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Certain characteristics of population ageing using a prospective approach: Serbia as a case study

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Abstract

The aim of this research is to show trajectories of population ageing in Serbia according to chronological and prospective criteria. The data used are from the complete period life tables published around the census years from 1953 to 2011. The emphasis is on the most recent period, since these data allow us to incorporate a regional dimension into the study, and to carry out the analysis at the municipal level. Throughout this study period, the prospective age threshold in Serbia was below the retrospective threshold; as a consequence, the proportion of people with a life expectancy of 15 years or less was consistently higher than the share of people aged 65 or older. Only the most recently available data for 2010/2012 indicate that the share of the population with a life expectancy of 15 years or less was the same as the share of the population aged 65+, albeit with uneven contributions by the male and female populations. Indeed, the use of the prospective approach highlights the unfavourable mortality conditions in Serbia, which are not made clear when only the chronological approach to population ageing is applied.

1 Introduction

Over the course of the last half of the 20th century, the levels and the directions of certain demographic forces that shape the populations of different countries changed substantially. These demographic shifts are still clearly visible in the former Eastern Bloc countries, where long-term developments in fertility, mortality, and migration have had profound effects on the current demographic structure of the population. As the focus of our research is Serbia, it is necessary to begin by noting the dynamic political and economic changes that have affected the country's

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demography in recent decades. Between 1992 and 2006, the political status of Serbia shifted: Serbia went from being one of the six republics in the Socialist Federal Republic of Yugoslavia (Bosnia and Herzegovina, Croatia, Macedonia, Montenegro, Slovenia, and Serbia) to being one of the two republics in the State Union of Serbia and Montenegro, to becoming an independent state. Meanwhile, the political influence that Yugoslavia (and its constitutive nations) had exerted as a part of the Non-Aligned Movement was diminished after the breakup of the federal union. As Yugoslavia dissolved, Serbia transitioned from having a planned economy to having a market economy. Large segments of the Serbian population found it very difficult to adapt to these abrupt shifts. Additionally, the move from general stability during the Yugoslav era to a period characterised by rapid socioeconomic change interacted with the specific features of the Serbian population. As conflicts between the Yugoslav federal republics began in 1991, a negative chain of events started, including a breakdown of trade relations, the imposition of UN financial and political sanctions in response to the Serbian role in the Yugoslav Wars, the influx of numerous refugees (particularly ethnic Serbs) from neighbouring regions, a surge in the number of internally displaced persons, the emigration of highly educated citizens, and the NATO bombing of Yugoslavia (1999). These events have all had an impact on the fertility and mortality levels and the population structure of Serbia in recent decades.

2 Sources of data and methodological limitations

Before presenting our analysis of various demographic processes in the Serbian population, we should mention some important technical and methodological issues. First, we note that there are issues related to changes in the definition of total population in the censuses in Serbia, as these irregularities may have (minor) effects on the research results of this paper. Unfortunately, it was not possible to eliminate such inconsistencies. In line with international census recommendations, Serbia adopted a new definition of citizen in 2002. Under this definition, individuals who lived or worked outside of Serbia in the previous year were not considered part of population. As this change had a large impact on the census results, caution should be used in interpreting the census data. Starting in the 1960s, large numbers of Serbian workers were migrating to other European countries. In a break with previous practice, the censuses of 1971, 1981, and 1991 counted these migrants and their family members as citizens of Yugoslavia (and Serbia), regardless of the duration of their stay abroad. Thus, even though some of these so-called "temporary workers" had been living abroad for more than 30 years, they were still considered part of the Serbian population.

The most recent census in 2011 brought additional changes in definitions. When estimating the total number of people in a given area, the concept of the "usual population" was used for the first time. The purpose of this new concept was to more precisely define population, but with an emphasis on the regional distribution;

thus, this change probably had only a minor impact on the total population numbers. However, these usual population estimates made it easier to evaluate the very dynamic migration patterns in the territory of Serbia between settlements and regions (mostly towards Belgrade). Under the definition of this term, a person is considered to be a resident of the place in which he/she alone (in case of a one-person household) or with members of his/her household spends most of his/her time (i.e., where the person sleeps); regardless of his/her registered place of residence. Thus, the total population of a certain place includes the individuals who had lived in that place continuously for at least one year before the time the census was taken, as well as the individuals who had lived in that place for less than 12 months, but with an intention to stay there for at least one year (SORS 2012). This concept could be important for our research since we are using complete life tables for the municipal level. In addition, unlike in the previous censuses, there was no column with unknown age in the 2011 census.

Another change that should be noted is related to the treatment of internally displaced persons; i.e., the people who migrated from Kosovo and Metohija after the 1999 NATO bombing. The 2002 census had a special questionnaire for this group, and they were not added to the total population in the new population balance. Yet the methodology used in the 2011 census counted these individuals as part of the resident population, adding them to the total number of enumerated citizens. An additional limitation of the 2011 census is the potential for under-coverage due to the boycott of the census by members of the Albanian ethnic community in three municipalities. However, life tables for those municipalities were calculated by drawing upon numerical and structural statistics. All of these inconsistencies had some impact on data quality, but the major trends and patterns in the population can be distinguished.

