A Contribution to the International Polar Year

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Circumpolar Health Indicators: Sources, Data, and Maps

T. Kue Young
Cartography by Winfried K. Dallmann

International Association of Circumpolar Health Publishers:
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Table of Content

Preface

The idea of compiling this special Circumpolar Health Supplement developed during the preparation for the book *Health Transitions in Arctic Populations* (Young and Bjerregaard 2008). In the course of reviewing and collecting a vast array of health data, it occurred to me that the task of the book's editors and contributors would have been greatly facilitated if there were a single source of statistical information on the health of circumpolar peoples and regions. This statistical compilation is thus a spin-off product of the book project, but one which subsequently has taken on a life of its own.

This sort of undertaking would not have been possible, at least within a reasonably short time frame, without the existence of the internet. It is a marvel of modern technology that in a single afternoon, one could dart back and forth from one "statbank" to another, opening pdfs here, downloading ftps there, unhindered by national borders, or library hours. I can honestly say that I derived considerable pleasure in carrying out this task. There was an element of the "chase", tracking down an elusive figure for a particular indicator in a particular year from a particular region. On more than one occasion, I punched the air in triumph when one last recalcitrant gap in a table was finally filled, when some impenetrable website in Finnish (or Icelandic, or Russian) yielded its secrets.

The beautiful colour maps are the creation of Winfried Dallmann, formerly of the Norwegian Polar Institute in Tromsø, and now at the Centre for International Climate and Environmental Research in Oslo. I was helped by many good friends and colleagues in the circumpolar health "community", in matters both linguistic and methodological. Special thanks go to Tiina Mäkinen in Finland, Peter Bjerregaard and Anders Koch in Denmark, Sven Hassler in Sweden, and Andrew Kozlov in Russia. Many staff members in various statistical agencies have been most helpful in providing guidance in locating publications, or actually extracting the data themselves: Helena Korpi of Statistics Finland; Mika Gissler of STAKES; Solveig Glomsrød, Robert Lalla, and Laila Holmen

Lystad of Statistics Norway; Keun Hwang of Statistics Greenland; Jon Gunnar Tuffa and Åsa L'Abée-Lund of the Norwegian Institute of Public Health; Milla Bennis of the National Board of Health and Welfare of Sweden; Robert Anderson, Joyce Martin, and Martha Munson of the U.S. National Center for Health Statistics; and Russell Wilkins, Christine Shea and Kim Boyuk of Statistics Canada. At the University of Toronto, graduate students Olga Oulanova translated key documents from Russian and Carmina Ng helped in the analysis of downloaded datasets.

Funding for this project was provided by a contribution agreement from Health Canada (Northern Region). This project is part of a series of research knowledge dissemination activities of the CIHR Team in Circumpolar Chronic Disease Prevention, a 5-year research development program in the North and for the North supported by the Canadian Institutes of Health Research (CTP-79853).

I sincerely hope that this monograph is able to fulfill its aim of providing useful information to health researchers and policy makers. I certainly see this as just the beginning of an ongoing activity that would not only be continued over time but also expanded in scope. It would be particularly suited as a collaborative project for my colleagues in the International Network for Circumpolar Health Research.

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Introduction

The objective of this Circumpolar Health Supplement is to compile and publish a set of statistical tables on all the circumpolar countries and their northern regions and subpopulations, in a standardized and consistent manner, summarizing their health status, health determinants and health care.

Substantial amounts of statistical data on circumpolar health are currently available in different reports, such as the Arctic Council Sustainable Development Working Group's *Analysis of Arctic Children and Youth Health Indicators* and the *Arctic Human Development Report*, and the recently published book *Health Transitions in Arctic Populations* (Young and Bjerregaard 2008). There are also many other health related statistics in the possession of national statistical agencies and health ministries, many of which are published on their websites and available to the public.

This compendium of statistical data is intended to provide a single convenient source of health statistics to be consulted and used by researchers and policy makers in all the circumpolar countries and regions. Companion spreadsheets are also made available on the website of the International Network for Circumpolar Health Research (www.inchr.org) to enable users to do their own analyses and graphical presentations.

Where possible, actual numbers for the numerator and denominator are presented to allow users to generate rates, and also group regions and single years together. Where such raw data are not available, published rates and proportions are reproduced.

Each section contains detailed methodological notes on the concepts, definitions, and data sources. This compendium is directed at the non-specialist, and it can easily serve also as a textbook/reference book for public health practice, health surveillance and monitoring, and community health assessment in the circumpolar regions.

There is deliberately a minimum of interpretation of the data – this is intended as a tool for others to use, who should "draw their own conclusions". However, key patterns, especially disparities among northern regions, and disparities between "the North" and the larger nation-states to which they belong, are illustrated by graphs and colour maps.

It is intended that this compendium will be revised and updated at regular intervals in the future, creating continuous data series for many health indicators from the beginning of the 21st century. While international statistical agencies do exist, such as NOMESCO, Eurostat, WHOSIS, etc, to date a uniquely "circumpolar" health statistical body does not yet exist. It is hoped that this

project will be the first step towards the creation of an international, circumpolar, collaborative health statistical information system. An initiative of the International Polar Year is the Sustainable Arctic Observing Networks (SAON). The systematic and standardized collection of health indicators from human populations is analogous to data collection by weather stations or oceanographic surveys, and it is hoped that this monograph provides a model for a circumpolar health observatory.

The choice of health indicators is limited to what is consistently available across the circumpolar North. Such information is generally accessible to anyone with a computer and internet connection, but the hard work lies in locating the resources and retrieving them. Some data gaps are closed by making special requests to the relevant statistical or health agency to acquire the data. By and large the health indicators are derived from population registries and censuses, vital statistics, and disease registries, where data are generally comparable across nations and regions. It is hoped that in future editions, the scope of the health indicators compiled will be expanded considerably, especially by the inclusion of more survey-based information, and additional health care and socioeconomic indicators.

Defining Northern Regions

As much of health statistics is collected by government agencies, it is usually aggregated by administrative divisions. For the purposes of this monograph, we have defined our boundaries based on such administrative divisions (Fig.1), including:

[**US**] *United States*	[**DK**] *Denmark*	[**RU**] *Russian Federation*
[Ak] Alaska	[Gl] Greenland	[Mu] Murmansk Oblast
[**CA**] *Canada*	[Fo] Faroe Islands	[Ka] Kareliya Republic
[Yk] Yukon	[**IS**] *Iceland*	[Ar] Arkhangelsk Oblast
[Nt] Northwest Territories	[**NO**] *Norway*	- [Ne] Nenets AO
[Nu] Nunavut	[Nd] Nordland	[Ko] Komi Republic
	[Tr] Troms	[Yn] Yamalo-Nenets AO
	[Fm] Finnmark	[Km] Khanty-Mansi AO
	[**SE**] *Sweden*	[Tm] Taymyr AO
	[Vb] Västerbotten	[Ev] Evenki AO
	[Nb] Norrbotten	[Sk] Sakha Republic
	[FI] *Finland*	[Ma] Magadan Oblast
	[Ou] Oulu	[Ky] Koryak AO
	[La] Lappi	[Ck] Chukotka AO

Note: AO = autonomous okrug;
the 2-letter country and region codes are used in the maps and some graphs

The whole of Alaska and Greenland are included. Northern Canada includes only the three northern territories, all located above 60° N latitude. While the Nunavik region in northern Québec province and the Nunatsiavut region in Labrador are often regarded as part of the Canadian Arctic, health data from these regions are generally difficult to extract from the provinces to which they belong.

The northernmost counties in Norway, Sweden, and Finland constitute the northern regions of those countries. ["County" here refers to *fylke* in Norway, *län* in Sweden, and *lääni* in Finland]. These regions, plus those of Murmansk Oblast, Kareliya Republic, Arkhangelsk Oblast, Nenets AO, and Komi Republic in European Russia, are also members of the Barents Euro-Arctic Council.

Under the Nomenclature of Territorial Units for Statistics (NUTS) used by Eurostat, the NUTS 2 level regions of Ovre Norrland and Norge-Nord are identical to the northern regions defined above for Sweden and Norway respectively, consisting of the same counties. The situation for Finland is not so straightforward. The NUTS 2 region of Pohjois-Suomi [Northern Finland] consists of the *maakunta* of Pohjois-Pohjanmaa, Lappi, and Keski-Pohjanmaa, within the *lääni* of Oulu, Lappi, and Länsi-Suomi, respectively. The maakunta of Kainuu, part of Oulun lääni, on the other hand, is grouped with other regions into the NUTS 2 region of Itä-Suomi [East Finland]. Some of the ready-made data from Eurostat for Northern Finland, therefore, cannot be used here.

The situation in Russia is quite complex. The Russian Federation is composed of different types of administrative divisions called federal "subjects" (*subyetkty*), including republic, *kray*, *oblast*, autonomous *okrug*, and federal city, with varying degrees of autonomy, but all sending representatives to the Federal Council (*Sovet Federatsii)*, the upper house of the Russian parliament. In this monograph *kray*, *oblast* and *okrug* are used as Anglicized terms (with "s" added to form the plural) rather than their translations as "territory", "region" and "area", which are not consistently used in the literature. [The shorter geographical names are used without the adjectival endings in the more formal Russian versions – for example, Murmansk Oblast instead of Murmanskaya Oblast; and Koryak AO instead of Koryakskiy AO].

Autonomous okrugs (hereafter AO), with the exception of Chukotka, are generally part of some higher level units such as oblasts or krays, and usually represent the traditional territories of some indigenous ethnic groups. Demographic and health data are usually available for these AO separately. Both the Nenets AO and Arkhangelsk Oblast, to which the Nenets AO is subordinate, are included on our list. The Yamalo-Nenets, Khanty-Mansi, Taymyr, Evenki, and Koryak AO are included, but not their "parent" Tyumen Oblast, Krasnoyarsk Kray, and Kamchatka Oblast, which extend far into the southern parts of Siberia. All 13 Russian regions selected here are among those designated as "Far North districts and equivalents" under Decision #1029 of the USSR Council of Ministers adopted in 1967. Part or all of their territory lies above the Arctic Circle. For further information on definitional issues of the Russian North, see Kozlov et al (2007). Note that as of January 1, 2007, the Taymyr, Evenki and Koryak AO ceased to exist as distinct federal subjects.

Data Sources

The following is a list of organizations and agencies from which statistical data have been obtained, together with their website addresses.

International

- Association of Nordic Cancer Registries (NORDCAN) www.ancr.nu/nordcan.asp
- Nordic Medico-Statistical Committee (NOMESCO) www.nom-nos.dk
- Nordic Council of Ministers www.norden.org
- Organization of Economic Cooperation and Development (OECD) www.oecd.org
  SourceOECD online library of statistical databases http://oberon.sourceoecd.org
- Statistical Agency of the European Communities (EUROSTAT) http://epp.eurostat.cec.eu.int
- World Health Organization (WHO) www.who.int
  WHO Statistical Information System (WHOSIS) www.who.int/whosis
  WHO Mortality Database www.who.int/healthinfo/morttables/en/index.html

Canada

- Canadian Institute of Health Information (CIHI) www.cihi.ca
- Public Health Agency of Canada (PHAC) www.phac-aspc.gc.ca
- Statistics Canada www.statcan.ca

Denmark

- Danmarks Statistik [Statistics Denmark] www.dst.dk
  StatBank interactive website www.statbank.dk
- Sundhedsstyrelsen [National Board of Health] www.sst.dk
  Statistical database http://sundhedsdata.sst.dk
- Statens Institut for Folkesundhed [National Institute of Public Health]
  www.si-folkesundhed.dk
- Statens Serum Institut www.ssi.dk

Faroe Islands

- Hagstova Føroya [Statistics Faroe Islands] www.hagstova.fo
- Landslæknin í Føroyum [Chief Medical Officer] www.landslaeknin.fo

Finland

- Kansanterveyslaitos (KTL) [National Public Health Institute] www.ktl.fi
- Sosiaali- ja terveysalan tutkimus- ja kehittämiskeskus (STAKES) www.stakes.fi
  [National Research and Development Centre for Welfare and Health]
  SOTKANet indicator bank website www.sotkanet.fi
- Suomen Syöpärekisteri [Finnish Cancer Registry] www.cancerregistry.fi
- Tilastokeskus [Statistics Finland] www.stat.fi
  Statistical database http://statfin.stat.fi

Greenland

- Embedslægeinstitutionen i Grønland / Peqqinnissakkut Nakkutilliisoqarfik/ [Chief Medical Officer] www.nanoq.gl/eli
- Grønlands Statistik / Kalaallit Nunaanni Naatsorsueqqissaartarfik [Statistics Greenland] www.statgreen.gl
- Center for Sundhedsforkning i Grønland, Statens Institut for Folkesundhed [Centre for Health Research in Greenland, National Institute of Public Health] www.folkesundhed.gl

Iceland

- Hagstofa Íslands [Statistics Iceland] www.statice.is
- Landlæknisembættið [Directorate of Health] www.landlaeknir.is
- Lýðheilsustöð [Public Health Institute] www.lydheilsustod.is

Norway

- Nasjonalt folkehelseinstituttet [Norwegian Institute of Public Health] www.fhi.no
  Norgeshelsa [Norhealth] interactive website http://norgeshelsa.no
- Kreftregisteret [Cancer Registry of Norway] www.kreftregisteret.no
- Statistisk sentralbyrå [Statistics Norway] www.ssb.no
  Statbank interactive website http://statbank.ssb.no

Russia

- Federal'naia sluzba gosydarstvennoi statistiki [Federal State Statistics Service], formerly Goskomstat Rossii www.gks.ru

Sweden

- Smittskyddsinstitutet [Swedish Institute for Infectious Disease Control] www.smittskyddsinstitutet.se
- Socialstyrelsen [National Board of Health and Welfare] www.socialstyrelsen.se
- Statistika centralbyrån [Statistics Sweden] www.scb.se
  Statistikdatabasen www.ssd.scb.se

United States

- Alaska Native Tribal Health Consortium www.anthc.org
- Alaska State Department of Health and Social Services www.hss.state.ak.us
  Alaska Center for Health Data and Statistics www.hss.state.ak.us/dph/infocenter
- Center for Disease Control and Prevention (CDC) www.cdc.gov
  CDC Wonder interactive website http://wonder.cdc.gov
- National Center for Health Statistics (NCHS) www.cdc.gov/nchs
  VitalStats interactive website www.cdc.gov/nchs/datawh/vitalstats.htm
- U.S. Census Bureau www.census.gov
  American FactFinder interactive website http://factfinder.census.gov

Fig. 1. Map of northern regions.
Note: See list of country and regional codes on page 11.

PART A

POPULATION

Concepts and Definitions

In assessing the health of a population, accurate enumeration of the population is needed to provide the denominator for the rates and proportions which constitute many health indicators. The characteristics of a population, however, are also of interest in their own right, and some (eg. socioeconomic status, ethnicity, etc) are themselves potential determinants of health.

Most health indicators are aggregated on an annual basis, with the number of events occurring in a year (numerator) divided by the **mean population (Table A-1)** of that period (year). Depending on how population is reported by the particular statistical agency:

Mean population for year X
= population on July 1 for year X; or
= [population on Jan 1 for year X + population on Jan 1 for year (X+1)] / 2; or
= [population on Dec 31 for year X + population on Dec 31 for year (X-1)] / 2

As most health events tend to vary according to age and sex, the **age-sex distribution (Table A-2, Fig.2)** of a population is needed to allow the computation of age-specific and age-standardized rates and proportions. While population data were aggregated in 5-year age-groups (0-4, 5-9, etc), due to the large size of the table, a smaller number of age groups (0-4, 5-14, 15-24, 25-44, 45-64, and 65+) were shown in Table A-2.

The circumpolar region is known for its vast expanses and small populations, reflected in a generally low **population density (Table A-3)**, calculated as:

Population density = (mean annual population) / (land area in sq.km)

This is expressed as persons per sq.km. The concept of "land" area excludes inland waters and coastal territorial waters. However, in the Arctic, there are also large, uninhabitable ice-covered areas. Strictly speaking these areas should also be excluded, but to determine their exact extent would require sophisticated satellite imaging techniques. In the case of Greenland, if only ice-free land area is used in the calculation of population density (about 410,450 sq.km), the population density would increase from 0.03 to 0.14 per sq.km.

Despite the low overall population density, where people do live in the Arctic, they tend to congregate in urban areas. Defining the **urban population (Table A-4)** is particularly problematic because of the different definitions used in different countries. In general, the concept of "urban population" is based on the absolute number of inhabitants, the population density, the existence of a "built-up" area, and the distance between buildings. In the Nordic countries, there is a generally uniform definition of urban settlements or localities [Finnish *taajamat*, Norwegian *tettsteder*, Swedish *tätorter*]. In Iceland they are referred to as urban "nuclei" [*byggðakjarni*]. In Table A-4, the urban population for these countries was derived from the sum of the population in such entities.

Typically, an urban settlement consists of a hub of buildings inhabited by at least 200 persons, and the distance between buildings shall normally not exceed 50 metres [some use 200 metres as the limit], except for natural barriers, public areas and facilities, parks, etc. Statistical agencies make use of population data, census information, registries of addresses and buildings, and digital maps to delimit such areas, which are independent of administrative/political boundaries.

The statistical agencies of Greenland and Faroe Islands do not produce data on urban population based on the above definition. In Greenland, all communities are classified as either towns (*byer*) or settlements (*bygder*). In Table A-4, the urban population shown was the sum of all people living in towns. For the Faroe Islands, the urban population was taken as the total population of the 7 largest towns (*býir*) with population exceeding 1,000.

For Russia, census publications consistently divide the population into urban and rural. The urban population (*gorodskoe naselenie*) comprises all persons residing in urban settlements, which are defined as legally established populated areas such as cities, towns and urban-type settlements (industrial communities, recreation zones, summer cottages-dachas).

In the United States, two types of urban areas are defined by the Census Bureau: urban clusters (UC) and urbanized areas (UA). UC is a densely settled territory with at least 2,500 persons but fewer than 50,000. UA is an area consisting of a central place and adjacent territory with a general population density of at least 1,000 people per square mile [equivalent to about 385 persons per sq.km.] that together has a minimum residential population of at least 50,000 people. The "urban" classification cuts across other hierarchies and can be in metropolitan or non-metropolitan areas.

In Canada, urban areas are those continuously built-up areas with a population of 1,000 or more and a population density of 400 or more per sq.km.

In addition to the total urban population in each region, Table A-4 also lists the largest town/city/municipality within each region, to indicate the size of its administrative, political and economic centre, which generally includes both an urban core and surrounding rural areas. In the Nordic countries, the equivalent of the municipality is *kommune* in Danish and Norwegian; *kommun* in Swedish; *kommunur* in Faroese; *kunta* in Finnish and *sveitarfélag* in Icelandic. In Russia, the officially designated city (*gorod*) and adjacent settlements under its administration is listed. For some of the sparsely populated autonomous okrugs, their largest towns (ie. Palana and Tura), which have the status of "urban-type settlement" (*posyelok gorodskogo teepa*), are listed.

A major focus of health research is **Indigenous peoples (Table A-5)**, which constitute a significant proportion of the population of some circumpolar regions. For a fuller discussion of the international contexts and various definitions of indigenous peoples, see Young and Bjerregaard (2008), and Bartlett et al (2007). Among the various countries, only the United States consistently provides health data on their indigenous population (American Indians and Alaska Natives, or AIAN). All tables in this monograph thus have a separate row for "Alaska Natives". Similarly there is one separate row for individuals "born in Greenland". Traditionally, researchers have used "born in Greenland" as a marker for indigenous Greenlanders, i.e. Inuit. This practice is far from ideal, and can be expected to be less and less accurate as travel and migration between Greenland and Denmark increases. For the northern territories of Canada, ethnic-specific data are not consistently available and thus there are no separate rows for the Aboriginal (First Nations and Inuit) population.

In the US 2000 Census, 100% of respondents were asked (in the so-called "short form") to report one or more "races" they considered themselves to be – "White", "Black", "American Indian or Alaska Native", "Asian", and "Native Hawaiian or other Pacific Islander". The term "ethnicity" was used only to refer to Hispanic and non-Hispanic.

Respondents who identified themselves as AIAN were asked to write in their enrolled or principal tribe. This was entirely self-identified, and not based on any legal entitlement or official recognition. Overall, some 25% of AIAN did not specify a tribe. The written responses were then grouped according to the *American Indian and Alaska Native Tribal Detailed Classification List* (US Census Bureau 2003: Appendix H).

Note that the term "tribe" as tabulated by the Census is not anthropologically coherent or accurate. In the case of Alaska, it includes also Alaska Native Regional Corporations and Alaska Native Villages. Various groups labelled as "Aleut", such as the Chugach, Alutiiq and Koniaq, are in fact Eskimo. Table A-5 reports the classification as used in the Census. For further information on AIAN in the 2000 Census, see US Census Bureau (2003) and Ogunwole (2002).

The Constitution of Canada recognizes three groups of Aboriginal peoples: North American Indians (or First Nations), Inuit and Métis. In the Canadian Census, two separate questions in the "long form" given to 20% of respondents inquire about ethnic origins and Aboriginal identity. In response to the origins question, an Aboriginal person may choose a single origin in one of the three groups, multiple Aboriginal origins, or both Aboriginal and non-Aboriginal origins. Not all persons considered Aboriginal in the "origins" question choose to "identify" themselves as Aboriginal, and the size of the Aboriginal population based on the identity question is thus smaller than the population based on the origins question. Note that the number of persons reported was extrapolated from the 20% sample to the entire census population. For further information on how Statistics Canada identifies Aboriginal people, see Statistics Canada (2007).

Sami is the only indigenous group in Norway, Sweden and Finland. There is no direct means to estimate the number of Sami in any of these countries. Different criteria based on language, ancestry, occupation, and self-identity can be used. One set of figures - 40,000 in Norway, 20,000 in Sweden and 7,500 in Finland – is widely quoted, for example in the Sami handbook (Solbakk 2006) and various Sami institutional websites. Hassler et al (2005) developed a population database for Swedish Sami using a more inclusive definition. Another source of estimate is the electoral rolls for the Sami parliaments (*Samediggi*) in the three countries, which include only those aged 18 and above. Clearly, not all Sami are interested in participating in such elections.

In Russia, the 1996 Federal law *On the Bases of State Regulation of Social and Economic Development of the North of the Russian Federation*, defines the indigenous, numerically small, peoples (*korennye malochislennye narody*) of the North, Siberia, and the Far East as those "living on the territories of traditional residence of their ancestors, adhering to their original way of life, and believing themselves to be independent ethnic entities; their total

number in Russia is less than 50 thousand people". This concept was inherited from the Soviet era. Between 1926 and 1993 this group included 26 peoples of various origins, languages and cultures who occupied an enormous territory, from the Kola Peninsula to Chukotka. Since 1993 the list has expanded considerably. By 2000, 40 groups had been recognized and they were included in the 2002 Census. Note that other "large" (ie. with population > 50,000) non-Slavic minorities such as Komi, Buryats and Yakuts are not considered as "indigenous" in this definition. For further details on Russian indigenous peoples, see Kozlov and Lisitsyn (2008).

Data Sources and Limitations

There are two sources of information on population – the census and population registry. Both are in use in the circumpolar countries.

The Nordic countries have well established population registries, which are continuously updated, and thus capable of generating the precise population of the country and its regions at a point in time, such as the beginning of the year (January 1, as in the case of Denmark, Greenland, Faroe Islands, and Norway), or at year end (Dec 31, as in the case of Finland, Iceland and Sweden). Denmark and Iceland also publish their population on July 1. Population counts by age, sex and residence from these countries are available from the interactive websites of their national statistical agencies (see URL addresses in Introduction). Censuses are also conducted in these countries, primarily to obtain information about living conditions and other characteristics of the population not available from the population registry.

Canada, United States and Russia rely on periodic censuses. Canadian censuses are conducted every 5 years in the years ending in "1" and "6". In the United States, a census is conducted once every 10 years in the year ending in "0". Russian censuses are irregular – the last Soviet census was completed in 1989, and the first post-Soviet census in 2002. As the period 2000-2004 is the focus of this monograph, information from the US census of 2000, the Canadian census of 2001, and the Russian census of 2002 are used.

In the "intercensal" years, these jurisdictions produce annual (indeed even quarterly) estimates of the population, taking into account data on births, deaths, and migrations, so-called "components of population change". In this monograph, when calculating rates and proportions, it is these annual estimates that were used. In Table A-1, for the census years of 2000, 2001 and 2002 in the US, Canada and Russia respectively, it is the annual estimates rather than the census counts that were presented. Note that the US Census Bureau also conducts the American Community Surveys on representative samples of the population, from which the size of the population and its characteristics can be estimated.

Annual (January 1) estimates of the Russian population were available from the website of the Federal State Statistics Service of Russia. Note that age-sex distribution was available only for the national population. For the northern regions, the population counts in various age-sex groups in each region were obtained by applying the age-sex distribution from the 2002 census to the annual mean total population.

For Canada, the July 2000 population reported here is the "final intercensal estimate", the 2001-2003 population the "final postcensal estimates", and the 2004 population the "updated postcensal estimate", as published in Statistics Canada's *Demographic Estimates Compendium 2006*. At some later date, the 2004 "updated" status will be revised to "final".

The US National Center for Health Statistics (NCHS), in collaboration with the Census Bureau, annually produces estimates for the current year and revises previous years' population based on new information such as late registration of births and deaths. The 2005 "vintage" series [File pcen_v2005.zip] was used here, which covered the period 2000-2005 [www.cdc.gov/nchs/about/major/dvs/popbridge/popbridge.htm]. The population of 2001, for example, in the 2005 vintage series differs slightly from that of 2004, 2003, etc. However, the effect on the calculated rates is minimal.

In 1997 the Office of Management and Budget (OMB) revised its standards for race classification for use in federal statistics systems in place since 1977. The number of "races" was increased from 4 to 5, and multiple race options were permitted. This change was implemented in the 2000 Census, with its multiple race categories (singly or in combination, totalling 31 categories), making comparison of race-specific data collected under the earlier 4 single-races system difficult. The NCHS developed a "regression bridging method" to generate "bridging proportions" which was then applied to the census and postcensal population estimates to generate "bridged-race" estimates in the 4 single-race categories. [See *Documentation for Bridged-Race Postcensal Vintage 2005 Population Estimates for July 1, 2000 – July 1, 2005*, released August 2006 www.cdc.gov/nchs/about/major/dvs/popbridge/popbridge.htm]. In this monograph, Alaska Native rates were computed using such bridged-race estimates.

Population density

Population density in Table A-3 was calculated from the land area data in this table and the mean annual population data in Table A-1. Land area was rounded to the nearest 10 sq km, and for Russia, 100 sq km. The sources of data on land area include:

- United States area data were from US Census Bureau: 2000 Census, Geographic Identifiers file G001, available from the American FactFinder interactive website;
- Canada area data were from Statistics Canada 2001 Census on-line highlight tables (Cat. No. 93F0051XIE);
- Denmark, Norway, and Sweden area data were from the Eurostat interactive website;
- Greenland, Faroe Islands and Iceland area data were from the interactive websites of their respective national statistical agencies;
- Finland area data were from *Statistical Yearbook of Finland 2004*, Table 2;
- Russia area data were from *Regions of Russia: Social and Economic Indicators 2005* Table 1.2.

Urban population

For the urban population in Table A-4, only one year was chosen, either the census year or a year close to the mid point of the 2000-2004 period, depending on the source:

- United States data were from the 2000 Census, available from the American FactFinder;
- Canada data were from the 2001 Census, available from CANSIM Table 109-0200;
- Denmark data were for January 1, 2002, from *Statistical Yearbook 2002* Table 40;
- Greenland data were for January 1, 2002, from *Greenland in Figures 2002*;
- Faroe Islands data were for January 1, 2002, from Statistics Faroe Islands' website;
- Iceland data were for Dec 31, 2002, from Statistics Iceland's website;
- Norway data were for Jan 1, 2002, from *Statistical Yearbook of Norway 2003* Table 50; population of municipalities was from Table 52
- Sweden data were for Dec 31, 2000, from *Statistical Yearbook of Sweden 2004* Table 56; population of municipalities were for Dec 31, 2002, from Table 64;
- Finland data were for Dec 31, 2003, from *Statistical Yearbook of Finland 2004* Table 51; numbers were calculated from the published percentages; Oulun lääni data were obtained by combining data from Kainuu and Pohjois-Pohjanmaa; population of the largest cities were from Table 37.
- Russia data were from the 2002 Census report, vol 1, Table 4.

Indigenous peoples

For Table A-5, the total (all-races) population was reproduced from Table A-4. The sources of data on the indigenous population include:

- United States data were from the 2000 Census, American FactFinder wesbite;
- Canada data were from the 2001 Census of Canada. Tables No. 97F0011XCB2001004 and 97F0011XCB2001002;
- Greenland data were based on population registry data on 1-Jan-2002, from Statistics Greenland;
- Russian data were from the 2002 Census report, volume 13;
- The Sami Parliament of Finland published counts of the Finnish Sami population of all ages in addition to the number of adults on the electoral roll for the 2003 election, in: www.samediggi.fi/vanha/suomi/toimieli/vaali/lukumaara_vuoden_2003_vaaleissa.pdf. The electoral roll for the 2005 Norwegian Sami parliament election was reported in www.ssb.no/english/subjects/00/01/10/sametingsvalg_en/tab-2005-12-19-03-en.html; and the 2005 Swedish Sami parliament election in www.sametinget.se/1059. Language data in Finland were from the 2000 Census (Statistics Finland website).

