identical at the beginning and the end of the observed period and this applies to both sexes.

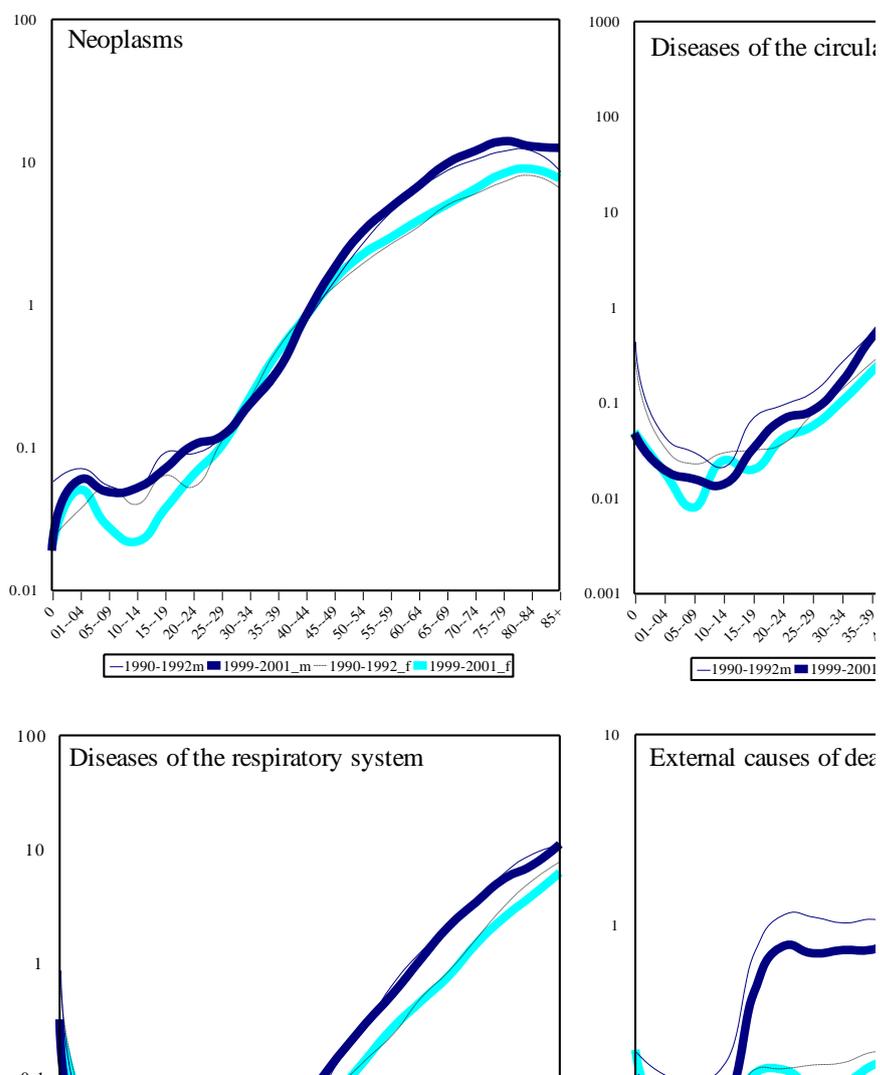
The percentage share of neoplasms as the cause of death is somewhat higher in the case of the male population (19.4%) than of the female one (15.7%). One can observe an upward tendency in the share of neoplasms as the cause of death of the male population, while in the case of the female population, its share in total mortality is almost identical at the beginning and the end of the 1990s. It should be noted that there is an increased share of neoplasms of colon, rectum and anus as the cause of death of the male population (9.7% vs. 11.5% of all deaths due to neoplasms). At the same time, there is a noticeable increase in the share of neoplasms of trachea, bronchus and lung as the cause of death of the female population (from 8.7% to 10.7%). A high share of these malignant neoplasms as the cause of death shows that the harmful smoking habits have been retained not only in the case of the male population, but even more so in the case of the female population, among whom, the situation has been aggravated.

Deaths due to external causes hold the third place among the primary causes of mortality of the male population. At the beginning of the period, violent deaths accounted for 8.2% of total male mortality, while in 1999-2001 their share declined to only 6.0%. A decrease in the share of deaths due to violence was also recorded among women, but such a decrease began from a considerably lower level (from 3.0% to 2.4%). In this regard, it should be noted that deaths of the female population due to external causes hold the fifth place among the primary causes of mortality (immediately after the diseases of the respiratory system and endocrine, nutritional and metabolic diseases).

An analysis of the age-specific death rates for the most frequent causes of death shows that these rates are increasing with age (Figure 2) and that they are the highest in the case of the old population. Neoplasms are the only exception and this refers only to the oldest age groups (75 years and over). The least difference in the age-specific death rates is recorded in the case of deaths due to violence, where there is a relatively high mortality of the adult population. However, mortality is also abruptly increasing in the case of the old population (65 years and over) and, in particular, the oldest one. One of the basic conclusions is also that the age-specific death rates for the male population are higher, almost without exception, than those for the female population. In relative terms, the sex differences in the selected causes of death are most pronounced in the case of deaths caused by neoplasms and deaths due to violence as well as infectious and parasitic diseases.⁵

⁵ It should be noted that the age-specific death rates for infectious diseases are very low and it can be stated that they are statistically almost insignificant.