For the purpose of the analyses, we used seven consecutive published life tables for the years around the censuses for Central Serbia and Vojvodina. We were unable to use published data for the Republic of Serbia because over the course of the last decade, Kosovo and Metohija declared independence, which made most of the statistical data unavailable. This problem persisted for a long period of time. For example, vital statistics are not available from 1998, and the 1991 census gathered only limited data on the population living in Kosovo and Metohija. In order to create comparable time series, we had to make some compromises, while keeping in mind the importance of obtaining correct and accurate data that are comparable in terms of time and territory. To incorporate the territorial changes that had occurred, we used additional computation of complete life tables for the territory of the Republic of Serbia (Central Serbia and Vojvodina without Kosovo and Metohija). This approach to administrative-territorial changes and data availability did not affect the final results of the life tables. It is worth mentioning that because the method used for the computation of complete life tables did not change (Becker–Zeuner method), methodological uniformity was assured. We started with the first available complete life tables created for the period 1952–1954, and then referred to the life tables for 1960/1962 and 1970/1972. In all of these tables the data were available for males

and females, but not for the total population. The rest of the published life tables are for the years 1980/1981, 1990/1992, 2001/2003, and, finally, 2010/2012.

3 Drivers of Population ageing in Serbia

Despite the many recent disruptions to Serbian society, some demographic trends in the country have been relatively steady. For example, the period total fertility rate (TFR) has been falling for decades, from relatively high levels during the post-World War II baby boom around the 1950s (3.1 in Central Serbia and 2.8 in Vojvodina), to lowest-low levels in recent years (around 1.3). The current tempo-adjusted TFR is 1.6,[1] which is still below replacement level. Age-specific mortality also underwent a transition: whereas infant mortality levels were high half a century ago, they are much lower today due to medical advances and better access to healthcare. Improvements in life expectancy were very rapid in the decades after World War II, and are clearly visible on Graph 1, with female life expectancy rising faster than male life expectancy. These positive trends have, however, slowed down in recent decades. The stagnation in life expectancy in the 1990s reflects the harsh conditions the population endured during the transition to a market economy and the years of war and economic sanctions. While the most recent available data show some tangible improvements in mortality, Serbia continues to lag far behind other countries in terms of life expectancy, and has considerable room for further improvement.

Additional structural changes (urbanisation, deruralisation, industrialisation, and the expansion of educational opportunities) have resulted in a decrease in fertility and in the concentration of mortality at older ages. The emigration of "temporary workers" in the 1960s affected the population structure, as the option of family reunification enabled whole families to leave the country. The different characteristics of the waves of migration over the past three decades also modified the age structure of the population: for example, whereas the ages of the immigrant refugees during the 1990s reflected the age structure of the endogenous population, most of the emigrant workers were young. Consequently, the shares of different age groups in the population have fluctuated. Generally, the share of younger people in the population has fallen, while the share of older people in the population has risen. All of these processes have reinforced the pronounced population ageing trend in Serbia, which is affecting various societal spheres.

In order to cover the numerous changes that happened in Serbian spatial units as a result of international recommendations, and since territorial units were recently brought into line with the NUTS nomenclature, we present a comprehensive overview (Table 1) of the total number of people aged 65 and older, and of their share in the total population. All of the censuses before the last one showed a

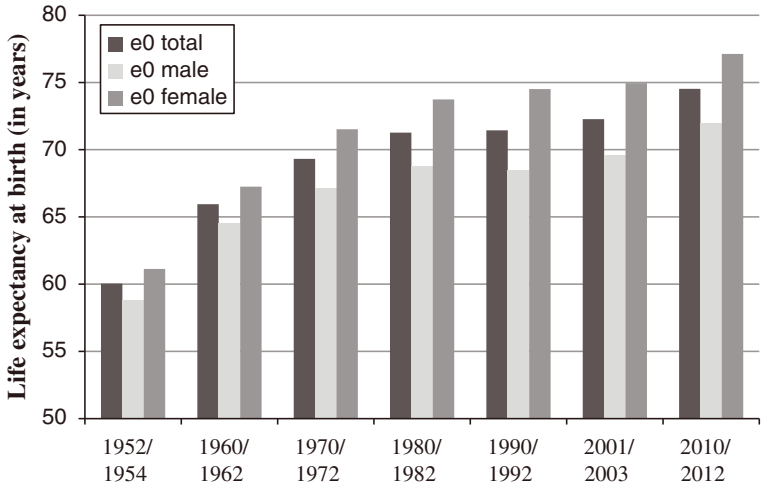
[1] Author's calculation, there are no official data on this indicator.