Tables

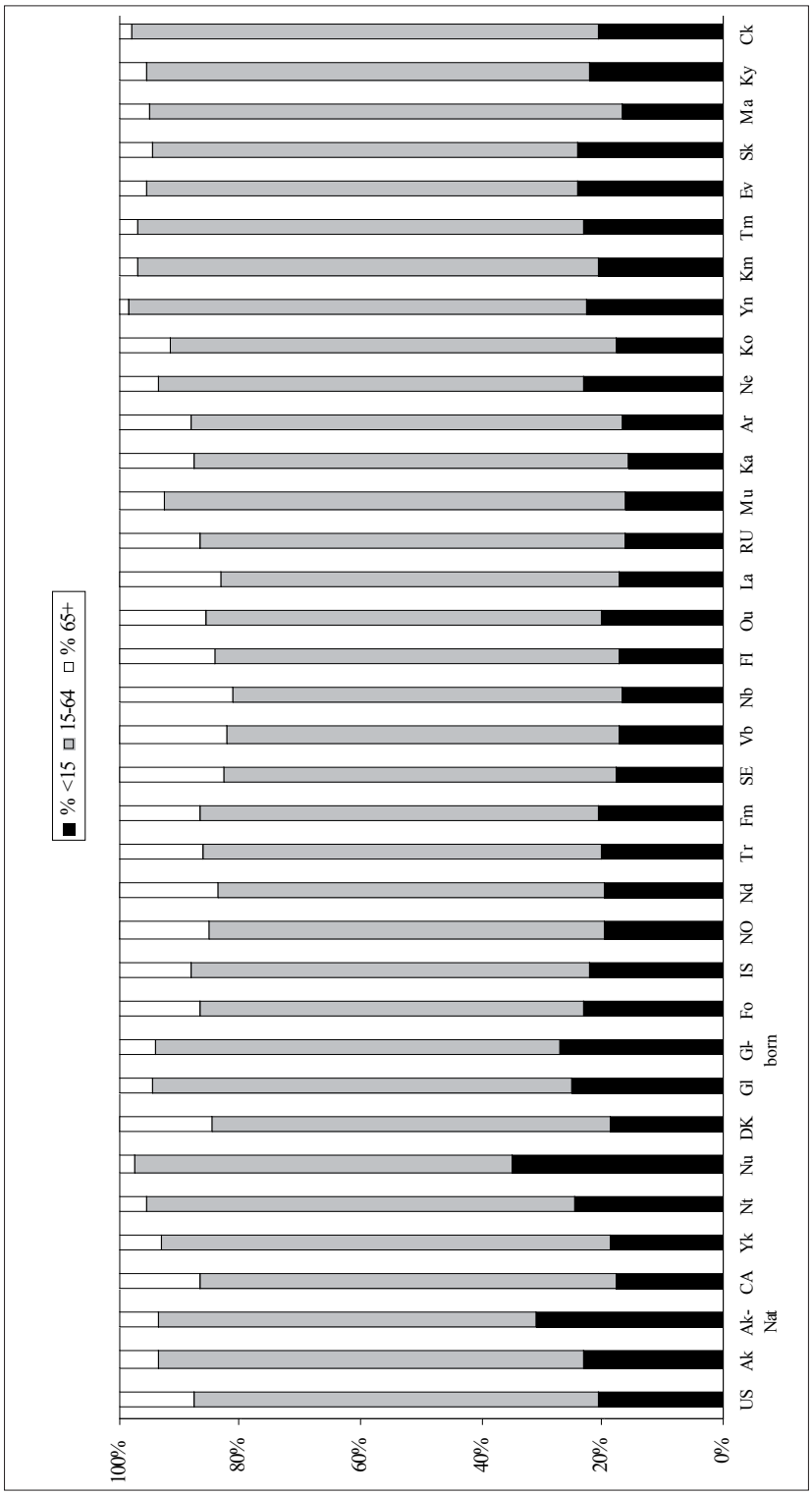

Fig.2. Age distribution of population: circumpolar countries and northern regions.
Note: See list of country and regional codes on page 11.

Table A-1. Annual Mean Population.

Country/Region	2000	2001	2002	2003	2004
United States	282,193,477	285,107,923	287,984,799	290,850,005	293,656,842
Alaska	627,500	632,249	640,699	648,510	657,755
- Alaska Natives	107,901	108,716	109,975	110,899	112,446
Canada	30,689,035	31,021,251	31,372,587	31,676,077	31,989,454
Yukon	30,421	30,129	30,137	30,574	30,896
Northwest Territories	40,499	40,822	41,489	42,231	42,798
Nunavut	27,500	28,121	28,739	29,165	29,633
Northern Canada	*98,420*	*99,072*	*100,365*	*101,970*	*103,327*
Denmark	5,337,344	5,355,082	5,374,255	5,387,174	5,401,177
Greenland	56,201	56,394	56,609	56,765	56,912
- Born in Greenland	49,504	49,710	49,869	50,019	50,190
Faroe Islands	45,749	46,553	47,315	47,923	48,258
Iceland	281,154	285,054	287,559	289,272	292,587
Norway	4,490,967	4,513,751	4,538,159	4,564,855	4,591,910
Nordland	238,702	237,899	237,227	237,004	236,941
Troms	151,469	151,725	151,960	152,438	152,685
Finnmark	74,073	73,910	73,623	73,362	73,142
Northern Norway	*464,244*	*463,534*	*462,810*	*462,804*	*462,768*
Sweden	8,872,110	8,895,963	8,924,960	8,958,231	8,993,534
Västerbotten	256,177	255,231	255,025	255,594	256,417
Norrbotten	257,168	255,488	254,185	253,255	252,731
Northern Sweden	*513,345*	*510,719*	*509,210*	*508,849*	*509,148*
Finland	5,176,209	5,188,008	5,200,598	5,213,014	5,228,172
Oulu	454,302	455,819	456,924	457,925	459,699
Lappi	193,060	190,528	188,533	187,347	186,680
Northern Finland	*647,362*	*646,347*	*645,457*	*645,272*	*646,379*
Russian Federation	146,596,870	145,976,473	145,306,492	144,565,928	143,821,212
Murmansk Oblast	931,969	914,305	897,772	884,906	876,393
Kareliya Republic	732,138	725,176	718,376	711,955	705,888
Arkhangelsk Oblast	1,379,726	1,359,783	1,341,552	1,325,289	1,311,233
- Nenets AO	41,053	40,914	41,298	41,766	41,893
Komi Republic	1,050,377	1,036,262	1,022,842	1,010,873	1,001,073
Yamalo-Nenets AO	497,282	500,696	505,861	511,849	519,232
Khanty-Mansi AO	1,371,548	1,397,658	1,424,798	1,447,119	1,462,760
Taymyr AO	38,257	38,705	39,419	39,557	39,407
Evenki AO	18,241	17,882	17,699	17,574	17,461
Sakha Republic	959,993	954,478	950,057	948,802	949,818
Magadan Oblast	197,960	190,582	184,525	180,086	176,512
Koryak AO	26,238	25,758	25,325	24,656	24,094
Chukotka AO	59,574	56,422	54,223	52,274	51,059
Northern Russia	*7,263,303*	*7,217,707*	*7,182,449*	*7,154,940*	*7,134,930*
Total Northern Regions	9,997,278	9,957,629	9,932,473	9,916,305	9,912,064

Table A-2. Age-Sex Distribution.

Country/Region		2000						
		0-4	5-14	15-24	25-44	45-64	65+	Total
United States	M	9,815,615	21,051,271	20,196,852	42,578,174	30,372,547	14,455,265	138,469,724
	F	9,371,769	20,045,149	19,191,202	42,452,781	32,040,366	20,622,486	143,723,753
Alaska	M	24,355	56,360	48,114	103,840	74,923	16,911	324,503
	F	23,142	53,619	42,903	97,968	66,176	19,189	302,997
- Alaska Natives	M	5,394	12,723	9,509	15,127	8,735	2,758	54,246
	F	4,832	12,193	8,975	15,388	8,864	3,403	53,655
Canada	M	916,729	2,096,861	2,136,762	4,841,853	3,554,669	1,649,835	15,196,709
	F	874,449	1,995,526	2,028,814	4,776,628	3,613,777	2,203,132	15,492,326
Yukon	M	964	2,367	2,203	5,089	4,028	876	15,527
	F	948	2,215	2,040	5,415	3,469	807	14,894
Northwest Territories	M	1,753	3,791	3,271	7,328	3,950	866	20,959
	F	1,694	3,683	2,954	7,103	3,308	798	19,540
Nunavut	M	1,813	3,463	2,448	4,418	1,875	365	14,382
	F	1,690	3,216	2,375	3,967	1,630	240	13,118
Northern Canada	M	4,530	9,621	7,922	16,835	9,853	2,107	50,868
	F	4,332	9,114	7,369	16,485	8,407	1,845	47,552
Denmark	M	173,883	332,762	310,470	801,608	688,754	330,401	2,637,878
	F	164,851	315,938	300,690	773,212	683,645	461,130	2,699,466
Greenland	M	2,442	5,228	3,810	10,789	6,444	1,302	30,015
	F	2,367	5,117	3,559	9,018	4,587	1,538	26,186
- Born in Greenland	M	2,343	4,963	3,529	8,791	4,550	1,171	25,347
	F	2,270	4,874	3,335	8,120	4,041	1,517	24,157
Faroe Islands	M	1,743	3,818	3,313	6,589	5,467	2,746	23,676
	F	1,647	3,704	2,794	5,728	4,760	3,441	22,073
Iceland	M	10,915	22,548	21,730	42,183	28,683	14,659	140,718
	F	10,516	21,521	21,102	41,453	27,962	17,882	140,436
Norway	M	154,841	306,437	276,726	678,528	524,649	283,040	2,224,221
	F	146,830	290,465	265,783	652,380	513,399	397,889	2,266,746
Nordland	M	8,033	16,851	15,295	33,810	29,220	16,183	119,392
	F	7,638	15,832	14,218	31,926	27,301	22,395	119,310
Troms	M	5,449	10,770	9,476	23,358	18,400	8,771	76,224
	F	5,094	9,956	8,874	22,106	17,246	11,969	75,245
Finnmark	M	2,800	5,297	4,488	11,790	9,179	4,114	37,668
	F	2,667	5,057	4,228	11,004	7,992	5,457	36,405
Northern Norway	M	16,282	32,918	29,259	68,958	56,799	29,068	233,284
	F	15,399	30,845	27,320	65,036	52,539	39,821	230,960
Sweden	M	237,665	601,297	524,452	1,243,088	1,130,786	649,148	4,386,436
	F	225,618	570,670	500,730	1,192,473	1,113,610	882,573	4,485,674
Västerbotten	M	6,482	17,931	17,272	34,419	32,305	19,225	127,634
	F	6,263	16,827	16,977	32,305	31,231	24,940	128,543
Norrbotten	M	6,419	17,336	15,662	34,764	35,515	20,414	130,110
	F	5,913	16,506	13,660	31,885	33,731	25,363	127,058
Northern Sweden	M	12,901	35,267	32,934	69,183	67,820	39,639	257,744
	F	12,176	33,333	30,637	64,190	64,962	50,303	255,601

Table A-2 continued

Finland	M	150,305	329,281	337,151	724,478	688,993	295,976	2,526,184
	F	144,094	315,988	322,488	697,243	694,005	476,207	2,650,025
Oulu	M	15,177	33,045	34,378	63,332	57,398	24,549	227,879
	F	14,320	31,880	31,378	57,961	54,702	36,182	226,423
Lappi	M	5,272	12,960	13,536	26,013	27,424	11,807	97,012
	F	5,056	12,668	12,254	24,109	25,367	16,594	96,048
Northern Finland	M	20,449	46,005	47,914	89,345	84,822	36,356	324,891
	F	19,376	44,548	43,632	82,070	80,069	52,776	322,471
Russian Federation	M	3,311,585	8,955,812	12,418,632	21,565,660	15,920,769	6,094,122	68,266,580
	F	3,156,152	8,576,818	12,107,729	22,108,329	19,460,888	12,920,374	78,330,290
Murmansk Oblast	M	21,521	56,198	99,618	158,954	100,278	17,673	454,242
	F	20,297	53,358	73,378	151,941	130,494	48,259	477,727
Kareliya Republic	M	16,408	44,128	61,172	109,840	80,560	26,731	338,839
	F	15,550	41,959	61,236	111,990	100,098	62,466	393,299
Arkhangelsk Oblast	M	32,315	86,050	121,918	207,795	154,528	47,761	650,366
	F	30,717	82,449	115,806	203,249	186,117	111,022	729,360
- Nenets AO	M	1,443	3,467	3,689	6,708	4,249	746	20,302
	F	1,272	3,300	3,324	6,287	4,643	1,925	20,751
Komi Republic	M	26,502	68,883	93,404	175,892	113,204	25,593	503,478
	F	25,092	65,781	91,536	170,101	135,156	59,233	546,899
Yamalo-Nenets AO	M	16,001	41,665	39,672	99,198	50,767	2,650	249,953
	F	15,272	39,875	40,420	94,783	51,457	5,522	247,329
Khanty-Mansi AO	M	41,179	103,760	120,418	264,560	139,110	12,959	681,986
	F	39,069	98,768	121,601	254,207	147,391	28,526	689,562
Taymyr AO	M	1,250	3,233	3,224	6,481	4,116	312	18,616
	F	1,257	3,214	3,229	6,613	4,537	791	19,641
Evenki AO	M	653	1,575	1,451	2,944	2,239	290	9,152
	F	615	1,604	1,481	2,812	2,097	480	9,089
Sakha Republic	M	33,912	85,460	85,845	153,354	92,510	18,369	469,450
	F	32,111	81,951	85,926	152,889	104,904	32,762	490,543
Magadan Oblast	M	5,051	12,326	16,644	33,881	26,580	2,735	97,217
	F	4,654	11,932	16,380	31,632	29,696	6,449	100,743
Koryak AO	M	830	2,128	1,996	4,599	3,406	416	13,375
	F	789	2,103	1,799	4,097	3,398	677	12,863
Chukotka AO	M	1,823	4,559	5,602	11,018	7,869	453	31,324
	F	1,747	4,413	4,274	9,599	7,510	707	28,250
Northern Russia	M	197,445	509,965	650,964	1,228,516	775,167	155,942	3,517,998
	F	187,170	487,407	617,066	1,193,913	902,855	356,894	3,745,305
Total Northern Regions	M	291,062	721,730	845,960	1,636,238	1,109,978	298,730	4,903,697
	F	276,125	689,208	796,382	1,575,861	1,212,317	543,689	5,093,581

Table A-2. Age-Sex Distribution (continued).

Country/Region		2001						
		0-4	5-14	15-24	25-44	45-64	65+	Total
United States	M	9,894,823	21,061,818	20,586,968	42,511,117	31,354,692	14,606,467	140,015,885
	F	9,454,573	20,062,348	19,519,980	42,277,925	33,053,829	20,723,383	145,092,038
Alaska	M	24,604	55,505	50,429	100,635	78,104	17,540	326,817
	F	23,088	53,068	44,540	95,259	69,566	19,911	305,432
- Alaska Natives	M	5,551	12,491	9,934	14,830	9,081	2,828	54,715
	F	4,948	12,015	9,216	15,091	9,219	3,512	54,001
Canada	M	900,215	2,096,912	2,168,038	4,840,644	3,673,452	1,685,143	15,364,404
	F	858,981	1,998,430	2,059,190	4,764,586	3,737,741	2,237,919	15,656,847
Yukon	M	886	2,303	2,153	4,848	4,210	918	15,318
	F	901	2,136	2,053	5,248	3,627	846	14,811
Northwest Territories	M	1,697	3,811	3,301	7,310	4,103	877	21,099
	F	1,672	3,658	3,035	7,071	3,482	805	19,723
Nunavut	M	1,816	3,484	2,545	4,500	1,959	369	14,673
	F	1,708	3,253	2,404	4,122	1,724	237	13,448
Northern Canada	M	4,399	9,598	7,999	16,658	10,272	2,164	51,090
	F	4,281	9,047	7,492	16,441	8,833	1,888	47,982
Denmark	M	172,501	340,220	304,335	800,000	697,436	332,757	2,647,249
	F	164,130	322,284	294,773	773,807	691,825	461,014	2,707,833
Greenland	M	2,360	5,226	3,922	10,622	6,621	1,351	30,102
	F	2,299	5,125	3,661	8,898	4,734	1,575	26,292
- Born in Greenland	M	2,260	4,963	3,647	8,656	4,719	1,211	25,456
	F	2,196	4,884	3,450	8,008	4,165	1,551	24,254
Faroe Islands	M	1,783	3,871	3,353	6,721	5,594	2,794	24,116
	F	1,649	3,775	2,854	5,808	4,895	3,456	22,437
Iceland	M	10,854	22,929	21,707	42,652	29,751	14,864	142,757
	F	10,462	21,737	21,182	41,827	28,904	18,185	142,297
Norway	M	153,166	310,993	276,254	677,044	537,273	281,887	2,236,617
	F	145,492	294,715	264,797	651,432	525,262	395,436	2,277,134
Nordland	M	7,780	16,927	15,109	33,240	29,858	16,055	118,969
	F	7,354	15,998	14,025	31,468	27,816	22,269	118,930
Troms	M	5,323	10,913	9,466	23,135	18,770	8,765	76,372
	F	4,995	10,069	8,856	21,900	17,622	11,911	75,353
Finnmark	M	2,723	5,390	4,455	11,567	9,319	4,134	37,588
	F	2,591	5,086	4,202	10,814	8,159	5,470	36,322
Northern Norway	M	15,826	33,230	29,030	67,942	57,947	28,954	232,929
	F	14,940	31,153	27,083	64,182	53,597	39,650	230,605
Sweden	M	234,563	599,373	527,104	1,242,625	1,145,964	650,971	4,400,600
	F	222,246	569,355	502,893	1,192,843	1,127,521	880,505	4,495,363
Västerbotten	M	6,283	17,646	17,227	34,040	32,698	19,296	127,190
	F	6,106	16,577	16,913	31,893	31,550	25,002	128,041
Norrbotten	M	6,281	17,033	15,663	33,973	35,648	20,636	129,234
	F	5,789	16,243	13,546	31,169	33,969	25,538	126,254
Northern Sweden	M	12,564	34,679	32,890	68,013	68,346	39,932	256,424
	F	11,895	32,820	30,459	63,062	65,519	50,540	254,295

Table A-2 continued

Finland	M	147,648	329,122	335,675	717,518	701,203	302,303	2,533,469
	F	141,386	315,805	321,238	690,428	705,701	479,981	2,654,539
Oulu	M	15,005	32,892	34,378	62,637	58,675	25,131	228,718
	F	14,178	31,694	31,331	57,351	55,851	36,696	227,101
Lappi	M	5,074	12,597	13,210	24,888	27,875	12,139	95,783
	F	4,827	12,306	11,858	23,095	25,773	16,886	94,745
Northern Finland	M	20,079	45,489	47,588	87,525	86,550	37,270	324,501
	F	19,005	44,000	43,189	80,446	81,624	53,582	321,846
Russian Federation	M	3,297,570	8,917,912	12,366,076	21,474,394	15,853,392	6,068,332	67,977,676
	F	3,142,796	8,540,520	12,056,488	22,014,766	19,378,531	12,865,696	77,998,797
Murmansk Oblast	M	21,113	55,133	97,731	155,941	98,377	17,338	445,633
	F	19,912	52,347	71,986	149,061	128,021	47,345	468,672
Kareliya Republic	M	16,252	43,708	60,590	108,795	79,796	26,476	335,617
	F	15,401	41,560	60,654	110,926	99,146	61,872	389,559
Arkhangelsk Oblast	M	31,848	84,806	120,156	204,792	152,293	47,069	640,964
	F	30,273	81,257	114,132	200,312	183,427	109,418	718,819
- Nenets AO	M	1,438	3,456	3,676	6,686	4,234	743	20,233
	F	1,268	3,290	3,312	6,265	4,628	1,918	20,681
Komi Republic	M	26,146	67,957	92,149	173,528	111,683	25,249	496,712
	F	24,755	64,897	90,306	167,815	133,340	58,437	539,550
Yamalo-Nenets AO	M	16,111	41,950	39,945	99,878	51,116	2,669	251,669
	F	15,377	40,148	40,698	95,434	51,810	5,560	249,027
Khanty-Mansi AO	M	41,963	105,736	122,711	269,596	141,758	13,205	694,969
	F	39,812	100,648	123,915	259,047	150,198	29,069	702,689
Taymyr AO	M	1,264	3,272	3,262	6,556	4,164	316	18,834
	F	1,271	3,252	3,267	6,691	4,590	800	19,871
Evenki AO	M	640	1,544	1,423	2,886	2,195	284	8,972
	F	602	1,572	1,452	2,757	2,056	471	8,910
Sakha Republic	M	33,717	84,968	85,353	152,473	91,979	18,263	466,753
	F	31,926	81,480	85,431	152,011	104,303	32,574	487,725
Magadan Oblast	M	4,863	11,868	16,023	32,617	25,589	2,633	93,593
	F	4,481	11,488	15,769	30,453	28,590	6,208	96,989
Koryak AO	M	814	2,088	1,959	4,515	3,345	409	13,130
	F	773	2,065	1,766	4,021	3,337	666	12,628
Chukotka AO	M	1,727	4,318	5,305	10,435	7,453	429	29,667
	F	1,654	4,179	4,048	9,091	7,113	670	26,755
Northern Russia	M	196,458	507,348	646,607	1,222,012	769,748	154,340	3,496,513
	F	186,237	484,893	613,424	1,187,619	895,931	353,090	3,721,194
Total Northern Regions	M	288,927	717,875	843,525	1,622,780	1,112,933	299,209	4,885,249
	F	273,856	685,618	793,884	1,563,542	1,213,603	541,877	5,072,380

Table A-2. Age-Sex Distribution (continued).

Country/Region		2002						
		0-4	5-14	15-24	25-44	45-64	65+	Total
United States	M	9,990,483	21,037,032	20,911,492	42,434,601	32,409,672	14,759,168	141,542,448
	F	9,546,739	20,046,544	19,792,273	42,081,964	34,145,108	20,829,723	146,442,351
Alaska	M	25,001	55,075	53,088	98,230	81,615	18,279	331,288
	F	23,402	52,600	46,379	92,940	73,434	20,656	309,411
- Alaska Natives	M	5,683	12,295	10,454	14,654	9,382	2,926	55,394
	F	5,137	11,773	9,637	14,778	9,653	3,603	54,581
Canada	M	884,883	2,097,593	2,192,632	4,839,972	3,803,051	1,720,441	15,538,572
	F	845,590	1,997,372	2,084,984	4,761,065	3,872,292	2,272,712	15,834,015
Yukon	M	834	2,237	2,224	4,679	4,342	956	15,272
	F	855	2,102	2,128	5,112	3,787	881	14,865
Northwest Territories	M	1,628	3,841	3,388	7,413	4,264	905	21,439
	F	1,665	3,641	3,099	7,128	3,677	840	20,050
Nunavut	M	1,817	3,509	2,607	4,584	2,053	382	14,952
	F	1,717	3,287	2,487	4,230	1,831	235	13,787
Northern Canada	M	4,279	9,587	8,219	16,676	10,659	2,243	51,663
	F	4,237	9,030	7,714	16,470	9,295	1,956	48,702
Denmark	M	170,379	346,889	302,190	796,159	705,793	335,931	2,657,341
	F	162,654	328,734	292,727	772,079	699,642	461,078	2,716,914
Greenland	M	2,292	5,231	3,998	10,486	6,802	1,405	30,214
	F	2,254	5,110	3,749	8,781	4,891	1,610	26,395
- Born in Greenland	M	2,192	4,975	3,716	8,511	4,901	1,250	25,545
	F	2,144	4,878	3,541	7,881	4,296	1,584	24,324
Faroe Islands	M	1,802	3,915	3,408	6,839	5,728	2,842	24,534
	F	1,651	3,818	2,917	5,896	5,031	3,468	22,781
Iceland	M	10,684	23,134	21,620	42,506	30,843	15,073	143,860
	F	10,420	21,996	21,091	41,863	29,926	18,403	143,699
Norway	M	150,793	315,265	277,735	674,507	549,291	281,429	2,249,020
	F	143,685	298,571	266,364	650,378	536,872	393,269	2,289,139
Nordland	M	7,502	17,089	15,024	32,503	30,375	16,047	118,540
	F	7,099	16,117	13,955	31,070	28,292	22,154	118,687
Troms	M	5,223	10,980	9,536	22,887	19,144	8,758	76,528
	F	4,833	10,142	8,923	21,649	17,993	11,892	75,432
Finnmark	M	2,627	5,446	4,411	11,377	9,412	4,172	37,445
	F	2,523	5,098	4,184	10,600	8,298	5,475	36,178
Northern Norway	M	15,352	33,515	28,971	66,767	58,931	28,977	232,513
	F	14,455	31,357	27,062	63,319	54,583	39,521	230,297
Sweden	M	235,914	593,328	533,111	1,241,183	1,160,188	654,053	4,417,777
	F	223,219	563,639	508,851	1,191,798	1,140,800	878,876	4,507,183
Västerbotten	M	6,224	17,313	17,406	33,792	33,003	19,420	127,158
	F	6,064	16,274	17,022	31,656	31,831	25,020	127,867
Norrbotten	M	6,178	16,685	15,832	33,279	35,816	20,862	128,652
	F	5,747	15,836	13,605	30,429	34,181	25,735	125,533
Northern Sweden	M	12,402	33,998	33,238	67,071	68,819	40,282	255,810
	F	11,811	32,110	30,627	62,085	66,012	50,755	253,400

Table A-2 continued

Finland	M	145,717	328,694	333,546	711,727	712,676	308,897	2,541,257
	F	139,277	315,611	319,059	684,815	716,509	484,070	2,659,341
Oulu	M	14,968	32,662	34,225	62,011	59,878	25,715	229,459
	F	14,070	31,426	31,142	56,714	56,975	37,138	227,465
Lappi	M	4,863	12,300	12,942	23,853	28,292	12,484	94,734
	F	4,647	11,994	11,601	22,212	26,126	17,219	93,799
Northern Finland	M	19,831	44,962	47,167	85,864	88,170	38,199	324,193
	F	18,717	43,420	42,743	78,926	83,101	54,357	321,264
Russian Federation	M	3,282,436	8,876,982	12,309,320	21,375,834	15,780,630	6,040,480	67,665,682
	F	3,128,371	8,501,322	12,001,154	21,913,727	19,289,589	12,806,647	77,640,810
Murmansk Oblast	M	20,731	54,136	95,963	153,121	96,598	17,026	437,575
	F	19,552	51,400	70,685	146,366	125,705	46,489	460,197
Kareliya Republic	M	16,100	43,298	60,022	107,776	79,046	26,228	332,470
	F	15,256	41,170	60,086	109,885	98,217	61,292	385,906
Arkhangelsk Oblast	M	31,421	83,669	118,545	202,046	150,252	46,438	632,371
	F	29,867	80,168	112,602	197,626	180,968	107,950	709,181
- Nenets AO	M	1,452	3,488	3,710	6,749	4,275	749	20,423
	F	1,280	3,321	3,343	6,324	4,670	1,937	20,875
Komi Republic	M	25,808	67,077	90,955	171,280	110,238	24,921	490,279
	F	24,434	64,057	89,137	165,642	131,613	57,680	532,563
Yamalo-Nenets AO	M	16,278	42,383	40,357	100,907	51,643	2,696	254,264
	F	15,536	40,562	41,118	96,420	52,343	5,618	251,597
Khanty-Mansi AO	M	42,778	107,789	125,093	274,831	144,511	13,462	708,464
	F	40,585	102,602	126,322	264,076	153,115	29,634	716,334
Taymyr AO	M	1,288	3,332	3,321	6,677	4,241	322	19,181
	F	1,295	3,312	3,326	6,815	4,674	816	20,238
Evenki AO	M	634	1,529	1,408	2,857	2,172	281	8,881
	F	596	1,556	1,437	2,729	2,034	466	8,818
Sakha Republic	M	33,561	84,574	84,958	151,767	91,553	18,178	464,591
	F	31,778	81,103	85,036	151,307	103,819	32,423	485,466
Magadan Oblast	M	4,708	11,491	15,514	31,581	24,776	2,548	90,618
	F	4,338	11,122	15,269	29,485	27,682	6,011	93,907
Koryak AO	M	801	2,053	1,926	4,439	3,287	403	12,909
	F	760	2,031	1,736	3,954	3,281	654	12,416
Chukotka AO	M	1,660	4,150	5,099	10,028	7,162	412	28,511
	F	1,590	4,017	3,891	8,736	6,835	643	25,712
Northern Russia	M	195,768	505,481	643,161	1,217,310	765,479	152,915	3,480,114
	F	185,587	483,100	610,645	1,183,041	890,286	349,676	3,702,335
Total Northern Regions	M	287,411	714,898	842,870	1,611,749	1,117,046	300,215	4,874,189
	F	272,534	682,541	792,927	1,553,321	1,216,559	540,402	5,058,284

Table A-2. Age-Sex Distribution (continued).

