Russia inherited a number of spatial misallocations that hinder economic efficiency, including the spatial allocation of the population. This factor is most evident in the periphery regions of the Russian North and Arctic from which there was considerable out-migration and contraction of the settlement structure. The cost of maintaining settlements across this vast area has become expensive. However, most natural resources critical to Russia’s economic growth are located in these regions. The term sustainability can be defined in a number of different ways and at different geographic scales. The broad question addressed is whether the current size of the population of the Russian Arctic sustainable? From a national standpoint, this means whether there are too many or too few people in large urban settlements in the Russian Arctic. Within each Arctic city, can the current infrastructure support the current population size or is there excess infrastructure with population decline and what should be done about it. For companies operating in the Russian Arctic, is the size of the labor force optimal to maximize profits. With rapidly changing climate across the Russian Arctic, how will this impact the population residing there? This chapter analyzes changes in population and migration patterns in the Russian North and Arctic over the past two decades.

This note links with the others in the conference by providing data on the changing population size in the regions and settlements of the Russian Arctic since the breakup of the Soviet Union and the start of economic reforms. Analysis is based on data from the 1989, 2002, and 2010 population censuses conducted in Russia as well as annual data on births, deaths, and migration. This note analyzes population change by region, between urban and rural areas and in the largest northern settlements. A final section concludes.

1 This note is an update of several previous chapters by the author including “Growth Poles and Ghost Towns in the Russian Far North”, Russia and the North, edited by Elana Wilson Rowe, University of Ottawa Press: Ottawa, 2009, pp. 129-163 and “Changing Settlement Patterns across the Russian North at the Turn of the Millennium”, Russia’s Northern Regions on the Edge: Communities, Industries and Populations from Murmansk to Magadan edited by Markku Tykkyläinen and Vesa Rautio, Kikimora Publications University of Helsinki: Helsinki, Finland, 2008, pp. 25-52.

2 Supported by a Research Collaboration Network grant from the National Science Foundation "Building a Research Network for Promoting Arctic Urban Sustainability in Russia".
Defining the Russian Arctic

For planning, economic development, statistical and other purposes, the Russian government defines two different types of northern regions – the Far North (Krainyy Sever) and regions equivalent to the Far North (mestnosti priravnennyye k rayonam Kraitnego Severa). The entire territory of ten regions are classified as being in the Far North - Nenets Autonomous Okrug, Murmansk Oblast, Yamal-Nenets Autonomous Okrug, Taimyr Autonomous Okrug, Evenki Autonomous Okrug, Republic of Sakha (Iakutia), Chukotka Autonomous Okrug, Kamchatka Oblast, Koriak Autonomous Okrug, and Magadan Oblast. The Russian government classifies sixteen regions as belonging to the Far North on the basis that all or a majority of their territory is classified being in the Far North. In addition to the ten regions listed above, the following are also classified as the Far North – Republic of Karelia, Komi Republic, Arkhangelsk Oblast, Khanty-Mansi Autonomous Okrug, Tuva Republic, and Sakhalin Oblast (Figure 1). The city of Norilsk, which is administratively part of the Krasnoiark Kray but physically located in the Taimyr Autonomous Okrug, is also included in the Far North. In 1989, these regions encompassed 54 percent of the territory of Russia but only 6.6 percent of the country’s population.

![Figure 1: Regions of the Russian Far North](image)

Migration and Population Change in the Russian North

Analysis of changing settlement patterns across the Russian North will start at a broad level and then increase the level of geographic granularity. The level of spatial resolution makes a difference as there is not one northern economy but many as the Russian North is simultaneously both under and overdeveloped. For the entire Russian North, migration has been the main driving force of population change over the period of the economic transition, with a net out-migration
of 21 percent of the 1989 population (table 1). This caused the population of the North to fall from 9.8 million to 7.0 million currently. By 1990, all northern regions had more people leaving than arriving and this trend has continued, albeit at much lower rates than the early 1990s. The year of the greatest out-migration was 1992, the first year of the economic reforms and the year that prices were liberalized when the market cost of living in the northern periphery began to be felt. Over the entire period, all northern regions except for the Khanty-Mansi Autonomous Okrug have had out-migration. Ten of the sixteen northern regions have had one-quarter or more of their populations migrate out since 1989. At the extreme are Magadan, which saw an out-migration of 61 percent of its population and Chukotka, from which nearly three of every four persons migrated out causing the population to fall from 164,000 in 1989 to just 50,000 currently.