Table 1:
Total number and share of people aged 65 and older, census years

Census year	1948	1953	1961	1971	1981	1991	2002	2011
	Total number of 65+							
Serbia (without Kosovo)	324950	384061	446628	650828	801959	895615	1240505	1250316
Vojvodina	105785	123080	139946	189585	229962	238051	315185	316538
Central Serbia	219165	260981	306682	461243	571997	657564	925320	933778
Belgrade	14554	21070	45323	87101	122343	158434	247029	271762
NUTS1 Serbia-South*	204611	239911	261359	374142	449654	499130	678291	662016
NUTS1 Serbia-North**	120339	144150	185269	276686	352305	396485	562214	588300
	Share of 65+ in total population							
Serbia (without Kosovo)	5.61	6.23	6.69	9.04	10.38	11.45	16.54	17.40
Vojvodina	6.45	7.25	7.54	9.71	11.30	11.82	15.51	16.39
Central Serbia	5.28	5.85	6.36	8.78	10.04	11.32	16.93	17.77
Belgrade	2.29	2.88	4.81	7.20	8.32	9.89	15.67	16.38
NUTS1 Serbia-South*	5.81	6.43	6.73	9.26	10.64	11.87	17.44	18.41
NUTS1 Serbia-North**	5.29	5.93	6.62	8.75	10.05	10.96	15.33	16.38

Source: Devedzic, Stojilkovic Gnjatovic (2015) *Central Serbia without Belgrade; ** Vojvodina and Belgrade region

Graph 1:
Life expectancy of total population, around census years



territorial division that included Central Serbia and two autonomous provinces: namely, Vojvodina and Kosovo and Metohija. The census held in 2011 was harmonised with European nomenclature of territorial units of statistics (NUTS). It is not possible to compare the same areas across censuses because in the 2011 census the region of Belgrade was no longer considered a part of Central Serbia, but was instead included in NUTS 1 Serbia-North together with Vojvodina. Moreover, Central Serbia was no longer a viable term in the 2011 census, since most of the previous territory was called Serbia-South (three regions: Southern and Eastern Serbia, Western Serbia and Sumadija, and Kosovo and Metohija).

Even though the share of older people in the population had been rising with each consecutive census, it is important to highlight that the greatest increase was observed between the censuses held in 1991 and 2002. The hardship and the turmoil the population in Serbia endured during the 1990s are partially reflected in census data showing that over a period of just11 years (1991 to 2002), the share of people aged 65 and older in the population increased by an additional five percent. The last census confirmed the continuation of this trend, but at a slower rate. Migration has played a large role in population ageing trends. Since the middle of the 20th century, Serbians have been migrating from rural to urban settlements. Initially, this process was mainly related to the industrialisation of the country during the 1960s and the 1970s. As a result of this shift, many rural areas became depopulated, and large geographic areas of Serbia experienced unprecedented levels of demographic ageing. Following the economic transition in the 1990s, another trend emerged, with people moving from medium-sized cities to the biggest regional centres. Belgrade

has always been appealing to migrants, but the tendency to move to the capital is fading as the population ages. Moreover, while the Belgrade region has long had the youngest population, its age structure has been catching up with that of the rest of Serbia over the past two decades. Today, the worst demographic situations are found in the municipalities without urban settlements, and those are mostly located alongside the borderline with the neighbouring countries. Based on a map that shows the share of older people in the population across settlements of varying sizes, Devedzic and Stojilkovic Gnjatovic (2015) concluded that bigger (mostly urban) settlements are younger than smaller (mostly rural) settlements. If we look at the share of people aged 65 and older in the population, it appears that Serbia South is slightly older than Serbia North; a topic we will explore later.

4 Emergence of a new thought on population ageing

Does being 65 mean being old? This is a hard question to answer. There is a great deal of evidence that the definition of "old" is changing over time and place, especially since today's elderly people differ from older people of previous decades in terms of their health and their life styles. Still, while these changes that are intuitively easily understood, measuring them represents a methodological challenge. To provide us with a more precise understanding of population ageing, Sanderson and Scherbov (2005, 2007, 2008, 2010) have suggested using a prospective approach that acknowledges variations in life expectancy. The advantage of this approach is that it considers "prospective age" as a dynamic category, and thus takes into account the improvement (or the deterioration) in life expectancy when measuring population ageing in a given country. This biometric (rather than chronological) approach is based on an operational definition of the old-age threshold, or the "prospective threshold", as the age at which life expectancy falls below 15 years. In elaborations of these ideas, three demographic indicators based on prospective age have been constructed: the (prospective) share of the elderly, the (prospective) median age, and the (prospective) old-age dependency ratio. This approach shows that in most developed countries, the share of people aged 65 and older in the population is larger than the share of people in the population who are going to live 15 years or less; but there are some countries on the other side of the spectrum. By defining α-ages, Sanderson and Scerbov (2014) provided some additional avenues for research on this topic.

For the purposes of this paper, we will present the assessment of population ageing using the prospective approach for Serbia. We also intend to show the trajectories of population ageing according to chronological and prospective criteria. This new paradigm of population ageing, which takes into account shifts in life expectancy, shows that Serbia lags behind other European countries in terms of improvements in health among the elderly. Indeed, the first publication that ranked countries on the basis of the prospective approach (Mamolo and Scherbov 2009) put Serbia in first place on a list of countries based on the share of the population

expected to live less than 15 years (the arbitrary threshold chosen by the creators of the prospective approach). In subsequent publications of the European Demographic Data Sheet (2008, 2010, 2012, 2014), Serbia was still among the first three for this indicator.