Country/Region		2003						
		0-4	5-14	15-24	25-44	45-64	65+	Total
United States	M	10,114,009	20,971,276	21,206,058	42,367,934	33,439,671	14,958,870	143,057,818
	F	9,664,157	19,988,972	20,049,681	41,895,255	35,200,603	20,993,519	147,792,187
Alaska	M	25,471	54,295	55,341	95,831	85,130	18,990	335,058
	F	23,536	51,841	48,311	90,986	77,339	21,439	313,452
- Alaska Natives	M	5,909	12,082	10,829	14,198	9,798	2,980	55,796
	F	5,359	11,409	10,054	14,413	10,143	3,725	55,103
Canada	M	875,146	2,087,995	2,211,552	4,825,236	3,930,809	1,758,239	15,688,977
	F	835,501	1,988,421	2,104,263	4,746,030	4,003,846	2,309,039	15,987,100
Yukon	M	841	2,185	2,347	4,573	4,507	1,003	15,456
	F	815	2,112	2,201	5,073	3,983	934	15,118
Northwest Territories	M	1,607	3,807	3,534	7,467	4,469	929	21,813
	F	1,721	3,574	3,236	7,170	3,861	856	20,418
Nunavut	M	1,839	3,494	2,675	4,625	2,055	411	15,099
	F	1,723	3,315	2,561	4,309	1,895	263	14,066
Northern Canada	M	4,287	9,486	8,556	16,665	11,031	2,343	52,368
	F	4,259	9,001	7,998	16,552	9,739	2,053	49,602
Denmark	M	169,063	350,879	300,836	790,939	712,924	339,885	2,664,526
	F	161,328	332,848	290,582	769,199	706,603	462,088	2,722,648
Greenland	M	2,246	5,196	4,089	10,277	7,025	1,459	30,292
	F	2,203	5,041	3,882	8,648	5,069	1,630	26,473
- Born in Greenland	M	2,145	4,949	3,823	8,323	5,113	1,287	25,640
	F	2,093	4,814	3,675	7,735	4,461	1,601	24,379
Faroe Islands	M	1,807	3,946	3,457	6,916	5,863	2,884	24,873
	F	1,679	3,806	2,994	5,933	5,160	3,478	23,050
Iceland	M	10,661	22,892	21,857	42,177	31,804	15,322	144,713
	F	10,281	21,939	21,105	41,643	30,978	18,613	144,559
Norway	M	149,229	317,824	280,897	671,849	560,758	282,021	2,262,578
	F	142,512	300,867	269,608	649,566	547,777	391,947	2,302,277
Nordland	M	7,249	17,156	15,202	32,028	30,742	16,116	118,493
	F	6,881	16,086	14,098	30,682	28,695	22,069	118,511
Troms	M	5,070	11,053	9,685	22,720	19,455	8,808	76,791
	F	4,711	10,171	9,034	21,457	18,363	11,911	75,647
Finnmark	M	2,540	5,441	4,439	11,199	9,459	4,218	37,296
	F	2,443	5,105	4,201	10,430	8,427	5,460	36,066
Northern Norway	M	14,859	33,650	29,326	65,947	59,656	29,142	232,580
	F	14,035	31,362	27,333	62,569	55,485	39,440	230,224
Sweden	M	240,194	583,622	543,102	1,239,196	1,172,094	658,675	4,436,883
	F	227,499	554,143	518,172	1,190,375	1,152,309	878,850	4,521,348
Västerbotten	M	6,286	16,898	17,816	33,773	33,249	19,537	127,559
	F	6,118	15,888	17,286	31,543	32,126	25,074	128,035
Norrbotten	M	6,136	16,207	16,085	32,734	36,083	21,012	128,257
	F	5,770	15,326	13,844	29,870	34,252	25,936	124,998
Northern Sweden	M	12,422	33,105	33,901	66,507	69,332	40,549	255,816
	F	11,888	31,214	31,130	61,413	66,378	51,010	253,033

Table A-2 continued

Finland	M	144,954	326,551	332,460	707,187	720,974	316,779	2,548,905
	F	138,212	313,836	318,049	680,267	724,644	489,101	2,664,109
Oulu	M	15,066	32,392	33,990	61,591	60,758	26,395	230,192
	F	14,027	31,110	30,976	56,151	57,873	37,596	227,733
Lappi	M	4,745	12,001	12,822	23,105	28,488	12,886	94,047
	F	4,530	11,661	11,628	21,493	26,424	17,564	93,300
Northern Finland	M	19,811	44,393	46,812	84,696	89,246	39,281	324,239
	F	18,557	42,771	42,604	77,644	84,297	55,160	321,033
Russian Federation	M	3,265,707	8,831,739	12,246,585	21,266,892	15,700,203	6,009,694	67,320,820
	F	3,112,426	8,457,995	11,939,989	21,802,041	19,191,280	12,741,377	77,245,108
Murmansk Oblast	M	20,434	53,360	94,588	150,926	95,214	16,782	431,304
	F	19,272	50,663	69,672	144,268	123,905	45,822	453,602
Kareliya Republic	M	15,956	42,911	59,486	106,812	78,340	25,994	329,499
	F	15,120	40,803	59,548	108,902	97,340	60,743	382,456
Arkhangelsk Oblast	M	31,040	82,655	117,108	199,597	148,430	45,875	624,705
	F	29,505	79,196	111,237	195,230	178,774	106,642	700,584
- Nenets AO	M	1,468	3,527	3,752	6,827	4,323	758	20,655
	F	1,294	3,358	3,381	6,397	4,723	1,958	21,111
Komi Republic	M	25,506	66,292	89,891	169,275	108,947	24,631	484,542
	F	24,148	63,307	88,094	163,703	130,074	57,005	526,331
Yamalo-Nenets AO	M	16,470	42,885	40,834	102,103	52,255	2,728	257,275
	F	15,719	41,043	41,604	97,561	52,963	5,684	254,574
Khanty-Mansi AO	M	43,448	109,477	127,053	279,137	146,775	13,673	719,563
	F	41,221	104,209	128,301	268,215	155,513	30,097	727,556
Taymyr AO	M	1,292	3,344	3,333	6,700	4,256	323	19,248
	F	1,299	3,324	3,338	6,838	4,691	819	20,309
Evenki AO	M	629	1,517	1,398	2,837	2,157	280	8,818
	F	592	1,545	1,427	2,709	2,019	464	8,756
Sakha Republic	M	33,517	84,463	84,845	151,565	91,433	18,154	463,977
	F	31,736	80,996	84,923	151,107	103,682	32,381	484,825
Magadan Oblast	M	4,595	11,213	15,141	30,822	24,181	2,487	88,439
	F	4,234	10,854	14,901	28,777	27,014	5,867	91,647
Koryak AO	M	780	1,999	1,876	4,321	3,199	393	12,568
	F	740	1,977	1,690	3,850	3,193	638	12,088
Chukotka AO	M	1,600	4,000	4,916	9,667	6,905	398	27,486
	F	1,533	3,872	3,751	8,421	6,591	620	24,788
Northern Russia	M	195,267	504,116	640,469	1,213,762	762,092	151,718	3,467,424
	F	185,119	481,789	608,486	1,179,581	885,759	346,782	3,687,516
Total Northern Regions	M	286,831	711,079	843,808	1,602,778	1,121,179	301,688	4,867,363
	F	271,557	678,764	793,843	1,544,969	1,220,204	539,605	5,048,942

Table A-2. Age-Sex Distribution (continued).

Country/Region		2004						
		0-4	5-14	15-24	25-44	45-64	65+	Total
United States	M	10,258,460	20,857,312	21,435,942	42,364,560	34,450,148	15,168,981	144,535,403
	F	9,802,212	19,888,175	20,261,752	41,762,460	36,242,796	21,164,044	149,121,439
Alaska	M	26,055	53,516	58,017	94,469	88,186	19,904	340,147
	F	23,843	51,173	50,193	89,208	80,922	22,269	317,608
- Alaska Natives	M	6,271	11,880	11,155	14,052	10,139	3,086	56,583
	F	5,644	11,079	10,511	14,165	10,630	3,834	55,863
Canada	M	872,683	2,069,874	2,230,355	4,816,097	4,056,487	1,797,291	15,842,787
	F	832,805	1,971,134	2,124,167	4,737,302	4,133,825	2,347,434	16,146,667
Yukon	M	844	2,114	2,428	4,489	4,679	1,055	15,609
	F	796	2,108	2,238	4,964	4,188	993	15,287
Northwest Territories	M	1,617	3,776	3,596	7,461	4,641	967	22,058
	F	1,728	3,542	3,329	7,207	4,039	895	20,740
Nunavut	M	1,856	3,484	2,771	4,671	2,142	435	15,359
	F	1,733	3,264	2,700	4,314	1,961	302	14,274
Northern Canada	M	4,317	9,374	8,795	16,621	11,462	2,457	53,026
	F	4,257	8,914	8,267	16,485	10,188	2,190	50,301
Denmark	M	167,992	353,316	301,933	784,871	719,063	344,732	2,671,907
	F	160,258	335,587	290,626	765,458	713,025	464,316	2,729,270
Greenland	M	2,215	5,105	4,218	10,011	7,286	1,492	30,327
	F	2,156	4,954	4,046	8,521	5,266	1,642	26,585
- Born in Greenland	M	2,117	4,866	3,969	8,102	5,370	1,302	25,726
	F	2,047	4,728	3,838	7,590	4,652	1,610	24,465
Faroe Islands	M	1,829	3,917	3,502	6,927	5,977	2,918	25,070
	F	1,704	3,756	3,037	5,912	5,293	3,486	23,188
Iceland	M	10,679	22,791	21,991	42,594	33,136	15,506	146,697
	F	10,320	21,899	21,091	41,763	32,034	18,783	145,890
Norway	M	148,267	318,378	285,066	668,840	571,958	284,050	2,276,559
	F	141,751	301,532	273,417	648,438	558,224	391,989	2,315,351
Nordland	M	7,054	17,024	15,451	31,598	31,178	16,227	118,532
	F	6,678	15,945	14,300	30,308	29,122	22,056	118,409
Troms	M	4,858	11,063	9,849	22,452	19,733	8,938	76,893
	F	4,625	10,169	9,111	21,289	18,661	11,937	75,792
Finnmark	M	2,447	5,421	4,509	10,963	9,552	4,279	37,171
	F	2,348	5,095	4,248	10,276	8,553	5,451	35,971
Northern Norway	M	14,359	33,508	29,809	65,013	60,463	29,444	232,596
	F	13,651	31,209	27,659	61,873	56,336	39,444	230,172
Sweden	M	246,069	570,311	555,649	1,236,742	1,181,679	666,035	4,456,485
	F	233,153	541,753	529,513	1,189,655	1,161,215	881,760	4,537,049
Västerbotten	M	6,413	16,310	18,271	33,898	33,480	19,697	128,069
	F	6,222	15,421	17,635	31,495	32,318	25,257	128,348
Norrbotten	M	6,128	15,692	16,356	32,292	36,306	21,204	127,978
	F	5,899	14,726	14,194	29,431	34,301	26,202	124,753
Northern Sweden	M	12,541	32,002	34,627	66,190	69,786	40,901	256,047
	F	12,121	30,147	31,829	60,926	66,619	51,459	253,101

Table A-2 continued

Finland	M	145,104	323,186	332,772	702,872	727,623	325,928	2,557,485
	F	138,311	310,728	318,275	675,980	731,254	496,139	2,670,687
Oulu	M	15,229	32,099	33,764	61,383	61,481	27,162	231,118
	F	14,196	30,783	30,898	55,817	58,628	38,259	228,581
Lappi	M	4,673	11,703	12,796	22,540	28,705	13,296	93,713
	F	4,457	11,296	11,703	20,935	26,656	17,920	92,967
Northern Finland	M	19,902	43,802	46,560	83,923	90,186	40,458	324,831
	F	18,653	42,079	42,601	76,752	85,284	56,179	321,548
Russian Federation	M	3,248,883	8,786,244	12,183,498	21,157,337	15,619,325	5,978,737	66,974,024
	F	3,096,394	8,414,425	11,878,481	21,689,730	19,092,417	12,675,741	76,847,188
Murmansk Oblast	M	20,237	52,847	93,678	149,475	94,297	16,620	427,154
	F	19,086	50,176	69,002	142,882	122,713	45,380	449,239
Kareliya Republic	M	15,820	42,545	58,978	105,903	77,673	25,772	326,691
	F	14,991	40,455	59,040	107,975	96,510	60,226	379,197
Arkhangelsk Oblast	M	30,711	81,779	115,865	197,480	146,856	45,388	618,079
	F	29,192	78,356	110,057	193,159	176,878	105,512	693,154
- Nenets AO	M	1,473	3,538	3,764	6,846	4,336	760	20,717
	F	1,298	3,368	3,391	6,415	4,739	1,965	21,176
Komi Republic	M	25,258	65,650	89,020	167,634	107,891	24,392	479,845
	F	23,914	62,693	87,240	162,117	128,812	56,452	521,228
Yamalo-Nenets AO	M	16,708	43,504	41,424	103,577	53,008	2,766	260,987
	F	15,946	41,635	42,204	98,968	53,728	5,764	258,245
Khanty-Mansi AO	M	43,917	110,660	128,426	282,154	148,362	13,821	727,340
	F	41,667	105,336	129,688	271,113	157,193	30,423	735,420
Taymyr AO	M	1,287	3,331	3,321	6,675	4,240	321	19,175
	F	1,294	3,311	3,326	6,812	4,674	815	20,232
Evenki AO	M	625	1,508	1,389	2,819	2,142	278	8,761
	F	588	1,536	1,418	2,692	2,006	460	8,700
Sakha Republic	M	33,553	84,553	84,936	151,729	91,530	18,173	464,474
	F	31,770	81,082	85,014	151,270	103,793	32,415	485,344
Magadan Oblast	M	4,504	10,991	14,839	30,209	23,700	2,439	86,682
	F	4,150	10,640	14,606	28,206	26,478	5,750	89,830
Koryak AO	M	762	1,954	1,833	4,222	3,127	384	12,282
	F	723	1,932	1,652	3,762	3,120	623	11,812
Chukotka AO	M	1,563	3,907	4,802	9,443	6,744	388	26,847
	F	1,497	3,782	3,663	8,227	6,437	606	24,212
Northern Russia	M	194,945	503,229	638,511	1,211,320	759,570	150,742	3,458,317
	F	184,818	480,934	606,910	1,177,183	882,342	344,426	3,676,613
Total Northern Regions	M	286,842	707,244	846,030	1,597,068	1,126,052	303,822	4,867,058
	F	271,523	675,065	795,633	1,538,623	1,224,284	539,878	5,045,006

Table A-3. Population Density.

Country/Region	Land area	2000	2001	2002	2003	2004
United States	9,161,920	30.8	31.1	31.4	31.7	32.1
Alaska	1,481,350	0.4	0.4	0.4	0.4	0.4
Canada	9,012,110	3.4	3.4	3.5	3.5	3.5
Yukon	474,710	0.06	0.06	0.06	0.06	0.07
Northwest Territories	1,141,110	0.04	0.04	0.04	0.04	0.04
Nunavut	1,925,460	0.01	0.01	0.01	0.02	0.02
Northern Canada	*3,541,280*	*0.03*	*0.03*	*0.03*	*0.03*	*0.03*
Denmark	43,100	123.8	124.2	124.7	125.0	125.3
Greenland	2,166,090	0.03	0.03	0.03	0.03	0.03
Faroe Islands	1,400	32.7	33.3	33.8	34.2	34.5
Iceland	103,000	2.7	2.8	2.8	2.8	2.8
Norway	304,280	14.8	14.8	14.9	15.0	15.1
Nordland	36,050	6.6	6.6	6.6	6.6	6.6
Troms	24,880	6.1	6.1	6.1	6.1	6.1
Finnmark	45,760	1.6	1.6	1.6	1.6	1.6
Northern Norway	*106,690*	*4.4*	*4.3*	*4.3*	*4.3*	*4.3*
Sweden	441,340	20.1	20.2	20.2	20.3	20.4
Västerbotten	55,190	4.6	4.6	4.6	4.6	4.6
Norrbotten	98,250	2.6	2.6	2.6	2.6	2.6
Northern Sweden	*153,440*	*3.3*	*3.3*	*3.3*	*3.3*	*3.3*
Finland	304,470	17.0	17.0	17.1	17.1	17.2
Oulu	56,860	8.0	8.0	8.0	8.1	8.1
Lappi	93,000	2.1	2.0	2.0	2.0	2.0
Northern Finland	*149,860*	*4.3*	*4.3*	*4.3*	*4.3*	*4.3*
Russian Federation	17,075,400	8.6	8.5	8.5	8.5	8.4
Murmansk Oblast	144,900	6.4	6.3	6.2	6.1	6.0
Kareliya Republic	172,400	4.2	4.2	4.2	4.1	4.1
Arkhangelsk Oblast	587,400	2.3	2.3	2.3	2.3	2.2
- Nenets AO	176,700	0.2	0.2	0.2	0.2	0.2
Komi Republic	415,900	2.5	2.5	2.5	2.4	2.4
Yamalo-Nenets AO	750,300	0.7	0.7	0.7	0.7	0.7
Khanty-Mansi AO	523,100	2.6	2.7	2.7	2.8	2.8
Taymyr AO	862,100	0.0	0.0	0.0	0.0	0.0
Evenki AO	767,600	0.0	0.0	0.0	0.0	0.0
Sakha Republic	3,103,200	0.3	0.3	0.3	0.3	0.3
Magadan Oblast	461,400	0.4	0.4	0.4	0.4	0.4
Koryak AO	301,500	0.1	0.1	0.1	0.1	0.1
Chukotka AO	737,700	0.1	0.1	0.1	0.1	0.1
Northern Russia	*8,827,500*	*0.8*	*0.8*	*0.8*	*0.8*	*0.8*
Total Northern Regions	16,530,610	0.6	0.6	0.6	0.6	0.6

Table A-4. Urban Population.

Country/Region	Total population	Urban population		Largest city/town/municipality		
		Number	%	Name	Latitude N	Population
United States	281,421,906	222,360,539	79.0			
Alaska	626,932	411,257	65.6	Anchorage	61	260,283
Canada	30,007,094	23,585,940	78.6			
Yukon	28,674	16,740	58.4	Whitehorse	61	19,058
Northwest Territories	37,360	21,640	57.9	Yellowknife	62	16,541
Nunavut	26,745	8,635	32.3	Iqaluit	64	5,236
Northern Canada	*92,779*	*47,015*	*50.7*			
Denmark	5,368,354	4,572,047	85.2			
Greenland	56,542	46,323	81.9	Nuuk	64	14,272
Faroe Islands	46,961	25,317	53.9	Tórshavn	62	18,040
Iceland	288,201	284,402	98.7	Reykjavik	64	112,490
Norway	4,524,066	3,474,623	76.8			
Nordland	237,503	157,125	66.2	Bodø	67	37,937
Troms	151,673	98,643	65.0	Tromsø	69	53,456
Finnmark	73,732	53,730	72.9	Alta	69	15,838
Northern Norway	*462,908*	*309,498*	*66.9*			
Sweden	8,882,792	7,464,861	84.0			
Västerbotten	255,640	194,058	75.9	Umeå	64	106,525
Norrbotten	256,238	209,280	81.7	Luleå	65	72,139
Northern Sweden	*511,878*	*403,338*	*78.8*			
Finland	5,219,732	4,353,256	83.4			
Oulu	458,504	361,009	78.7	Oulu	65	125,928
Lappi	186,917	139,253	74.5	Rovaniemi	66	35,081
Northern Finland	*645,421*	*500,262*	*77.5*			
Russian Federation	145,166,731	106,429,049	73.3			
Murmansk Oblast	892,534	823,215	92.2	Murmansk	69	336,137
Kareliya Republic	716,281	537,395	75.0	Petrozavodsk	62	266,589
Arkhangelsk Oblast	1,336,539	999,591	74.8	Arkhangelsk	65	362,327
- Nenets AO	41,546	26,242	63.2	Naryan-Mar	68	25,592
Komi Republic	1,018,674	766,587	75.3	Syktyvkar	62	245,768
Yamalo-Nenets AO	507,006	422,826	83.4	Salekhard	67	37,035
Khanty-Mansi AO	1,432,817	1,301,924	90.9	Khanty-Mansiysk	61	53,953
Taymyr AO	39,786	26,330	66.2	Dudinka	69	27,442
Evenki AO	17,697	5,836	33.0	Tura	64	5,836
Sakha Republic	949,280	609,999	64.3	Yakutsk	62	246,279
Magadan Oblast	182,726	168,725	92.3	Magadan	60	106,425
Koryak AO	25,157	6,517	25.9	Palana	59	3,928
Chukotka AO	53,824	35,869	66.6	Anadyr	65	11,038
Northern Russia	*7,213,867*	*5,731,056*	*79.4*			
Total Northern Regions	9,383,482	7,325,819	78.1			

Table A-5. Indigenous Peoples.

	Canada	Yukon	Northwest Territories	Nunavut	North
Total population	29,639,030	28,520	37,105	26,670	92,295
Total Aboriginal origins population	1,319,890	6,990	18,955	22,860	48,805
North American Indian single origin	455,805	3,895	9,855	85	52.9
North American Indian and non-Aboriginal origins	501,840	2,320	2,095	110	13,835
Métis single origin	72,210	115	1,265	20	4,525
Métis and non-Aboriginal origins	193,810	325	765	20	1,400
Inuit single origin	37,030	75	2,945	20,185	1,110
Inuit and non-Aboriginal origins	14,365	100	555	2,260	23,205
Other Aboriginal multiple origins	44,835	165	1,480	180	2,915
Total Aboriginal identity population	976,305	6,540	18,730	22,720	1,825
North American Indian single response	608,850	5,600	10,615	95	47,990
Métis single response	292,305	535	3,580	55	16,310
Inuit single response	45,070	145	3,910	22,560	4,170
Multiple Aboriginal responses	6,665	100	180	0	26,615
Aboriginal responses not included elsewhere	23,415	165	445	10	280

	United States	Alaska
Total population	281,421,906	626,932
American Indian and Alaska Native (AIAN) alone	2,475,956	98,043
AIAN alone or in combination	4,119,301	119,241
American Indian alone	1,865,118	98,043
American Indian alone or in combination	3,997,917	29,979
Alaska Native alone	97,876	77,992
Alaska Native alone or in combination	1,179,517	108,187
Eskimo alone	45,919	41,481
Eskimo alone or in combination	54,761	46,733
Athabascan alone	14,520	11,910
Athabascan alone or in combination	18,838	14,546
Aleut alone	11,941	8,282
Aleut alone or in combination	16,978	10,695
Tlingit-Haida alone	14,825	9,153
Tlingit-Haida alone or in combination	22,365	12,523

	Greenland
Total population	56,542
Born in Greenland	49,796

Table A-5. Indigenous Peoples (continued).

	Norway	Nordland	Troms	Finnmark
Total population	4,524,066	237,503	151,673	73,732
Estimate of Sami population (Solbakk)	40,000	-	-	-
Registered voters for Sami parliament	12,538	777	2,538	7,107

	Sweden	Västerbotten	Norbotten
Total population	8,882,792	255,640	256,238
Estimate of Sami population (Solbakk)	20,000	-	-
Registered voters for Sami parliament	7,180	-	-
Population research database (Hassler)	36,000	6,000	18,000

	Finland	Lappi	Other regions	Abroad
Total population	5,219,732	186,917	5,032,815	-
Estimate of Sami population (Solbakk)	7,500	-	-	-
Speakers of a Sami language	1,720	1,499	75	-
Registered voters for Sami parliament	5,155	2,685	2,070	400
Population count by Sami parliament	7,956	3,669	3,702	585

Table A-5. Indigenous Peoples (continued).

	Russian Federation	Murmansk Oblast	Kareliya Republic	Arkhangelsk Oblast	Nenets AO	Komi Republic	Yamalo-Nenets AO
Total population	145,166,700	892,534	716,281	1,336,539	41,546	1,018,674	507,006
Aleuts	540			1			1
Chukchi	15,767	4	3	2		10	3
Chuvans	1,087	1	2	2	1	1	
Dolgans	7,261			2	1	2	4
Enets	237					2	
Eskimo	1,750			1			1
Evenks	35,527	13	1	15	13	6	57
Evens	19,071	3	1			4	7
Itelmens	3,180		1				
Kets	1,494	4	1	8	6	10	15
Khanty	28,678	11	4	15	5	88	8,760
Koryaks	8,743	2	1	3		1	1
Mansi	11,432	6	1	8		11	172
Nanais	12,160	1		6			
Negidals	567			1	1		3
Nenets	41,302	163	6	8,326	7,754	708	26,435
Nganasans	834						
Nivkhi	5,162			3	1		
Orochi	686		2				1
Oroki	346		1				
Sami	1,991	1,769	7	7			2
Selkups	4,249					12	1,797
Tofalars	837			1			
Udege	1,657					1	
Ulchi	2,913	1		1			2
Yukagirs	1,509	1				5	
Total 26 groups	208,980	1,979	31	8,402	7,782	861	37,261
Alyutors	0						
Chelkans	855					1	
Chulyms	656						
Kamchadals	2,293			1			
Kereks	8						
Kumandins	3,114	5	1			2	5
Shors	13,975	11	1	4		14	12
Soyots	2,769						
Taz	276		3			1	
Telengits	2,399					2	
Teleuts	2,650						4
Tubalars	1,565			18			
Tuvinian-Todzhins	4,442						
Veps	8,240	128	4,870	31		37	1
Total 40 groups	252,222	2,123	4,906	8,456	7,782	918	37,283

Table A-5. Indigenous Peoples (continued).

	Khanty-Mansi AO	Taymyr AO	Evenky AO	Sakha Republic	Magadan Oblast	Koryak AO	Chukotka AO	Northern regions
Total population	1,432,817	39,786	39,786	949,280	182,726	25,157	53,824	7,235,956
Aleuts		2	1	4	6		15	
Chukchi	1	1			248	1,412	12,622	14,306
Chuvans	1			2	39		951	1,000
Dolgans	1	5,517	30	1,272			1	6,830
Enets		197		2				201
Eskimo		1		6	26	3	1,534	1,572
Evenks	43	305	3,802	18,232	25	7	37	22,556
Evens	6		8	11,657	2,527	751	1,407	16,371
Itelmens				4	643	1,181	15	1,844
Kets	14	16	211	6				291
Khanty	17,128		1	8	2	1	4	26,027
Koryaks	6			10	888	6,710	55	7,677
Mansi	9,894			6				10,098
Nanais		7		63	15	21	9	122
Negidals					1	2	1	9
Nenets	1,290	3,054	12	27	5	1	19	47,800
Nganasans		766	7	3				776
Nivkhi	10	1	1	9	7		1	33
Orochi				2	126		2	133
Oroki				1				2
Sami	1	1		3	1			1,791
Selkups	22	9		1				1,841
Tofalars				4			2	7
Udege				3	5	5		14
Ulchi	1			6	9	7	3	30
Yukagirs	1			1,097	79		185	1,368
Total 26 groups	28,419	9,875	4,074	32,425	4,650	10,107	16,848	162,714
Alyutors								0
Chelkans								1
Chulyms				1				1
Kamchadals					314	132	8	455
Kereks							3	3
Kumandins	17			9	9			48
Shors	59	4	4	69	21		6	205
Soyots				7				7
Taz								4
Telengits	1							3
Teleuts				20				24
Tubalars								18
Tuvinian-Todzhins							0	
Veps	2		2	7		1		5,079
Total 40 groups	28,498	9,879	4,080	32,538	4,994	10,240	16,865	168,562

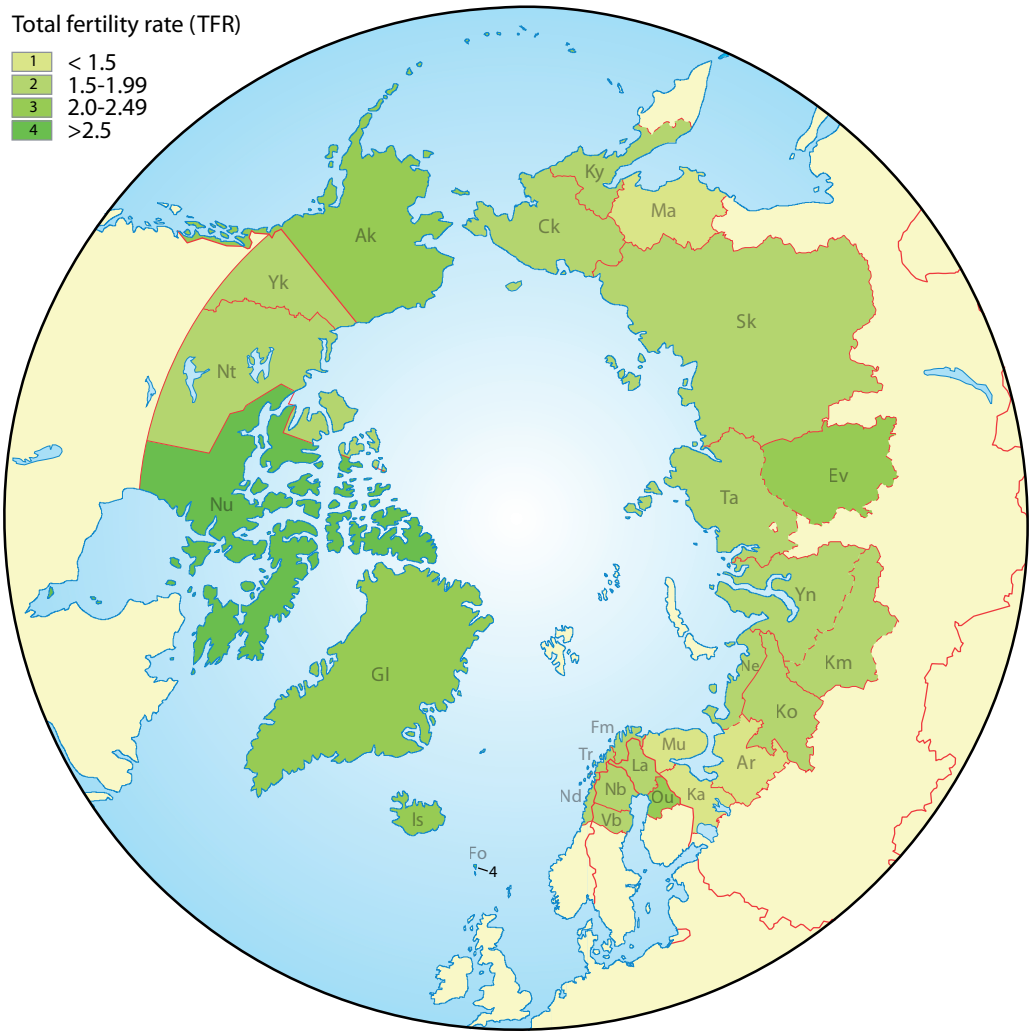

Fig. 3. Variation in total fertility rate among northern regions.
Note: See list of country and regional codes on page 11.