Table 1: Population Trends in the Russian North, 1989-2011 (beginning-of-year; in thousands)

<table>
<thead>
<tr>
<th>Region</th>
<th>Total population</th>
<th>Percent change, 1989-2011</th>
<th>Absolute change, 1989-2011</th>
<th>Intercensus percent change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1989</td>
<td>2011</td>
<td>Total increase migration</td>
<td>Total increase migration</td>
</tr>
<tr>
<td>RUSSIAN FEDERATION</td>
<td>147,022</td>
<td>142,914</td>
<td>-2.8</td>
<td>-8.3</td>
</tr>
<tr>
<td>The North</td>
<td>9,774</td>
<td>7,970</td>
<td>-18.5</td>
<td>2.7</td>
</tr>
<tr>
<td>Karelian Republic</td>
<td>790</td>
<td>644</td>
<td>-10.5</td>
<td>-7.9</td>
</tr>
<tr>
<td>Komi Republic</td>
<td>1,251</td>
<td>900</td>
<td>-28.1</td>
<td>-1.7</td>
</tr>
<tr>
<td>Arkhangelsk Oblast</td>
<td>1,570</td>
<td>1,225</td>
<td>-22.0</td>
<td>-7.3</td>
</tr>
<tr>
<td>Nenets Autonomous Okrug *</td>
<td>54</td>
<td>43</td>
<td>-21.1</td>
<td>6.7</td>
</tr>
<tr>
<td>Murmansk Oblast</td>
<td>1,165</td>
<td>795</td>
<td>-31.8</td>
<td>-1.8</td>
</tr>
<tr>
<td>Khaty-Mansi Autonomous Okrug *</td>
<td>1,282</td>
<td>1,537</td>
<td>19.9</td>
<td>16.5</td>
</tr>
<tr>
<td>Yamal-Nenets Autonomous Okrug*</td>
<td>495</td>
<td>525</td>
<td>6.0</td>
<td>19.1</td>
</tr>
<tr>
<td>Tuva Republic</td>
<td>308</td>
<td>308</td>
<td>0.0</td>
<td>19.0</td>
</tr>
<tr>
<td>Taimyr Autonomous Okrug *</td>
<td>56</td>
<td>37</td>
<td>-34.6</td>
<td>8.4</td>
</tr>
<tr>
<td>Evenki Autonomous Okrug *</td>
<td>25</td>
<td>16</td>
<td>-34.8</td>
<td>8.0</td>
</tr>
<tr>
<td>Sakha Republic (Yakutia)</td>
<td>1,094</td>
<td>958</td>
<td>-12.4</td>
<td>13.1</td>
</tr>
<tr>
<td>Chukotka Autonomous Okrug</td>
<td>164</td>
<td>50</td>
<td>-69.3</td>
<td>5.0</td>
</tr>
<tr>
<td>Kamchatka Oblast</td>
<td>472</td>
<td>321</td>
<td>-31.9</td>
<td>0.8</td>
</tr>
<tr>
<td>Koryak Autonomous Okrug *</td>
<td>40</td>
<td>20</td>
<td>-49.0</td>
<td>-0.8</td>
</tr>
<tr>
<td>Magadan Oblast</td>
<td>392</td>
<td>157</td>
<td>-60.1</td>
<td>0.8</td>
</tr>
<tr>
<td>Sakhalin Oblast</td>
<td>710</td>
<td>497</td>
<td>-30.1</td>
<td>-4.3</td>
</tr>
</tbody>
</table>

Sources and notes: Rosstat.