Figure 2. Age-sex specific death rates by cause. Serbia (excluding Kosovo), 1990-1992 and 1999-2001



During the 1990s, there was no more significant change in the age-specific mortality pattern relating to the diseases being the most frequent cause of death. As an exception, one can single out only the age-specific death rates from neoplasms and from violence. As compared to the beginning of the

observed period (1990-1992), at the end of the period (1999-2001), there was a certain increase in the age-specific deaths rates from neoplasms for both sexes and, in particular, for the oldest age groups (65+). As for deaths due to violence, the situation is opposite – the mortality rates were higher at the beginning of the period, which is especially evident in the case of the younger adult population.

Regional Aspects

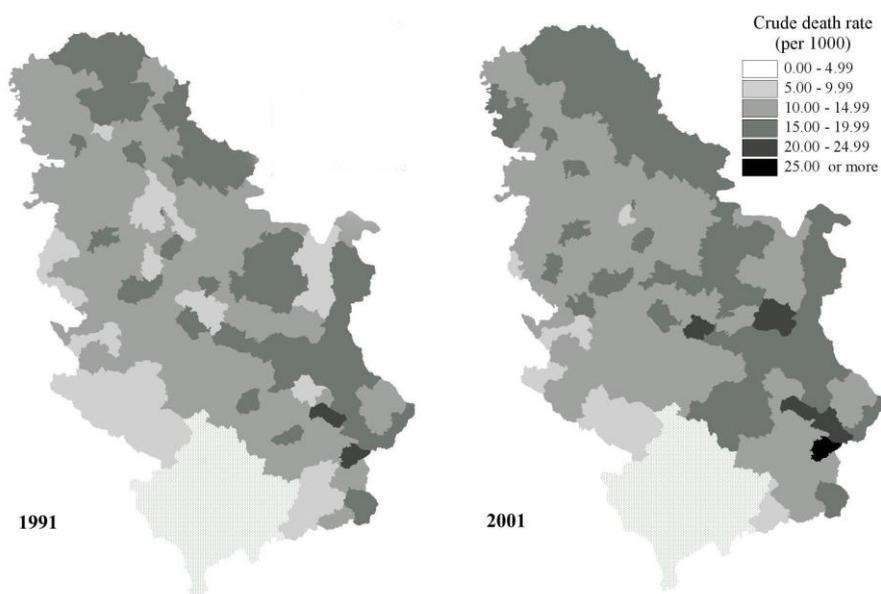
Serbia is known as one of the most demographic heterogeneous areas in Europe. Very clear geographical differences are mostly present due to the differences in the achieved level of demographic development of Kosovo and the rest of Serbia. However, if we observe only Central Serbia and Vojvodina, which is true in this case, the differences aren't very distinguished. This is mostly pertaining to the fertility pattern (both are low fertility zones) and distribution of population by age (both have advanced demographic aging). As for mortality, the differences are more distinguished, which is reflected in the differences in the level of life expectancy. However, the differences aren't so clearly distinguished that it's possible to speak of two mortality patterns.

If the analysis is lowered to the municipality level, the differences become more distinguished. Still, regarding the general mortality characteristics, the differences aren't such that certain zones can be clearly separated. The fact that these are small areas is important to the greatness of the differences,⁶ since the values of the indicator, due to the small number of cases, can often be significantly above or below average, or, on the other hand, completely opposite changes can be present in a short period of time, from which a general trend of changes cannot be deduced.

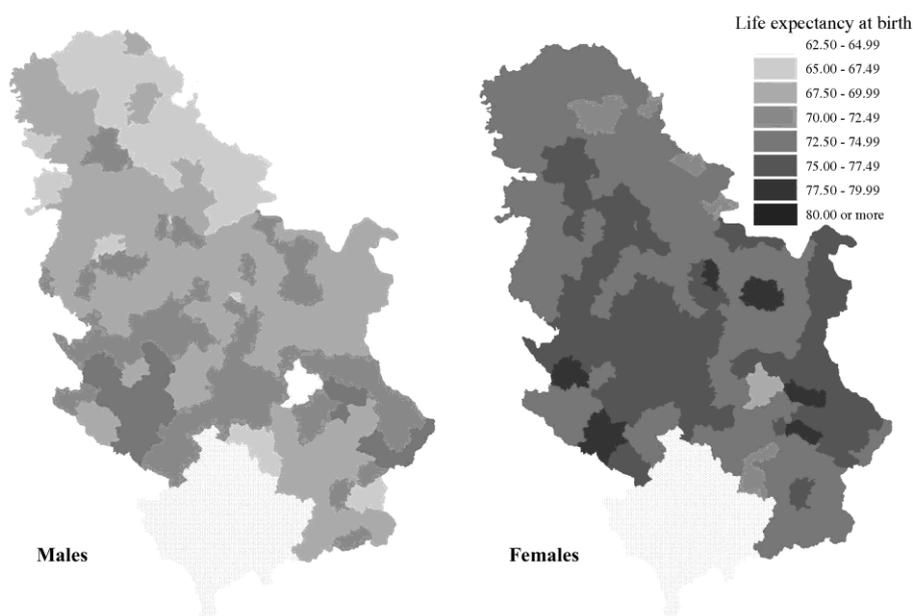
It can be said that zoning of municipalities is easiest to conduct according to the level of the crude death rate. According to the number of deaths per 1000 population, Serbia (excluding Kosovo) can be clearly divided into east and west areas. Crude death rate is usually noticeably higher in the east, and especially in the south, than in the west of the country (maps 1.1 and 1.2). It should be noted that there were similar demographic differences in the beginning of 1990s, but they were less clear then ten years later. It should now be noted that these geographic differences are also, above all, the result of differences in the population age structure of municipalities. This way, the municipalities with the highest crude death rates are also the demogra-

⁶ In 2002, municipalities had, on average, above 46.6 thousand inhabitants, but out of all 161 municipalities, 88 have less than 30 thousand inhabitants, and 32 less than 15 thousand.