PART B

FERTILITY

Concepts and Definitions

A population changes in size and composition by the number of people who are born into it, die in it, and move in and out of it. The **number of livebirths (Table B-1)** provides the basic information from which various measures of fertility can be constructed. Most statistical agencies have similar definitions of a "livebirth", based on the WHO one:

The complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of the pregnancy, which, after such separation, breathes or shows any other evidence of life such as heartbeat, umbilical cord pulsation, or definite movement of voluntary muscles, whether the umbilical cord has been cut or the placenta is attached (WHO Reproductive Health Indicators, 2006:32)

The simplest and easiest fertility indicator to compute is the **crude birth rate (Table B-2)**. Its denominator, however, is the total population, thus including those who do not contribute to births such as females outside their reproductive age and males.

Crude birth rate = (number of livebirths during year X) / (mean population of year X)

The rate is expressed as per 1,000 persons. The denominator for Table B-2 was extracted from Table A-1. Rates for the 2000-2004 period were calculated by dividing the sum of births during the 5-year period by the sum of the 5 annual mean populations. This differed slightly from averaging the 5 single-year rates.

Children are not born to women equally throughout their reproductive careers, and populations differ in terms of the peak ages of childbearing. The number of **livebirths by mother's age (Table B-3)** is needed to generate the **age-specific and total fertility rates (Table B-4).**

There are two approaches to "mother's age": age at last birthday (ie. number of completed whole years of life) and age reached during the year (ie. the actual duration of life lived in years and months). Many statistical agencies produce data for both, which are very similar. Where a choice is available, it is the latter definition that is used here.

Mother's ages were aggregated into 5-year age groups in the table. The under-15 and 50+ groups were not consistently reported. Moreover, it is the 15-49 age group that is generally taken arbitrarily as the "reproductive age" range.

Age-specific fertility rate = (number of births to women in age group *i* during year X) / (mean number of women in age group *i* during year X)

The rate is expressed as per 1,000 women. The numerator in Table B-4 was obtained from Table B-3, and the denominator from Table A-2. Rates for the 2000-2004 period were calculated by dividing the sum of births during the 5-year period by the sum of the 5 annual mean populations. This differed slightly from averaging the 5 single year rates.

The total fertility rate (TFR) can be interpreted as the mean number of children that would be born alive to a woman during her lifetime if she were to progress through her childbearing years experiencing the age-specific fertility rates (ASFR) of the population in a given year. It is therefore a purely hypothetical rate. A TFR of 2.0 is considered the replacement level for the population, since a couple will need two children to replace themselves (when childhood mortality is taken into account, a population will need a TFR of 2.1 or 2.2 to replace itself). A population at replacement level will eventually stop growing, if there is no immigration. The TFR can be calculated as:

Total fertility rate = [sum of age-specific fertility rates for age group (15-19), (20-24)… (45-49)] * 5

Since the ASFR for each 5-year age group is in fact the average of the ASFR for 5 single years of age, to obtain the sum of all single-year rates for ages 15 to 49, one needs to multiply by 5. The formula as stated above produces a TFR expressed as per 1,000 women. However, TFR is more often expressed as per woman, in which case the above quantity needs to be divided by 1,000. In Table A-4, TFRs were all calculated from the ASFRs in the table. They may differ slightly from the TFRs published by some statistical agencies. Fig.3 compares TFR and Fig.4 the ASFR for the age group 15-19 in the various northern regions.

Data Sources and Limitations

The number of livebirths are available from the national statistical agencies, either in their interactive databank websites or in published reports. Births are attributed to the mothers' usual region/territory of residence. The Alaska Native and "born in Greenland" categories also refer to the mother's status.

- Canada data were from Statistics Canada's CANSIM Table 102-4503 for total livebirths and CANSIM Table 102-4503 for livebirths by mother's age;
- Greenland data were from Statistics Greenland's annual report *Befolkningens bevægelser* 2000-2004;
- For Faroe Islands, only age-specific fertility rates were available from Statistics Faroe Islands – the number of livebirths by mother's age is back calculated.
- Norway data on livebirths by mother's age were by special request from Statistics Norway.
- Russian national data for 2000-2004 were obtained from *Demographic Yearbook of Russia 2006*. Only age-specific fertility rates, not number of livebirths by mother's age, were available for the northern regions: 2000-01 data from the *Demographic Yearbook 2002* and 2002-2004 data from *Demographic Yearbook 2005*. Prior to 2002, separate data were not reported for the Nenets, Yamalo-Nenets, Khanty-Mansi, Taymyr and Evenki AOs.

Tables

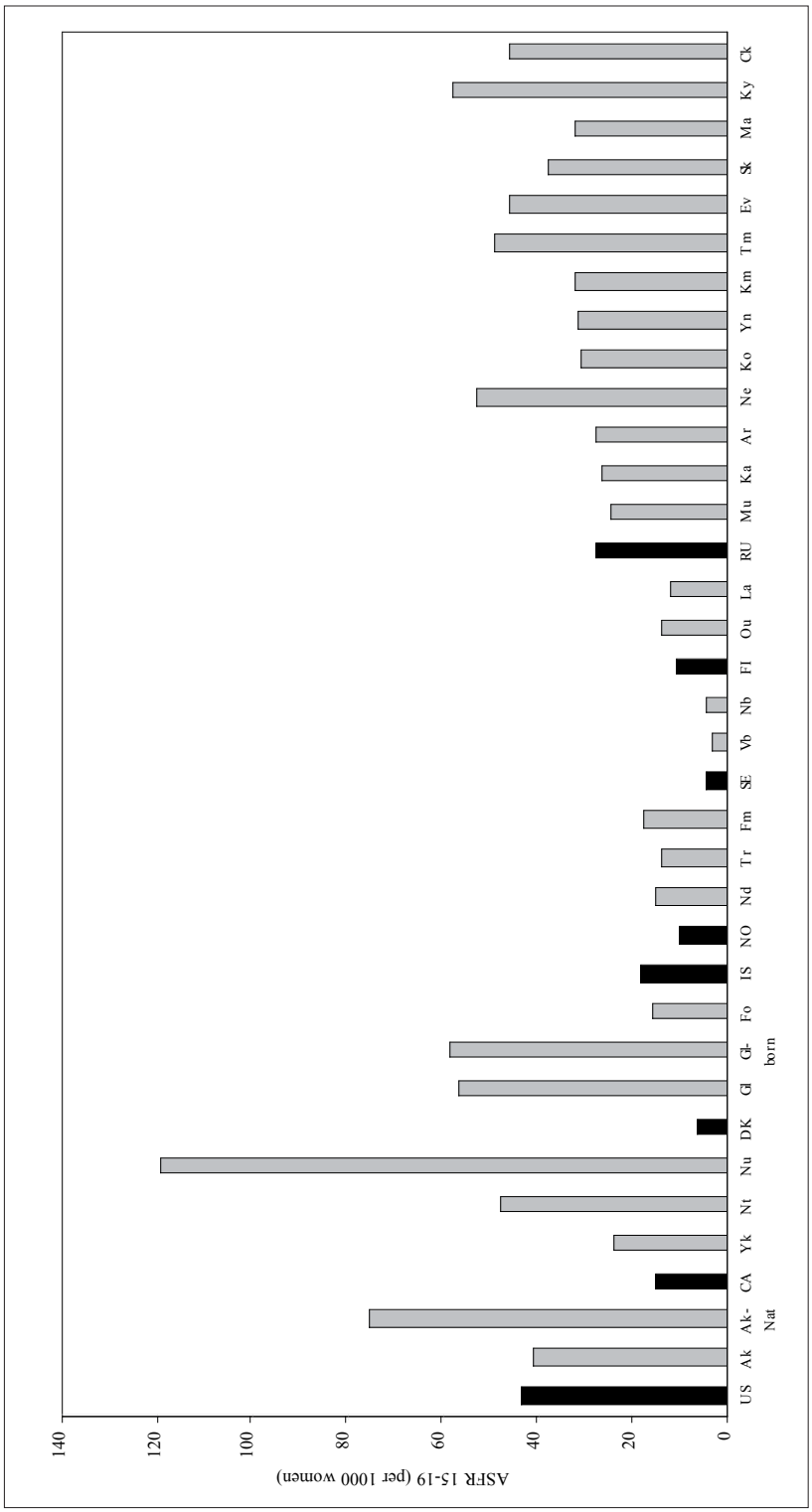

Fig.4. Age-specific fertility rates for age group 15-19: circumpolar countries and northern regions.
Note: See list of country and regional codes on page 11; Bars in black represent countries, greys represent northern regions.

Table B-1. Number of Livebirths.

Country/Region	2000	2001	2002	2003	2004	2000-04
United States	4,058,814	4,025,933	4,021,726	4,089,950	4,112,052	20,308,475
Alaska	9,974	10,003	9,938	10,086	10,338	50,339
- Alaska Natives	2,509	2,542	2,438	2,477	2,590	12,556
Canada	327,882	333,744	328,802	335,202	337,072	1,662,702
Yukon	370	344	339	335	365	1,753
Northwest Territories	673	613	635	701	698	3,320
Nunavut	727	710	726	758	747	3,668
Northern Canada	*1,770*	*1,667*	*1,700*	*1,794*	*1,810*	*8,741*
Denmark	67,084	65,458	64,075	64,599	64,609	325,825
Greenland	885	937	940	895	893	4,550
- Mother born in GL	808	852	854	801	810	4,125
Faroe Islands	692	632	709	705	713	3,451
Iceland	4,315	4,091	4,049	4,143	4,234	20,832
Norway	59,234	56,696	55,434	56,458	56,951	284,773
Nordland	2,833	2,741	2,614	2,638	2,583	13,409
Troms	2,098	1,907	1,841	1,768	1,811	9,425
Finnmark	1,120	970	999	900	880	4,869
Northern Norway	*6,051*	*5,618*	*5,454*	*5,306*	*5,274*	*27,703*
Sweden	90,441	91,466	95,815	99,157	100,928	477,807
Västerbotten	2,406	2,465	2,488	2,633	2,537	12,529
Norrbotten	2,434	2,341	2,309	2,319	2,441	11,844
Northern Sweden	*4,840*	*4,806*	*4,797*	*4,952*	*4,978*	*24,373*
Finland	56,742	56,189	55,555	56,630	57,758	282,874
Oulu	5,797	5,738	5,898	5,997	6,089	29,519
Lappi	1,999	1,800	1,756	1,774	1,800	9,129
Northern Finland	*7,796*	*7,538*	*7,654*	*7,771*	*7,889*	*38,648*
Russian Federation	1,266,800	1,311,604	1,396,967	1,477,301	1,502,477	6,955,149
Murmansk Oblast	8,020	8,289	8,778	8,719	8,928	42,734
Kareliya Republic	6,374	6,833	7,247	7,290	7,320	35,064
Arkhangelsk Oblast	12,150	13,090	13,934	14,269	14,361	67,804
- Nenets AO	541	598	606	665	595	3,005
Komi Republic	9,906	10,325	11,177	11,462	11,489	54,359
Yamalo-Nenets AO	5,839	6,388	6,635	7,163	7,264	33,289
Khanty-Mansi AO	15,579	17,130	19,051	19,883	20,377	92,020
Taymyr AO	460	562	608	625	637	2,892
Evenki AO	242	274	263	274	267	1,320
Sakha Republic	13,147	13,262	13,887	14,224	14,716	69,236
Magadan Oblast	1,925	1,928	1,997	2,016	2,032	9,898
Koryak AO	289	298	310	268	339	1,504
Chukotka AO	686	719	653	679	787	3,524
Northern Russia	*74,617*	*79,098*	*84,540*	*86,872*	*88,517*	*413,644*
Total Northern Regions	110,940	114,390	119,781	122,524	124,646	562,762

Table B-2. Crude Birth Rates.

Country/Region	2000	2001	2002	2003	2004	2000-04
United States	14.4	14.1	14.0	14.1	14.0	14.1
Alaska	15.9	15.8	15.5	15.6	15.7	15.7
- Alaska Natives	23.3	23.4	22.2	22.3	23.0	22.8
Canada	10.7	10.8	10.5	10.6	10.5	10.6
Yukon	12.2	11.4	11.2	11.0	11.8	11.5
Northwest Territories	16.6	15.0	15.3	16.6	16.3	16.0
Nunavut	26.4	25.2	25.3	26.0	25.2	25.6
Northern Canada	*18.0*	*16.8*	*16.9*	*17.6*	*17.5*	*17.4*
Denmark	12.6	12.2	11.9	12.0	12.0	12.1
Greenland	15.7	16.6	16.6	15.8	15.7	16.1
- Mother Born in GL	16.3	17.1	17.1	16.0	16.1	16.5
Faroe Islands	15.1	13.6	15.0	14.7	14.8	14.6
Iceland	15.3	14.4	14.1	14.3	14.5	14.5
Norway	13.2	12.6	12.2	12.4	12.4	12.5
Nordland	11.9	11.5	11.0	11.1	10.9	11.3
Troms	13.9	12.6	12.1	11.6	11.9	12.4
Finnmark	15.1	13.1	13.6	12.3	12.0	13.2
Northern Norway	*13.0*	*12.1*	*11.8*	*11.5*	*11.4*	*12.0*
Sweden	10.2	10.3	10.7	11.1	11.2	10.7
Västerbotten	9.4	9.7	9.8	10.3	9.9	9.8
Norrbotten	9.5	9.2	9.1	9.2	9.7	9.3
Northern Sweden	*9.4*	*9.4*	*9.4*	*9.7*	*9.8*	*9.6*
Finland	11.0	10.8	10.7	10.9	11.0	10.9
Oulu	12.8	12.6	12.9	13.1	13.2	12.9
Lappi	10.4	9.4	9.3	9.5	9.6	9.6
Northern Finland	*12.0*	*11.7*	*11.9*	*12.0*	*12.2*	*12.0*
Russian Federation	8.6	9.0	9.6	10.2	10.4	9.6
Murmansk Oblast	8.6	9.1	9.8	9.9	10.2	9.5
Kareliya Republic	8.7	9.4	10.1	10.2	10.4	9.8
Arkhangelsk Oblast	8.8	9.6	10.4	10.8	11.0	10.1
- Nenets AO	13.2	14.6	14.7	15.9	14.2	14.5
Komi Republic	9.4	10.0	10.9	11.3	11.5	10.6
Yamalo-Nenets AO	11.7	12.8	13.1	14.0	14.0	13.1
Khanty-Mansi AO	11.4	12.3	13.4	13.7	13.9	13.0
Taymyr AO	12.0	14.5	15.4	15.8	16.2	14.8
Evenki AO	13.3	15.3	14.9	15.6	15.3	14.9
Sakha Republic	13.7	13.9	14.6	15.0	15.5	14.5
Magadan Oblast	9.7	10.1	10.8	11.2	11.5	10.6
Koryak AO	11.0	11.6	12.2	10.9	14.1	11.9
Chukotka AO	11.5	12.7	12.0	13.0	15.4	12.9
Northern Russia	*10.3*	*11.0*	*11.8*	*12.1*	*12.4*	*11.5*
Total Northern Regions	11.1	11.5	12.1	12.4	12.6	11.3

Table B-3. Distribution of Livebirths by Mother's Age.

Country/Region	2000-2004									
	<15	15-19	20-24	25-29	30-34	35-39	40-44	45-49	Other	Total 15-49
United States	37,057	2,170,269	5,128,298	5,397,054	4,764,403	2,300,955	483,298	25,687	1,454	20,269,964
Alaska	69	5,410	14,242	13,378	10,380	5,388	1,393	73	6	50,264
- Alaska Natives	32	2,216	4,030	3,072	1,888	1,048	259	10	1	12,523
Canada	597	78,142	286,198	511,062	507,893	234,546	42,280	1,622	362	1,661,743
Yukon	1	140	372	461	474	244	56	5	0	1,752
Northwest Territories	8	376	793	876	809	381	72	5	0	3,312
Nunavut	23	808	1,171	867	528	216	44	9	2	3,643
Northern Canada	*32*	*1,324*	*2,336*	*2,204*	*1,811*	*841*	*172*	*19*	*2*	*8,707*
Denmark	-	4,716	37,824	115,555	113,951	46,784	6,777	218	0	325,825
Greenland	-	571	1,340	1,043	943	552	95	4	2	4,548
- Mother Born in GL	-	564	1,313	914	742	502	86	3	1	4,125
Faroe Islands	-	127	699	1,017	998	518	89	1	2	3,449
Iceland	3	937	4,277	6,664	5,556	2,810	566	19	-	20,829
Norway	16	6,629	41,646	95,652	95,903	38,786	5,923	217	1	284,756
Nordland	1	564	2,549	4,296	3,974	1,734	284	7	0	13,408
Troms	1	307	1,568	2,924	3,029	1,332	256	8	0	9,424
Finnmark	0	194	814	1,552	1,533	646	123	7	0	4,869
Northern Norway	*2*	*1,065*	*4,931*	*8,772*	*8,536*	*3,712*	*663*	*22*	*0*	*27,701*
Sweden	14	5,945	52,753	143,534	173,297	85,069	16,410	785	-	477,793
Västerbotten	0	122	1,458	4,227	4,415	1,910	375	22	-	12,529
Norrbotten	1	173	1,550	3,834	3,968	1,913	383	22	-	11,843
Northern Sweden	*1*	*295*	*3,008*	*8,061*	*8,383*	*3,823*	*758*	*44*	*-*	*24,372*
Finland	-	8,412	46,940	88,664	84,556	44,325	9,459	518	-	282,874
Oulu	-	1,135	6,455	9,146	7,622	3,977	1,087	97	-	29,519
Lappi	-	402	1,984	2,640	2,294	1,399	386	24	-	9,129
Northern Finland	*-*	*1,537*	*8,439*	*11,786*	*9,916*	*5,376*	*1,473*	*121*	*-*	*38,648*
Russian Federation	-	840,764	2,656,531	1,950,092	1,000,705	382,189	82,548	3,792	-	6,916,621
Murmansk Oblast	-	-	-	-	-	-	-	-	-	-
Kareliya Republic	-	-	-	-	-	-	-	-	-	-
Arkhangelsk Oblast	-	-	-	-	-	-	-	-	-	-
- Nenets AO	-	-	-	-	-	-	-	-	-	-
Komi Republic	-	-	-	-	-	-	-	-	-	-
Yamalo-Nenets AO	-	-	-	-	-	-	-	-	-	-
Khanty-Mansi AO	-	-	-	-	-	-	-	-	-	-
Taymyr AO	-	-	-	-	-	-	-	-	-	-
Evenki AO	-	-	-	-	-	-	-	-	-	-
Sakha Republic	-	-	-	-	-	-	-	-	-	-
Magadan Oblast	-	-	-	-	-	-	-	-	-	-
Koryak AO	-	-	-	-	-	-	-	-	-	-
Chukotka AO	-	-	-	-	-	-	-	-	-	-
Northern Russia	-	-	-	-	-	-	-	-	-	-

Table B-4. Age-Specific and Total Fertility Rates.

	2000-2004							
Country/Region	15-19	20-24	25-29	30-34	35-39	40-44	45-49	TFR
United States	43.7	104.3	114.6	93.1	42.2	8.4	0.5	2.03
Alaska	41.1	141.4	139.8	96.1	43.9	10.0	0.5	2.36
- Alaska Natives	75.6	211.1	189.9	107.7	52.3	12.9	0.6	3.25
Canada	15.2	54.5	98.5	91.6	36.9	6.3	0.3	1.52
Yukon	24.1	74.0	90.9	85.0	37.7	7.4	0.7	1.60
Northwest Territories	47.8	101.8	105.5	87.6	39.8	8.4	0.7	1.96
Nunavut	119.7	202.7	139.8	88.0	43.7	11.6	2.9	3.04
Northern Canada	*64.6*	*127.4*	*113.0*	*85.7*	*39.1*	*8.5*	*1.1*	*2.20*
Denmark	6.7	49.1	126.0	118.1	45.4	7.2	0.2	1.76
Greenland	56.6	152.3	133.8	87.0	39.9	8.3	0.5	2.39
- Mother Born in GL	58.5	160.8	138.4	78.7	39.3	8.3	0.4	2.42
Faroe Islands	15.8	106.9	168.8	134.2	64.1	11.5	0.1	2.51
Iceland	18.3	78.7	127.9	110.6	52.5	10.7	0.4	2.00
Norway	10.0	61.6	124.4	111.6	46.4	7.5	0.3	1.81
Nordland	15.5	74.7	126.1	99.0	41.8	7.1	0.2	1.82
Troms	13.8	69.8	113.4	104.5	47.8	9.9	0.3	1.80
Finnmark	17.9	79.7	121.4	104.9	47.5	10.1	0.6	1.91
Northern Norway	*15.3*	*73.8*	*120.7*	*101.9*	*44.7*	*8.5*	*0.3*	*1.83*
Sweden	4.6	41.5	101.9	114.2	53.7	11.3	0.5	1.64
Västerbotten	3.1	31.6	106.3	113.3	47.1	9.5	0.5	1.56
Norrbotten	4.6	49.7	118.9	105.8	46.3	9.2	0.5	1.67
Northern Sweden	*3.8*	*38.9*	*112.0*	*109.6*	*46.7*	*9.3*	*0.5*	*1.60*
Finland	10.6	58.5	114.8	105.0	48.4	10.1	0.5	1.74
Oulu	13.8	87.5	140.8	118.7	53.5	13.5	1.2	2.15
Lappi	12.3	75.4	126.0	97.2	45.1	10.6	0.6	1.84
Northern Finland	*13.4*	*84.3*	*137.2*	*112.9*	*51.0*	*12.6*	*1.0*	*2.06*
Russian Federation	27.6	94.2	74.2	41.0	14.6	2.6	0.1	1.27
Murmansk Oblast	24.4	89.2	72.3	40.2	12.4	1.9	0.1	1.20
Kareliya Republic	26.4	92.6	74.8	41.3	13.2	2.0	0.1	1.25
Arkhangelsk Oblast	27.5	100.0	76.4	41.9	13.5	1.8	0.2	1.31
- Nenets AO	53.0	142.8	109.2	58.1	22.4	4.6	0.2	1.95
Komi Republic	30.9	97.9	73.5	41.3	14.0	2.2	0.1	1.30
Yamalo-Nenets AO	31.3	120.2	88.8	54.6	21.9	4.1	0.2	1.61
Khanty-Mansi AO	32.4	112.9	89.7	53.6	19.2	3.2	0.1	1.56
Taymyr AO	49.3	141.1	101.5	53.8	31.3	4.8	0.9	1.91
Evenki AO	46.1	152.8	95.5	70.3	30.1	7.9	0.1	2.01
Sakha Republic	38.1	125.4	97.8	63.7	31.7	7.0	0.4	1.82
Magadan Oblast	32.4	88.5	71.5	43.7	14.5	3.1	0.1	1.27
Koryak AO	57.8	139.1	89.9	47.3	23.5	4.5	0.1	1.81
Chukotka AO	45.8	108.6	82.6	58.6	23.7	6.4	0.2	1.63
Northern Russia	-	-	-	-	-	-	-	-

PART C

MORTALITY

Concepts and Definitions

Measuring the pattern of mortality in a population is a time-honoured approach to assessing the health status of a population, although it should be emphasized that death represents only the severest consequence of ill health. Information on deaths is relatively easy to obtain, and death is final, unequivocal and occurs only once in a person.

The most basic information required is the **number of deaths (Table C-1),** which when divided by the size of the population, produces the **crude death rate (Table C-2)**.

Crude death rate = (number of deaths during year X) / (mean population of year X)

The rate is expressed as per 1,000 persons. The denominator for Table C-2 was obtained from Table A-1. Rates for the 2000-2004 period were calculated by dividing the sum of deaths during the 5-year period by the sum of the 5 annual mean populations. This differed slightly from averaging the 5 single year rates.

As with births, deaths also do not occur evenly across different age groups. From the number of **deaths by age and sex (Table C-3)** are obtained the **age-sex-specific mortality rates (Table C-4)**. While the data were aggregated by 5-year age groups (0-4, 5-9, 10-14, etc), to reduce the size of the table, a smaller number of age-groups (0-9, 10-19, 20-39, 40-59, 60-79 and 80+) were presented in Tables C-3 and C-4.

Age-specific mortality rate for males = (number of deaths among males in age group *i* during year X) / (mean number of males in age group *i* during year X)

Age-specific mortality rate for females = (number of deaths among females in age group *i* during year X) / (mean number of females in age group *i* during year X)

The rate is expressed as per 1,000 males or females. The denominator for Table C-4 was obtained from Table A-2. Rates for the 2000-2004 period were calculated by dividing the sum of deaths during the 5-year period by the sum of the 5 annual mean populations. This differed slightly from averaging the 5 single year rates.

A widely used health indicator is **life expectancy at birth (Table C-5, Fig.5).** Life expectancy at birth summarizes the mortality experience of a population that prevails across all age groups. It can be defined as the average number of years that a newborn is expected to live if current mortality rates continue to apply. Note that life expectancy (LE) can be computed for other ages, eg. at age 65. The computation of LE is complex, and requires the construction of a life table, which presents the probability of dying, the death rate and the number of survivors for each age or age group. LE at birth is heavily influenced by the extent of deaths among infants and the very young, but is not affected by the different age structures of the populations being compared.

The method for constructing life tables is described in most textbooks of demography. The U.S. Census Bureau's Population Analysis Spreadsheets [file LTMXQXAD] provides a template for calculating LE by inputting various age-specific mortality rates of a population [www.census.gov/ipc/www/pas.html]. Life tables using 5-year intervals of data [except <1 and 1-4 years] are termed abridged life tables.

Because infancy, defined as age under 1 year, is a particularly vulnerable period in a person's life, the **number of infant deaths (Table C-6)** is also recorded, from which the **infant mortality rate (Table C-7, Fig.6)** is constructed. Infant mortality rate (IMR) is a health indicator that is also widely used in international comparisons.

Infant mortality rate = (number of deaths under 1 year of age during year X) / (number of livebirths during year X)

The rate is expressed as per 1,000 livebirths. The denominator for Table C-5 was obtained from Table B-1 (except for Norway regions, where the number of livebirths presented in Table D-1 was used instead). Rates for the 2000-2004 period were calculated by dividing the sum of deaths during the 5-year period by the sum of the livebirths. This differed slightly from averaging the 5 single year rates.

The IMRs reported by most statistical agencies do not actually track a cohort of newborn infants for one year after birth, although such an approach is certainly feasible using electronic data linkage between births and deaths databases. Note that among infant deaths during year X, some were born in year (X-1), and among livebirths in year X, some may go on to die in year (X+1).

Infancy can be broken down into the neonatal and postneonatal periods, with the corresponding neonatal mortality and post-neonatal mortality rates. These are also presented in Table C-6 and Table C-7. To avoid confusion, if the first day of life is designated as Day 0, then the neonatal period extends from the beginning of Day 0 to the end of Day 27 (or, put in another way, 28 completed days):

Neonatal mortality (NNM) = deaths during day 0 to day 27
Postneonatal mortality (PNM) = deaths during day 28 to day 364
Infant mortality = NNM + PNM = deaths during day 0 to day 364

Beyond the overall number (and crude rate) of deaths, examining the causes of deaths can provide more detailed information on the relative importance of different health problems, at least those that result in death. Because populations differ in their age-sex composition, and that death is very much age-dependent, simple comparisons of crude death rates among populations can be misleading. A more meaningful comparison utilizes **age-standardized mortality rates by cause (Table C-8)**.

Age-standardized mortality rates (ASMR) adjust for differences in the age distribution of the population by applying the observed age-specific mortality rates for each population (the study population) to a standard population. The age-standardized mortality rate is thus a weighted average of the age-specific mortality rates per 100,000 persons, where the weights are the proportions of persons in the corresponding age groups of the standard population. The so-called "direct" method is used, according to the formula:

Age-standardized mortality rate = $\Sigma(r_i N_i) / \Sigma N_i$

Where r_i is the age-specific mortality rate for the *i*th age group of the study population
N_i is the number of persons in the *i*th age group of the standard population

The rate is usually expressed as per 100,000 persons. Because of the small number of deaths for some causes, for Table A-8, the numerator of r_i was the combined total of deaths in the 5 years, divided by the sum of the mean population of each of the 5 years.

Any population can serve as a standard. When comparing regions within a country, the national population tends to be used as the standard. For international comparisons, there are hypothetical or artificially constructed populations. For ASMR, the standard population used here was the European Standard Population used by Eurostat. Other world standard populations such as those of WHO and the International Agency for Research on Cancer (IARC) are also available. The latter was used for computing age-standardized cancer incidence rates (Table E-3).

