CENSUS ATLAS OF RUSSIA: SEX COMPOSITION, AGE STRUCTURE, AND MARITAL STATUS

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Executive Summary

This is one of several papers which analyze the results of the 2010 Russian population census. This paper examines the gender composition, age structure, and marital status of the population of Russia based on the results of the 1989, 2002, and 2010 censuses. For each of these demographic indicators, the paper starts by examining the issue in Russia followed by analysis of trends over time from the last three population censuses conducted in Russia and then over space by focusing on regional-levels trends. The male-female sex ratio in Russia is among the lowest in the world and has declined slightly in the post-Soviet period because of higher male mortality. The numerous demographic, social, and economic implications resulting from this low male sex ratio are examined. Regionally, Russia has a predominantly female core and a predominantly male periphery. Like most countries across the developed and developing worlds, the population of Russia is aging, with significant consequences for population and economic growth. Regionally, Russia has a relatively older population in the central part of the country and a younger periphery. The percent of the population who decide to marry has declined significantly in the post-Soviet period, especially among younger people. Those who do marry are getting divorced earlier, thus the population is spending far less of their lives in a marital union which has implications for housing, household formation, education, and fertility.
4. Sex Composition, Age Structure, and Marital Status

This paper examines the gender composition, age structure, and marital status of the population of Russia based on the results of the 1989, 2002, and 2010 censuses. Each section begins with a discussion the issue in Russia. This includes international comparisons if appropriate and if data are available. This is then followed by analysis of trends over time based on the last three population censuses, and earlier. The next section examines trends at the regional level.

4.1 Sex Composition

Russia’s unusual sex ratio

Russia’s sex ratio of 85.9 males per 100 females stands out as being among the lowest in the world (figure 4.1). In 2010, globally there were 101.6 males per 100 females. Because of excess male mortality mainly due to life style causes of death, more developed countries have lower sex ratios, 94.3 males per 100 females, than less developed countries, 103.3 males per 100 females. European countries as a whole have lower male sex ratios, 92.8 males per 100 females, than Asian countries, 104.8 males per 100 females. The only countries with lower male sex ratios than Russia are Latvia (84.1 males per 100 females), Lithuania (85.7 males per 100 females), and Ukraine (85.7 males per 100 females). All of these are countries are former Soviet states with large Russian or Slavic populations, which have the same characteristic of large female-male gaps in life expectancy due to high male mortality, as do a number of other former Communist states of Eastern Europe. The United States has a higher sex ratio than these countries at 96.7 males per 100 females but that is still significantly lower than the global average. At the other end of the spectrum are countries with high male sex ratios including India and China where...
there are suspected high levels of female infanticide or neglect and sex-selective abortion. Saudi Arabia and several other Persian Gulf states have high female sex ratios for some of the same reasons but also because of high male immigrant populations.

National-level trends in the sex ratio

Overall, there were 76.8 million females enumerated in the 2010 census and 66.0 million males, a difference of 10.8 million. This is a slight increase over the 2002 census when the difference was 10.0 million and the 1989 census when females outnumbered males by 9.6 million and is the result of the high and increasing female-male gap in life expectancy since the breakup of the Soviet Union. The absolute excess of females in Russia is by far the largest in the world.

In 2010, there were 86.1 males per 100 females which is a decrease from 2002, when there were 87.4 males per 100 females and from 1989 when there were 87.7 males per 100
females. The continued female-male gap in life expectancy explains the continued wide sex ratio in the country. This situation of a large excess of females over males has persisted in Russia for quite some time, as can be seen in figure 4.2 which shows the sex ratio in Russia from 1897 to 2013. As far back as 1897, with about 95 males per 100 females, there were fewer males in Russia than in most other countries. As a result of World War I and the Civil War in Russia, the relative number of men dropped to 90.3 males per 100 females and declined further to 89.9 on the eve of World War II in 1941. Males suffered the brunt of the devastating losses during the war and at the end of the war, the sex ratio was estimated to be 74.7 males per 100 females. This ratio for Russia, along with similar low male sex ratios for several other FSU states that were heavily impacted by the war, are likely among the lowest ratios ever recorded for sizable populations. As cohorts with more equal sex ratios replaced those with deficits of males, the overall sex ratio gradually increased after World War II, to a peak of 88.6 males per 100 females in 1995, before beginning to decline again.

Figure 4.2: Males per 100 females, 1897-2013

1 The sex ratio figures for 2010 presented by Rosstat from the census differ slightly from those compiled by the United Nations Population Division.
The sex ratio at birth in Russia is no different than the typical global average of 105 males per 100 females. Ratios of between 104 to 106 males births per 100 females births are fairly typical across a broad range of populations and deviations from this ratio indicate female infanticide, sex-selective abortions, or other measures taken to alter the sex ratio. In most societies, males have higher mortality than females so that at older ages, the sex ratio evens out and at the oldest ages, there are usually more females than males. Figure 4.3 shows the sex ratios by age in Russia at the time of the 1989, 2002, and 2010 censuses. The sex ratio at birth of about 105 males per 100 females holds until about age 20 when higher male mortality begins to greatly affect the ratio. In all censuses, there are more males than females until the early 30s. From that age onwards, higher male mortality continues to pull down the male sex ratio, so that at the oldest ages over 85, there is only one male per every five females. The sex ratios at different ages were roughly similar in all three censuses. The only exception was the lower ratio of those ages 65 to 75 in 1989. This is the cohort who had suffered the majority of casualties during World War II.
There are several implications of this unequal sex ratio for Russian society and the economy. The major one is that the Russian population would obviously be a lot higher if Russian men lived longer and if there was not such a large amount of excess male mortality. There would be productivity and output gains for the Russian economy if men lived longer and lived more healthy life years. There are no implications on the Russian marriage market because the sex ratio is roughly equal during the time at which most people in Russia get married in their twenties. However, Russian women can expect to spend much longer portions of their lives as widows because of pre-mature male mortality. At age 55, there are less than 80 males for every 100 females and at age 60, there are less than 70.