Before we get to the prospective criteria of population ageing, we present an analysis of life expectancy at age 65 for the Serbian population. We conducted this analysis because it is clear that if life expectancy at age 65 is less than 15 years, then the number of people in this age group who are living less than 15 years is greater than the number of people aged 65+. If we consider the total population aged 65 and older in Serbia (Graph 2), we see that life expectancy among this group has been improving very slowly over the past six decades. A similar pattern holds for the rise in total life expectancy, except that in the case of 65-year-olds period life expectancy actually declined slightly between 1990/1992 and 2001/2003. Life expectancy among people aged 65+ has only recently started to show more marked improvements: the first time life expectancy among this group surpassed 15 years was in the last decade. Broken down by gender, we see that women generally have a higher life expectancy than men. Still, life expectancy among women aged 65+ has not shown steady improvement, and it even declined slightly during the 1990s. Nonetheless, the gains made by women are responsible for pushing this age group over the life expectancy threshold of 15 years: while the total population aged 65+ can expect to live 15.1 years, women have a life expectancy of 16.1 years, while men have a life expectancy of 13.8 years. According to Devedzic and Stojilkovic (2012), there are not only sex but regional differences, as both men and women in Central Serbia tend to live longer than their counterparts in Vojvodina.

We now look at the point at which the prospective threshold is reached, or the age at which life expectancy is 15 years or less. It is interesting to note that the prospective threshold was age 61 for the period 1952/1954, when population ageing was not regarded as a problem nor predicted to be such a pervading force. At that time, the older population was defined as people aged 60+. The perception of the onset of old age is frequently connected to the termination of economic activity and the attainment of pension rights, and this is also the case in Serbia. Until the 1990s in Serbia, the statutory pension age was 60 for men and 55 for women, but in line with current trends, the onset of old age was gradually reset. Changes in Serbian pension law in the 2000s led to an increase in the minimum retirement age to 65 for men and 60 for women. Thus, it appears that Serbia was in a better position in the 1950s than it is now, since it took more than half a century for the country to catch up even partially with the demographic developments in developed countries. It is appropriate to wonder whether future retirement policies will raise the retirement age further, and whether these demographic trends will be considered in such a move. While pensionable ages are being raised in some countries, the slow improvements in life expectancy could be a limiting factor in policy reforms in Serbia.

Given these trends in life expectancy among the Serbian population aged 65+ over the past six decades, it is not surprising that the prospective threshold was

Graph 2:
Life expectancy at age 65, around census years

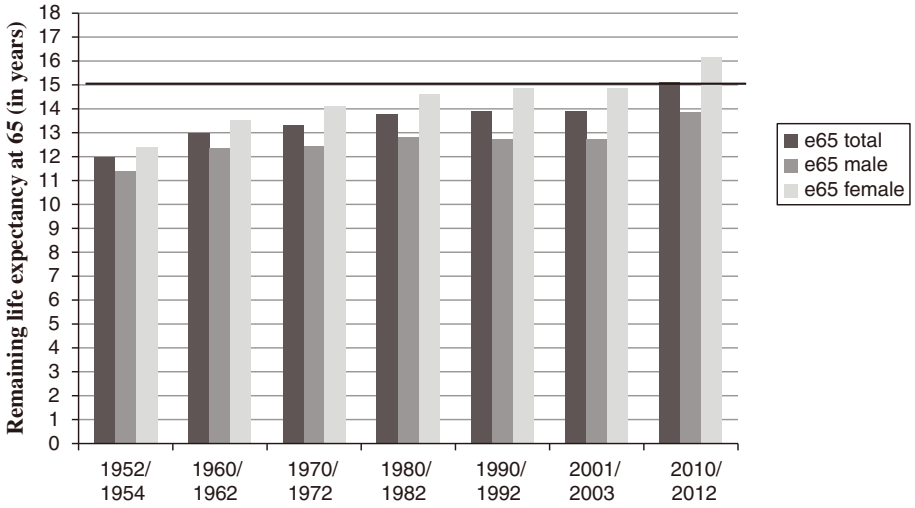


Table 2:
Prospective threshold, 1953–2011

	Serbia (without Kosovo)			Central Serbia			Vojvodina		
Year	**Total**	**Male**	**Female**	**Total**	**Male**	**Female**	**Total**	**Male**	**Female**
1952/1954	61.17	59.27	61.03	–	59.60	61.06	–	59.01	61.57
1960/1962	62.03	60.90	62.88	–	61.10	62.87	–	60.29	63.28
1970/1972	62.62	61.19	63.82	–	61.72	63.89	–	60.38	64.28
1980/1982	63.28	61.73	64.52	63.60	62.30	64.65	62.49	60.21	64.22
1990/1992	63.45	61.46	64.84	63.86	62.12	65.09	62.32	59.48	64.20
2001/2003	63.41	61.48	64.82	63.76	61.97	65.08	62.41	59.95	64.09
	Serbia (without Kosovo)			**Serbia – South**			**Serbia – North**		
2010/2012	65.14	63.23	66.51	65.11	63.43	66.38	65.19	62.98	66.70

Source: Based on Devedzic, Stojilkovic (2012).

below the limit that was widely accepted as the onset of old age for most of this period. The first time a regional subpopulation reached the prospective threshold of 65 was in 1990/1992 among the female population of Central Serbia. Given the general trends in male life expectancy, it is hardly surprising that no male regional population reached the prospective threshold of 65. On the other hand, the most recent available data show that the female population has made further advances.