Maps 1. Crude death rate. Serbia excluding Kosovo (by municipalities), 1991 and 2001

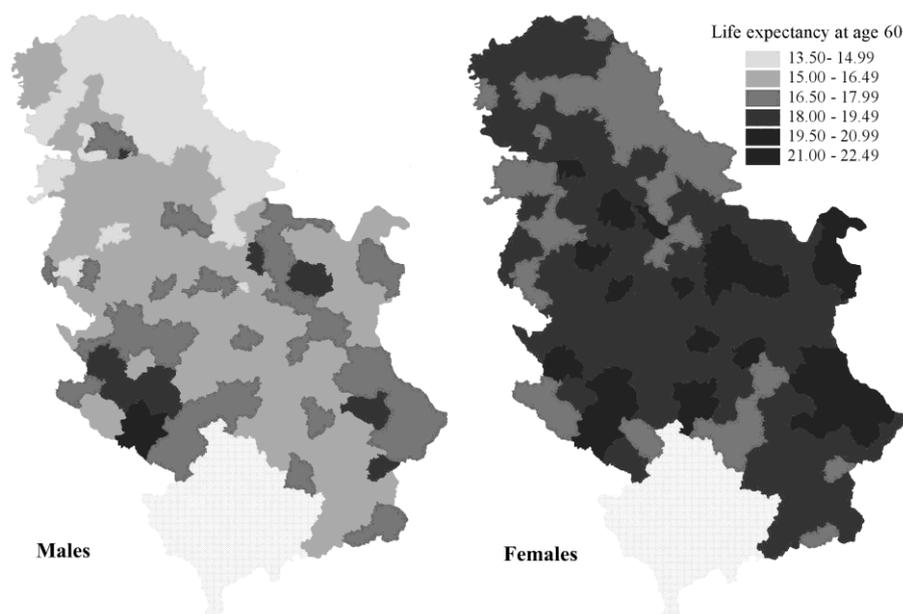


Maps 2. Life expectancy at birth by sex. Serbia excluding Kosovo (by municipalities), 1999-2001



phically oldest, and municipalities with the lowest crude death rate are also the demographically youngest municipalities.⁷ The fact that the differences in the crude death rates are above all caused by the population age structure is also supported by data on life expectancy. In Serbia, from a regional aspect, the differences in life expectancy at birth are not stressed (maps 2.1 and 2.2). In the three-year period 1999-2001, life expectancy by municipalities, is in the interval of 64.7 to 74.7 years for males and 69.3 to 79.0 years for females. However, in over 75% of municipalities, life expectancy for males is between 67.5 and 72.5 years (in the same three-year period, average for Serbia is 69.3 years), and for females in 91.3% municipalities it is in the interval of 72.5 to 77.5 years (average for Serbia is 74.7 years). The distribution of municipalities according to life expectancy at 60 years of age is also quite even (maps 3.1 and 3.2). In most municipalities (73.9%) life expectancy at age 60 is in the interval of 15-18 years for males, and 18-21 years for females (77.6%).

Maps 3. Life expectancy at age 60 (by sex).
Serbia excluding Kosovo (by municipalities), 1999-2001



⁷ In 2001, in five municipalities (Babusnica, Rekovac, Boljevac, Gadzin Han, Crna Trava) the crude death rate was higher than 20 per 1000. That same year, in four municipalities (Tutin, Sjenica, Presevo, Novi Pazar), crude death rate was below 7,5 per 1000. All previous five municipalities are included in the group of municipalities with the oldest population (median age is over 50 years, percentage of elderly 65+ is over 30%), while all four other municipalities are included in the group of demographically youngest municipalities (percentage of population aged over 65 years is 10% or less).

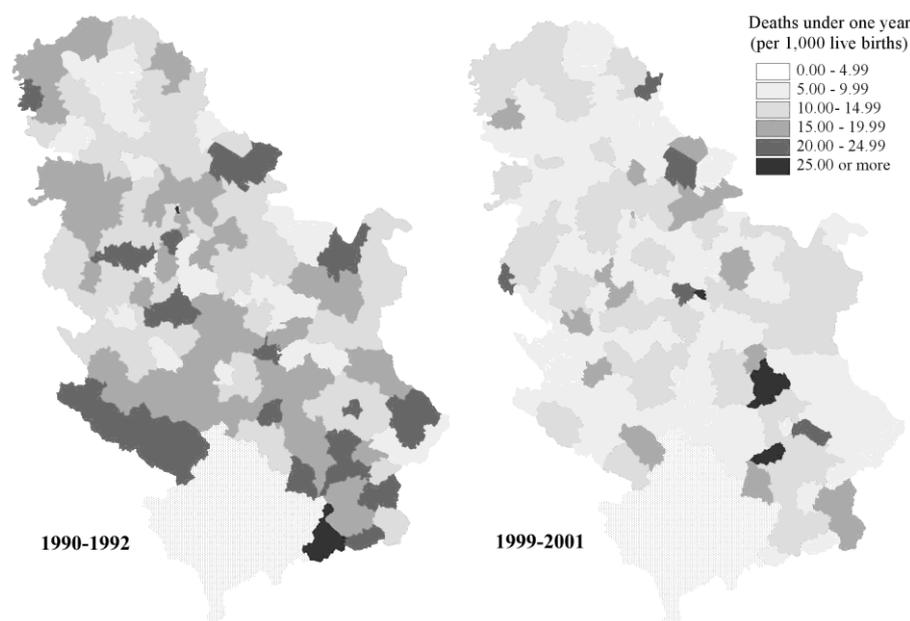
Spatially, municipalities with the highest life expectancy at birth and at age 60 are in the southeast and southwest of Central Serbia. These are mostly less economically developed municipalities, with an above average part of rural population, and they are in the mountain regions of the country. It should also be noted that in these municipalities, the correlations of fertility levels with life expectancy at birth are not significant. In fact, in the group of 10 municipalities with the highest expectancy at birth, there are municipalities with very low fertility (southeast), but also municipalities with relatively high fertility (southwest).