**Oblast-level trends in the sex ratio**

The sex ratios at the regional level reflect sex-selective patterns of migration, differences in male and female mortality, and historical sex ratios. Map 4.1 shows the sex ratio by region in 1989, when national sex ratio in Russia was 87.7 males per 100 females. The regional pattern is of a predominantly male periphery and predominantly female core. The map shows regional sex ratios relative to the national average, not to 100 males per 100 females. A number of regions in central Russia had male-female sex ratios below the national average. These regions contain a large portion of the country’s population and are thus reflective of the national ratio. The reason behind the low male-female sex ratios in these region are the same as for the country, very low male-female sex ratios following World War II and high male mortality. In 1989, the Ivano oblast had the lowest male-female sex ratio in country, 81.2 males per 100 females, or roughly four males for every five females. Moscow (81.4 males per 100 females) and St. Petersburg (81.9 males per 100 females) had low sex ratios close to this level. Moving out from this core is
a group of regions with sex ratios close to the national average. Moving further north and east towards the periphery, the sex ratios become predominantly male. The regions on the northern coast along the Arctic Ocean have the highest male sex ratios in the country, where men actually outnumber women. In 1989, the region with the highest male-female sex ratio was Chukotka, with 111 males per 100 females. The reason for the high male sex ratios in these regions was sex-selective migration. These were all regions with large numbers of people who had migrated to these regions from elsewhere in Russia and the other states of the former Soviet Union for work. The primary economic activity in these regions was resource extraction. Those sectors, along with related construction and transport are economic sectors dominated by males. Related to this is that the populations of these regions tended to migrate back to central Russia or other FSU states upon completion of a tour of duty or retirement, thus they did not have the older cohorts where the male-female gap was so large.
In 2002, the national sex ratio had declined slightly from 87.7 males per 100 females to 87.2 males per 100 females and there were regional differences in how the sex ratio changed (map 4.2, shown with the same scales as map 4.1 to facilitate comparison). Moscow city had the largest increase going from 81.4 males per 100 females in 1989 to 91.2 in 2002 (map 4.3). Moscow had the largest absolute population increase in the country, as a result of large-scale immigration, which was obviously predominantly male. Chechnya had the second largest relative increase in percent male going from 88.6 males per 100 females in 1989 to 93.3 in 2002. This seems rather counterintuitive given the fact that two wars were fought there during the inter-census period, which would have predominantly affected males. Among males 15 to 24, the sex ratios were particularly high, with 109 males per 100 females. There were suspected issues of incomplete enumeration in Chechnya during the 2002 census given the situation in the region at that time. If these figures reflect the actual situation, it could be explained by high male-in-migration from other regions to take part in the war. Other regions in the North Caucasus such as Dagestan and North Ossetia, also had increases in percent male for reasons that are difficult to explain.
Many of those regions that had large relative declines in their male populations are those which had large amounts of out-migration during the 1990s. This includes many regions in Siberia and the Russian north. The Siberian and Far East Federal Districts had the largest relative declines in their male populations. However, only part of the declines in the male sex ratio in these regions can be explained by predominantly male outmigration from the downsizing of the northern regions which would affect males more than females. Gender differentials from net migration account for one-quarter of sex ratio change and differences from natural increase (decrease) account for three-quarters (Heleniak, 2010). The male-female gaps in life expectancy in these northern and Arctic regions are the highest in Russia. Death rates from external causes (murder, suicide, accidents) are much higher in the North than Russia, causes of death which disproportionately affect men. Thus, the coping mechanism of men in the North to rapidly
changing socio-economic conditions during the initial post-Soviet period was not out-migration but behaviors that resulted in premature death.

However, because much of the migration to these regions during Soviet period was predominantly male, most of the regions in the periphery remain predominantly male. The core in central Russia is predominately female with ratios of males to females well below the national average. These regions contain a large portion of Russia’s population are thus reflective of national trends. They have predominantly Russian populations and their age structures are much older than the national average. As pointed out above, it is at the older ages that the excess of females is most prominent.

In 2010, the trend of a declining male sex ratio continued when nationally, the sex ratio declined from 87.2 males per 100 females to 86.1 males per 100 females. The regional trend of declines in the male sex ratio in the northern and Arctic periphery regions also continued. Only a few regions had increases in the male-female sex ratio and these were rather small. The largest increase was in Chechnya which increased from 93.3 males per 100 females in 2002 to 96.1 males per 100 females in 2010. Meanwhile, neighboring Ingushetia had a significant decrease in the male sex ratio from 87.6 males per 100 females in 2002 to 78.0 males per 100 females in 2010. Many of the periphery regions in the North, Siberia, and the Far East continued to have large declines in their male-female sex ratios, though these declines were generally smaller than during the 1989-2002 census period. Chukotka had the largest decline, going from 110.9 males per 100 females in 2002 to 100.4 males per 100 females in 2010. In spite of the decline, it remained the only region in Russia where males outnumbered females.
To summarize, map 4.4 shows the change in the sex ratio by region between the 1989 and 2010 censuses. Because there was an overall decline in the male-female sex ratio over this time, nearly all regions had declines in their sex ratios, with only a few in the central and western portions of the country having increases. All regions in the North, Siberia, and the Far East have had significant declines in their male sex ratios, in part due to sex selective out-migration of males but more so because of high male mortality.
4.2 Age Structure

The implications of an older Russian population

The age structure of any country has important implications for both its economy and society. This is certainly the case in Russia given the rapid aging trends that it has experienced over the past two decades. There is also an important regional dimension given the large differences in the age structure among Russian regions.