The age distribution of the European Standard Population is as follows:

Age group	Population
0-4	8,000
5-9	7,000
10-14	7,000
15-19	7,000
20-24	7,000
25-29	7,000
30-34	7,000
35-39	7,000
40-44	7,000
45-49	7,000
50-54	7,000
55-59	6,000
60-64	5,000
65-69	4,000
70-74	3,000
75-79	2,000
80-84	1,000
85+	1,000
Total	100,000

Source: Eurostat. *Health Statistics: Atlas on mortality in the European Union. Annex 1 – Standard European population*

The causes of death were coded according to the International Classification of Diseases, 10th edition (ICD-10). This is a system of alphanumeric codes, organized into chapters (I to XX). Each country, however, uses a slightly different system of grouping individual codes into causes and groups of causes. The European Short List consists of 65 causes. A few causes and groups of causes were selected for inclusionin Table C-8. These causes, with their corresponding ICD-10 codes are as follows:

All Causes	A00-Y89 [Chapters I-XX]
Infectious and parasitic diseases	A00-B99 [Chapter I]
(eg. tuberculosis, viral hepatitis, AIDS, malaria)	
Neoplasms	C00-D48 [Chapter II]
Malignant neoplasms	C00-C97
(eg. cancer of the lungs, breast, prostate)	
Endocrine, nutritional and metabolic diseases	E00-E90 [Chapter IV]
Diabetes mellitus	E10-E14
Diseases of the nervous system and sense organs	G00-H95 [Chapters VI-VIII]
(eg. meningitis, Alzheimer's)	
Diseases of the circulatory system	I00-I99 [Chapter IX]
Ischemic heart disease	I20-I25
Cerebrovascular disease	I60-I69
Diseases of the respiratory system	J00-J99 [Chapter X]
Influenza and pneumonia	J10-J18
Chronic lower respiratory diseases	J40-J47
(eg. chronic bronchitis, asthma)	
Diseases of the digestive system	K00-K93 [Chapter XI]
(eg. peptic ulcer, appendicitis)	
Chronic liver diseases and cirrhosis	K70,73,74
[Some countries report all liver diseases	K70-K76]
Diseases of the genitourinary system	N00-N99 [Chapter XIV]
Certain conditions originating in the perinatal period	P00-P96 [Chapter XVI]
Congenital malformations	Q00-Q99 [Chapter XVII]
External causes of mortality (i.e. injuries)	V01-Y89 [Chapter XX]
Accidents	V01-X59
(eg. transport accidents, falls, accidental poisoning)	
Intentional self-harm (i.e. suicide)	X60-X84
Assault (i.e. homicide)	X85-Y09

Because of the large amount of data from which the ASMRs by cause were computed, the raw data and the different steps in the computation were not reproduced in this monograph.

Data Sources and Limitations

All statistical agencies maintain mortality databases which contain information relating to the number and causes of death and also basic demographic data of the decedents. The total number of deaths reported in Table C-3 may be different from Table C-1 even if they are obtained from the same agencies, as the ages of the decedents are not known in all deaths.

United States national and Alaska data for all deaths and infant deaths were from the NCHS annual report *Deaths: Final Data* [in *National Vital Statistics Reports* vol 50 (15), 2002; vol 52 (3), 2003; vol 53 (5), 2004; vol 54 (13), 2006; and vol 55 (19), 2007].

Canada data were from Statistics Canada's CANSIM Table 102-0501 for the number of all deaths, Table 102-0504 for deaths by age and sex, and Table 102-0507 for infant deaths. Deaths included those that occurred in Canada or the United States, and were attributed to the decedents' usual territory/province of residence.

Greenland data on all deaths were from Statistics Greenland's annual report *Befolkningens bevægelser* for 2000-2004. Infant deaths data for Greenland for 2000-2002 were obtained by special request from the Centre for Health Research in Greenland of the National Institute of Public Health, and 2003-2004 data were as published in *Befolkningens bevægelser.* Iceland data were from the website of Statistics Iceland.

Faroe Islands infant deaths data were from the Chief Medical Officer's report *Medicinalberetning for Færøerne* 2000-2004. For denominator, the number of livebirths in Table D-1, which was also derived from the same source, was used, rather than Table B-1, from Statistics Faroe Islands. There were also discrepancies in the number of infant deaths as reported by the Chief Medical Officer (CMO) and by Statistics Faroe Islands. For 2000 and 2001, Statistics Faroe Islands reported 1 and 3 infant deaths respectively, whereas none was reported at all for these two years by the CMO. The counts for 2002-2004 in the two sources were identical. Since the CMO report also broke down infant deaths into NNM and PNM, these data were used in Table C-6.

Infant deaths data for Denmark were from Eurostat. For Sweden, they were as published in Statistics Sweden's annual report *Belfolkningsstatistik 2000-2003*, and *Tabeller över Sveriges befolkning 2004*.

The number of deaths by age and sex for Norway nationally was from Statistics Norway. For infant deaths in Norway, two different data sources were used. National data for 2001-2004 were from Statistics Norway, as published in *Statistisk årbok 2006* (Table 112); and 2000 data as published in *Statistisk årbok 2003* (Table 109). Regional data were requested from the Medical Birth Registry of the Norwegian Institute of Public Health – the total number of livebirths from this source differed slightly from Statistics Norway's, and for regional IMR, the denominator was taken from Table D-1 instead of Table B-1.

Total deaths and deaths by age and sex for Finland were from Statistics Finland's Statfin website. Finnish regional IMR and its components were obtained by special request from Statistics Finland.

Deaths by age and sex for Russia nationally were available only for the period 2003-04 from the *Demographic Yearbook 2005*. Regional data were not available. The breakdown of IMR into neonatal and postneonatal mortality rates were not reported for Russia nationally or regionally. Russian regional IMR data for 2000-2001 were from *Demographic Yearbook 2002,* and 2002-2004 data from *Demographic Yearbook* 2005.

Life expectancy

LE at birth, with some exceptions, were as published by the various national statistical agencies. United States national data for LE at birth were from NCHS. *Health United States 2006*, Table 27. Abridged life tables were specially constructed for the State of Alaska and Alaska Natives, based on age-specific mortality rates for the period 2000-2003.

National LE at birth data (single years) for Iceland, Denmark, Norway, Sweden and Norway were from Eurostat; regional data for Norway (2001-2005 period) and Sweden (2000-2004) were from their national statistical agencies. Regional data for Finland were obtained by special request from Statistics Finland. Faroe Islands data (2000-2004 period) were from Statistics Faroe Islands. Greenland data (2000-2004 period) were from Statistics Greenland's *Befolkningens bevægelser 2004*.

Russian national data were from the website of the Federal State Statistical Service [www.gks.ru]; regional data were from *Regions of Russia: Main Characteristics of Subjects of the Russian Federation 2005*.

Causes of death

Causes of death data were generally available from various national statistical and health agencies:

- United States and Alaska data were from the published tables in the GMWIII series (available from the NCHS Data Warehouse) and also the public use Multiple Causes of Death datasets consisting of individual death records on CD ROMs;
- Canada data were from Statistics Canada's CANSIM Table 102-0551, supplemented by special requests for tabulation of groups of causes not available from the website;
- Data for the Nordic countries were from their Causes of Death Registers available from the national statistical agencies (Denmark, Faroe Islands, Finland, Iceland), national health board (Sweden), and public health institute (Norway), supplemented by data from Eurostat. Regional data for Norway and Finland were obtained by special requests to the registries. Note Denmark data covered only the years 2000-2001; all other countries/regions covered the years 2000-2004;
- Greenland data were from the mortality research database maintained at the Centre for Research in Greenland at the National Institute of Public Health in Copenhagen; data were available for the period 2000-2004.
- Russia national data were for the 2000-2002 period, from WHO Mortality Database; regional data were the mean of 2004 (from *Demographic Yearbook 2005*), and 2000 and 2001 (from *Demographic Yearbook 2002*). However, 2000-01 data were not reported separately for Nenets, Yamalo-Nenets, Khanty-Mansi, Taymyr, Evenki and Koryak AO.

Tables

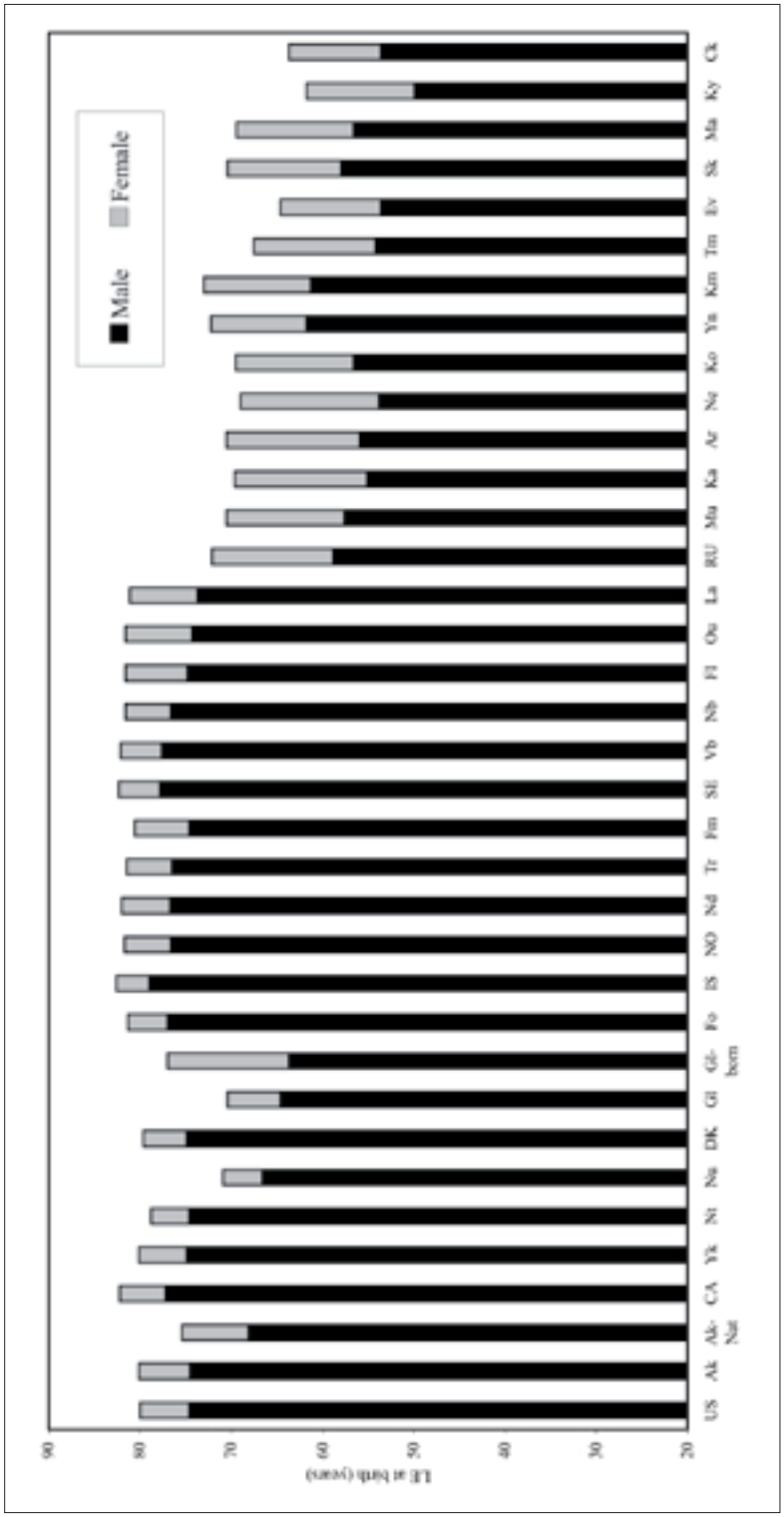

Fig.5. Life expectancy at birth by sex: circumpolar countries and northern regions.
Note: See list of country and regional codes on page 11.

Table C-1. Number of Deaths.

Country/Region	2000	2001	2002	2003	2004	2000-04
United States	2,403,351	2,416,425	2,443,387	2,448,288	2,397,615	12,109,066
Alaska	2,914	2,974	3,030	3,180	3,051	15,149
- Alaska Natives	648	691	697	725	700	3,461
Canada	218,062	219,538	223,603	226,169	226,584	1,113,956
Yukon	156	134	147	133	166	736
Northwest Territories	163	163	169	202	153	850
Nunavut	130	123	127	134	121	635
Northern Canada	*449*	*420*	*443*	*469*	*440*	*2,221*
Denmark	57,998	58,355	58,610	57,574	55,806	288,343
Greenland	458	438	435	412	475	2,218
- Born in Greenland	437	413	412	389	436	2,087
Faroe Islands	352	358	392	404	379	1,885
Iceland	1,828	1,725	1,822	1,826	1,824	9,025
Norway	44,002	43,982	44,468	42,478	41,200	216,130
Nordland	2,504	2,607	2,473	2,407	2,289	12,280
Troms	1,374	1,402	1,350	1,372	1,288	6,786
Finnmark	687	680	685	701	639	3,392
Northern Norway	*4,565*	*4,689*	*4,508*	*4,480*	*4,216*	*22,458*
Sweden	93,461	93,752	95,009	92,961	90,532	465,715
Västerbotten	2,667	2,596	2,756	2,644	2,555	13,218
Norrbotten	2,782	2,730	2,855	2,834	2,799	14,000
Northern Sweden	*5,449*	*5,326*	*5,611*	*5,478*	*5,354*	*27,218*
Finland	49,339	48,550	49,418	48,996	47,600	243,903
Oulu	3,959	3,801	3,910	4,003	3,837	19,510
Lappi	1,793	1,782	1,840	1,806	1,752	8,973
Northern Finland	*5,752*	*5,583*	*5,750*	*5,809*	*5,589*	*28,483*
Russian Federation	2,225,332	2,254,856	2,332,272	2,365,826	2,295,402	11,473,688
Murmansk Oblast	10,805	11,198	11,840	12,312	11,719	57,874
Kareliya Republic	12,083	12,597	13,435	14,141	13,092	65,348
Arkhangelsk Oblast	22,540	21,997	23,517	23,771	23,001	114,826
- Nenets AO	531	560	540	590	519	2,740
Komi Republic	13,594	13,968	15,265	15,810	15,210	73,847
Yamalo-Nenets AO	2,763	3,057	2,934	3,093	2,975	14,822
Khanty-Mansi AO	9,426	9,863	9,829	10,000	9,828	48,946
Taymyr AO	438	438	397	386	345	2,004
Evenki AO	214	234	237	215	218	1,118
Sakha Republic	9,325	9,738	9,700	9,660	9,692	48,115
Magadan Oblast	2,345	2,332	2,329	2,264	2,373	11,643
Koryak AO	391	390	376	462	463	2,082
Chukotka AO	570	701	611	562	623	3,067
Northern Russia	*84,494*	*86,513*	*90,470*	*92,676*	*89,539*	*443,692*
Total Northern Regions	102,302	104,225	108,551	110,731	107,030	532,839

Table C-2. Crude Death Rates.

Country/Region	2000	2001	2002	2003	2004	2000-04
United States	8.5	8.5	8.5	8.4	8.2	8.4
Alaska	4.6	4.7	4.7	4.9	4.6	4.7
- Alaska Natives	6.0	6.4	6.3	6.5	6.2	6.3
Canada	7.1	7.1	7.1	7.1	7.1	7.1
Yukon	5.1	4.4	4.9	4.4	5.4	4.8
Northwest Territories	4.0	4.0	4.1	4.8	3.6	4.1
Nunavut	4.7	4.4	4.4	4.6	4.1	4.4
Northern Canada	*4.6*	*4.2*	*4.4*	*4.6*	*4.3*	*4.4*
Denmark	10.9	10.9	10.9	10.7	10.3	10.7
Greenland	8.1	7.8	7.7	7.3	8.3	7.8
- Born in Greenland	8.8	8.3	8.3	7.8	8.7	8.4
Faroe Islands	7.7	7.7	8.3	8.4	7.9	8.0
Iceland	6.5	6.1	6.3	6.3	6.2	6.3
Norway	9.8	9.7	9.8	9.3	9.0	9.5
Nordland	10.5	11.0	10.4	10.2	9.7	10.3
Troms	9.1	9.2	8.9	9.0	8.4	8.9
Finnmark	9.3	9.2	9.3	9.6	8.7	9.2
Northern Norway	*9.8*	*10.1*	*9.7*	*9.7*	*9.1*	*9.7*
Sweden	10.5	10.5	10.6	10.4	10.1	10.4
Västerbotten	10.4	10.2	10.8	10.3	10.0	10.3
Norrbotten	10.8	10.7	11.2	11.2	11.1	11.0
Northern Sweden	*10.6*	*10.4*	*11.0*	*10.8*	*10.5*	*10.7*
Finland	9.5	9.4	9.5	9.4	9.1	9.4
Oulu	8.7	8.3	8.6	8.7	8.3	8.5
Lappi	9.3	9.4	9.8	9.6	9.4	9.5
Northern Finland	*8.9*	*8.6*	*8.9*	*9.0*	*8.6*	*8.8*
Russian Federation	15.2	15.4	16.1	16.4	16.0	15.8
Murmansk Oblast	11.6	12.2	13.2	13.9	13.4	12.8
Kareliya Republic	16.5	17.4	18.7	19.9	18.5	18.2
Arkhangelsk Oblast	16.3	16.2	17.5	17.9	17.5	17.1
- Nenets AO	12.9	13.7	13.1	14.1	12.4	13.2
Komi Republic	12.9	13.5	14.9	15.6	15.2	14.4
Yamalo-Nenets AO	5.6	6.1	5.8	6.0	5.7	5.8
Khanty-Mansi AO	6.9	7.1	6.9	6.9	6.7	6.9
Taymyr AO	11.4	11.3	10.1	9.8	8.8	10.3
Evenki AO	11.7	13.1	13.4	12.2	12.5	12.6
Sakha Republic	9.7	10.2	10.2	10.2	10.2	10.1
Magadan Oblast	11.8	12.2	12.6	12.6	13.4	12.5
Koryak AO	14.9	15.1	14.8	18.7	19.2	16.5
Chukotka AO	9.6	12.4	11.3	10.8	12.2	11.2
Northern Russia	*11.6*	*12.0*	*12.6*	*13.0*	*12.5*	*12.3*
Total Northern Regions	10.2	10.5	10.9	11.2	10.8	10.7

Table C-3. Distribution of Deaths by Age and Sex.

Country/Region		2000-2004						
		0-9	10-19	20-39	40-59	60-79	80+	Total
United States	M	101,100	61,043	326,191	1,051,792	2,430,738	1,971,584	5,942,448
	F	78,342	27,484	149,210	648,748	2,008,358	3,252,653	6,164,795
Alaska	M	273	286	967	2,436	3,235	1,518	8,715
	F	203	120	429	1,341	2,292	2,048	6,433
- Alaska Natives	M	107	124	339	470	655	267	1,962
	F	82	51	171	330	476	388	1,498
Canada	M	6,429	4,363	22,269	82,640	253,090	197,621	566,412
	F	5,035	2,117	10,524	52,126	181,115	296,605	547,522
Yukon	M	12	3	38	127	201	68	449
	F	6	1	15	60	110	95	287
Northwest Territories	M	14	10	71	127	189	97	508
	F	11	7	33	62	121	101	335
Nunavut	M	38	64	91	72	112	27	404
	F	28	19	33	44	90	17	231
Northern Canada	M	*64*	*77*	*200*	*326*	*502*	*192*	*1,361*
	F	*45*	*27*	*81*	*166*	*321*	*213*	*853*
Denmark	M	1,130	560	3,909	20,346	63,006	51,695	140,646
	F	907	245	1,777	12,672	50,045	82,050	147,696
Greenland	M	45	50	178	305	586	130	1,294
	F	23	26	71	173	430	200	923
Faroe Islands	M	9	9	20	133	418	382	971
	F	5	3	17	49	305	535	914
Iceland	M	47	34	187	544	1,904	1,918	4,634
	F	39	19	82	370	1,389	2,492	4,391
Norway	M	816	513	3,622	11,161	40,999	50,667	107,778
	F	656	265	1,419	6,927	28,225	77,685	115,177
Nordland	M	44	25	180	612	2,525	2,763	6,149
	F	33	23	59	329	1,740	3,946	6,130
Troms	M	30	19	101	411	1,467	1,398	3,426
	F	25	16	48	236	913	2,123	3,361
Finnmark	M	16	19	76	264	829	565	1,769
	F	17	6	31	110	518	943	1,625
Northern Norway	M	*90*	*63*	*357*	*1,287*	*4,821*	*4,726*	*11,344*
	F	*75*	*45*	*138*	*675*	*3,171*	*7,012*	*11,116*
Sweden	M	1,178	670	4,608	21,011	86,311	112,360	226,138
	F	907	429	2,030	13,440	60,680	162,091	239,577
Västerbotten	M	29	22	143	544	2,676	3,288	6,702
	F	34	21	54	346	1,788	4,273	6,516
Norrbotten	M	46	17	168	665	3,140	3,181	7,217
	F	27	14	69	379	1,973	4,321	6,783
Northern Sweden	M	*75*	*39*	*311*	*1,209*	*5,816*	*6,469*	*13,919*
	F	*61*	*35*	*123*	*725*	*3,761*	*8,594*	*13,299*

Table C-3 continued

Finland	M	783	678	4,666	22,335	55,865	35,225	119,552
	F	542	288	1,681	9,630	38,267	73,943	124,351
Oulu	M	73	86	448	1,969	4,921	2,696	10,193
	F	45	26	155	738	3,048	5,305	9,317
Lappi	M	35	34	190	961	2,438	1,184	4,842
	F	21	14	63	366	1,538	2,129	4,131
Northern Finland	M	*108*	*120*	*638*	*2,930*	*7,359*	*3,880*	*15,035*
	F	*66*	*40*	*218*	*1,104*	*4,586*	*7,434*	*13,448*
Russian Federation	M	28,777	26,904	282,553	838,312	1,119,459	188,169	2,484,174
	F	20,621	11,274	77,228	300,753	1,039,459	692,618	2,141,953
Murmansk Oblast	M	-	-	-	-	-	-	-
	F	-	-	-	-	-	-	-
Kareliya Republic	M	-	-	-	-	-	-	-
	F	-	-	-	-	-	-	-
Arkhangelsk Oblast	M	-	-	-	-	-	-	-
	F	-	-	-	-	-	-	-
- Nenets AO	M	-	-	-	-	-	-	-
	F	-	-	-	-	-	-	-
Komi Republic	M	-	-	-	-	-	-	-
	F	-	-	-	-	-	-	-
Yamalo-Nenets AO	M	-	-	-	-	-	-	-
	F	-	-	-	-	-	-	-
Khanty-Mansi AO	M	-	-	-	-	-	-	-
	F	-	-	-	-	-	-	-
Taymyr AO	M	-	-	-	-	-	-	-
	F	-	-	-	-	-	-	-
Evenki AO	M	-	-	-	-	-	-	-
	F	-	-	-	-	-	-	-
Sakha Republic	M	-	-	-	-	-	-	-
	F	-	-	-	-	-	-	-
Magadan Oblast	M	-	-	-	-	-	-	-
	F	-	-	-	-	-	-	-
Koryak AO	M	-	-	-	-	-	-	-
	F	-	-	-	-	-	-	-
Chukotka AO	M	-	-	-	-	-	-	-
	F	-	-	-	-	-	-	-
Northern Russia	M	-	-	-	-	-	-	-
	F	-	-	-	-	-	-	-
Total Northern Regions	M	-	-	-	-	-	-	-
	F	-	-	-	-	-	-	-

Table C-4. Age-Sex-Specific Mortality Rates.

Country/Region		2000-2004						
		0-9	10-19	20-39	40-59	60-79	80+	Total
United States	M	99.8	57.4	157.4	550.3	2,866.4	11,712.7	839.8
	F	81.0	27.3	73.8	328.0	1,961.6	10,030.8	842.0
Alaska	M	107.0	98.5	206.4	489.8	2,440.0	10,982.5	525.7
	F	84.2	44.5	100.4	292.0	1,788.2	8,804.1	415.3
- Alaska Natives	M	186.6	194.5	454.1	793.7	3,328.6	12,799.6	709.0
	F	155.9	83.5	234.8	536.9	2,233.3	9,958.9	548.3
Canada	M	67.5	40.4	97.1	368.2	2,480.6	11,579.8	729.6
	F	55.4	20.6	47.1	230.4	1,566.2	9,154.8	692.0
Yukon	M	126.5	24.2	178.8	485.2	2,762.5	11,003.2	581.7
	F	63.1	8.8	66.2	243.4	1,876.8	10,149.6	382.8
Northwest Territories	M	77.7	55.6	194.7	459.4	2,913.5	13,143.6	473.1
	F	62.6	41.5	94.6	250.3	2,181.4	12,453.8	333.4
Nunavut	M	209.3	414.8	371.0	555.4	3,572.6	10,465.1	542.5
	F	164.6	129.8	144.0	382.4	3,685.5	10,241.0	336.3
Northern Canada	M	*140.2*	*168.1*	*243.2*	*488.2*	*2,970.8*	*11,895.9*	*525.5*
	F	*102.1*	*63.0*	*100.7*	*272.4*	*2,317.7*	*11,134.3*	*349.4*
Denmark	M	64.7	35.8	103.2	535.8	3,116.8	14,326.6	1,059.2
	F	54.6	16.5	48.3	340.6	2,171.7	11,379.1	1,087.9
Greenland	M	183.6	211.7	377.6	706.4	4,869.9	28,017.2	857.2
	F	96.7	113.4	172.0	543.9	3,848.2	20,920.5	699.6
Faroe Islands	M	49.3	47.2	59.2	422.0	2,524.0	12,298.8	794.2
	F	28.8	16.8	60.5	175.0	1,798.2	10,206.0	805.1
Iceland	M	42.6	30.7	87.4	297.9	2,243.0	11,970.3	644.7
	F	36.8	17.9	39.0	209.6	1,496.2	9,979.6	612.5
Norway	M	52.7	34.7	111.5	363.0	2,625.3	14,893.5	958.1
	F	44.7	18.9	45.2	233.4	1,569.8	11,526.0	1,005.9
Nordland	M	55.1	30.5	113.6	371.4	2,820.3	14,240.8	1,035.3
	F	43.6	30.1	39.4	214.6	1,725.2	10,459.6	1,032.3
Troms	M	55.6	37.6	90.7	389.8	2,814.1	14,899.3	895.0
	F	50.1	33.9	45.7	237.9	1,615.4	10,877.1	890.4
Finnmark	M	59.1	78.1	138.0	515.1	3,220.9	15,241.4	945.1
	F	66.7	25.7	60.5	239.8	1,919.1	11,780.1	898.1
Northern Norway	M	*55.9*	*40.2*	*109.9*	*400.4*	*2,880.0*	*14,545.1*	*974.7*
	F	*49.6*	*30.6*	*45.1*	*226.2*	*1,719.9*	*10,746.5*	*964.7*
Sweden	M	45.6	22.9	76.6	343.6	2,375.3	13,606.4	1,023.3
	F	36.9	15.5	35.1	225.6	1,482.7	10,836.0	1,062.6
Västerbotten	M	40.7	24.9	81.8	314.9	2,485.1	14,500.6	1,051.1
	F	49.7	25.3	32.7	210.2	1,477.2	11,127.0	1,016.8
Norrbotten	M	66.6	19.9	103.7	356.8	2,627.9	14,654.3	1,120.3
	F	41.7	17.4	48.5	216.8	1,527.7	11,691.0	1,079.1
Northern Sweden	M	*53.4*	*22.4*	*92.3*	*336.6*	*2,560.2*	*14,575.7*	*1,085.9*
	F	*45.8*	*21.4*	*40.0*	*213.6*	*1,503.3*	*11,403.6*	*1,047.6*

Table C-4 continued

Finland	M	50.8	40.8	135.7	576.8	2,886.1	13,680.3	940.8
	F	36.7	18.1	51.0	252.4	1,566.2	10,970.9	935.1
Oulu	M	46.9	50.6	144.5	596.5	3,033.9	13,784.6	888.4
	F	30.4	16.1	55.9	238.2	1,576.0	11,252.3	819.2
Lappi	M	65.5	50.1	170.2	625.3	3,040.4	14,036.8	1,018.7
	F	40.8	21.6	61.8	260.4	1,674.5	10,431.7	877.3
Northern Finland	M	*51.7*	*50.5*	*151.3*	*605.6*	*3,036.1*	*13,860.6*	*926.6*
	F	*33.1*	*17.7*	*57.5*	*245.1*	*1,607.7*	*11,004.4*	*836.2*
Russian Federation	M	84.2	45.5	268.2	900.8	2,550.7	7,289.9	734.5
	F	63.2	19.8	73.1	286.2	1,350.5	6,450.7	552.0
Murmansk Oblast	M	-	-	-	-	-	-	-
	F	-	-	-	-	-	-	-
Kareliya Republic	M	-	-	-	-	-	-	-
	F	-	-	-	-	-	-	-
Arkhangelsk Oblast	M	-	-	-	-	-	-	-
	F	-	-	-	-	-	-	-
- Nenets AO	M	-	-	-	-	-	-	-
	F	-	-	-	-	-	-	-
Komi Republic	M	-	-	-	-	-	-	-
	F	-	-	-	-	-	-	-
Yamalo-Nenets AO	M	-	-	-	-	-	-	-
	F	-	-	-	-	-	-	-
Khanty-Mansi AO	M	-	-	-	-	-	-	-
	F	-	-	-	-	-	-	-
Taymyr AO	M	-	-	-	-	-	-	-
	F	-	-	-	-	-	-	-
Evenki AO	M	-	-	-	-	-	-	-
	F	-	-	-	-	-	-	-
Sakha Republic	M	-	-	-	-	-	-	-
	F	-	-	-	-	-	-	-
Magadan Oblast	M	-	-	-	-	-	-	-
	F	-	-	-	-	-	-	-
Koryak AO	M	-	-	-	-	-	-	-
	F	-	-	-	-	-	-	-
Chukotka AO	M	-	-	-	-	-	-	-
	F	-	-	-	-	-	-	-
Northern Russia	M	-	-	-	-	-	-	-
	F	-	-	-	-	-	-	-

Table C-5. Life Expectancy at Birth.