Viewed by large areas, in Vojvodina, compared to Central Serbia, life expectancy at birth for males is two years lower (67.9 opposed to 69.8) and one year lower for females (74.0 opposed to 74.9). Viewed by municipalities, life expectancy is usually lowest in Vojvodina. Out of 10 municipalities with the lowest expectancy at birth for males, 8 municipalities are in Vojvodina, and 6 for females. In the group of 10 municipalities with the lowest life expectancy at 60 years of age for males, all are in Vojvodina, and for females, 5 are in Vojvodina. Out of the 10 municipalities with the highest life expectancy at 60 years of age for males, only one is in Vojvodina, and for females, none is in Vojvodina.

Since municipalities in Vojvodina are in the group of developed municipalities, low values of life expectancy at birth, and especially at 60 years of age, can usually be explained by lifestyle, nutrition and living environment which don't favor the decrease in mortality, especially for males.

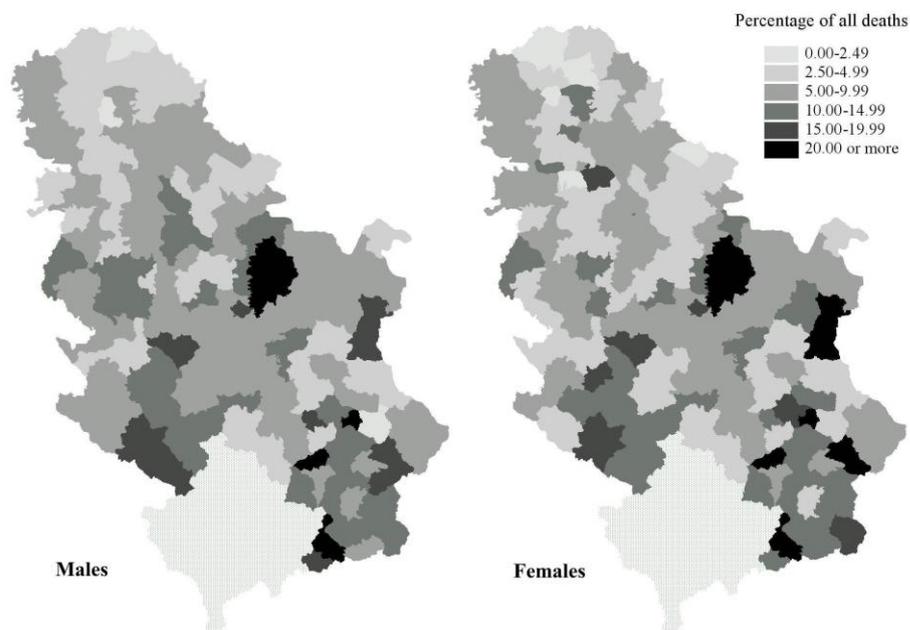
Infant mortality rate presents one of the basic indicators of mortality. The level of this rate is closely connected to the level of the socio-economical development and the level of fertility. The changes in the infant mortality by municipalities in 1990s shows that the mortality trends in Serbia are changing in the direction of diminishing the regional differences (maps 4.1 and 4.2). In the beginning of the period (1990-1992) the infant mortality rate was in the interval of 1.4 (Ada) to 40.0 per 1000 (Presevo). The lowest infant mortality is in Vojvodina, that is, in developed municipalities which are, at the same time, marked by low fertility. At the same time, municipalities with the highest fertility rate in Serbia, which are at the same time the least developed, also had the highest infant mortality rate. That way, the group of municipalities with the infant mortality rate between 20-40 per 1000 live births includes Presevo, Bujanovac, Medvedja (all with a high percentage of ethnic Albanians), as well as Tutin, Sjenica, Priboj (all with a high percentage of Bosniacs).