Population aging, the process by which older individuals become a proportionally larger share of the total population, was one of the most distinctive demographic events of the twentieth century. The population of the world is aging at an unprecedented rate because of long-term declines in fertility and increases in life expectancy. For many FSU countries, including Russia,
population aging is accelerating faster than other regions of the world because of the very steep declines in fertility during the past two decades of economic transition, increases in mortality and already older age structures at the beginning of the transition period (Heleniak & Canagarajah, 2013).

Much of the support for the elderly in Russia and other developed countries is provided by public and private pensions and government health care. The purpose of such programs is to avoid large drops in income for people upon retirement. However, based on current trends, these systems are unsustainable. Possible policy options include encouraging higher fertility, permitting more immigration, increasing labor force participation, raising the age at retirement, reducing public pension benefits, or some combination. All would reduce the pension expenditure ratio.

There have been several recent studies of the demographic situation in Russia carried out under the auspices of the UN which put forth a variety policy options to address demographic trends in Russia, not just aging (The United Nations in Russia, 2008; UNDP Russia, 2009). The study also contains the results of several surveys examining the receptivity of Russia to increased immigration and the status of migrants in the country, both legal and illegal. It proposes measures to improve labor force participation among working ages and pensioners as well as health improvements as ways to reduce tensions in the labor market. It also examines pension expenditures under different aging scenarios. The conclusion was that both aging and new patterns of social expenditures are inevitable.

One of the major studies of population aging in the Europe and Central Asia region and its consequences was done by the World Bank in 2007 (Chawla, Betcherman, & Banerji, 2007).²

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² The Europe and Central Asia region is an operational region of the World Bank that includes the countries of the former Soviet Union, the formerly centrally-planned and Communist countries of Eastern Europe, and also Turkey.
The demographic transition occurred along with the political and economic transitions of the 1990s. The study took a more pragmatic and broader approach to the aging situation in the Europe and Central Asia region and came to a much less pessimistic conclusion than those who examined the demographic situation and concluded that the future situation was dire simply because of the huge expected aging of the population. It concluded that economic growth can be continued even with declining working-age population through policies that promote increased labor productivity and labor force participation. The study noted that during the first decade-and-a-half of the economic transition, that labor productivity had a stronger impact on economic growth than aging. Further gains in productivity can be expected in Russia and across much of the region as workers who gained most of their training and experience during the period of central planning exit the labor force and are replaced by workers who accumulated their education and training after the transition.

Because of aging, Russia and nearly all of the countries in the region will face significantly higher expenditures in health care, elder care, and public pensions. However, the report argues that these can be mitigated for three main reasons. One, the direct impact of aging on health expenditures is low with much of the cost increases driven by technological factors which are independent of aging. Two, aging reduces the demand for education expenditures. Three, since the most severe effects of aging will not be felt for a couple of decades across much of the region, there is time to rationalize the structure of health care, create flexible policies to address long-term care for elderly, and institute pension systems which provide necessary income support but which are also sustainable.

The report suggests both raising the retirement age and equalizing it between men and women, and also linking increases to the CPI not the wage index. The differential male and
female retirement ages are a legacy of the Soviet period. This leads to the absurd situation where, based on current levels of life expectancy, Russian men are entitled to 2.8 years of pensions while women receive 19.7 years. In Russia, retirement ages are well below OECD countries. Russia is in the process of reforming its health care system which is necessary as most relied on expensive inpatient care and had far more doctors and beds per capita than other regions. Another area of potential lowering of health care costs in a number of countries in the region is through improvements in the health status of the current young and middle-aged persons so that they will be healthier when old.

Managed migration could also be a possible solution but as noted, there are a myriad of social and political issues associated with allowing increased immigration, especially to a country like Russia without a long history of immigrant incorporation which had been almost entirely closed to international migration for most of the 20th century.

Within the field of economic demography, understanding of the effects of population aging on economic productivity is still in its early stages (Bloom, Lutz, & Prskawetz, 2008). The most powerful policy instrument appears to improving the skill level of the labor force (The World Bank, 2013 (January)). A major policy question is how improvements in education, accelerating technological change, and increasing labor force participation rates can compensate for and mitigate potential problems caused by population aging. However, the key is not aging itself but how Russia responds to aging. Life expectancy in Russia is rising meaning that people will live not only longer but healthier. The aging of the population in Russia is inevitable but there are a variety of options available to policy makers and the elderly themselves (The World Bank in Russia, 2013).
Aging in Russia

The median age of the Russian population increased from 32.8 in 1989 to 38.0 in 2010, a rather large increase in just over two decades as a result of the steep declines in fertility during the post-Soviet period. The median age for the rural population, 38.3, is slightly higher than that for the urban population, 37.9. It is the gender difference in median age which is wide, males have a median age of 35.0 years while females have a median age 6 years older of 41.0 years. This is due to significantly higher male mortality than females.