In the Russian Arctic, the 1990s was a unique period of rapid social and economic restructuring. This caused massive population losses across much of the north which is reflected in trends between the last Soviet population census conducted in 1989 and the first Russian census which took place in 2002, when the population declined by 14.4 percent. Population declines continued into the 2000s but at much lower rates, as between the 2002 and 2010 censuses the population only declined by 5.0 percent. Population decline was less in the 2000s than in the 1990s in every northern region and a number of northern regions actually had population increases.

Urban-Rural Population Change in the Russian North

The Soviet Union was a land of large cities and the Russian north even more so than the rest of the country. Forty percent of the population of the north resides in the sixteen northern cities with a population of 100,000 or more. The urban population consists of those living in cities, towns, and urban-type settlements. These are settlements with 12,000 or more inhabitants or whom not less than 85 percent are workers, employees, and family members, though this criterion differs among regions. Hill and Gaddy observed that Russia’s population is
concentrated in cities with few physical connections between them. This applies even more so to distant northern cities. The Soviet Union underwent one of the most rapid urbanizations in world history as a result of the industrialization of the 1920s and 1930s. This urbanization took place even faster in the east and north than in the rest of the country.

![Figure 2: Percent Urban in the Russian Arctic, 1989 and 2010](source: Rosstat)

Because the economic structure of the north is based primarily on resource extraction and the small size of the agricultural sector due to climatic conditions, the north was more urbanized than the rest of Russia with 79 percent of the northern population classified as urban in 1989 against 74 percent for the entire county (Figure 2). There were differences among northern regions in the share of their populations classified as urban based primarily on the extent of development of the resource-extraction sector. In some of the smaller northern homelands of Siberian natives which lacked industrial raw materials, large urban settlements were never constructed and their populations remained primarily rural. At the other extreme, in northern regions such as Murmansk, the home of the North Sea Fleet and a number of resource extraction settlements, and the Khanty-Mansi Autonomous Okrug, the center of the Russian oil sector, over ninety percent of their populations were classified as urban.

For Russia, the urban population declined by 3.1 million (3 percent) between 1989 and 2010, primarily because the large excess of deaths over births was concentrated in urban areas. In the north, urban areas declined by 1.3 million (17 percent) and rural areas slightly more so by 0.4 million (21 percent). The urban population decline in the north can be attributed to the same trend of more deaths than births but also to the fact that out-migration took place primarily from urban areas. The absolute size of the urban population declined in all but three of the sixteen northern regions, the oil and gas regions of west Siberia where there has been considerable investment and economic growth and the Republic of Tuva. Both urban and rural out-migration prevailed and the rate of urbanization declined in all but a few northern regions.
Population Change in the Largest Northern Settlements

This section examines population change in the largest settlements in the Russian North but before doing so places these cities in the Russian urban hierarchy by size and function. There are three broad groups of northern cities. A first group are those that are older, have long been part of the Russian/Soviet economy, are located closer to the more densely populated areas of Russia and are in the established urban hierarchy of the country (those in black in the figure). A second group are those established and rapidly populated during the period of industrialization and urbanization from 1920 to 1960 (blue). A third group includes newer oil and gas towns in west Siberia founded and developed after 1970 (green).

![Figure 3: Population Growth in Largest Arctic Cities in Russia, 1897 to 2010 (thousands)](chart)

In his classic study, Chauncy Harris classifies the 304 cities with populations over 50,000 in 1967 into 8 different groups based upon their economic structure. Of northern cities, Murmansk, Arkhangelsk, Petrozavodsk, Syktyvkar, Petropavlovsk-Kamchatskii, Iakutsk, Yuzhno-Sakhalinsk and Magadan were classified as diversified administrative centers. Severodinsk was classified as an industrial city based on manufacturing. Vorkuta was classified as an industrial city combining mining and manufacturing. The remaining northern cities were unclassified because they were less than 50,000 inhabitants in 1967. Those older northern settlements in European Russia were closer and better connected to population centers in central Russia, while those in Siberia and the Far East were distant from other population centers and thus did not benefit from positive agglomeration effects of being close and suffered from the costs of being distant.