Maps 4. **Infant mortality rate. Serbia excluding Kosovo (by municipalities), 1990-1992 and 1999-2001**

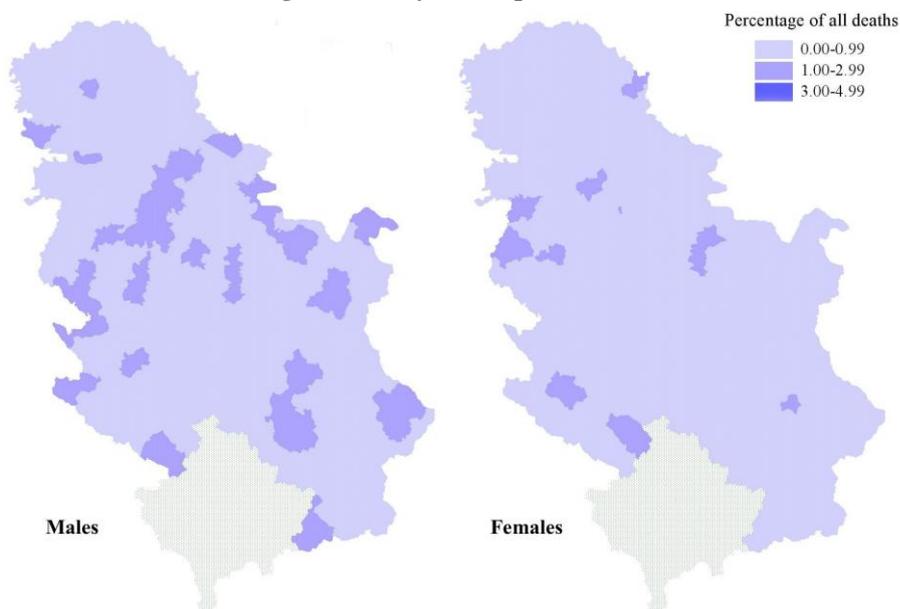


Near the end of the period (1999-2001) the infant mortality rate was in 75% municipalities lower than at the beginning of the period. It should be noted that the reduction of the infant mortality rate was realized in all 24 municipalities which in 1990-1992 had an infant mortality rate of over 20 per 1000. At the same time, the interval between the lowest and highest infant mortality rate was reduced to 29.8 per 1000. The number of municipalities with an infant mortality rate higher than 20 per 1000 was reduced to 8, and none of the mentioned south Serbia and Sandzak municipalities are among them. Earlier remarks regarding the incapability of clear zoning of Serbia by general mortality characteristics are also true for causes of death by municipalities. It is now necessary to repeat the remark that was already stated in the analysis of the causes of death in entire Serbia, and it regards the large percentage of all deaths **due to symptoms and ill-defined conditions**. However, that percentage is not only increasing, but is also very high in a big number of municipalities (1999-2001 over 10% in 52 municipalities for males, and 47 for females), so that in some municipalities it accounts for over 30% of all causes of death (maps 5.1 and 5.2). It should be noted that in Vojvodini, the share of municipalities with a high percentage of all deaths due to symptoms and ill-defined conditions is significantly smaller than in Central Serbia, and especially compared to its southern and south-eastern area.

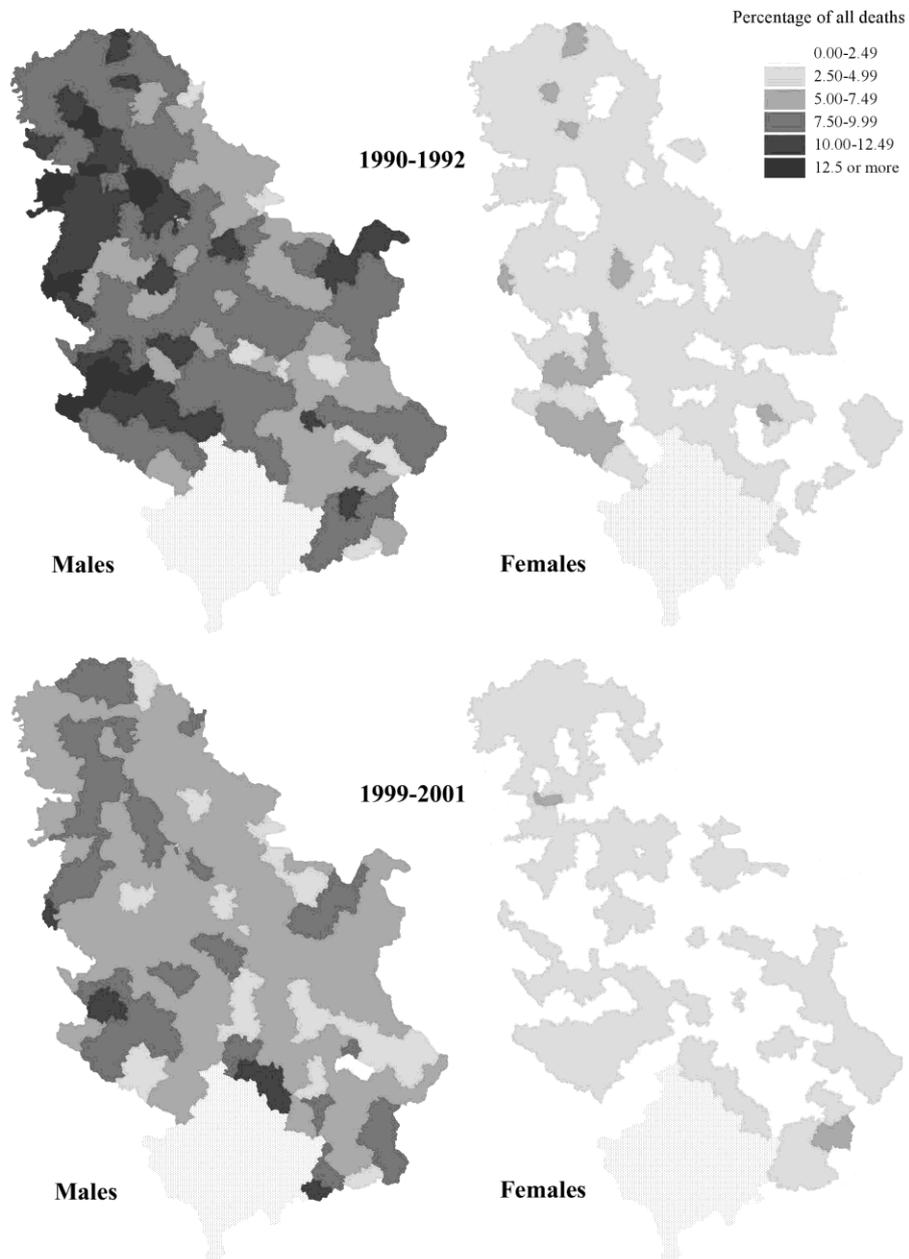
Maps 5. **Percentage of all deaths due to symptoms and ill-defined conditions (by sex). Serbia excluding Kosovo (by municipalities), 1999-2001**