There are extremely wide differences in the median age among countries in the world (figure 4.4). The median age of Sub-Saharan Africa is 18.1, while the median age of Europe is 40.3 years. The median age for Russia in 2010 of 38.0 years is comparable that for more developed countries in the world including a number of other countries of the former Soviet Union and Eastern Europe. It is less than that of other FSU states such as Estonia (median age of 40.5) and Ukraine (39.4) and older European states such Italy (43.3) and Germany (44.3), or Japan, which has the oldest median age in the world at 44.9. The reason that the median age of Russia is less than these countries is explained by the large non-Russian minority populations who have younger age structures and higher fertility. The significant age differences and population growth rates between Russia and the other more demographically advanced countries of the former Soviet Union and Central Asia is evident as Tajikistan, Kyrgyzstan, and Uzbekistan have median ages of between 22 and 24 years. Regardless of the future trend in fertility and mortality, this will ensure continued growth in these countries with implications for labor supply and migration patterns within the region.
There are two questions are asked in the census on age: data of birth and current age. The question on date of birth is taken if the two do not correspond as it is usually regarded as more accurate. Questionnaires were returned with age question unanswered for 34,309 persons or 0.02 percent of the population resulting in a small residual category titled ‘age unknown’. Thus, the completeness of the responses to the age question were quite high giving confidence in the results and reflecting the high levels of education and literacy of the Russian population.

**National-level trends in the age-structure**

With the long-term secular decline in the birthrate and the rise in life expectancy in the first half of the twentieth century, the population of Russia has been aging as in most countries in the world. Figure 4.5 shows the age structure of the population divided into broad age groups at

**Figure 4.4: Median age in Russia and selected countries, 2010**

each Russian censuses from 1879 to 2010. As can be seen, there has been a long-term shift of smaller shares of the population in the young ages and more in the older ages. The share that young people made up of the Russian population was 40 percent at the last All-Russian census in 1897 and the first two Soviet censuses. It declined to 30 percent in 1959 and further to 16 percent in 2010. The elderly share of the total population has been steadily increasing and in 2002 made up 22 percent of the population. In 1998, for the first time in Russia, the size of the elderly population exceeded that of the young population.

This trend of the elderly population being larger than the youth population is expected to continue into the foreseeable future with projected below-replacement fertility in Russia. Because fertility was at or above replacement for most of the twentieth century, the size of the working-age population was growing as a share of the total population, contributing to overall

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3 Young people or youth are those ages 0 to 15 years. Persons in the working ages are males 16 to 59 years of age and females 16 to 54 years of age. The elderly are defined as males 60 years and older and females 55 years and older.
economic growth. Between the 1989 and 2010 censuses, the relative size of the working-age population increased from 57 to 62 percent of the total population. The absolute size of the working-age population continued to grow until 2007 but has since started to decline as the smaller birth cohorts of the past two decades replace larger cohorts that are retiring. The relative size of the working-age population is expected to decline, possibly acting as a brake on economic growth unless there are productivity gains to counter the absolute decline in the labor force.

Figure 4.6 shows the single-year age structure from the 2010 census. These relatively smaller and large cohorts, and the impact that they have a generation later can clearly be seen. The smaller cohort of those now in their early 80s was the result of famines and purges of early 1930s. As always, smaller cohorts will have an echo a generation later when these persons entered their reproductive ages. There is a huge indentation around age 65 which is the result of the much smaller birth cohort during WWII. There was then an echo of this smaller cohort of those now in their mid-40s and subsequent echo of those in their teens. By the early 1960s, Russia had basically completed the fertility transition and women had settled into a two-child pattern so that each generation was just replacing itself and these cohort differences dictated much of the size of each subsequent cohort. In the 1980s, there was some fear of population decline especially among ethnic Russians and Slavs. Until this time, much of Soviet economic growth was the result of additions to the labor force which were beginning to slow down. As a result, a package of pronatalist measures were put into place in an effort to stimulate fertility. The policy was ethnically targeted as it tried to stimulate second and third births among Russian and other Slavic women. The total fertility rate increased from 1.888 children per woman in 1979
to 2.194 in 1986 (Rosstat, Annual editions). The number of births increased from 2,179 thousand in 1979 to a peak of 2,500 thousand in 1986. Subsequent analysis of cohort fertility by demographers has shown that this had only a temporary effect. Russian women did not increase the total number of children that they had but only had the same number earlier (Zakharov & Ivanova, 1996). The fact that they had their children “early” also lead to the steep decline in fertility and the number of births from the late 1980s into the 1990s, which was also the period of the economic transition (Avdeev, 2011).

Thus, there is a peak cohort around age 23 who were born in 1987. But following this, each cohort from age 23 until about age 9 are smaller than the previous one as a result of the decline in fertility. The fertility rate declined from a peak of 2.194 in 1987 to a low of 1.157 in 1999 before increasing to 1.600 in 2010. The numbers of births fell from 2.5 million in 1987 to just 1.2 million in 1999 before rebounding to 1.8 million in 2011 (Rosstat, Annual editions). However, Russia should temporarily enjoy a demographic dividend from the pronatalist policies, in that the number of women of peak reproductive ages are entering their 20s. The size of the labor force will decline from its peak of 90.4 million to 74.8 million in 2025, a drop of 15.6 million. Further exacerbating this problem is that even within the working-age population there is aging. Of the projected decline in the working ages of 11 million persons between now and 2025, 95 percent will be in the 15 to 39 age group. Thus, to avoid further declines, labor participation rates will have to be raised among those in the older working ages, groups with traditionally lower participation rates, labor productivity will need to be raised, or more migration will need to be allowed.