Country/Region	2000		2001		2002		2003		2004		2000-04	
	M	F	M	F	M	F	M	F	M	F	M	F
United States	74.3	79.7	74.4	79.8	74.5	79.9	74.8	80.1	75.2	80.4	74.6	80.0
Alaska	<	<	<	<	74.5	80.1	>	>	>	>	74.5	80.1
- Alaska Natives	<	<	<	<	68.1	75.4	>	>	>	>	68.1	75.4
Canada	76.7	81.9	77.0	82.1	77.2	82.1	77.4	82.4	77.8	82.6	77.2	82.2
Yukon	73.8	78.6	76.6	80.1	73.9	80.3	75.5	83.1	74.5	78.6	74.9	80.1
Northwest Territories	74.2	78.2	73.5	78.8	73.2	79.6	73.8	75.7	78.4	81.7	74.6	78.8
Nunavut	66.2	69.7	66.3	70.3	67.2	69.6	66.5	70.5	66.8	74.2	66.6	70.9
Denmark	74.3	79.0	74.7	79.3	74.8	79.5	75.2	79.9	75.6	80.2	74.9	79.6
Greenland	<	<	<	<	64.6	70.4	>	>	>	>	64.6	70.4
- Born in Greenland	<	<	<	<	63.7	70.0	>	>	>	>	63.7	70.0
Faroe Islands	<	<	<	<	77.0	81.3	>	>	>	>	77.0	81.3
Iceland	78.4	81.8	78.9	83.3	78.7	82.5	79.7	82.7	79.2	82.7	79.0	82.6
Norway	76.0	81.4	76.2	81.5	76.4	81.5	77.1	82.0	77.5	82.3	76.6	81.7
Nordland	<	<	<	<	76.7	82.0	>	>	>	>	76.7	82.0
Troms	<	<	<	<	76.5	81.5	>	>	>	>	76.5	81.5
Finnmark	<	<	<	<	74.6	80.6	>	>	>	>	74.6	80.6
Sweden	77.4	82.0	77.6	82.1	77.7	82.1	77.9	82.5	78.4	82.7	77.8	82.3
Västerbotten	<	<	<	<	77.6	82.1	>	>	>	>	77.6	82.1
Norrbotten	<	<	<	<	76.6	81.6	>	>	>	>	76.6	81.6
Finland	74.2	81.0	74.6	81.5	74.9	81.5	75.1	81.8	75.3	82.3	74.8	81.6
Oulu	<	<	<	<	74.3	81.6	>	>	>	>	74.3	81.6
Lappi	73.1	80.6	73.4	81.1	73.7	80.9	73.5	81.6	74.7	81.5	73.7	81.1
Russian Federation	59.0	72.3	58.9	72.2	58.7	71.9	58.6	71.8	58.9	72.3	58.8	72.1
Murmansk Oblast	58.5	71.0	58.0	70.5	57.4	70.2	56.8	70.0	57.1	70.7	57.6	70.5
Kareliya Republic	56.4	70.2	55.9	70.0	54.9	69.2	53.7	69.0	54.8	69.6	55.1	69.6
Arkhangelsk Oblast	56.3	70.6	56.4	71.1	55.7	70.2	55.4	69.9	55.6	70.5	55.9	70.5
- Nenets AO	54.0	68.3	52.4	68.5	55.5	69.2	52.0	68.1	55.4	70.9	53.8	69.0
Komi Republic	57.8	70.1	57.4	70.4	56.2	69.2	55.5	68.7	56.1	69.3	56.6	69.5
Yamalo-Nenets AO	61.6	72.3	60.6	71.8	62.3	71.7	61.6	72.3	63.0	73.2	61.8	72.2
Khanty-Mansi AO	59.9	72.6	60.5	72.4	61.6	72.8	62.0	73.1	62.6	74.0	61.3	73.0
Taymyr AO	51.4	66.7	52.6	65.4	55.1	66.9	54.9	68.2	57.1	70.3	54.2	67.5
Evenki AO	54.4	63.4	50.1	65.2	51.4	64.2	55.0	66.8	57.1	63.1	53.6	64.6
Sakha Republic	57.9	70.3	57.3	70.1	57.5	70.3	58.1	70.6	58.5	70.7	57.9	70.4
Magadan Oblast	55.7	70.0	56.1	68.8	56.7	68.9	57.4	70.0	56.8	69.1	56.6	69.4
Koryak AO	52.4	60.2	51.8	60.0	51.4	62.8	47.4	63.3	46.4	62.1	49.9	61.7
Chukotka AO	54.9	67.1	51.0	61.2	53.3	63.9	54.8	64.5	54.0	61.7	53.6	63.7

Table C-6. Number of Infant Deaths.

Country/Region	2000			2001			2002		
	NNM	PNM	Total	NNM	PNM	Total	NNM	PNM	Total
United States	18,776	9,259	28,035	18,265	9,303	27,568	18,747	9,287	28,034
Alaska	35	32	67	38	45	83	19	36	55
- Alaska Natives	15	14	29	8	30	38	5	12	17
Canada	1,193	544	1,737	1,261	478	1,739	1,277	485	1,762
Yukon	0	1	1	3	0	3	2	1	3
Northwest Territories	5	1	6	2	1	3	5	2	7
Nunavut	5	4	9	4	8	12	2	6	8
Northern Canada	*10*	*6*	*16*	*9*	*9*	*18*	*9*	*9*	*18*
Denmark	270	88	358	227	93	320	217	67	284
Greenland	5	6	11	6	7	13	14	2	16
- Born in Greenland	5	6	11	6	7	13	12	2	14
Faroe Islands	0	0	0	0	0	0	2	0	2
Iceland	11	2	13	8	3	11	5	4	9
Norway	156	70	226	168	62	230	132	54	186
Nordland	9	8	17	9	3	12	5	0	5
Troms	9	4	13	4	2	6	3	2	5
Finnmark	3	2	5	5	2	7	1	1	2
Northern Norway	*21*	*14*	*35*	*18*	*7*	*25*	*9*	*3*	*12*
Sweden	211	98	309	229	105	334	211	102	313
Västerbotten	10	5	15	4	4	8	5	3	8
Norrbotten	4	9	13	5	3	8	6	6	12
Northern Sweden	*14*	*14*	*28*	*9*	*7*	*16*	*11*	*9*	*20*
Finland	136	69	205	122	59	181	117	48	165
Oulu	9	5	14	10	10	20	6	5	11
Lappi	5	3	8	4	4	8	5	2	7
Northern Finland	*14*	*8*	*22*	*14*	*14*	*28*	*11*	*7*	*18*
Russian Federation	-	-	19,286	-	-	19,104	-	-	18,407
Murmansk Oblast	-	-	99	-	-	121	-	-	107
Kareliya Republic	-	-	91	-	-	87	-	-	72
Arkhangelsk Oblast	-	-	171	-	-	206	-	-	174
- Nenets AO	-	-	13	-	-	12	-	-	11
Komi Republic	-	-	128	-	-	96	-	-	120
Yamalo-Nenets AO	-	-	85	-	-	97	-	-	92
Khanty-Mansi AO	-	-	157	-	-	157	-	-	166
Taymyr AO	-	-	9	-	-	13	-	-	13
Evenki AO	-	-	6	-	-	6	-	-	8
Sakha Republic	-	-	230	-	-	232	-	-	210
Magadan Oblast	-	-	29	-	-	22	-	-	30
Koryak AO	-	-	9	-	-	5	-	-	11
Chukotka AO	-	-	16	-	-	30	-	-	21
Northern Russia	-	-	*1,030*	-	-	*1,072*	-	-	*1,024*
Total Northern Regions	-	-	1,211	-	-	1,253	-	-	1,156

Table C-6. Number of Infant Deaths (continued).

Country/Region	2003			2004			2000-2004		
	NNM	PNM	Total	NNM	PNM	Total	NNM	PNM	Total
United States	18,893	9,132	28,025	18,593	9,343	27,936	93,274	46,324	139,598
Alaska	32	38	70	36	33	69	160	184	344
- Alaska Natives	8	15	23	16	13	29	52	84	136
Canada	1,323	442	1,765	1,344	431	1,775	6,398	2,380	8,778
Yukon	2	0	2	3	1	4	10	3	13
Northwest Territories	3	1	4	0	0	0	15	5	20
Nunavut	5	10	15	7	5	12	23	33	56
Northern Canada	*10*	*11*	*21*	*10*	*6*	*16*	*48*	*41*	*89*
Denmark	204	82	286	220	63	283	1,138	393	1,531
Greenland	5	3	8	2	8	10	32	26	58
- Born in Greenland	2	3	5	2	5	7	27	23	50
Faroe Islands	1	0	1	1	2	3	4	2	6
Iceland	8	2	10	6	6	12	38	17	55
Norway	140	57	197	126	61	187	722	304	1,026
Nordland	6	4	10	6	3	9	35	18	53
Troms	4	3	7	3	4	7	23	15	38
Finnmark	1	2	3	4	2	6	14	9	23
Northern Norway	*11*	*9*	*20*	*13*	*9*	*22*	*72*	*42*	*114*
Sweden	220	88	308	225	89	314	1,096	482	1,578
Västerbotten	7	5	12	4	1	5	30	18	48
Norrbotten	8	3	11	7	3	10	30	24	54
Northern Sweden	*15*	*8*	*23*	*11*	*4*	*15*	*60*	*42*	*102*
Finland	120	62	182	142	51	193	637	289	926
Oulu	7	10	17	11	6	17	43	36	79
Lappi	4	3	7	4	1	5	22	13	35
Northern Finland	*11*	*13*	*24*	*15*	*7*	*22*	*65*	*49*	*114*
Russian Federation	-	-	18,142	-	-	17,339	-	-	92,278
Murmansk Oblast	-	-	78	-	-	98	-	-	503
Kareliya Republic	-	-	59	-	-	71	-	-	380
Arkhangelsk Oblast	-	-	176	-	-	145	-	-	872
- Nenets AO	-	-	19	-	-	6	-	-	61
Komi Republic	-	-	107	-	-	99	-	-	550
Yamalo-Nenets AO	-	-	89	-	-	97	-	-	460
Khanty-Mansi AO	-	-	153	-	-	140	-	-	773
Taymyr AO	-	-	16	-	-	11	-	-	62
Evenki AO	-	-	3	-	-	6	-	-	29
Sakha Republic	-	-	188	-	-	197	-	-	1,057
Magadan Oblast	-	-	24	-	-	24	-	-	129
Koryak AO	-	-	3	-	-	5	-	-	33
Chukotka AO	-	-	19	-	-	16	-	-	102
Northern Russia	-	-	*915*	-	-	*909*	-	-	*4,950*
Total Northern Regions	-	-	1,083	-	-	1,065	-	-	5,768

Table C-7. Infant Mortality Rates.

Country/Region	2000			2001			2002		
	NNM	PNM	Total	NNM	PNM	Total	NNM	PNM	Total
United States	4.6	2.3	6.9	4.5	2.3	6.8	4.7	2.3	7.0
Alaska	3.5	3.2	6.7	3.8	4.5	8.3	1.9	3.6	5.5
- Alaska Natives	6.0	5.6	11.6	3.1	11.8	14.9	2.1	4.9	7.0
Canada	3.6	1.7	5.3	3.8	1.4	5.2	3.9	1.5	5.4
Yukon	0.0	2.7	2.7	8.7	0.0	8.7	5.9	2.9	8.8
Northwest Territories	7.4	1.5	8.9	3.3	1.6	4.9	7.9	3.1	11.0
Nunavut	6.9	5.5	12.4	5.6	11.3	16.9	2.8	8.3	11.0
Northern Canada	*5.6*	*3.4*	*9.0*	*5.4*	*5.4*	*10.8*	*5.3*	*5.3*	*10.6*
Denmark	4.0	1.3	5.3	3.5	1.4	4.9	3.4	1.0	4.4
Greenland	5.6	6.8	12.4	6.4	7.5	13.9	14.9	2.1	17.0
- Born in Greenland	6.2	7.4	13.6	7.0	8.2	15.3	14.1	2.3	16.4
Faroe Islands	0.0	0.0	0.0	0.0	0.0	0.0	2.8	0.0	2.8
Iceland	2.5	0.5	3.0	2.0	0.7	2.7	1.2	1.0	2.2
Norway	2.6	1.2	3.8	3.0	1.1	4.1	2.4	1.0	3.4
Nordland	3.2	2.8	6.0	3.3	1.1	4.4	1.9	0.0	1.9
Troms	4.3	1.9	6.2	2.1	1.0	3.1	1.6	1.1	2.7
Finnmark	2.7	1.8	4.4	5.2	2.1	7.3	1.0	1.0	2.0
Northern Norway	*3.5*	*2.3*	*5.8*	*3.2*	*1.2*	*4.5*	*1.6*	*0.5*	*2.2*
Sweden	2.3	1.1	3.4	2.5	1.1	3.7	2.2	1.1	3.3
Västerbotten	4.2	2.1	6.2	1.6	1.6	3.2	2.0	1.2	3.2
Norrbotten	1.6	3.7	5.3	2.1	1.3	3.4	2.6	2.6	5.2
Northern Sweden	*2.9*	*2.9*	*5.8*	*1.9*	*1.5*	*3.3*	*2.3*	*1.9*	*4.2*
Finland	2.4	1.2	3.6	2.2	1.1	3.2	2.1	0.9	3.0
Oulu	1.6	0.9	2.4	1.7	1.7	3.5	1.0	0.8	1.9
Lappi	2.5	1.5	4.0	2.2	2.2	4.4	2.8	1.1	4.0
Northern Finland	*1.8*	*1.0*	*2.8*	*1.9*	*1.9*	*3.7*	*1.4*	*0.9*	*2.4*
Russian Federation	-	-	15.2	-	-	14.6	-	-	13.2
Murmansk Oblast	-	-	12.3	-	-	14.6	-	-	12.2
Kareliya Republic	-	-	14.3	-	-	12.7	-	-	9.9
Arkhangelsk Oblast	-	-	14.1	-	-	15.7	-	-	12.5
- Nenets AO	-	-	24.0	-	-	20.1	-	-	18.2
Komi Republic	-	-	12.9	-	-	9.3	-	-	10.7
Yamalo-Nenets AO	-	-	14.6	-	-	15.2	-	-	13.9
Khanty-Mansi AO	-	-	10.1	-	-	9.2	-	-	8.7
Taymyr AO	-	-	19.6	-	-	23.1	-	-	21.4
Evenki AO	-	-	24.8	-	-	21.9	-	-	30.4
Sakha Republic	-	-	17.5	-	-	17.5	-	-	15.1
Magadan Oblast	-	-	15.1	-	-	11.4	-	-	15.0
Koryak AO	-	-	31.1	-	-	16.8	-	-	35.5
Chukotka AO	-	-	23.3	-	-	41.7	-	-	32.2
Northern Russia	-	-	*13.8*	-	-	*13.6*	-	-	*12.1*
Total Northern Regions	-	-	10.9	-	-	11.0	-	-	9.7

Table C-7. Infant Mortality Rates (continued).

Country/Region	2003			2004			2000-2004		
	NNM	PNM	Total	NNM	PNM	Total	NNM	PNM	Total
United States	4.6	2.2	6.9	4.5	2.3	6.8	4.6	2.3	6.9
Alaska	3.2	3.8	6.9	3.5	3.2	6.7	3.2	3.7	6.8
- Alaska Natives	3.2	6.1	9.3	6.2	5.0	11.2	4.1	6.7	10.8
Canada	3.9	1.3	5.3	4.0	1.3	5.3	3.8	1.4	5.3
Yukon	6.0	0.0	6.0	8.2	2.7	11.0	5.7	1.7	7.4
Northwest Territories	4.3	1.4	5.7	0.0	0.0	0.0	4.5	1.5	6.0
Nunavut	6.6	13.2	19.8	9.4	6.7	16.1	6.3	9.0	15.3
Northern Canada	*5.6*	*6.1*	*11.7*	*5.5*	*3.3*	*8.8*	*5.5*	*4.7*	*10.2*
Denmark	3.2	1.3	4.4	3.4	1.0	4.4	3.5	1.2	4.7
Greenland	5.6	3.4	8.9	2.2	9.0	11.2	7.0	5.7	12.7
- Born in Greenland	2.5	3.7	6.2	2.5	6.2	8.6	6.5	5.6	12.1
Faroe Islands	1.4	0.0	1.4	1.4	2.8	4.1	1.2	0.6	1.7
Iceland	1.9	0.5	2.4	1.4	1.4	2.8	1.8	0.8	2.6
Norway	2.5	1.0	3.5	2.2	1.1	3.3	2.5	1.1	3.6
Nordland	2.2	1.5	3.7	2.3	1.2	3.5	2.6	1.3	3.9
Troms	2.2	1.7	3.9	1.7	2.2	3.9	2.4	1.6	4.0
Finnmark	1.1	2.2	3.3	4.6	2.3	6.9	2.9	1.8	4.7
Northern Norway	*2.0*	*1.7*	*3.7*	*2.5*	*1.7*	*4.2*	*2.6*	*1.5*	*4.1*
Sweden	2.2	0.9	3.1	2.2	0.9	3.1	2.3	1.0	3.3
Västerbotten	2.7	1.9	4.6	1.6	0.4	2.0	2.4	1.4	3.8
Norrbotten	3.4	1.3	4.7	2.9	1.2	4.1	2.5	2.0	4.6
Northern Sweden	*3.0*	*1.6*	*4.6*	*2.2*	*0.8*	*3.0*	*2.5*	*1.7*	*4.2*
Finland	2.1	1.1	3.2	2.5	0.9	3.3	2.3	1.0	3.3
Oulu	1.2	1.7	2.8	1.8	1.0	2.8	1.5	1.2	2.7
Lappi	2.3	1.7	3.9	2.2	0.6	2.8	2.4	1.4	3.8
Northern Finland	*1.4*	*1.7*	*3.1*	*1.9*	*0.9*	*2.8*	*1.7*	*1.3*	*2.9*
Russian Federation	-	-	12.3	-	-	11.5	-	-	13.3
Murmansk Oblast	-	-	8.9	-	-	11.0	-	-	11.0
Kareliya Republic	-	-	8.1	-	-	9.7	-	-	9.7
Arkhangelsk Oblast	-	-	12.3	-	-	10.1	-	-	10.1
- Nenets AO	-	-	28.6	-	-	10.1	-	-	10.1
Komi Republic	-	-	9.3	-	-	8.6	-	-	8.6
Yamalo-Nenets AO	-	-	12.4	-	-	13.4	-	-	13.4
Khanty-Mansi AO	-	-	7.7	-	-	6.9	-	-	6.9
Taymyr AO	-	-	25.6	-	-	17.3	-	-	17.3
Evenki AO	-	-	10.9	-	-	22.5	-	-	22.5
Sakha Republic	-	-	13.2	-	-	13.4	-	-	13.4
Magadan Oblast	-	-	11.9	-	-	11.8	-	-	11.8
Koryak AO	-	-	11.2	-	-	14.7	-	-	14.7
Chukotka AO	-	-	28.0	-	-	20.3	-	-	20.3
Northern Russia	-	-	*10.5*	-	-	*10.3*	-	-	*10.3*
Total Northern Regions	-	-	8.8	-	-	8.5	-	-	8.5

Table C-8. Age-Standardized Mortality Rates by Cause.

	All	Infect/	Neoplasms		Endo/met/nutr		Nervous/	Circulatory		
Country/Region	causes	parasitic	all	malignant	all	diabetes	sen org	all	ischem	stroke
United States	698.9	19.1	184.7	173.9	29.0	21.7	26.3	247.8	134.4	41.8
Alaska	683.3	11.5	173.9	169.6	27.2	21.1	28.1	208.5	95.0	43.3
- Alaska Natives	939.0	19.8	217.2	215.2	25.3	16.2	21.5	226.0	95.5	49.5
Canada	585.6	9.1	184.5	180.8	25.0	19.4	25.0	186.2	103.7	36.9
Yukon	732.4	7.7	226.9	225.5	19.7	16.0	14.1	212.6	102.2	44.8
Northwest Territories	809.9	13.9	217.6	215.8	22.7	20.2	23.1	229.5	111.5	48.8
Nunavut	1,090.1	20.7	378.9	372.8	3.6	0.0	6.5	244.3	75.5	53.2
Northern Canada	*841.2*	*12.9*	*247.5*	*245.2*	*19.2*	*15.7*	*16.8*	*227.1*	*102.3*	*49.0*
Denmark	751.3	5.2	226.9	220.5	24.4	18.5	15.9	248.9	111.3	59.7
Greenland	1,433.8	36.3	358.8	344.0	24.8	15.0	15.4	421.5	124.3	133.3
- Born in Greenland	1,482.9	40.7	373.7	359.1	23.8	13.9	17.0	421.0	118.2	135.5
Faroe Islands	608.8	4.6	167.9	163.0	18.9	15.2	20.7	237.2	111.5	61.4
Iceland	559.6	5.3	168.1	165.8	8.2	6.2	28.1	214.4	115.9	48.4
Norway	624.8	7.8	175.9	172.5	13.0	9.6	17.9	226.0	103.8	52.9
Nordland	632.8	8.0	172.1	169.6	11.9	9.1	15.7	242.4	118.7	53.3
Troms	648.6	8.8	168.6	166.0	11.9	9.6	21.3	257.2	121.2	60.9
Finnmark	743.8	7.3	184.0	181.9	15.1	12.1	16.5	287.0	137.5	64.5
Northern Norway	*653.7*	*8.1*	*172.9*	*170.4*	*12.4*	*9.7*	*17.5*	*253.4*	*122.2*	*57.1*
Sweden	590.5	7.0	161.0	156.2	14.3	11.8	14.9	239.9	116.0	54.4
Västerbotten	604.2	8.9	154.1	149.5	12.3	10.1	27.5	252.1	123.1	56.6
Norrbotten	642.5	7.1	149.1	144.6	19.2	16.0	21.5	265.3	132.4	61.6
Northern Sweden	*623.7*	*8.0*	*151.5*	*146.9*	*15.8*	*13.1*	*24.5*	*259.0*	*127.9*	*59.1*
Finland	670.2	5.2	151.2	147.5	9.0	7.5	27.0	270.9	161.5	61.9
Oulu	698.0	4.9	144.7	141.1	10.2	8.5	29.0	301.3	201.2	58.4
Lappi	714.2	5.5	155.9	152.0	10.7	9.1	29.1	288.9	176.2	61.2
Northern Finland	*703.0*	*5.0*	*148.3*	*144.6*	*10.4*	*8.8*	*29.0*	*297.6*	*193.5*	*59.3*
Russian Federation	1,453.9	24.4	192.5	190.6	8.2	7.2	4.0	793.2	374.9	295.1
Murmansk Oblast	1,613.8	12.2	212.2	-	-	-	-	930.6	-	-
Kareliya Republic	1,879.5	15.8	232.2	-	-	-	-	1,059.1	-	-
Arkhangelsk Oblast	1,781.2	19.8	209.3	-	-	-	-	998.9	-	-
- Nenets AO	1,688.7	15.5	206.9	-	-	-	-	1,031.1	-	-
Komi Republic	1,763.9	18.9	208.3	-	-	-	-	921.0	-	-
Yamalo-Nenets AO	1,364.7	13.1	210.9	-	-	-	-	687.2	-	-
Khanty-Mansi AO	1,451.1	19.6	244.0	-	-	-	-	810.4	-	-
Taymyr AO	1,714.2	17.1	193.8	-	-	-	-	959.0	-	-
Evenki AO	2,119.8	47.1	286.5	-	-	-	-	846.6	-	-
Sakha Republic	1,561.5	17.9	218.6	-	-	-	-	756.3	-	-
Magadan Oblast	1,744.3	18.4	255.5	-	-	-	-	921.4	-	-
Koryak AO	2,924.2	117.4	243.6	-	-	-	-	1,581.7	-	-
Chukotka AO	1,911.8	6.8	186.1	-	-	-	-	1,073.8	-	-
Northern Russia	-	-	-	-	-	-	-	-	-	-

	Respiratory			Digestive	Genito-	Peri-	Con-			Injuries	
all	flu/pneum	chron LR	all	chr liver	urinary	natal	genital	all	accidents	suicide	homicide
63.3	16.1	35.1	26.1	9.4	15.6	5.8	4.0	53.1	33.6	10.5	6.2
60.2	12.1	36.6	27.7	9.8	10.3	3.2	4.1	86.0	56.1	20.2	6.2
95.3	26.7	49.7	53.5	19.1	16.1	3.7	5.4	160.4	98.7	40.1	12.7
44.8	11.9	24.6	22.4	6.8	10.9	4.4	3.5	39.5	24.8	11.2	1.5
56.3	14.2	33.3	25.6	10.1	8.9	7.8	4.4	93.2	66.6	15.2	7.1
97.1	29.8	52.4	21.1	12.0	12.2	4.8	5.7	83.9	56.3	20.2	5.3
203.8	26.1	159.1	8.9	1.0	7.1	9.0	8.5	149.9	64.3	76.9	8.7
96.0	*22.7*	*59.7*	*20.9*	*9.3*	*10.0*	*7.2*	*6.1*	*110.1*	*64.3*	*36.6*	*6.8*
66.0	13.5	47.9	38.6	14.0	7.9	3.8	4.5	47.6	30.5	12.3	1.1
143.8	48.3	86.0	64.7	7.7	12.3	12.3	6.7	197.9	87.9	86.3	13.2
153.2	50.5	92.4	63.1	7.6	11.8	10.6	6.9	217.9	94.9	95.9	15.5
48.7	19.8	20.3	24.8	9.8	9.3	0.8	4.0	31.8	25.6	4.8	0.0
43.1	17.0	22.3	16.1	1.3	6.8	2.3	2.8	40.0	23.6	12.4	1.2
53.8	24.6	24.8	19.8	4.7	8.2	2.7	3.7	42.6	29.6	11.3	0.9
49.7	24.5	21.2	21.5	3.7	10.4	2.6	4.7	44.5	31.8	11.8	0.5
57.3	27.1	26.1	18.2	3.4	10.8	2.6	3.9	39.7	29.3	9.0	0.5
63.6	27.0	30.6	23.1	3.7	13.7	3.1	4.8	52.7	33.9	14.9	2.4
54.0	*25.6*	*24.0*	*20.7*	*3.6*	*11.0*	*2.7*	*4.5*	*44.3*	*31.4*	*11.4*	*0.8*
36.3	14.9	16.5	19.8	5.3	7.2	2.5	3.3	40.1	22.9	11.8	1.0
32.1	13.7	12.1	17.2	3.2	7.7	2.2	5.1	39.5	26.0	9.0	0.6
41.3	16.9	18.4	18.9	3.2	9.1	3.2	4.2	46.2	31.2	11.3	1.0
36.7	*15.3*	*15.3*	*18.1*	*3.2*	*8.5*	*2.7*	*4.6*	*42.8*	*28.6*	*10.1*	*0.8*
47.7	29.0	15.0	30.7	13.1	5.6	2.3	3.7	69.8	44.0	20.4	2.5
52.6	29.7	19.0	24.2	7.6	5.7	2.0	4.4	66.4	37.8	24.1	2.5
49.7	25.9	19.4	24.7	7.8	6.5	2.2	4.7	82.1	50.6	25.2	3.8
51.7	*28.5*	*19.1*	*24.3*	*7.7*	*5.9*	*2.1*	*4.4*	*70.7*	*41.4*	*24.3*	*2.9*
65.1	26.3	33.0	45.8	22.8	9.1	10.6	7.7	213.0	287.2	36.2	27.2
52.0	-	-	49.0	-	-	-	-	187.2	-	-	-
65.5	-	-	43.6	-	-	-	-	294.8	-	-	-
67.0	-	-	49.1	-	-	-	-	274.9	-	-	-
25.4	-	-	22.2	-	-	-	-	295.5	-	-	-
79.6	-	-	65.0	-	-	-	-	281.9	-	-	-
58.0	-	-	53.5	-	-	-	-	173.0	-	-	-
48.0	-	-	49.6	-	-	-	-	165.2	-	-	-
59.0	-	-	48.9	-	-	-	-	350.5	-	-	-
84.8	-	-	106.8	-	-	-	-	400.4	-	-	-
58.0	-	-	62.1	-	-	-	-	247.8	-	-	-
123.3	-	-	58.5	-	-	-	-	243.6	-	-	-
146.4	-	-	125.2	-	-	-	-	442.3	-	-	-
150.2	-	-	67.7	-	-	-	-	285.0	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-

Note: infect = infective; endo/met/nutr = endocrine/metabolic/nutritional; sen org = sense organs; ischem = ischemic; flu/pneum = influenza pneumonia; chron LR = chronic lower respiratory; chr liver = chronic liver;

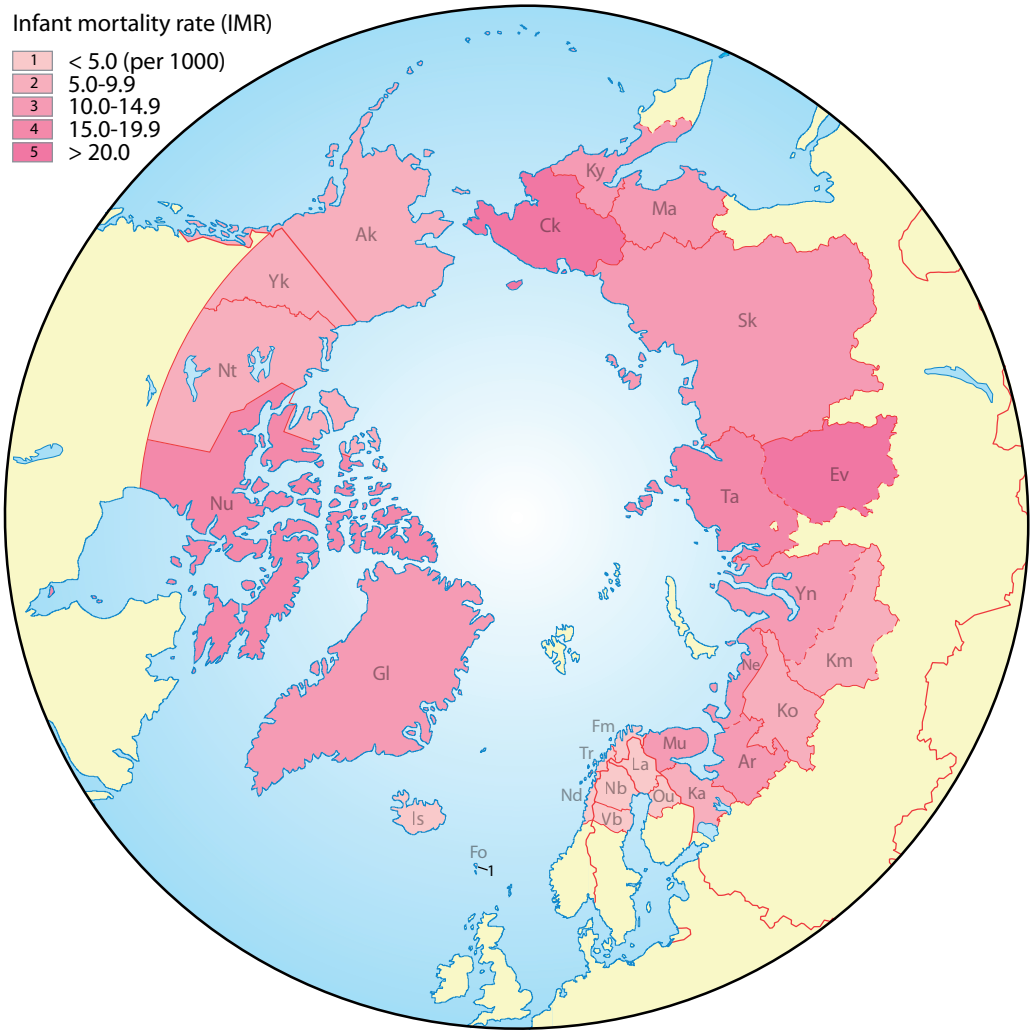

Fig. 6. Variation in total fertility rate among northern regions.
Note: See list of country and regional codes on page 11.