Maps 6. **Percentage of all deaths due to infectious diseases (by sex). Serbia excluding Kosovo (by municipalities), 1999-2001**



Maps 7. Percentage of all deaths due to external causes (by sex). Serbia excluding Kosovo (by municipalities), 1990-1992 and 1999-2001



Even with the mentioned limitations, it seems important to mention a few remarks. Firstly, the geography of death by **infectious diseases** shows that at the end of the 20th century, no part of Serbia has a traditional mortality pattern, which is characterized by a high percentage of deaths in this disease group (maps 6.1 and 6.2). In the 1999-2001 period, in only two municipalities (Tutin and Presevo), the percentage of all male deaths due to infectious diseases⁸ was over 2% (is precisely 2.4%), while the percentage of all deaths in this disease group doesn't go over 2% in any of the municipalities.

Maps 8. Percentage of all deaths due to diseases of the circulatory system (by sex). Serbia excluding Kosovo (by municipalities), 1999-2001



Secondly, the data on the percentage of **external causes of death** by municipalities clearly shows that in 1990-1992, that is, during the beginning of the wars on the territory of ex-SFRY, the largest percentage of these death causes in males was located in municipalities that are on or near the Bosnia and Herzegovina border, as well as in Vojvodina (maps 7.1-7.2). At the end of the decade, the percentage of all deaths due to external causes

⁸ Not including deaths due to symptoms and ill-defined condition.

was mostly reduced, especially in the municipalities in which it was very high at the beginning of the 1990s. The only exception are some municipalities in south Serbia which are on the border of Kosovo (for example Presevo or Kursumlija), which can be explained by the rebellion of Albanians and the NATO bombing in 1999 (maps 7.3-7.4).

Thirdly, the percentage all female deaths due to **diseases of the circulatory system** has an almost epidemic character. In 1999-2001, in 111 of 161 municipalities, two-thirds of all female deaths were due to diseases of the circulatory system, and in 26 these diseases were the cause of death in over four-fifths of all female deaths (maps 8.2).

Conclusion

The mortality trends during the 1990s point to several specific features which distinguish Serbia from other European countries. On one side, the periods of distinctly unfavourable mortality trends in Serbia were relatively short and considerably less intensive than in the great majority of other transition countries, especially in some former Soviet republics (e.g. Russia, Ukraine, Belarus, Moldova). Many of them regard these unfavourable trends as unexpectedly moderate, especially if one bears in mind the proportions and duration of a general social crisis in Serbia during the 1990s (economic, social and political crisis; perennial sanctions imposed by the international community; numerous armed conflicts in which Serbia was indirectly or directly was involved). However, one must bear in mind that the protracted and very severe crisis in Serbia emerged relatively gradually. In addition, the former Yugoslavia was characterized by many elements of a market-based system (socialist self-management) due to which the transition shock was considerably smaller for the majority of the citizens than in other ex-communist countries.

On the other hand, improvements in the mortality trends in Serbia, which were recorded during the 1990s and, especially, in the second half of the 1990s (countries in transition) were considerably less pronounced than in most European countries. This can also be explained by the specific nature of the Serbian crisis, as well as the fact that the last war in which Serbia was involved, was at the very end of the decade (1999). In addition, Serbia is the country that was especially late in initiating serious transition processes. Due to such trends, at the beginning of the 21st century, Serbia's position among the European countries with respect to the mortality rate was noticeably aggravated. At the same time, the difference vis-B-vis the

countries that have achieved the best results in reducing population mortality increased considerably.

As for Serbia's future prospects, the major influence on the mortality trends will be exerted by the degree of success of the ongoing reforms, but not only in the sphere of public health, as well as by the pace of surmounting an economic crisis.

References

- ANDERSON, R. N. et al. (2001). "Comparability of Cause of Death Between ICD-9 and ICD-10: Preliminary Estimates". *National Vital Statistics Reports*, Vol. 49, No. 2.
- CASELLI, G., VALLIN, J., WUNSCH, G. (eds.) (2002). *Demographie: analyse et synthese. III Les determinants de la mortalite* (Paris: INED).
- Council of Europe (2002). *Recent Demographic Developments in Europe 2002* (Strasbourg: Council of Europe Publishing).
- MACURA, M. (1994). "Demografske implikacije secesije i ekonomske blokade". *Sankcije - uzroci, legitimitet, legalitet i posledice. Zbornik radova sa okruglog stola održanog 14. i 15. juna 1994. godine*. Naučni skupovi. Knjiga LXXVI, Odeljenje društvenih nauka. Knjiga 15 (Beograd: Srpska akademija nauka i umetnosti).
- PENEV, G. (2001). "Natural Movement of Population, 1991-99/2000", *Yugoslav Survey* (Belgrade), vol. XXXXII, No. 1, pp. 3-14.
- RADIVOJEVIĆ, B. (2002). Smanjenje smrtnosti starog stanovništva u Jugoslaviji – šansa za povećanje očekivanog trajanja života [Decrease of Old Age Population Mortality in Yugoslavia – Chance to Increase Life Expectancy], *Stanovništvo* (Beograd), vol. XV, No. 1-4, pp. 35-52.
- United Nations (1982). *Levels and Trends of Mortality since 1950* (New York: United Nations – Department of International Economic and Social Affairs).