4 The total fertility rate is a period measure indicating the hypothetical number of children will have under current age specific fertility rates while cohort fertility is the actual number of children that women of a birth cohort actually have.
Between the 1989 and 2010 censuses, the population of Russia declined by 4.2 million. With the steep drop in the fertility rate, there was a large decline in the youth population of 12.9 million, an increase in the working-age population of 4.2 million and an increase in the elderly population of 4.5 million. The rather irregular pattern of some of the cohorts in 2010 being larger and some being smaller than the corresponding cohorts in 1989 is due in part to various kinks and echoes in Russia’s peculiar age-sex structure resulting from past demographic disasters working their way through up the age pyramid. The smaller cohorts of those ages 6 to 22 is the result of the recent fertility decline. The recent increase in fertility explains the larger cohorts under age 6. The smaller cohorts of those ages 35 to 50 are the result of being the offspring of the small cohort now about age 70. The cohort of persons ages 65 to 70 at the time of the 2010 census, were part of a much smaller cohort born during the turbulence of World War II.

![Figure 4.6: Age-Sex structure, October 2010](image)
Figure 4.7 graphically illustrates how the changes in the population size and age composition of Russia by five-year age groups every five years over the century from 1950 to 2050 based on United Nation’s estimates and projections. Over this period, the population will grow from 102.8 million in 1950 to a peak of 148.6 million in 1995 before declining to 120.9 million in 2050. The percent youth (0 to 19 years of age, using broad UN definitions) will decline from 40 percent of the population in 1950 when Russia’s population was quite young, to a low of 21 percent in 2010 and 2015 before rising slightly to 23 percent in 2050 as a result of a projected fertility increase. With past and projected aging of the country’s population, the percent elderly (65 and older) will rise from 5 percent in 1950 to 20 percent in 2050. The percent in the working ages will rise from 55 percent in 1950 to a peak of 66 percent in 2010 and 2015 as Russia is currently experiencing a short-lived demographic dividend of increased numbers of people in the working ages because some of the relatively larger cohorts born in the late 1980s are now entering the workforce and relatively smaller cohorts born during World War II are now retiring. This dividend will be short lived as the smaller cohorts from the large decline in fertility in the post-Soviet period will soon begin entering the working ages. The percent in the working ages will decline to 57 percent in 2050, about the same relative size as in 1950. It will decline considerably in absolute terms from 94.6 million in 2010 to 68.7 million in 2050 acting as a brake on economic growth.
The relative size of individual cohorts can be seen as the kinks and later echoes of the different size cohorts move through the age structure. For instance, in 1950, the number of persons 5 to 9 years old was only 6.9 million. This was the smaller cohort during World War II when many people postponed childbearing. The cohort born before it, those 10 to 14 years old in 1950, was nearly twice as large, 12.7 million and that after it, those ages 0 to 4 in 1950 was 11.1 million. This relatively smaller cohort can be graphically seen working its way through the age structure as the trough going from ages 5 to 9 in 1950 to ages 100 plus in 2045. Because this generation was smaller, they would give birth to a relatively smaller cohort when they became of child-bearing ages, starting with those born in 1970. Another smaller cohort that will work its way through the age structure are those born during the post-Soviet fertility decline of the 1990s, those ages 0 to 4 in 2000 and 2005. In 1995, there were 8.0 million persons ages 0 to 4, this number declined to 6.5 million in 2000, and then back to the same level of 8.0 million in 2010 as part of the fertility rebound. However, these relatively smaller cohorts will continue to work
through the age structure and to be smaller than the cohorts immediately older and younger. This can be seen in 2050, when this cohort will be 45 to 54 years of age.

**Oblast-level trends in the age-structure**

As with the sex ratio, there are distinct regional differences in age structure as measured by the median age in 1989 (map 4.5). In 1989, the median age for the country was 32.8 years. A group of regions in central Russia centered around Moscow are the regions with the oldest age structures, all having had median ages over 34 years. Novgorod had the oldest median age at 40.8 years. Moving out from this older core are regions with slightly younger age structures but still with median ages above the national average. The populations of the regions get progressively younger further to the south and east. Regions with the youngest median age are ethnic regions in the Caucasus, Siberia, and the Far East. Other non-ethnic regions in Siberia and the Far East, which were primary migration destinations during most of the Soviet period, also have younger age structures.