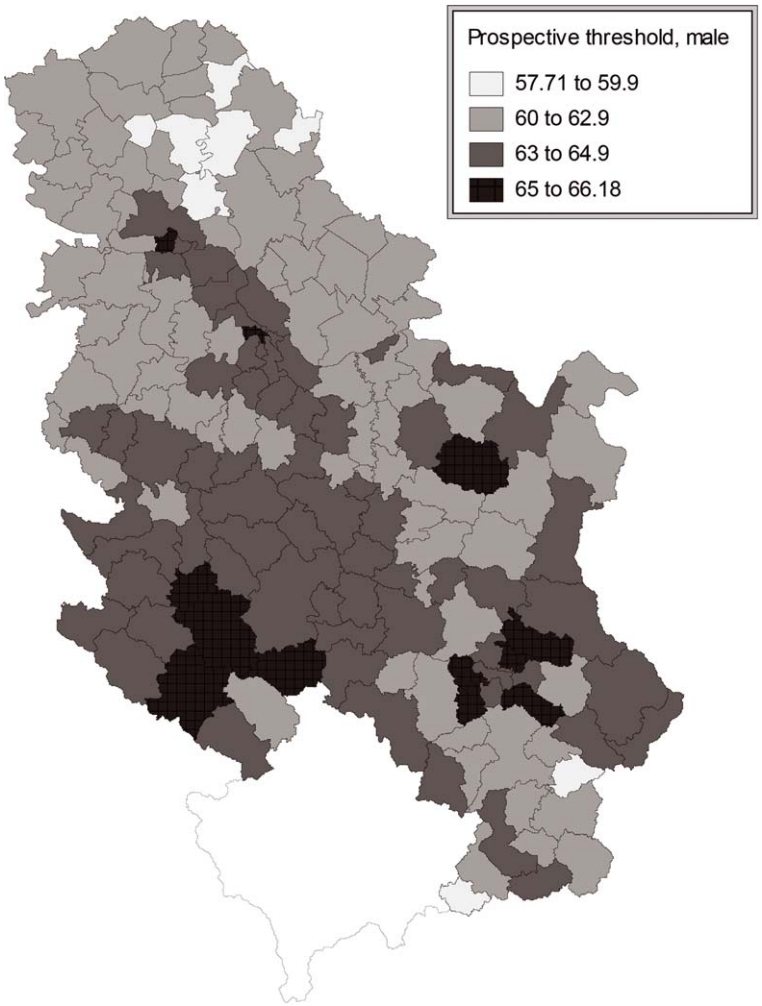
We have tried to shed some light on the various advantages of using the prospective approach rather than the traditional approach when examining population ageing. One very important dimension of demographic ageing is a regional aspect. In a country like Serbia, there is a high degree of centralisation of almost all social functions (the health care, industrial, service, and educational sectors are heavily concentrated in the Belgrade region), population ageing has to be placed in a spatial context. Studies that looked at the demographic features of aged 65 and older (Devedzic and Stojilkovic Gnjatovic 2015) have shown that these features vary in different parts of the country. Still, this kind of investigation does not provide us with information about the expected length of life of the older population. By incorporating the prospective approach into research on population ageing at the municipal level in Serbia, we were able to determine in which parts of the country the older population is long- (or short-) lived. First, we calculated the prospective threshold for all of the municipalities in Serbia using additionally processed period life tables. Map1shows the age at which the male population was expected to live 15 years or less in 2011. All of the municipalities in which this threshold was under age 60 were located in Vojvodina, with the exception of one in Southern Serbia (CrnaTrava, which is also known as one of the oldest municipalities in the country). It appears that Vojvodina had almost monotonically lower values, since of the municipalities between the regional centre of Novi Sad and the capital city of Belgrade, only one had a higher threshold. On the other hand, there were two isolated clusters in which men aged 65+ could expect to have an additional 15 years of life: one in Southern Serbia and the other in Western Serbia. This pattern calls for further investigation, but generally, municipalities in the mountainous parts of Serbia tended to have higher prospective thresholds, while municipalities located on the Vojvodina plain tended to have lower prospective thresholds.

The situation for the female population in 2011 was very different. The prospective threshold among women was under age 65 in only around one-tenth of all municipalities. This is a huge deviation from the male prospective threshold pattern, and clear proof that women tend to live longer than men in Serbia. However, before we interpret these findings as being positive for women, we should ask whether the women who live longer have a good quality of life. Moreover, these gaps between the sexes should be viewed in light of the marital (since women tend to marry older men), the educational (since women tend to have less education and higher rates of illiteracy), and the economic structures of the older population.

Our analysis of the prospective threshold can be extended by calculating the prospective share of the population living 15 years or less. When this indicator is compared with the traditional share of the population aged 65+, we get a more realistic picture of the trends in population ageing and the vitality of older people. This share depends on the prospective threshold and the population composition, or on the number of people in certain age groups.