Analysis of changes in the largest northern cities (defined here as those with a population of 100,000 or more in 1989) is important for two reasons. One, together they contain 40 percent of the population of the North and two, many are unique creations of Soviet northern development
practices. The largest of the northern cities were the only 6 cities that lie north of the main inhabited portion of the country which are most suitable for agriculture in the Soviet Union. This belt stretched from St. Petersburg, southward through Moscow, across Central Russia, and southern Siberia. Of 201 cities of over 100,000 in 1967, only six cities - Petrozavodsk, Murmansk, Arkhangelsk, Severodinsk, Syktyvkar, Norilsk, and Petropavlovsk-Kamchatskii - were in the North. As Harris states, most cannot be considered regional centers that serve as central places with tributary areas, as most are localized special-function cities.

Many northern settlements, both large and small are new cities, specifically created to exploit resources of the north, something that was more a peculiarly Soviet phenomenon. Many were not cities in the classic sense, than physical collection points, repositories, and supply centers, with very few responsibilities assigned to the municipal governments.

**The boom and bust by city**

People tend to migrate towards areas of economic growth and away from areas where the economy is declining, thus population change in Arctic cities is a good indicator of their vitality. As noted above, the principal trend was towards a downsizing of the northern economy although this was hardly uniform. This section highlights population change in some of the principal cities across the Russian Arctic.

The largest Arctic city used to be Murmansk, though it is now smaller than Arkhangelsk. It does remain the largest city north of the Arctic Circle. Murmansk Oblast is one of the most urbanized regions in Russia, with the population concentrated into Murmansk city and many smaller, resource-extraction settlements. Until WW I, the Kola Peninsula remained on the periphery of the Russian economy and was partly developed out of military necessity, when the need for a large warm water port was realized. The city of Murmansk was founded in November 1916, just a few months after the completion of the railway from St. Petersburg. It became an important port, with a population of 27,000 in 1928. Murmansk also became the northern base of the Northern Sea Route and the population grew rather spectacularly from 8,800 in 1926, to 117,000 in 1939, and then to 222,000 in 1959. In addition to being a transport center, the region also has enormous mineral resources. Deposits of apatite-nepheline, copper-nickel, and iron ore were discovered in the Kola region. These include the twin cities of Apatity and Kirovsk, which includes among the richest apatite deposits in the world and which supplied most of Soviet demand. During the transition period, the city of Murmansk has had among the largest population declines of among large northern settlements, falling by 35 percent since 1989.

The city of Arkhangelsk has been a part of the Russian economy and urban hierarchy for much longer as it was founded in late 1500s and was an important trading place in the 17th century. It later became the ship building centre of Russia and was the oldest seaport in Russia. By 1920, more than 400,000 persons lived in the region and it was the most populated part of the North. The population has declined by 16 percent since 1989.

Petropavlovsk-Kamchatskii, the largest city and oblast center of Kamchatka really developed in the Soviet period, growing from just a small village to 35,000 in 1939 and to a peak of 230,000 in 1989. The economy is based on fish processing but also some ship repair. With its location on
the far eastern periphery, the population has had among the largest population declines in the Arctic, declining by 34 percent since 1989.

Norilsk, located in the northern portion of the Krasnoiarsk at 69 degrees north, is the classic example of Soviet-era northern city that was founded and populated specifically to exploit important industrial resources. While Dudinka, the port on the Yenisey, existed as long ago as 1616, Norilsk, to which it linked by rail, is new. It is one of the world’s largest producers of non-ferrous metals, and is a leading producer of nickel (22%), palladium (65%), the second largest producer of platinum (23%) and also copper and cobalt (Rautio 2003, 52). It was founded by decree during the 2nd Five-Year Plan and the decision to start mining was taken in 1935. The nickel smelter went into operation in 1942 when plant equipment was moved from Monchegorsk on the Kola Peninsula. The settlement grew from a population of almost nothing to 92,000 in just 25 years, though most of growth was after the war. The population of the Norilsk industrial region peaked at 267,000 in 1990 before declining by nearly 34 percent until now, largely as a result of restructuring.