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5 Data on the median age for Chechnya and Ingushetia are not available for 1989 when they were a combined entity. In 1989, the median age calculated from 5-year age-sex data was about 24 years. Only Dagestan, the Aginsk-Buryat autonomous okrug, and Tuva had younger median ages. In 1989, the average age for the combined Chechen-Ingush Republic was 29 years. The average age for Russia was 35 years. Only a few of the autonomous okrugs in Siberia had younger average ages than the Chechen-Ingush Republic.
In 2010, there was the same broad regional pattern as in 1989 of an elderly population in the core of the country and the median age of the regions is progressively younger moving east and south from the core towards the periphery (map 4.6). The Central, Northwest, and Volga Federal Districts had the oldest median ages and many of the regions within these districts had relatively old median ages above the national level, which was 38.0 years. Whereas in 1989, there was only one region with a median age over 40, in 2010, there were 25 such regions. Regions with younger median ages were ethnic homelands in Siberia, the Far East, and the Caucasus. The regions with the youngest ages were Dagestan, Tuva, Ingushetiya, and Chechnya, all with median ages of 27 years or younger.
Between 1989 and 2010, the median age for Russia increased by over 5 years, from 32.8 to 38.0 years. Over that period, all regions in Russia had an increase in their median ages (map 4.7). Those regions with the largest increases in median age were a mixture of periphery regions in the European North such as Karelia, Arkhangelsk and Murmansk, periphery regions in the Far East such as Magadan, Kamchatka, Primorsky Amur, and Sakhalin, several regions in central Russia, and a few other scattered regions. The explanation behind the rapid aging of the periphery regions was the out-migration of large numbers of people in the young working ages over the past two decades. For those in central Russia, the explanation was the steep declines in fertility to populations with already old age structures. The regions with the smallest increases in median age were those with the youngest populations in Siberia and the Caucasus, most of which are ethnic homelands of non-Russian groups.
Maps 4.8, 4.9, and 4.10 respectively show the percent youth, working age, and elderly by region in Russia in 2010. Youth are people ages 15 and younger. Working ages are males 16 to 59 and females 16 to 54. Elderly are males 60 and older and females 55 and older. Nationally in 2010, the percent youth was 16.2 percent. Regions with the largest youth populations are ethnic homelands in the Caucasus and Siberia (map 4.8). Chechnya is the region with the largest youth population where 34 percent of the population is below age 16. The percent youth becomes smaller in regions closer to central Russia. Most regions in central Russia have less than 15 percent youth. The regions with the smallest youth populations are the city of Moscow, 12.8 percent, and St. Petersburg, 12.0 percent. All regions had declines in the relative sizes of their youth populations, except Chechnya where the percent youth stayed the same. The regions with the largest declines in their percent youth between 1989 and 2010 were periphery regions in Siberia and the Far East. This was due to the decline in the birth rate which affected all regions.
of Russia and the out-migration on young adults who brought their children with them. For example, in Magadan, whose population declined by over half from out-migration, the percent youth declined from 29 to 17 percent, a 12 percentage point decline. Regions with the smallest declines were a few regions in the Caucasus such as Chechnya, Ingushetia, and North Ossetia where the fertility rate was still above replacement level and most regions in central Russia which had relatively small youth populations in 1989.

Map 4.8: Youth Population by Region, 2010

In 2010, the working age was 61.6 percent of the entire population. The regions with the highest shares of persons in the working ages were Yamal-Nenets, Khanty-Mansiysk, Chukotka, Tyumen, Magadan, Kamchatka, Murmansk Oblast, Komi, Yakutia, and Sakhalin, all periphery regions which attracted large numbers of migrants from elsewhere in Russia and other parts of the Soviet Union to work (map 4.9). Most of these people returned to their country or region or
origin upon retirement. The regions with the smallest shares in the working ages were Chechnya, Ingushetia, and North Ossetia and a number of others in central Russia. Regions with the largest increases in the percent working are Dagestan, the Altay Republic, Mari-El, Kabardino-Balkar, and Ingushetia, all regions with higher than average fertility rates. Very few regions had declines in the percent of their populations in the working ages but those which did, or those which had small increases, were those in the periphery regions of the north and Far East such as Khabarovsk, Komi, Primorskiy Kray, Nenets Autonomous Okrug, Murmansk, Sakhalin, Chukotka, Magadan, and Kamchatka.

Regions with the highest percent elderly were obviously those in central Russia (map 4.10). The region with the highest percent elderly was Tula, with 27.7 percent. Moving out from this central core to the periphery, the percent elderly declined. In 2010, 22.3 percent of the entire population was elderly. Regions in Siberia and the Far East and the Caucasus had the lowest share elderly. This group included the Sakha Republic, Dagestan, the Khanty-Mansiysk Okrug, Chukotka, Tuva, Ingushetia, Checheniya, and Yamal-Nenets.
There are number of social and economic implications of these differential regional age structures (Heleniak, 2003). It is obvious that Russia has an aging population in its core in central Russia and a younger periphery. Because of the older age structures and smaller numbers of persons in their reproductive ages, the regions in central Russia have been and are expected to experience an excess of deaths over births leading to steep population declines. While the same is true in many periphery regions, the rate of natural decline is expected to be less. In many regions in central Russia, as older workers retire, they are being replaced by smaller cohorts of workers entering the workforce, leading to declines in the size of the labor forces and in some cases, labor shortages. These labor shortages must be made up for by increases in labor productivity or migration of workers from inside or outside Russia, or else these regions will suffer economic declines.
The relative dependency ratio that each region has also has implications for its public spending mix. Overall in Russia, the dependency ratio actually declined between the 1989 and 2002 censuses, going from 755 dependents per 1000 persons in the working ages to 631, and then declined further in the 2010 census to 623 per 1000 persons in the working ages. This was due to a decline in youth dependency ratio from 430 younger people per 1000 persons in the working ages in 1989 to 263 in 2010. Over the same period, the elderly dependency ratio increased slightly from 325 pensioners per 1000 persons in the working ages to 360. The decline in the dependency ratio has provided Russia with a short-term demographic dividend, with fewer dependents and a large working-age population. However, the absolute size of the working-age population peaked in 2007 and is projected to decline from 90 million in that year to 78 million in 2030 (Rosstat, 2010). At the same time, the population will age as many of the current workers will move into retirement ages. The dependency ratio will increase from its current level to 830 dependents per 1000 persons in 2030. This will be mainly driven by an increase in the elderly dependency ratio to 523 elderly per 1000 persons in the working ages in 2030. At both the national and regional levels, this will require a shift in spending away from education towards pensions and health care.

These trends are illustrated in figure 4.8 which contains the age-sex pyramids of three quite different regions – Tver, Dagestan, and Magadan. The Tver oblast, in central Russia, just north of Moscow is representative of an older region in central Russia. Its population pyramid is reflective of an older population with the large cohorts being those ages 45 to 60. The excess of females over males in the older ages can also clearly be seen. The region has a median age of 41.6 years, which is older than the national median age of 38.0 years. In 2010, 14.4 percent of the population is below the working ages (versus 16.2 percent nationally) and 26.4 percent of its
population are above the working ages (versus 22.2 percent nationally), resulting the top-heavy age-sex pyramid. The population of the region declined by 17 percent between the 1989 and 2010 censuses largely because of an excess of deaths over births. The population is aging rapidly and is expected to have an increasingly large elderly population in the future necessitating large expenditures on health care and somewhat on pensions. Though responsibility for pension payments is national, they are often mixed with other social expenditures at the regional level.