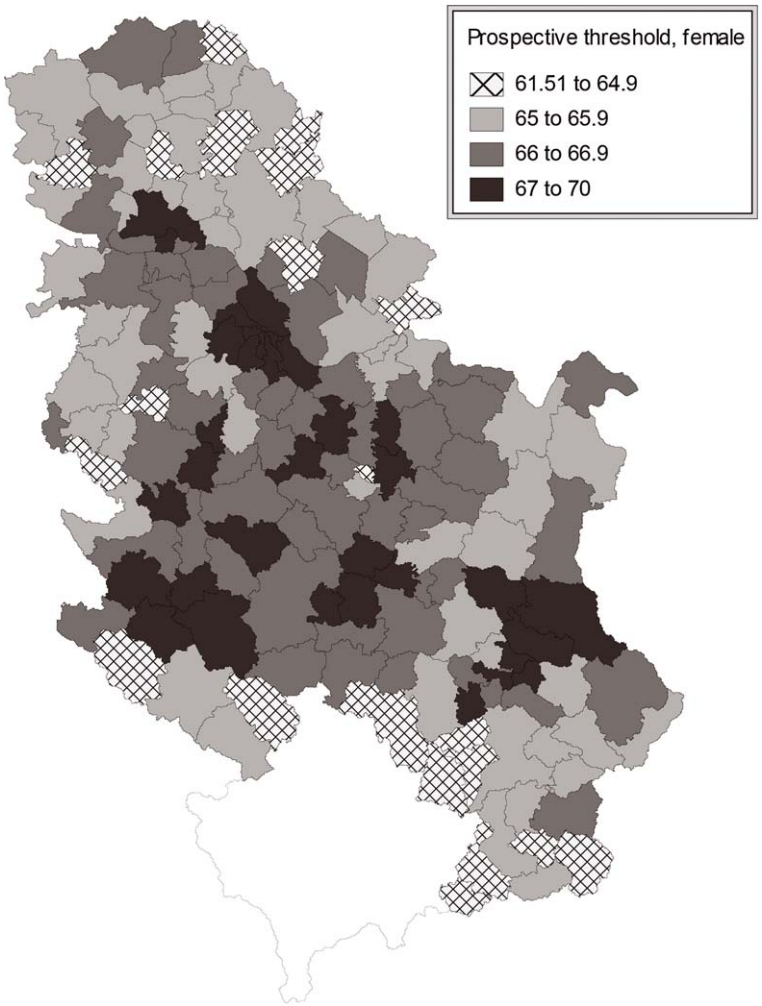
In Serbia, the very slow improvement in life expectancy among the older population is reflected in this comparison, because the prospective share was greater than the chronological share in all census years, except in the last one, when this

Map 1:
Prospective threshold, male population, 2011



difference was almost non-existent. Again, it is advisable to consider the absolute differences between the two approaches for the total, the male, and the female population (Graph 2). It is interesting to note that the life tables for the period 1980/1982 show the least variation when the share of the population with a life expectancy of 15 or less years is compared with the share of people aged 65+. However, the subsequent censuses showed even greater differences between the two analysed criteria, which highlights the societal changes that occurred around that time. The male population had lagged behind consistently, because the prospective

Map 2:
Prospective threshold, female population, 2011



share had been "occupying" larger population segments than the traditional share of older people. On the other hand, this difference was consistently smaller in the female population, among whom there was even a negative sign in 2010/2012, since the share of women aged 65 and older was greater than the share of women who were expected to live 15 years or less.

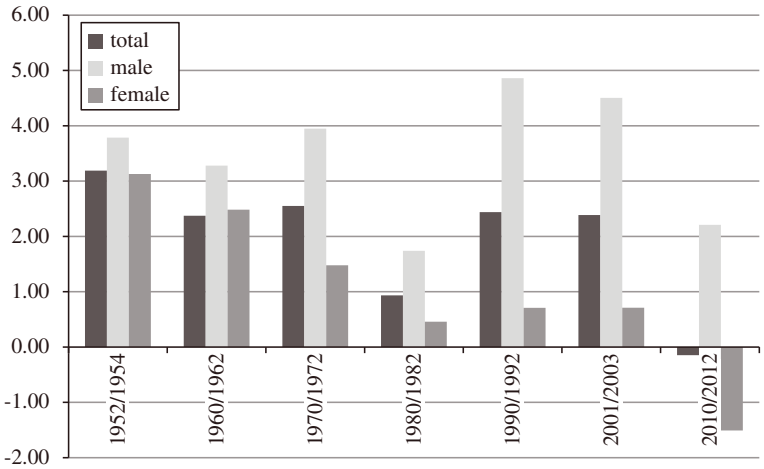
It is useful to add that these indicators are closely related to the population age composition, and that some demographic forces, like the fluctuation in fertility or in migratory movements, are affecting these outcomes. The relative shares of the

Table 3:
Proportion of the population with a remaining life expectancy of 15 years or less, around census years

	Serbia (without Kosovo)			Central Serbia			Vojvodina		
Year	**Total**	**Male**	**Female**	**Total**	**Male**	**Female**	**Total**	**Year**	**Total**
1952/1954	9.40	9.11	10.19	–	8.16	9.60	–	10.41	11.06
1960/1962	9.06	8.91	10.18	–	8.38	9.61	–	10.40	10.42
1970/1972	11.62	12.06	11.47	–	11.37	10.99	–	13.30	12.11
1980/1982	11.35	11.03	11.99	10.87	10.45	11.40	12.83	12.99	13.60
1990/1992	14.08	14.79	14.01	13.65	14.12	13.38	15.66	16.67	15.65
2001/2003	19.03	18.97	19.41	19.01	19.04	19.27	19.19	18.92	19.83
	Serbia (without Kosovo)			**Serbia – South**			**Serbia – North**		
2010/2012	17.58	17.59	18.45	18.61	18.44	19.50	16.53	16.74	17.36

Source: Based on Devedzic, Stojilkovic (2012).