PART D

REPRODUCTIVE OUTCOMES

Concepts and Definitions

An important measure of reproductive outcome, the survival of the fetus while still *in utero* and also shortly after birth, is reflected in the **number and rates of perinatal deaths (Table D-1, Fig.7)**. The definition of the perinatal period and perinatal death has been plagued by highly variable definitions across national jurisdictions.

WHO defines the perinatal period as commencing at 22 completed weeks (154 days) of gestation, and ends at 7 completed days after birth. This definition dates from ICD-10 and is recommended in its guidelines for reproductive health indicators (WHO 2006).

Perinatal death is thus a death (of a fetus or a neonate) within this perinatal period. WHO also specifies that the fetus should weigh at least 500 grams or has a crown-heel length of 25 cm or more.

A neonate who dies between birth and 7 completed days clearly had to be born alive first, and counted originally as a livebirth. The rather cumbersome WHO definition of a livebirth is given earlier in Part B. Closely aligned with this is the WHO definition of a fetal death:

Death prior to the complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of pregnancy; the death is indicated by the fact that after such separation the fetus does not breathe or show any other evidence of life, such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles (WHO Reproductive Health Indicators, 2006:32).

Fetal death is the preferred term, and should replace others such as "stillbirth", "miscarriage" or "spontaneous abortion". Fetal deaths do not include induced terminations of pregnancy (induced abortions).

The WHO's "22 weeks" definition is adhered to by Denmark, Finland, and Iceland; Norway starts registering fetal deaths at 12 weeks, most but not all Canadian provinces/territories and American states at 20 weeks, and Sweden at 28 weeks. Such inconsistency has led to the recommendation to report late fetal deaths (gestation of 28+ weeks and/or birthweight of 1,000+ grams) in international comparisons. Most national statistical agencies do report different sets of perinatal mortality data corresponding to definitions of 28+ weeks, 20+ weeks, or some other gestational age.

In this report:

Late fetal deaths (LaFe) = fetal deaths of 28 weeks or more gestation
Early neonatal deaths (EaNe) = deaths during day 0 to day 6
Perinatal deaths = LaFe + EaNe

Late fetal death rate = (number of late fetal deaths in year X) / (sum of livebirths and late fetal deaths in year X)
Perinatal mortality rate = (sum of late fetal deaths and early neonatal deaths in year X) / (sum of livebirths and late fetal deaths in year X)

Both rates are expressed as per 1,000 total births. Rates for 2000-04 were calculated by dividing the sum of deaths during the 5-year period by sum of livebirths and late fetal deaths in the same 5-year period. The number of livebirths in Table D-1 may differ from those reported in Table B-1 depending on the source of data for the perinatal deaths [see below].

The birthweight of an infant provides a gross, but easily obtainable, summary measure of the state of health and nutrition of the fetus while *in utero*. The number of **livebirths by birthweight (Table D-2)** gives rise to estimates of the prevalence of low birthweight and high birthweight births. Increasingly, birthweight is recognized as a strong predictor of the development of adult chronic diseases such as heart disease and diabetes.

There is general agreement on the various low birthweight categories among international (eg. WHO Reproductive Health Indicators 2006:36) and national (eg. the CDC Pediatric and Pregnancy Nutrition Surveillance System [www.cdc.gov/pednss]) agencies. High birthweight has not been a concern of WHO, but among the developed countries, it is also a target of monitoring because of its association with childhood obesity.

Low birthweight (LBW) = <2,500 grams
Very low birthweight (VLBW) = <1,500 grams
Extremely low birthweight = <1,000 grams
High birthweight (HBW) = >4,000 grams

Prevalence of low birthweight births = (number of births with birthweight <2500 grams, or <1,500 grams, or <1,000 grams) / (total number of births with birthweight information)
Prevalence of high birthweight births = (number of births with birthweight >4,000 grams) / (total number of births with birthweight information)

These are usually expressed as percent of all livebirths.

Some infants are born too early or too late, and the number of **livebirths by gestational age (Table D-3)** can be used to generate the prevalence of pre-term and post-term births.

The duration of gestation is measured from the first day of the last normal menstrual period. Gestational age is expressed in completed days or completed weeks. Increasingly the use of ultrasonography during prenatal care increases the accuracy of gestational age estimate. While premature infants tend to have low birthweight, gestational age and birthweight are two different concepts, and it is important to distinguish low birthweight due to prematurity and that due to intrauterine growth retardation in a full-term infant.

Pre-term birth = gestational age less than 37 completed weeks
Post-term birth = gestational age of 42 or more completed weeks.

The prevalence is usually expressed as a percent of all livebirths for which gestational age information is available.

Data Sources and Limitations

Perinatal mortality

The sources of perinatal mortality data for Canada and the United States are the national statistical agencies Statistics Canada and NCHS. For the Nordic countries, they are the medical births registry or the office of the chief medical officer.

- United States national data (2000-2003) were from *National Vital Statistics Reports* (MacDorman et al 2007). Alaska all-races and Alaska Native data (2000-03) were obtained by special request from NCHS.
- Canada data were from Statistics Canada CANSIM Table 102-0508;
- Denmark data were from Eurostat;
- Number of late fetal deaths for Greenland were as reported in the annual report of the Chief Medical Officer *Årsberetning 2005*; the number of perinatal deaths was calculated from the perinatal mortality rates in the report;
- Faroe Islands data were from the Chief Medical Officer's report *Medicinalberetning for Færøerne* 2000-2004;
- Norway data were from the website of the Medical Births Registry of the Norwegian Institute of Public Health.
- Sweden and Finland data were obtained by special requests from their Medical Births Registry at the National Board of Health and Welfare and STAKES respectively.
- Russian national and regional data were from the *Demographic Yearbook 2001, 2002, 2005* for 2000, 2001, and 2002-2004 data respectively.

The number of livebirths in Table D-1 may differ from those in Table B-1. The data in Table B-1 are from the various national statistical agencies. In the case of the United States and Canada, these agencies are also the source of information on perinatal deaths, and hence the livebirth counts in the two tables are identical. For the other jurisdictions, the medical births registry or chief medical officer is used as the source of both the number of livebirths and number of perinatal deaths. The livebirth counts from these sources (Table D-1) differ from those of their national statistical agencies (Table B-1) in that the former tends to record and report only on births occurring within the country, whereas the latter record and report on births to mothers who are citizens/permanent residents regardless of place of delivery. Because of incomplete data capture from health care institutions, the livebirth counts in the medical births registry also tend to be lower than the counts reported by the national statistical agencies. For further information about the Nordic countries' highly developed medical births registries, see for example Irgens (2000) on the development of the Norwegian registry. An evaluation of the quality of the Swedish registry is available in English from the National Board of Health and Welfare (Socialstyrelsen 2003).

Birthweights

Birthweight data were available from some national statistical agencies – United States (NCHS VitalStats website), Canada (CANSIM Table 102-4509), Greenland (*Befolkningens bevægelser* 2000-2004), Denmark and Iceland.

Norway, Sweden and Finland data were obtained by special request to their medical births registries. Finland national data were also available from the report "Parturients, deliveries and births" 2001-2004 by the Medical Birth Registry of STAKES (Vuori and Gissler, various years).

Faroe Islands data were available only for 2005-2006. Russia data for 2000 and 2004 (% only) were available from *Public Health in Russia 2005*, Fig.2.59

Gestational age

Gestational age data were available from the national statistical agencies of the United States (NCHS VitalStats website) and Canada (CANSIM Table 102-4512). Data from all other jurisdictions were from their medical birth registry or the chief medical officer:

- Denmark data were from reports of the Medical Birth Registry of the National Board of Health *Fødselsregisteret* for 2004, 2003, and 1997-2001 in the bulletin *Nye tal fra Sundhedsstyrelsen* 2003;7(12); 2004;8(4); and 2005;9(4);
- Greenland data were calculated from rates reported in annual reports of the Chief Medical Officer *Årsberetning* for 2000-2005; separate data for births to mothers born in Greenland were not available;
- Faroe Islands data for the 2000-04 period (prevalence only) were available from NOMESCO;
- Iceland data (prevalence only) for 2003 were from the special Children's Health section in *Health Statistics in the Nordic Countries 2003* (NOMESCO 2005:203)
- Norway, Sweden and Finland data were obtained by special request from the medical births registry of these countries; Finland national data were also available from the report "Parturients, deliveries and births" 2001-2004 by the Medical Birth Registry of STAKES (Vuori and Gissler, various years);
- Russia data were not available.

Tables

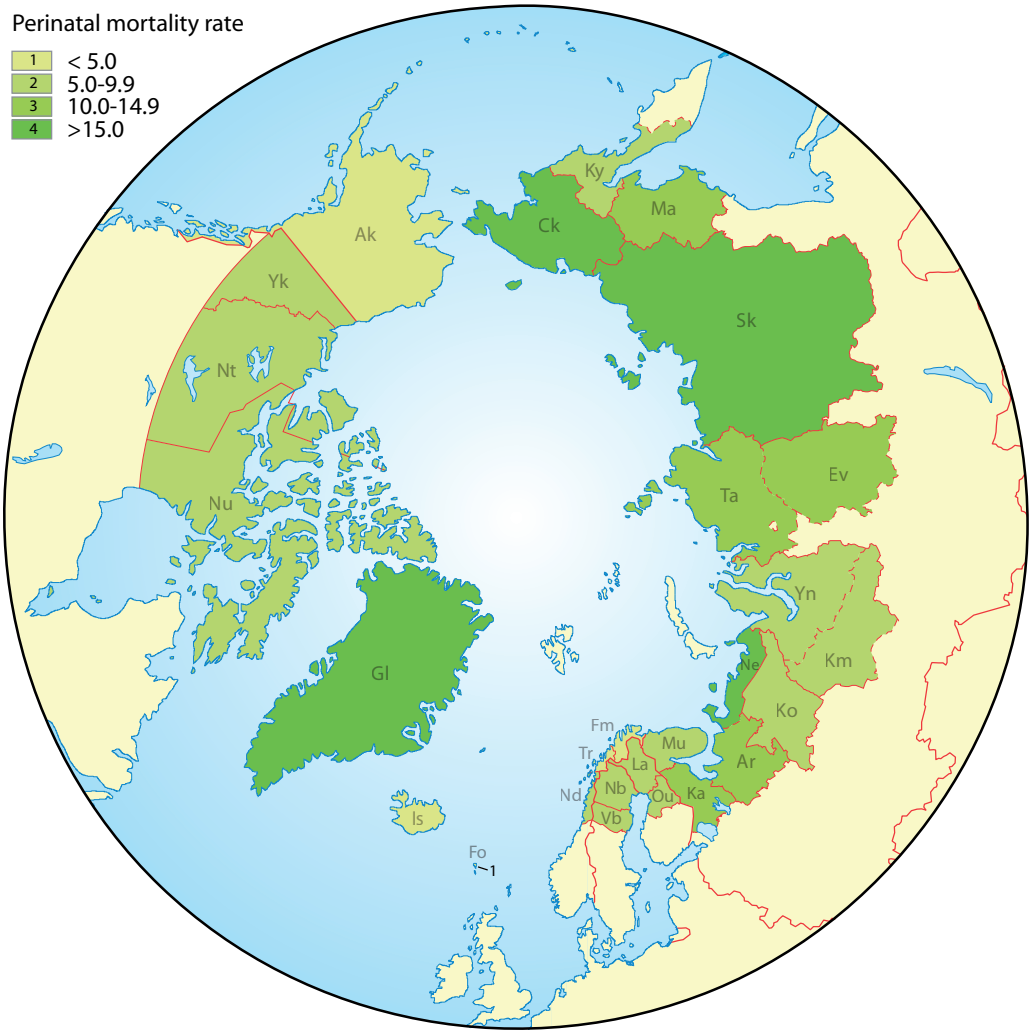

Fig. 7. Variation in perinatal mortality rate among northern regions.
Note: See list of country and regional codes on page 11.

Table D-1. Number and Rates of Perinatal Deaths.

Country/Region	Number (2000-2004)				Mortality rate	
	Livebirths	LaFe	EaNe	Peri	Late fetal	Perinatal
United States	16,196,423	52,113	59,687	111,800	3.2	6.9
Alaska	40,001	110	85	195	2.7	4.9
- Alaska Natives	9,966	23	32	55	2.3	5.5
Canada	1,662,702	5,184	5,283	10,467	3.1	6.3
Yukon	1,753	7	8	15	4.0	8.5
Northwest Territories	3,320	15	14	29	4.5	8.7
Nunavut	3,668	20	15	35	5.4	9.5
Northern Canada	*8,741*	*42*	*37*	*79*	*4.8*	*9.0*
Denmark	325,825	1,304	931	2235	4.0	6.8
Greenland	4,560	31	40	71	6.8	15.6
- Born in Greenland	-	-	-	-	-	-
Faroe Islands	3,477	10	2	12	2.9	3.4
Iceland	20,830	52	31	83	2.5	4.0
Norway	287,020	949	565	1,514	3.3	5.3
Nordland	13,449	56	28	84	4.1	6.2
Troms	9,531	26	16	42	2.7	4.4
Finnmark	4,866	12	8	20	2.5	4.1
Northern Norway	*27,846*	*94*	*52*	*146*	*3.4*	*5.2*
Sweden	470,877	1,683	781	2,464	3.6	5.2
Västerbotten	12,111	47	22	76	3.9	6.2
Norrbotten	11,719	45	21	62	3.8	5.3
Northern Sweden	*23,830*	*92*	*43*	*138*	*3.9*	*5.8*
Finland	281,681	1,025	500	1,525	3.6	5.4
Oulu	29,459	119	40	159	4.0	5.4
Lappi	9,114	37	17	54	4.0	5.9
Northern Finland	*38,573*	*156*	*57*	*213*	*4.0*	*5.5*
Russian Federation	6,955,149	43,991	39,499	83,490	6.3	11.9
Murmansk Oblast	42,734	238	179	417	5.5	9.7
Kareliya Republic	35,064	225	173	398	6.4	11.3
Arkhangelsk Oblast	67,804	516	403	919	7.6	13.5
- Nenets AO	3,005	23	28	51	7.6	16.8
Komi Republic	54,359	276	165	441	5.1	8.1
Yamalo-Nenets AO	33,289	170	153	323	5.1	9.7
Khanty-Mansi AO	92,020	435	284	719	4.7	7.8
Taymyr AO	2,892	14	21	35	4.8	12.0
Evenki AO	1,320	5	11	16	3.8	12.1
Sakha Republic	69,236	541	522	1,063	7.8	15.2
Magadan Oblast	9,898	70	61	131	7.0	13.1
Koryak AO	1,504	3	11	14	2.0	9.3
Chukotka AO	3,524	18	35	53	5.1	15.0
Northern Russia	*413,644*	*2,511*	*2,018*	*4,529*	*6.0*	*10.9*
Total Northern Regions	467,365	2,526	1,932	4,461	5.4	9.5

Table D-2. Distribution of Livebirths by Birthweight.

Country/Region	Number of livebirths (2000-2004)						Prevalence (%)		
	0-999	1000-1499	1500-2499	2500-3999	4000+	Total	VLBW	LBW	HBW
United States	145,468	148,754	1,291,468	16,504,661	2,199,703	20,290,054	1.5	7.8	10.8
Alaska	256	257	2,408	39,977	7,305	50,203	1.0	5.8	14.6
- Alaska Natives	77	75	593	9,474	2,285	12,504	1.2	6.0	18.3
Canada	7,280	8,641	78,974	1,380,160	183,336	1,658,391	1.0	5.7	11.1
Yukon	16	8	59	1,351	319	1,753	1.4	4.7	18.2
Northwest Territories	16	23	124	2,443	645	3,251	1.2	5.0	19.8
Nunavut	19	21	234	2,917	456	3,647	1.1	7.5	12.5
Northern Canada	*51*	*52*	*417*	*6,711*	*1,420*	*8,651*	1.2	6.0	16.4
Denmark	1,027	1,826	14,119	243,325	63,309	323,606	0.9	5.2	19.6
Greenland	13	32	199	3,297	864	4,405	1.0	5.5	19.6
- Born in Greenland	12	28	189	3,003	776	4,008	1.0	5.7	19.4
Faroe Islands	-	-	-	-	-	-	0.5	3.8	28.5
Iceland	53	87	578	14,210	5,839	20,767	0.7	3.5	28.1
Norway	1,173	1,663	11,488	211,182	61,170	286,676	1.0	5.0	21.3
Nordland	56	75	536	9,788	3,003	13,458	1.0	5.0	22.3
Troms	46	55	329	7,141	1,979	9,550	1.1	4.5	20.7
Finnmark	25	18	178	3,627	990	4,838	0.9	4.6	20.5
Northern Norway	*127*	*148*	*1,043*	*20,556*	*5,972*	*27,846*	1.0	4.7	21.4
Sweden	1,426	2,172	16,585	354,780	93,893	468,856	0.8	4.3	20.0
Västerbotten	31	44	386	9,049	2,586	12,096	0.6	3.8	21.4
Norrbotten	44	66	406	8,628	2,567	11,711	0.9	4.4	21.9
Northern Sweden	*75*	*110*	*792*	*17,677*	*5,153*	*23,807*	0.8	4.1	21.6
Finland	818	1,215	9,833	217,037	52,563	281,466	0.7	4.2	18.7
Oulu	78	136	988	22,494	5,740	29,436	0.7	4.1	19.5
Lappi	20	43	329	7,065	1,634	9,091	0.7	4.3	18.0
Northern Finland	*98*	*179*	*1,317*	*29,559*	*7,374*	*38,527*	0.7	4.1	19.1
Russian Federation	-	-	-	-	-	-	0.8	6.3	-
Murmansk Oblast	-	-	-	-	-	-	-	-	-
Kareliya Republic	-	-	-	-	-	-	-	-	-
Arkhangelsk Oblast	-	-	-	-	-	-	-	-	-
- Nenets AO	-	-	-	-	-	-	-	-	-
Komi Republic	-	-	-	-	-	-	-	-	-
Yamalo-Nenets AO	-	-	-	-	-	-	-	-	-
Khanty-Mansi AO	-	-	-	-	-	-	-	-	-
Taymyr AO	-	-	-	-	-	-	-	-	-
Evenki AO	-	-	-	-	-	-	-	-	-
Sakha Republic	-	-	-	-	-	-	-	-	-
Magadan Oblast	-	-	-	-	-	-	-	-	-
Koryak AO	-	-	-	-	-	-	-	-	-
Chukotka AO	-	-	-	-	-	-	-	-	-
Northern Russia	-	-	-	-	-	-	-	-	-

Table D-3. Distribution of Livebirths by Gestational Age.

Country/Region	2000-2004				%
	<37	37-41	42+	Total	premature
United States	2,431,631	16,320,141	1,345,466	20,097,238	12.1
Alaska	5,149	42,170	2,770	50,089	10.3
- Alaska Natives	1,799	13,674	856	16,329	11.0
Canada	125,990	1,517,719	14,970	1,658,679	7.6
Yukon	127	1,550	76	1,753	7.2
Northwest Territories	270	2,916	54	3,240	8.3
Nunavut	419	3,165	16	3,600	11.6
Northern Canada	*816*	*7,631*	*146*	*8,593*	9.5
Denmark	22,450	278,628	23,454	324,532	6.9
Greenland	376	3,966	179	4,521	8.3
- Born in Greenland	-	-	-	-	-
Faroe Islands	-	-	-	-	3.5
Iceland	-	-	-	-	5.3
Norway	20,087	243,192	21,598	284,877	7.1
Nordland	949	11,553	910	13,412	7.1
Troms	657	8,246	622	9,525	6.9
Finnmark	322	4,219	277	4,818	6.7
Northern Norway	*1,928*	*24,018*	*1,809*	*27,755*	6.9
Sweden	29,508	405,853	35,026	470,387	6.3
Västerbotten	693	10,476	941	12,110	5.7
Norrbotten	781	10,081	844	11,706	6.7
Northern Sweden	*1,474*	*20,557*	*1,785*	*23,816*	6.2
Finland	16,133	251,826	12,646	280,605	5.7
Oulu	1,651	26,268	1,500	29,419	5.6
Lappi	464	8,002	301	8,767	5.3
Northern Finland	*2,115*	*34,270*	*1,801*	*38,186*	5.5
Russian Federation	-	-	-	-	-
Murmansk Oblast	-	-	-	-	-
Kareliya Republic	-	-	-	-	-
Arkhangelsk Oblast	-	-	-	-	-
- Nenets AO	-	-	-	-	-
Komi Republic	-	-	-	-	-
Yamalo-Nenets AO	-	-	-	-	-
Khanty-Mansi AO	-	-	-	-	-
Taymyr AO	-	-	-	-	-
Evenki AO	-	-	-	-	-
Sakha Republic	-	-	-	-	-
Magadan Oblast	-	-	-	-	-
Koryak AO	-	-	-	-	-
Chukotka AO	-	-	-	-	-
Northern Russia	-	-	-	-	-

PART E

DISEASE INCIDENCE

Concepts and Definitions

As most health problems do not result in death, the causes of mortality do not provide a complete picture of the pattern of health of a population. Disease surveillance through special registries offers another source of information, but this is usually limited to the communicable (or notifiable) diseases and some chronic non-communicable diseases, notably cancer.

The **number and incidence rates of active tuberculosis (Table E-1)** are usually available from public health agencies in most developed countries, including all the circumpolar countries. Tuberculosis (TB) is caused by the bacteria *Mycobacterium tuberculosis*. It can occur in many sites in the body, although the majority of cases are pulmonary. "Active" TB denotes the presence of current active disease, which may be laboratory confirmed with positive bacterial smear or culture, but also on the basis of appropriate radiographic and/or clinical features. Only the total number of active cases and their corresponding rates were included in Table E-1 and Fig.8. Diseases caused by other species of Mycobacteria should not be counted as TB. For a detailed case definition, see the CDC's website for case definitions for infectious diseases under public health surveillance [www.cdc.gov/epo/dphsi/casedef/tuberculosis_current.htm]

Annual incidence rate of tuberculosis = (number of active cases notified in Year X) /
(mean population of year X)

This is usually expressed as per 100,000 persons. Rates were calculated from counts of cases in Table E-1 and mean annual population data in Table A-1. They may differ slightly from published rates.

Cancer is one of the few among the chronic, non-communicable diseases where population-based registries have been in existence for decades, at least among the developed countries. Cancer registration is complex and requires an adequate health care infrastructure to maintain and sustain it. Registries differ in their comprehensive coverage of cases and the quality of the data captured. **Age-standardized incidence rates of cancer (Table E-2, Fig.9)** are presented here, both for all cancers combined, and several more common sites, including lung, colon and rectum (the last two tend to be combined in some countries) in both sexes, prostate in men, and breast, cervix and uterine corpus in women. There are also very rare cancers (eg. nasopharyngeal and salivary glands) for which some circumpolar indigenous people such as the Inuit are particularly at high risk for. Friborg and Hassler (2008) reviewed in depth the epidemiology of cancer, with particular reference to the Sami and Inuit.

For age-standardization, a different standard population was used here than the one in Table C-8. To facilitate international comparisons in cancer incidence rates, the International Agency for Research on Cancer (IARC) has for years published *Cancer Incidence in Five Continents*, currently in its 8th edition (Parkin et al, 2002), where it uses a hypothetical "world" population of 100,000 people, distributed by age as follows:

Age group	Population
0-4	12,000
5-9	10,000
10-14	9,000
15-19	9,000
20-24	8,000
25-29	8,000
30-34	6,000
35-39	6,000
40-44	6,000
45-49	6,000
50-54	5,000
55-59	4,000
60-64	4,000
65-69	3,000
70-74	2,000
75-79	1,000
80-84	500
85+	500
Total	100,000

The method for age-standardization is discussed in Part C. The age-standardized incidence rates (ASIR) presented in Table E-2 can only be compared among themselves, or with any of the published rates in IARC or other scientific publications that use the same world standard population. They cannot be compared with published rates by some national agencies that use that country's population from a specific year as the standard. Increasingly many national agencies do provide different sets of ASIR using their own national population and the IARC world standard population as standards.

Note that *Cancer Incidence in Five Continents* contains information from 186 registries in 57 countries, which IARC deems to be of internationally recognized standards and comparable. Many of these registries cover only a limited number of cities or regions within countries. All the Nordic countries excluding Greenland and Faroe Islands, and all Canadian provinces and territories (including all three northern territories) are included. Many but not all states of the United States and only St. Petersburg of Russia are included. The Nordic countries also collaborate in the Association of Nordic Cancer Registries (NORDCAN) database.

Because of the large amount of data from which the ASIRs by cancer site were computed, the raw data and the different steps in the computation were not reproduced in this monograph.

Data Sources and Limitations

Tuberculosis

For TB, United States national and Alaska all-race data were obtained from the CDC On-Line Tuberculosis Information System, accessible from the CDC Wonder interactive website. Alaska Native data were from CDC's *Reported Tuberculosis in the United States* (2000: Table 17; 2001: Table 19; 2002: Table 19; 2003: Table 22; 2004: Table 22).

Canada data were from the Public Agency of Canada report *Tuberculosis in Canada*, various years. It should be noted that 97% of cases in the Canadian North occurred among its Aboriginal population.

Denmark data were from the Statens Serum Institute's bulletin EPI-NYT [2001:43; 2002:48; 2003:44; 2004:47; 2005:49]. Data for Greenland were reported in the annual report of the Chief Medical Officer, *Årsberetning* 2000 and 2004; for Faroe Islands, in its Chief Medical Officer's *Medicinalbertetning* 2005. Iceland data were available from the Directorate of Health website.

Data from the Norwegian Tuberculosis Registry maintained by the Norwegian Institute of Public Health were available from the Norgeshelsa interactive website. Finland data were from the National Public Health Institute (KTL) interactive statistical database. Sweden 2003-2004

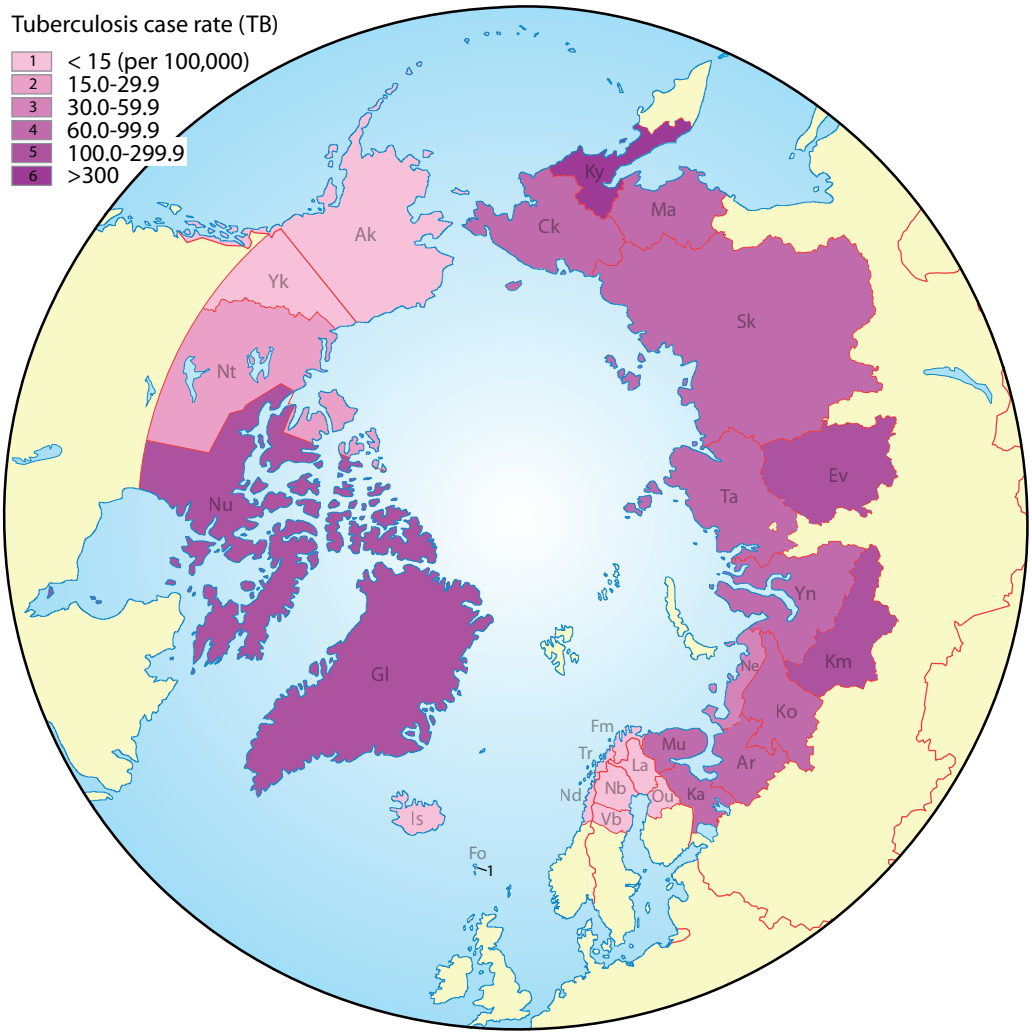

Fig. 8. Variation in tuberculosis incidence rate among northern regions.
Note: See list of country and regional codes on page 11.

data were reported by the Swedish Institute for Infectious Disease Control in *Tuberkulos i Sverige* (länsfördelning 2003-2005), and 2000-2002 data were reported in the annual epidemiologic report *Smitsamma sjukdomar.*

Russia national and regional data for 2000 and 2004 only were available from *Public Health in Russia 2001* (Table 3.34) and *2005* (Table 2.34). The mean of the two years was multiplied by 5 to generate the estimated number of cases and rates for the 2000-04 period. For the Nenets, Taymyr, Evenki, Koryak and Chukotka AO, data for 2001, 2002 and 2003 were obtained from *Economic and Social Indicators of Regions of Residence of Numerically Small Peoples 2004*.