Surgut, Nefteyugansk, Nizhnevartovsk in the Khanty-Mansi Okrug and Novyi Urengoi in the Yamal-Nenets Okrug are examples of northern cities founded later in the 1970s or 1980s to exploit the oil and natural gas resources of west Siberia and were among the few northern settlements that continued to grow in the post-Soviet period.

Vorkuta in the northern part of the Komi Republic has been a major supplier of high-quality coal to St. Petersburg region and other parts of northern European Russia. Like many others, it was founded on forced labor and by 1967 the city proper had a population of 65,000, and with the surrounding mines, had a population of 150,000. With closure of many of the mines and downsizing of production in others, the population fell by 39 percent between 1989 and 2010.

Yuzhno-Sakhalinsk on the island of Sakhalin has deposits coal, oil, and natural gas. Oil, concentrated on northern portion of island, has been in commercial production since the 1920s. Oil production in the region has made the region one of the largest sources of foreign direct investment in the country and as a result, the population of Yuzhno-Sakhalinsk has grown by over 16 percent since 1989.

Magadan was the center of operations of Dalstroy, based on gold mining, thanks to forced labour on a ruthless and enormous scale (Armstrong 1965, 132, 168). The Kolyma area, along with portions of Chukotka and Yakutia, are among the most important for production of gold and well as other rare metals including industrial diamonds. After its founding, Magadan grew from 27,000 in 1939 to 62,000 in 1959 and peaked at 152,000 in 1989 before losing more than one-third of its population in the post-Soviet era due to the mines in the region becoming depleted and the huge cost of living increases.

**Conclusion**

Overall, the population of the Russian Arctic continues to decline, albeit not as steeply as during the 1990s. Natural increase (the difference between births and deaths) is positive in the Arctic, unlike the country as a whole, because of the younger age structure in most Arctic regions. The
main driver of population change in the Arctic is migration which impacts both growing and declining regions in the Arctic. Most of the migration assistance programs that were developed during the 1990s have closed and most migration takes place without state assistance and knowledge. Evidence of this is that for most northern regions, there was a significant downward adjustment of the population estimates following the 2010 census because of unrecorded migration since the 2002 census. In spite of a reputation of immobility, the populations of the Arctic regions are actually quite mobile and are able to adjust to changing circumstances. It would not be a surprise to anybody that Chukotka has the highest rate of outmigration of all Russian regions. It would be a surprise to many that it also has the highest rate of in-migration as well, indicating considerable churning of the population. However, there is considerable path dependency to the settlement structure in the Russian Arctic and it cannot be expected to resemble other Arctic regions.

A recent World Bank report titled *Eurasian Cities: New Realities Along the Silk Road* calls for a rethinking of cities in the region and their role in the economies of these countries. While the report focuses on the southern regions in the FSU, many of the lessons apply to the Arctic cities and some even doubly so. The changing demographics and mobility of Eurasian cities is a factor in the future of Eurasian cities. Two decades after the start of economic reforms in Russia, a clear distinction has emerged between a small group of Arctic cities which are economically booming and those who economies have downsized considerably.

According to the report, “the central planners got some things right – easy access to public transportation, district heating networks, almost universal access to water systems, and socially integrated neighborhoods,” said Indermit Gill, World Bank Chief Economist for Europe and Central Asia. “But they failed to acknowledge the importance of markets and individual choice in shaping places for people to live in. To become sustainable, Eurasian cities need to find the right balance between markets and institutions.” To become catalysts of growth, Eurasian cities need better connectivity, better planning, to become more environmentally friendly, and to mobilize additional financing for these changes. These lessons should selectively be applied to Arctic cities.