Graph 3:
Absolute differences between the prospective and the chronological shares of the older population, around census years



different population segments also should not be neglected. This factor seems to be especially important in the case of Serbia, because future changes in these indictors can be affected by a large baby boom generation. According to Stojilkovic (2010), individuals born between 1947 and 1956 can be classified as baby boomers. This generation is on the verge of becoming traditionally old, but the last census had been conducted just before the first boomers had their 65th birthdays. The substantial size

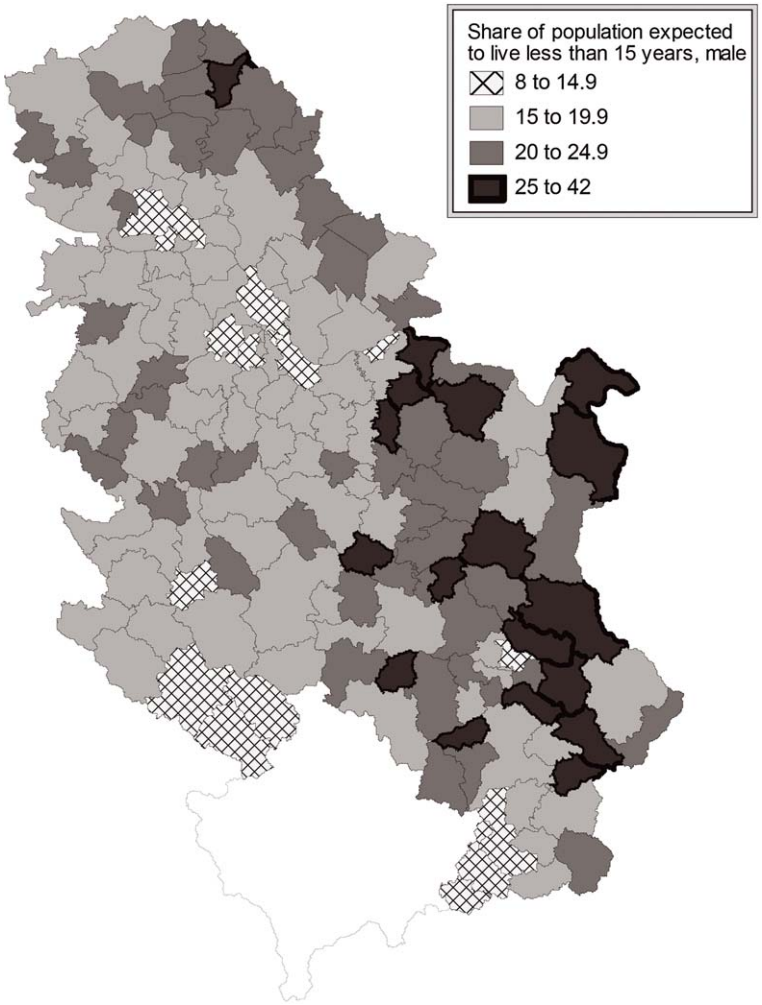
of this generation could cause the share of older people in the population to increase, regardless of the criteria used.

In order to explore the options for (and the advantages of) applying the prospective approach in different settings, we calculated the share of the population expected to live 15 years or less for men and women in all Serbian municipalities. This enabled us to evaluate the spatial dimension of population ageing in an unconventional manner. When applied to the male population (Map 3), this new approach highlights some important features of the geographical distribution of the (prospective) older population in 2011. The municipalities with the lowest shares of men with a life expectancy of 15 years or less were either regional centres or municipalities with higher fertility rates. The three biggest cities in Serbia (Belgrade, Novi Sad, and Nis) had the smallest shares of the analysed indicator as a result of their more favourable age structures. On the other hand, in the municipalities in which fertility was above the Serbian average (Tutin, Sjenica, Novi Pazar, Bujanovac, and Presevo), the share of men with a life expectancy of 15 years or less was smaller than in the remaining municipalities. The municipalities that received the greatest number of refugees during the 1990s are all located in Vojvodina. However, since the population structure of these immigrants was similar to that of the endogenous population (co-ethnic migration), their presence did not have a substantial influence on demographic ageing, apart from adding to the total population numbers. It would seem that in Vojvodina, differences in old-age mortality played the major role in regional differences in (prospective) ageing. The worst situations were definitely in Eastern Serbia and in parts of Southern Serbia, where one-quarter of all men had a life expectancy of 15 years or less. This is a mountainous area that has been heavily affected by the rural to urban migration waves that have significantly modified the country's age structure. Thus, these small settlements have relatively old populations. It is noteworthy that a few of the newly formed municipalities have very low values for this indicator, likely due to data imperfections. The greatest barrier we face to gaining a deeper understanding of the process of population ageing is a lack of time series on international migration, which in the case of Serbia mostly consists of out-migration.