Figure 4.8: Age-sex structure of Tver, Dagestan, and Magadan, 2010
By contrast is the age-sex pyramid of the Republic of Dagestan, which more resembles an actual pyramid reflective of its younger age structure. The population of the region grew by 57 percent since 1989, the largest increase of any region in Russia. This was due to a combination of high natural increase and net in-migration. Dagestan is a predominantly Muslim region and has a median age of 27.3 and only 11 percent of its population above retirement age but has 27 percent in the younger ages. Obviously, larger educational outlays are needed in such a region.

A third contrasting region is that of Magadan in the Far East. The population declined by 59 percent, the second-largest decline of any region after Chukotka. This decline was entirely due to out-migration from the region. Magadan has a median age of 37.1, slightly younger than the national average. Youth are 17 percent of the population, about the same level nationally. The pension-age population of the region is 17 percent of the total. However, this pension-age population is up considerably over what it was in 1989, when it was only 4.5 percent of the population. This can be seen in the size of the large cohorts 50 to 60 years of age. Magadan was

Source: Table 2-2.
a place that people went to work, primarily in the gold mines, but then retired elsewhere at the end of their careers. While there has been considerable out-migration from the region during the period between the censuses, much of this is of the able-bodied age portions of the population leaving many elderly ‘stuck’ in the region without the resources to leave. It is for this reason that Magadan was included as one of the regions in the Northern Restructuring Project which is supported by a loan from the World Bank, to help assist person who wish to voluntarily leave Magadan and other northern regions. In spite of the large out-migration from the region, it still attracts young migrants as seen in the large size of cohorts in the young working ages 20 to 35 years of age.

4.3 Marital Status

_Marriage in Russia_

The social and economic changes in Russia over the past two decades have had a profound effect on marriage. Because of changes in the economy including a widening income distribution and increased returns to education and reduced benefits for being married, many young people are either delaying marriage or choosing not to marry at all. In 1987, when a package of pro-natalist measures caused an increase in both the number of births and marriages, there were 1.4 million marriages (figure 4.9). In that year, there were 580,000 divorces and there were 40 marriages per 100 divorces. The number of marriages declined by more than one-third to a low of 900,000 in 2000 before rising to 1.2 million in 2012. Meanwhile, the divorce rate steadily increased peaking at 853,000 in 2002 before declining to 644,000 in 2012. When the number of divorces were at their peak, there were 84 divorces per 100 marriages, meaning that the rate of increase in the number of couples through marriage was quite
The ratio of divorces to marriages has declined since that peak but remains much higher than in the Soviet period. If couples do marry, they are much quicker to dissolve marriages in the face of adversity. Thus, with overall declines in marriages and the rise in divorces in the post-Soviet period, people are living much less time in marriages.

Another impact that the decline in marriage has is on the fertility rate, as most births still take place within marriages. When the number of women in union declines, so does the number of births. During the 1970s and 1980s, the number of births outside marriage was around 12 percent (figure 4.10). The percent of non-marital births steadily rose, peaking at 30 percent in 2005 before declining to 25 percent. However, in spite of the increase in non-marital births as a percent of all births, their contribution to overall fertility is not very significant and it is the decline in marital fertility that has caused the large decline in the overall number of births in post-Soviet Russia. Concerned about the decline in fertility, especially the decline in fertility...
among Slavic women, the Soviet government introduced several measures to stimulate the birth rate and to stimulate it in specific ways. The measures were introduced starting in 1983 and subsequently modified (Zakharov & Ivanova, 1996). Two key measures were the introduction of partiality paid maternity leave which was eventually extended to 3 years and the extension of the legal definition of a large family to those with three children, making them eligible for a range of benefits in public services and housing. Influenced in part by this package of pro-natalist measures in the late 1980s, the number of births peaked in 1987 at 2.5 million. This consisted of 2.2 million births inside of marriage and 317,427 non-marital births. The overall number of births then plunged by 1.3 million to a low of 1.2 million in 1999. This was almost entirely due to a decline in marital fertility as non-marital births rose only slightly between 1988 and 1999, by 21,856. The number of births has rebounded from this post-Soviet low to 1.9 million in 2012. More than 80 percent of this increase is due to a rise in marital fertility, brought about by the rise in the marriage rate. Thus, fertility in Russia remains largely driven by the number of couples marrying.

Figure 4.10: Marital and non-marital births, 1970 to 2011

Source: Rosstat, Demographic Yearbook.
National-level trends in marriage

Marriage is not nearly as universal as it was previously as larger segments of the population are either postponing marriage or not marrying altogether. The percent of persons 16 and older who were married declined from 66 to 57 percent between 1989 and 2010 (table 4.1). The number of people married declined by six million between 1989 and 2010, while the number never married increased by about the same amount over this time. The percent of the population who had never married increased from 16 to 21 percent of the population. The percent that are divorced or separated increased from 7 to 10 percent, increasing in absolute terms by 3.7 million persons. The percent widowed only increased slightly from 11.1 to 11.9 percent. Put another way, the percent of the population 16 years of age and older who are single rose from 34.4 percent in 1989 to 42.7 percent in 2010. This trend of increasing numbers of single people has implications for fertility, household composition, and other areas of Russian society.