Goran Penev

Mortality Trends in Serbia During the 1990s

S u m m a r y

Troubled historical events from the 1990s considerably influenced the latest demographic trends in Serbia (excluding Kosovo and Metohija). In the domain of mortality, these trends were reflected through the manifestation of many unfavorable changes. Such mortality changes in Serbia were relatively short-lived and considerably less pronounced than in most countries in transition, especially in comparison to some former Soviet republics. Taking into consideration the scale and duration of the general social crisis in Serbia, we could evaluate these aggravations as moderate. On the other hand, improvements of mortality trends that arose during the 1990s were considerably less pronounced than in other European countries,

especially in comparison to improvements that were realized in some other countries in the second half of the 1990s.

During the 1990s, the annual number of deaths as well as the crude death rates continued increasing. The crude death rate of 13.8 per 1000 in the year 2000 represents the maximum in the last 50 years. Consequently, at the end of the 20th century, Serbia (excluding Kosovo and Metohija) is above the European average according to crude mortality rates, and observed by countries, higher rates were registered only in a few former socialist countries.

During the 1990s, significant changes in age-specific mortality rates were not realized. The relatively greatest decrease was in infant mortality rate (from 21.8 in 1991 to 11.7 per 1000 in 2001). Despite the unexpectedly favorable trends, Serbia is considerably behind many other European countries in which the infant mortality rate is reduced to a very low level (under 5 per 1000 live births).

As for 1991 and 1992, and partly for 1993, a rapid increase of younger adult population deaths was noted. Such trends, though, did not cause considerable changes either in the total number of deaths or in the life expectancy.

The mortality of older adult population (40-59) at the end of the observed decade is almost identical to the one at the beginning of the 1990s. The same trend was present in the old population (60 and over), although the mortality level of the elderly population decreased slowly (75-84) or stagnated (85+). Such a mortality trend of the old has been present in Serbia since the 1970s, which is opposed to the changes in many developed countries in which very significant results in lowering old-age mortality were achieved in the last decades.

The mortality of the female population is lower in Serbia as well and the recent changes were mainly directed towards decreasing sex differences. The changes were considerably more favorable with the male population than with the female, especially when it comes to the older adult and old populations. Such trends represent a turnover in relation to the 1980s.

In the year 2001 in Serbia, the life expectancy at birth for the male population was 69.7 years, and for the female population 75.1 years. In relation to 1991 the expectation of life at birth has been prolonged for both sexes (1.15 years for the men and 0.38 years for the women). Compared with the European average, the life expectancy in Serbia is 2.6 years lower for males and 5.3 years lower for females. Since the extended life expectancy from the nineties was considerably under the European average, the rank of Serbia on the European LE list was lowered. This primarily refers to the male population, while with as regards to the female population, Serbia is still in the group of 10 European countries with the shortest life expectancy at birth.

No significant changes were noted in Serbia with as regards to deaths by cause. At the end of the observed period (1999-2001) the cause of death for over half of the deceased (56.1%) were the diseases of the circulatory system. In the same three-year period, neoplasm represented the cause of death for nearly every sixth person (17.6%). Similar percentages were recorded at the beginning of the period (1990-1992) as well.

The next on the list of major causes of death were violent deaths, but their number was considerably lower (4.3%). Despite the armed NATO intervention lasting several months in 1999, the percentage of violent deaths remained at a low level, not only in relation to the beginning of the period (5.8%), but also in relation to the European average, and especially in relation to some former Soviet republics. The percentage of infectious and parasitic diseases was also very low (0.5%). This means that the worsening of conditions that influence the general epidemiological situation did not cause a considerable increase of deaths from this group of diseases, and also that the number of the infected and the number of deaths due to AIDS are low in Serbia.

At the end of the twentieth century, the so-called symptoms and ill-defined conditions still represented a relatively large percentage (8.4%) of deaths by cause. It is, in relation to the state at the beginning of the period (6.2%), even increased, and considerably higher than in the most developed countries (about 1%). This points to the unsatisfactory quality of data on mortality, but also to the need to use the results of the analysis of mortality according to deaths by cause with caution.

Key words: *mortality, life expectancy, mortality by age and sex, deaths by cause, Serbia*

Goran Penev

Trendovi mortaliteta u Srbiji tokom 1990-ih godina

Rezi me

Burni istorijski događaji iz 1990-ih značajno su uticali na najnovije demografske trendove u Srbiji (bez Kosova i Metohije). U domenu mortaliteta oni su se odrazili kroz pojavu mnogih nepovoljnih trendova. U Srbiji su takvi trendovi mortaliteta bili relativno kratki i znatno manjeg intenziteta nego u većini zemalja u tranziciji, a posebno u odnosu na neke bivše sovjetske republike. S obzirom na razmere i trajanje opšte društvene krize u Srbiji, ta pogoršanja se mogu oceniti kao umerena. S druge strane, poboljšanja mortalitetnih trendova do kojih je došlo tokom 1990-ih, bila su znatno manje izražena nego u većini ostalih evropskih zemalja, a posebno u odnosu na poboljšanja koja su u nekim zemljama u tranziciji ostvarena u drugoj polovini 1990-ih.