These observations, when related to the prospective threshold, highlight some of the important features of population ageing in Serbia. It is important to point out that because of differences in population composition, municipalities can have the same share of people with a life expectancy of 15 years or less, but different prospective thresholds. However, municipalities with a large younger population and a lower prospective threshold are not the same as municipalities with a large older population and a high prospective threshold. When we look at population ageing through a prospective lens, we see that fertility is playing an important role in municipalities with Albanian ethnic majorities; that old-age mortality is defining population ageing in Vojvodina, and that the Southern and Eastern parts of Serbia are experiencing the consequences of rural migration.

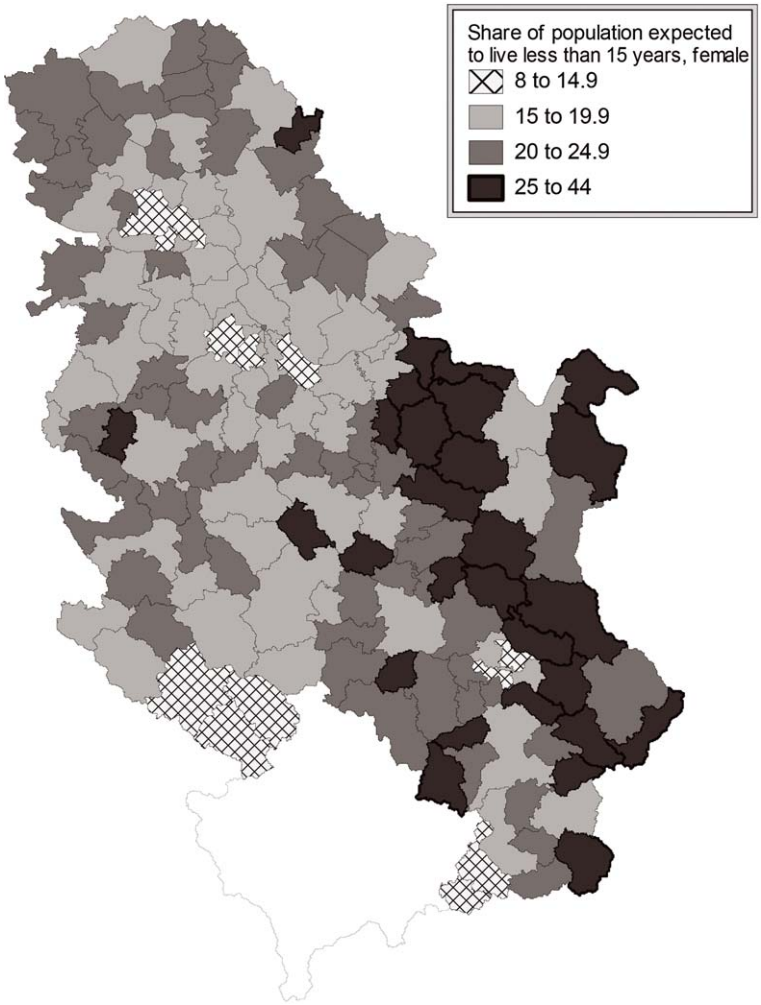
Similar observations can be made regarding the proportion of the female population with a remaining life expectancy of 15 years or less. In 2011, the

Map 3:
Proportion of the population with a remaining life expectancy of 15 years or less, male population, 2011



smallest shares of women with a life expectancy of 15 years or less were in the largest cities with numerous functions, and in municipalities with high fertility (and, consequently, a younger population structure). The greatest concentrations of women with a life expectancy of 15 years or less were again in Eastern and Western Serbia, but the number of municipalities in which the share of this population was more than 25% was higher for women than for men. It is interesting to note that in some municipalities this indicator was as high as 42% for men and 44% for

Map 4:
Proportion of the population with a remaining life expectancy of 15 years or less, female population, 2011



women, which means that in some municipalities close to the half of the total (male or female) population could expect to live less than 15 years. Such an unenviable reality clearly shows that the progressive trend of population ageing merits thorough examination, and that methodological advancements can shed some light from a different perspective.

5 Conclusion

Population ageing in Serbia is an unavoidable process of demographic change resulting from a long-term decrease in fertility and uneven improvements in mortality by age and sex over decades. The demographic developments in Serbia have also been affected by waves of migration, including by the emigration of guest workers to Western Europe in the 1960s, internal migration from rural areas to cities, the immigration of refugees, and brain drain in the 1990s. The survival of greater numbers of older people can be seen as a positive trend and a triumph of medical advancements, but if the share of older people is compared with the share of younger people, some unpleasant questions arise. New demographic methods, such as prospective and characteristics approaches that incorporate changes in the life expectancy of the older population, paint a more hopeful picture because they show that the health of older people has been improving in most developed countries. However, these new approaches may also reveal that in certain countries, including Serbia, life expectancy has been increasing more slowly than in most other developed countries. One of the most important properties of the prospective approach is that it can uncover some demographic relationships that traditional approaches miss or overlook. Further investigations of the uneven life expectancy values among the older population, and of the differentials in the prospective shares and prospective thresholds, will not only be useful research exercises, they will generate helpful input for population policy. These approaches can, for example, be used to address the question of whether health care and gerontology services for the older population should be redistributed, as there is a divergence between the concentrations of the (prospective) older population and the facilities that meet their needs.

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