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6 The question on marriage is posed to all persons 16 years of age and older. The possible responses were: married (if so, there was a follow-up question inquiring whether the marriage was registered or not), officially divorced, separated, widowed, or never married. The percent of persons responding to the question on marital status has increased slightly over time, from 0.4 percent in 1989, to 1.0 percent in 2002, to 3.1 percent in 2010.
There have been significant changes in both the age and gender patterns of marriage between the 1989 and 2010 censuses (figure 4.11). Overall, the percent of males 16 and older who are married declined from 72 to 63 percent, while the percent of females who are married declined from 60 to 52 percent. The large differences between males and females in terms of percent married has to do with the low male sex ratio in Russia, which overall is 86 males for 100 females, and even lower at older ages when people tend to be married.7 In terms of the marriage market in Russia, men have a decided advantage. The percent of men who are married peaks at ages 55 to 59 while for women, the percent married peaks earlier at ages 35 to 39

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7 Gay marriage is not legal in Russia and there is no way to determine from the census results how many gay or lesbian couples live together in de facto marriage. Thus, most gay or lesbian couples presumably indicate in the census that they are single.
because excess male mortality begins to impact the male sex ratio. At birth, the population of Russia has a fairly typical sex ratio of 105 males per 100 females. The sex ratio evens out at age 30 and then begins to drop rather steeply which has an impact on percent married and widowed for each sex. At age 50, the sex ratio has declined to 88 males per 100 females; at age 60 to 74 males per 100 females; and at age 70 to just 54 males per 100 females. Overall, in 2010, 4 percent of males and 19 percent of females are widowed. At ages 65 to 69, 12 percent of males are widowed and 44 percent of females are widowed.

Evidence of the shift in attitudes towards marriage is that the younger generations are those who have had the largest declines in percent married. Between 1989 and 2010, the percent of 20 to 24 year old males who were married declined from 38 to 21 percent and for females in this age group declined from 62 to 39 percent. For males ages 25 to 29, the percent married declined from 74 to 54 percent and for females in these ages, declined from 80 percent to 64 percent. In 1989, by age thirty, 82 percent of both males and females were married. In 2010, the
percent of thirty-year old males who were married declined to 69 percent and the percent of thirty year old females declined to 70 percent. With young people choosing increased education and starting careers over marriage and families, people are spending less of their lives in a marital union. While marriage has hardly died in Russia, it is not nearly as universal a life choice as it was in the past.

**Oblast-level trends in marriage**

Maps 4.11 and 4.12 show the percent of males 16 and older who were married in 1989 and 2010 (show in the same scales to facilitate comparison). In 1989, the percent of males 16 and older who were married ranged from 760 per thousand to 641 per thousand. Two regions on opposite ends of the country, Chukotka and Belgorod, had the highest percent of males married, both 760 per thousand. In that year, most regions in central Russia and west Siberia had more than 711 males 16 and older per thousand who were married. Many regions in the Far East and the north had smaller shares who were married. This was due to these regions having slightly younger populations and relatively higher male sex ratios. Regions with the lowest percent married were a number of ethnic homelands - the Tuva Republic, Aga Buryat Autonomous Okrug, Nenets Autonomous Okrug, North Ossetian Republic, and Checheniya.

In 2010, the range of males 16 and older who were married declined to between 690 per thousand and 560 per thousand, as there was an overall decline in the percent of the population who were married. There was a decline in every region in the percent of males married, with no real discernable regional pattern. In 2010, no regions had more than 711 per thousand males 16 and older who were married, the highest class in the map. Only a few clusters of regions in West Siberia and central Russia had more than 661 per thousand males 16 and older who were married.
in 2010. The regions along the Pacific coast had the smallest shares of males 16 and older who were married.
Maps 4.13 and 4.14 show the percent of females 16 and older who were married in 1989 and 2010 (again show in the same scales to facilitate comparison). There was little correlation between the percent of males married and the percent of females. The regions with the highest shares of females married were Chukotka, Magadan, and Kamchatka in the Far East, the Evenki okrug and the Khanty-Manisy and Yamal-Nenets okrugs in west Siberia. Nearly all regions in western Russia had low shares of females who were married. These are regions with low female sex ratios where there are high rates of females who are widowed or who had never married. Between 1989 and 2010, there was a slight increase in the percent of females who were married in Chechnya and Dagestan and declines in all other regions. There was more of a discernable regional pattern with the largest declines in the percent of females who were married occurring in Siberia and the Far East and smaller declines closer to central Russia. These periphery regions had the largest declines in the male sex ratio from a combination of out-migration and high male mortality. In 2010, only the Khanty-Mansi and Yamal-Nenets okrugs had more than 618 females 16 and older per thousand who were married. Many of the regions in central Russia continued to have the lowest shares of females who were married.
Map 4.13: Percent of females married, 1989

Females 16 and older, per 1000 persons indicating their marital status

- 457 - 535
- 536 - 617
- 618 - 699
- 700 - 781

Map 4.14: Percent of females married, 2010

Females 16 and older, per 1000 persons indicating their marital status

- 457 - 535
- 536 - 617
- 618 - 699
- 700 - 781
There is a strong correlation between the percent of males and females widowed by region as shown in maps 4.15 and 4.16. Regions in central Russia have the highest shares of both males and females who are widowed. This is due to these regions having older age structures. Moving out from these regions, the percent widowed becomes smaller as the age structures are younger. The one exception is Yakutia.
Map 4.16: Percent of females widowed, 2010

Females 16 and older, per 1000 persons indicating their marital status:
- 77 - 167
- 168 - 186
- 187 - 206
- 207 - 238
Bibliography