Tokom 1990-ih nastavljen je trend povećanja godišnjeg broja umrlih kao i opšte stope mortaliteta. U 2000. godini vrednost opšte stope mortaliteta od 13,8‰ predstavljala je maksimum u poslednjih 50 godina. Tako je krajem 20. veka Srbija (bez Kosova i Metohije) prema stopi mortaliteta iznad evropskog proseka, a posmatrano po zemljama, više stope su registrovane samo u nekoliko bivših socijalističkih zemalja.

Tokom 1990-ih godina nisu ostvarene bitnije promene u smrtnosti po starosti. Relativno najveće je smanjenje smrtnosti odojčadi (sa 21,8‰ u 1991. na 11,7‰ u 2001. godini). I pored neočekivano povoljnih kretanja u pogledu smrtnosti odojčadi Srbija prilično zaostaje u odnosu na mnoge evropske zemlje u kojima je ona svedena na vrlo nizak nivo (ispod 5 promila).

Za 1991. i 1992. a delimično i za 1993. godinu, vezuje se i nagli porast umrlih kod mlađeg sredovečnog stanovništva. Takva kretanja se, ipak, nisu bitnije odrazila na promene u ukupnom broju umrlih, odnosno na dužinu očekivanog trajanja života.

Smrtnost starijeg sredovečnog stanovništva (40-59) je krajem posmatrane decenije gotovo identična onoj s početka 1990-ih. Istovetan trend je bio prisutan i kod starog stanovništva (60 ili više), s tim što je kod najstarijih nivo smrtnosti lagano opadao (75-84) ili stagnirao (85+). Takav trend mortaliteta starih je u Srbiji prisutan od 1970-ih godina, što je u suprotnosti sa promenama u mnogim razvijenim zemljama u kojima su poslednjih decenija postignuti veoma značajni rezultati u snižavanju smrtnosti starih.

I u Srbiji važi zakonitost o nižoj smrtnosti ženskog stanovništva, a skorašnje promene su uglavnom bile usmerene ka smanjivanju razlika po polu. Promene su bile znatno povoljnije kod muškog nego kod ženskog stanovništva, i to posebno kod starijeg sredovečnog i starog stanovništva. Takva kretanja predstavljaju preokret u odnosu na 1980-e godine.

U Srbiji je 2001. godine očekivano trajanje života pri živorodjenju za muško stanovništvo iznosilo 69,7 godina, a za žensko 75,1 godina. U odnosu na 1991. srednje trajanja života je produženo za oba pola (1,15 godinu za muško i 0,38 godina za žensko). Srbija, u poređenju sa evropskim prosekom, zaostaje kod muškog za oko 2,6 godina, a kod ženskog gotovo 5,3 godine. S obzirom da je produženje očekivanog trajanja života iz 1990-ih znatno ispod evropskog proseka, došlo je i do pogoršanja ranga Srbije na evropskoj listi zemalja prema dužini očekivanog trajanja života. To se pre svega odnosi na muške, dok se za žene Srbija i dalje nalazi u grupi od 10 evropskih zemalja sa najkraćim očekivanim trajanjem života.

U Srbiji nije bilo bitnijih promena ni u pogledu uzroka smrti. Krajem posmatranog perioda (1999-2001) za preko polovine umrlih (56,1%) je kao uzrok smrti navedeno neko od oboljenja iz grupe bolesti krvotoka. U istom trogodišnjem periodu, tumor je predstavljao uzrok smrti za gotovo svaku šestu osobu (17,6%). Slični procentni udeli su zabeleženi i početkom perioda (1990-1992).

Sledeći na rang listi osnovnih uzroka smrti su nasilne smrti, ali je njihov udeo bitno manji (4,3%). Uprkos višemesečne oružane intervencije NATO-a iz 1999, udeo nasilnih smrti je ostao na niskom nivou, i to ne samo u odnosu na početak perioda (5,8%), već i u odnosu na evropski prosek, a posebno u odnosu na neke bivše sovjetske republike. Takođe je i udeo infektivnih i parazitaranih bolesti vrlo nizak (0,5%). To znači da se pogoršanje uslova koji utiču na opštu epidemiološku situaciju nije direktno odrazio na značajno povećanje umiranja od ove grupe bolesti, a takođe i da je u Srbiji mala zastupljenost obolelih i umrlih od side.

Krajem 20. veka u Srbiji je još uvek kod uzroka smrti relativno veliko učešće tzv. nedovoljno definisanih stanja (8,4%). Ono je u odnosu na stanje početkom perioda (6,2%), čak i povećano, i znatno je više nego u najrazvijenijim zemljama (oko 1%). To ukazuje na nezadovoljavajući kvalitet podataka o mortalitetu, ali i na potrebu da se rezultati analize mortaliteta prema uzroku smrti moraju razmatrati s rezervom.

Ključne reči: mortalitet, očekivano trajanje života, smrtnost po starosti i polu, uzroci smrti, Srbija