Cancer

For cancer, United States national and Alaska state data (2000-2002) were obtained from the National Program of Cancer Registries maintained by the CDC and available from the CDC Wonder website. Alaska also has a unique resource in its Alaska Native Tumour Registry, initiated under the United States Indian Health Service, and currently maintained by the Alaska Native Tribal Health Consortium, with data going back to 1969. Age-standardized rates for Alaska Natives (1999-2003) were recalculated to the IARC world standard population using age-specific rates by sites published in the report *Cancer in Alaska Natives 1969-2003* (Lanier et al 2006).

Canada national data (2000-2003) from the Canadian Cancer Registry were retrieved from the Public Health Agency of Canada's Cancer Surveillance On Line, re-standardized to the IARC World Standard. Yukon, Northwest Territories and Nunavut data (2000-2004) were obtained by special request from Statistics Canada.

Denmark data were obtained from the NORDCAN database (for the years 1999-2001). Iceland (2000-04), Faroe Islands (2000-04) and Greenland (1999-2003) data were from the NOMESCO [www.nom-nos.dk/nomstats/cancer05.xls]. Data for individuals born in Greenland (1999-2002) were obtained by request from the research database of J. Friborg at the Statens Serum Institut in Copenhagen (described in Friborg et al 2003).

Norway data (2000-2004) were from the Cancer Registry of Norway's *Cancer in Norway 2004* report. Sweden data (2000-2004) were from the Socialstyrelsen's statistical database interactive website. Finland data (2001-2005) were from the Finnish Cancer Registry interactive website. As data are arranged by hospital districts, data for Oulun lääni were combined from those of Pohjois-Pohjanmaa and Kainuu, while those of Lapin lääni were from Lansi-Pohja and Lappi hospital districts.

No registry data were available for Russia, although *Public Health in Russia* contained "morbidity" data for cancers, neither age-standardized nor age-specific rates were available for the country as a whole or the regions.

Tables

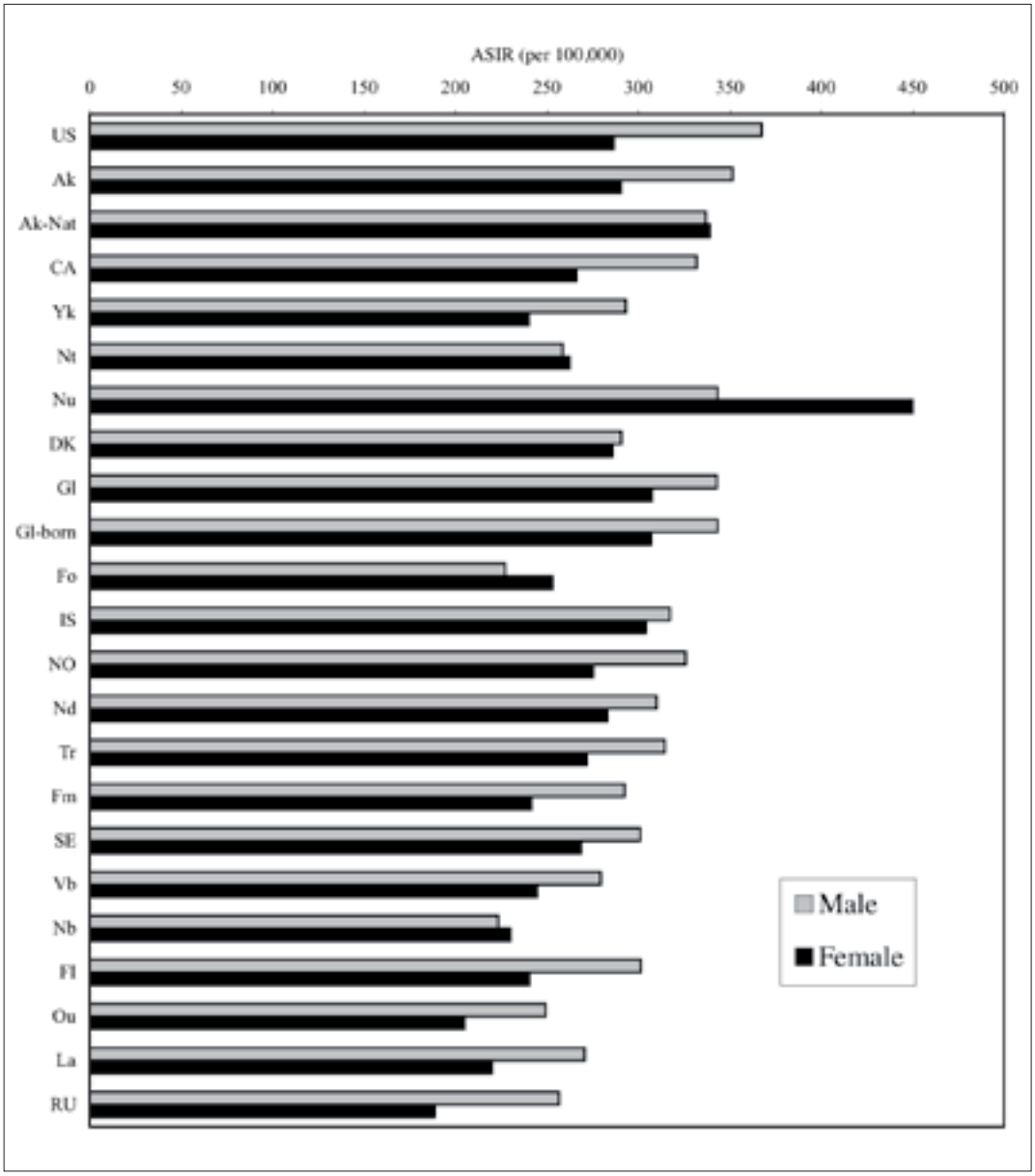

Fig. 9. Age-standardized incidence rate of cancer, all sites combined: circumpolar countries and northern regions.
Note: See list of country and regional codes on page 11.

Table E-1. Number and Incidence Rates of Active Tuberculosis.

Country/Region	2000		2001		2002		2003		2004		2000-04	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
United States	16,309	5.8	15,945	5.6	15,057	5.2	14,852	5.1	14,517	4.9	76,680	5.3
Alaska	108	17.2	54	8.5	49	7.6	57	8.8	43	6.5	311	9.7
- Alaska Natives	71	65.8	34	31.3	21	19.1	39	35.2	29	25.8	194	35.3
Canada	1,723	5.6	1,770	5.7	1,664	5.3	1628	5.1	1,613	5.0	8,398	5.4
Yukon	3	9.9	0	0.0	0	0.0	1	3.3	4	12.9	8	5.3
Northwest Territories	10	24.7	8	19.6	4	9.6	12	28.4	10	23.4	44	21.2
Nunavut	48	174.5	40	142.2	27	93.9	7	24.0	32	108.0	154	107.6
Northern Canada	*61*	*62.0*	*48*	*48.4*	*31*	*30.9*	*20*	*19.6*	*46*	*44.5*	*206*	*40.9*
Denmark	548	10.3	511	9.5	419	7.8	391	7.3	386	7.1	2,255	8.4
Greenland	44	78.3	104	184.4	83	146.6	89	156.8	69	121.2	389	137.5
Faroe Islands	6	13.1	1	2.1	0	0.0	1	2.1	0	0.0	8	3.4
Iceland	13	4.6	13	4.6	8	2.8	5	1.7	13	4.4	52	3.6
Norway	237	5.3	297	6.6	256	5.6	340	7.4	302	6.6	1,432	6.3
Nordland	5	2.1	11	4.6	17	7.2	11	4.6	14	5.9	58	4.9
Troms	9	5.9	12	7.9	5	3.3	9	5.9	8	5.2	43	5.7
Finnmark	6	8.1	4	5.4	11	14.9	10	13.6	5	6.8	36	9.8
Northern Norway	*20*	*4.3*	*27*	*5.8*	*33*	*7.1*	*30*	*6.5*	*27*	*5.8*	*137*	*5.9*
Sweden	454	5.1	440	4.9	438	4.9	410	4.6	463	5.1	2,205	4.9
Västerbotten	11	4.3	14	5.5	10	3.9	9	3.5	20	7.8	64	5.0
Norrbotten	10	3.9	9	3.5	8	3.1	6	2.4	6	2.4	39	3.1
Northern Sweden	*21*	*4.1*	*23*	*4.5*	*18*	*3.5*	*15*	*2.9*	*26*	*5.1*	*103*	*4.0*
Finland	539	10.4	493	9.5	472	9.1	412	7.9	331	6.3	2,247	8.6
Oulu	51	11.2	45	9.9	37	8.1	35	7.6	34	7.4	202	8.8
Lappi	11	5.7	29	15.2	23	12.2	11	5.9	10	5.4	84	8.9
Northern Finland	*62*	*9.6*	*74*	*11.4*	*60*	*9.3*	*46*	*7.1*	*44*	*6.8*	*286*	*8.9*
Russian Federation	140,677	96.0	132,477	90.8	128,873	88.7	124,041	85.8	118,924	82.7	44,992	88.8
Murmansk Oblast	720	77.3	-	-	-	-	-	-	580	66.2	3,250	72.1
Kareliya Republic	597	81.5	-	-	-	-	-	-	532	75.4	2,823	78.5
Arkhangelsk Oblast	1,517	109.9	-	-	-	-	-	-	953	72.7	6,175	91.9
- Nenets AO	26	63.3	18	44.0	19	46.0	20	47.9	20	47.7	103	49.8
Komi Republic	1,010	96.2	-	-	-	-	-	-	843	84.2	4,633	90.5
Yamalo-Nenets AO	535	107.6	-	-	-	-	-	-	450	86.7	2,463	97.1
Khanty-Mansi AO	1,605	117.0	-	-	-	-	-	-	1,354	92.6	7,398	104.1
Taymyr AO	25	65.3	26	67.2	27	68.5	26	65.7	33	83.7	137	70.1
Evenki AO	19	104.2	44	246.1	29	163.9	37	210.5	24	137.4	153	172.2
Sakha Republic	865	90.1	-	-	-	-	-	-	877	92.3	4,355	91.4
Magadan Oblast	222	112.1	-	-	-	-	-	-	144	81.6	915	98.4
Koryak AO	74	282.0	120	465.9	66	260.6	74	300.1	87	361.1	421	333.9
Chukotka AO	31	52.0	45	79.8	43	79.3	36	68.9	32	62.7	187	68.4
Northern Russia	*7,220*	*99.4*	-	-	-	-	-	-	*5,909*	*82.8*	*32,908*	*91.5*
Total Northern Regions	7,555	75.6	-	-	-	-	-	-	6,177	62.3	34,400	69.2

Table E-2. Age-standardized Incidence Rates of Cancer by Site and Sex.

Country/Region	All sites		Lung		Colon/rectum		Breast	Cervix	Prostate
	M	F	M	F	M	F	F	F	M
United States	367.2	286.3	57.0	36.3	39.2	28.1	92.6	7.2	110.1
Alaska	351.3	290.0	51.0	36.7	38.7	31.8	98.8	6.0	111.7
- Alaska Natives	336.6	338.7	69.2	46.6	65.4	65.9	95.9	6.4	46.8
Canada	331.6	265.9	50.7	32.9	43.7	29.7	79.4	6.4	87.7
Yukon	292.7	240.0	51.0	21.3	50.7	34.2	77.2	7.1	55.2
Northwest Territories	258.1	262.2	42.2	42.3	73.8	43.7	101.4	5.1	44.9
Nunavut	343.0	449.4	163.7	196.0	51.0	90.3	34.7	7.3	23.2
Denmark	290.2	285.6	47.0	31.8	39.6	30.0	83.9	11.0	39.9
Greenland	342.7	307.0	103.2	63.3	39.9	48.7	44.1	22.6	5.8
- Born in Greenland	342.9	306.7	116.7	65.4	38.8	43.9	34.8	25.7	1.6
Faroe Islands	226.9	253.0	29.9	15.2	29.3	34.7	75.9	11.7	23.6
Iceland	316.8	304.0	33.1	30.4	33.5	23.8	92.5	9.4	91.4
Norway	325.4	275.2	35.9	21.0	42.8	34.3	75.8	9.4	82.6
Nordland	309.6	282.7	37.7	23.0	42.3	33.3	72.5	13.3	74.8
Troms	314.0	271.5	37.3	21.6	39.5	30.5	73.1	11.4	75.6
Finnmark	292.1	241.1	51.0	21.4	38.2	27.5	65.1	12.3	54.8
Sweden	300.9	268.4	22.5	16.1	31.8	24.8	87.3	7.0	97.1
Västerbotten	279.2	244.4	17.3	11.4	33.2	66.8	73.1	5.6	99.3
Norrbotten	222.9	229.8	15.3	13.1	22.4	20.7	74.3	6.7	67.5
Finland	301.1	240.2	34.8	9.8	26.8	20.2	85.1	3.9	100.2
Oulu	248.9	204.5	34.6	9.0	20.1	14.3	65.6	3.3	75.2
Lappi	270.2	219.6	38.2	10.9	19.5	15.0	71.8	3.0	88.4
Russian Federation	256.3	188.6	-	-	-	-	-	-	-
Murmansk Oblast	-	-	-	-	-	-	-	-	-
Kareliya Republic	-	-	-	-	-	-	-	-	-
Arkhangelsk Oblast	-	-	-	-	-	-	-	-	-
- Nenets AO	-	-	-	-	-	-	-	-	-
Komi Republic	-	-	-	-	-	-	-	-	-
Yamalo-Nenets AO	-	-	-	-	-	-	-	-	-
Khanty-Mansi AO	-	-	-	-	-	-	-	-	-
Taymyr AO	-	-	-	-	-	-	-	-	-
Evenki AO	-	-	-	-	-	-	-	-	-
Sakha Republic	-	-	-	-	-	-	-	-	-
Magadan Oblast	-	-	-	-	-	-	-	-	-
Koryak AO	-	-	-	-	-	-	-	-	-
Chukotka AO	-	-	-	-	-	-	-	-	-
Northern Russia	-	-	-	-	-	-	-	-	-
Total Northern Regions	-	-	-	-	-	-	-	-	-

PART F
SOCIOECONOMIC CONDITIONS

Concepts and Definitions

Socioeconomic conditions are widely recognized to be important determinants of health. Although there are many measures, the number that can be used for international comparisons is limited. Variables such as income, education and employment are measured differently in different countries and they have different contexts. Only two measures are presented here, on the economy and on education. The former is an ecologic level measure, while the latter refers to individuals.

The **gross domestic product (Table F-1, Fig.10)** is a well established economic indicator, and is a measure of the goods and services produced within a country or region during a period. For further explanation of the concept and its measurement, see any textbook of economics, or the OECD *Factbook* (2007:24). "Domestic" refers to production occurring within the country or region, including activities of foreign-owned firms or migrant workers. GDP is to be contrasted with gross national product (GNP) which encompasses also production by a country's citizens abroad. The GDP divided by the population produces the per capita GDP to allow for comparison across regions with different sizes of population. Table F-1 also expresses the GDP of the northern regions as a percentage of their respective national GDP to indicate the relative share of the national economy. The ratio (northern per capita GDP) / (national per capita GDP) indicates if the average person in the north is better or worse off than the country's citizens as a whole.

Different countries use different currencies, and cross-national comparisons require the conversion to some common standard. While the US dollar at market exchange rates (MER) is often used, economists construct "purchasing power parities" (PPP) to adjust for price differences,

which may vary considerably among countries, and this conversion is more reflective of the true production volumes of the regions. Note that Arctic-regional PPP-factors have not been developed, and it is the PPP-factors of the national economies that are used, which could be a potential source of bias, especially if price levels are different between regions within countries.

The use of GDP as a measure of economic well-being has well-known shortcomings:

- Non-market transactions (child rearing, homemaking, etc) are excluded;
- Economic activities that are detrimental (eg. to the environment) are included;
- Value of leisure and other aspects of quality of life are excluded;
- Income distribution across the population is not measured; and
- The sustainability of production is ignored.

For northern regions, there are additional issues:

- A sizable proportion of the workforce in the north consists of seasonal workers from outside the region, and many firms are owned by non-residents and their profits leave the region. The regional GDP thus does not reflect the true income accruing to the residents of the region. On the other hand, a region such as Alaska, with its Alaska Permanent Fund, generates billions of dollars of investment income outside the state which is not captured by the state's GDP;
- Many northern regions are subsidized by the national governments, and such public sector spending are included in the regional GDP, even though it does not represent strengthening of the regional economy;
- Subsistence activities, especially by the indigenous people in the North, may not be counted at all, or inconsistently valued;
- Northern economies that are dependent on a few natural resources (eg. oil and gas) may be subject to substantial year to year variation due to market price fluctuations.

A full discussion and explanation of these issues can be found in the Statistics Norway report *The Economy of the North* (Glomsrød and Aslaksen 2006).

At the individual level, education is recognized as an important determinant of health. International comparison of educational levels of individuals is complicated by the vastly different educational systems in operation in different countries. Only one education indicator is presented here, that of **tertiary education attainment (Table F-2)**, referring to the proportion of the adult population who have completed tertiary education (or attained qualifications at that level). It should be noted that tertiary education is not necessarily the most important for health. Its selection is based on the fact that tertiary education is generally more easily identifiable and comparable across education systems. Disparities in tertiary education attainment are likely to be more pronounced across countries and regions than secondary education, which is likely to be uniformly high in the circumpolar countries.

Two issues, however, arise from the choice of tertiary education attainment: defining the age range and defining tertiary education. Some statistical agencies report their results on the population aged 15 and above, or 25 and above, with some restricting to only the "working age" (up to age 65), and others up to age 75. In young adulthood, many individuals are still engaged in formal schooling, and may not have completed their highest level of education. Setting the lower age limit at 25 will reduce this problem. In Table F-2, data from the OECD cover the range 25-64 while those from the Nordic Statistical Yearbook cover the range 15-74. Other variations are used by various national agencies.

While university is clearly tertiary education, it is by no means clear if some vocational training at the post-secondary level should also be considered tertiary. The International Standard Classification of Education (ISCED), developed by UNESCO and last revised in 1997, is based on the duration of training, age at entry and completion, academic content, etc, and encompasses all variations and permutations of educational systems in the world. Tertiary education is classed as ISCED 5 and 6. ISCED 6 refers mainly to programs leading to the research doctorate, a credential that is more or less the same everywhere. ISCED 5 is divided into 5A and 5B, with the former more "academic" or "theoretical" and the latter more "technical" or "practical". ISCED 5B may be difficult to distinguish from ISCED 4 - "post-secondary non-tertiary". In order to achieve consistency, tertiary education in Table F-2 was defined as ISCED 5A and 6, and published data that fit this definition as closely as possible were selected. Detailed notes on ISCED and how it applies to the educational systems of all OECD countries can be found in the OECD *Handbook for Internationally Comparative Education Statistics* (2004).

Data Sources and Limitations

Gross domestic product

GDP are calculated from national accounts, an exercise that is clearly beyond the competence of non-economists. Fortunately Statistics Norway has produced a report *Economy of the North* (Glomsrøld and Aslaksen 2006) which provided GDP data on exactly the same northern regions as those included in this monograph. Data in Table F-1 referred to 2003, and were reproduced from those published in Table 2.4, Fig.2.2, Fig.2.3 of the Statistics Norway report. The national data in this report were originally derived from the World Bank's World Development Indicators, while regional GDP were calculated by the report's authors. Denmark was not included in the report, and its GDP was obtained from the World Development Indicators On-Line [http://devdata.worldbank.org/dataonline] for inclusion in Table F-1.

Tertiary education

The sources of education data include censuses, labour force surveys, and particularly in the Nordic countries, education registers. Table F-2 presents tertiary education attainment data obtained from international and national agencies. Data from OECD and the Nordic Statistical Yearbook (published by the Nordic Council of Ministers) are intended for international comparisons where some effort at standardization had been made. Some data from national agencies are also provided – these should only be used for within-country comparisons.

- OECD data were for 2004, and were extracted from Table A1.3 of *Education at a Glance* (OECD 2006). Only data pertaining to ISCED 5A and 6 were presented. OECD coverage included all the circumpolar countries, including Russia, but not regions within these countries, nor Greenland and the Faroe Islands.
- *The Nordic Statistical Yearbook* also did not include Greenland or Faroe Islands. Data were from the 2005 Yearbook and referred to 2004. They differed from the OECD data in that the age range was 15-74, and both ISCED 5A and 5B (as well as ISCED 6) were included.
- United States data were from the 2000 Census, available from the American FactFinder Quick Table QT-P20, for ages 25+, and included individuals with a Bachelor's degree or higher. This is thus more restrictive than ISCED 5A, which includes also Associate degree programs in the United States.
- Canada data were from the 2001 Census, from Highlight Table 97F0024XIE2001012. Data for individuals with university degrees within the age range 25-64 were selected for inclusion in this table. This is also more restrictive than ISCED 5A, which includes for Canada university-level diploma and certificate programs of less than 3 years duration.
- Norway national and regional data were for 2002, retrieved from Statistics Norway's StatBank. Only individuals aged 25+ were included in the table, and tertiary education referred to both "short" and "long" courses, the former up to 4 years in duration and the latter exceeding 4 years. This would correspond to ISCED 5 and 6.
- Sweden data were for 2004, from Statistics Sweden's Statbank, covering individuals aged 16-74, classified as ISCED 5A and 6, with 3 or more years of duration.
- Finland data were from Statistics Finland's StaFin interactive website, and included individuals aged 15+ with qualifications from universities (*yliopistot)* and polytechnics (*ammattikorkeakoulut*), which would correspond to ISCED 5A and 6.
- Russia data were from the 2002 Census, volume 3, available as Table 2.4 in the English-language Basic Results section of the census website www.perepis2002.ru. Two categories were combined – "higher" and "postgraduate".
- Denmark and Iceland data were obtained from OECD and *Nordic Statistical Yearbook*. No data were available for Faroe Islands from these two sources or from Statistics Faroe Islands. While *Greenland in Figures 2007* showed that 23 persons attained university education in 2002/03, and 42 persons in 2004/05, these figures clearly did not include the large number of university-educated technical and professional people working in Greenland

Tables

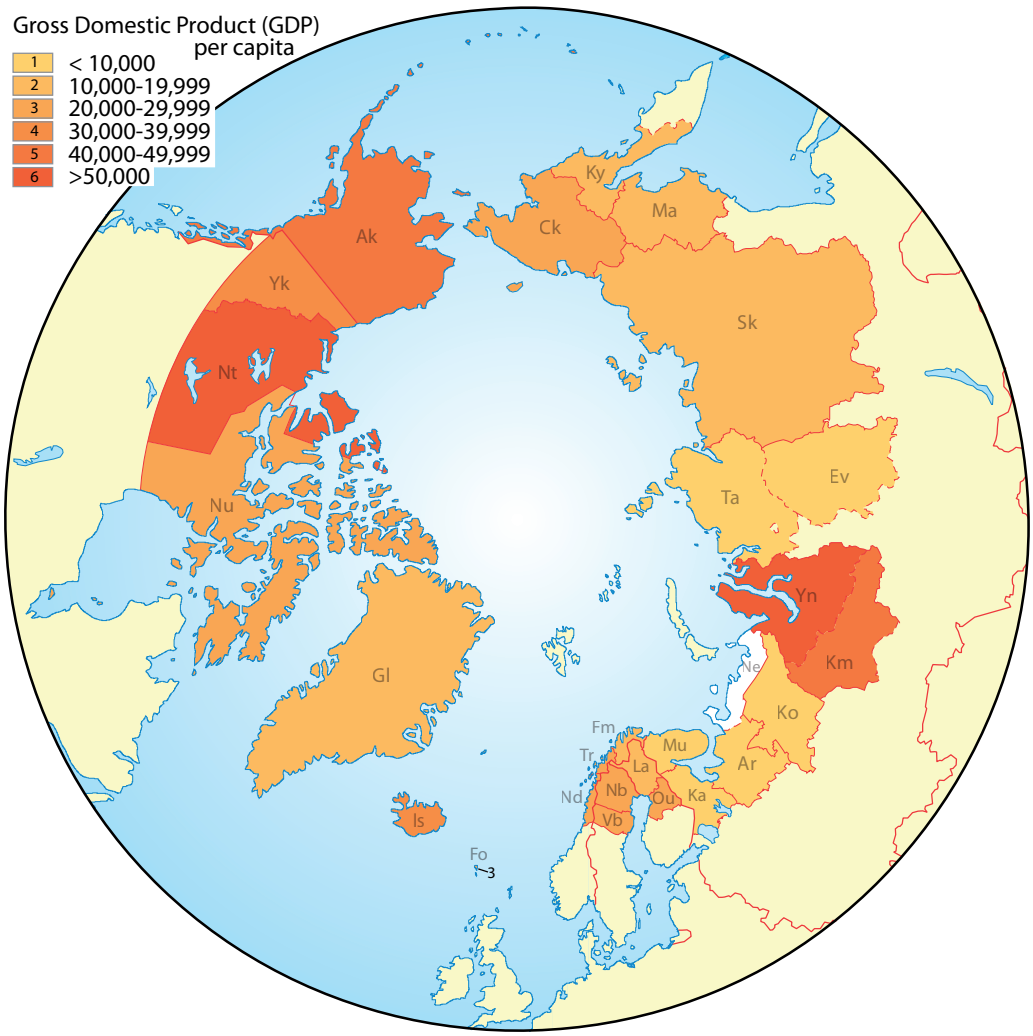

Fig. 10. Variation in gross domestic product among northern regions.
Note: See list of country and regional codes on page 11.

Table F-1. Gross Domestic Product.

Country/Region	Millions USD-PPP	%	USD-PPP per capita	Ratio
United States	10,978,000	100	37,750	1.00
Alaska	31,704.0	0.3	48,905	1.30
Canada	950,000	100	30,040	1.00
Yukon	1,000	0.1	32,740	1.09
Northwest Territories	3,259	0.3	77,212	2.57
Nunavut	790	0.1	27,102	0.90
Northern Canada	5,194	0.5	46,567	1.55
Denmark	165,800	100	30,774	1.00
Greenland	1,108	0.7	19,552	0.64
Faroe Islands	1,069	0.6	22,738	0.74
Iceland	8,835	100	30,570	1.00
Norway	173,000	100	37,910	1.00
Nordland	4,923	2.8	20,775	0.55
Troms	3,422	2.0	22,478	0.59
Finnmark	1,456	0.8	19,803	0.52
Northern Norway	9,882	5.7	21,243	0.56
Sweden	239,000	100	26,710	1.00
Västerbotten	6,441	2.7	25,159	0.94
Norrbotten	6,976	2.9	27,578	1.03
Northern Sweden	13,417	5.6	26,361	0.99
Finland	143,000	100	27,460	1.00
Oulu	10,046	7.0	21,938	0.80
Lappi	3,695	2.6	19,725	0.72
Northern Finland	13,742	9.6	21,296	0.78
Russian Federation	1,284,000	100	8,950	1.00
Murmansk Oblast	7,293	0.6	8,288	0.9
Kareliya Republic	4,462	0.3	6,294	0.7
Arkhangelsk Oblast	9,082	0.7	6,891	0.8
Komi Republic	9,990	0.8	9,941	1.1
Yamalo-Nenets AO	29,960	2.3	58,175	6.5
Khanty-Mansi AO	62,394	4.9	42,824	4.8
Taymyr AO	307	0.0	7,874	0.9
Evenki AO	93	0.0	5,184	0.6
Sakha Republic	12,322	1.0	12,985	1.5
Magadan Oblast	2,248	0.2	12,629	1.4
Koryak AO	387	0.0	16,112	1.8
Chukotka AO	1,276	0.1	24,531	2.7
Northern Russia	139,815	10.9	19,571	2.2
Total Northern Regions	224,766	17.5	22,669	2.5

Table F-2. Attainment of Tertiary Education.

	OECD (25-64)			Nordic (15-74)			National		
Country/Region	Total	Male	Female	Total	Male	Female	Total	Male	Female
United States	29.7	30.2	29.3	-	-	-	24.4	26.1	22.8
Alaska	-	-	-	-	-	-	24.7	24.1	25.4
- Alaska Natives	-	-	-	-	-	-	7.1	6.0	8.1
Canada	22.2	22.3	22.1	-	-	-	22.6	22.6	22.6
Yukon	-	-	-	-	-	-	23.4	21.3	25.5
Northwest Territories	-	-	-	-	-	-	19.4	17.8	21.1
Nunavut	-	-	-	-	-	-	11.9	11.3	12.4
Northern Canada	-	-	-	-	-	-	*19.0*	*17.5*	*20.7*
Denmark	25.2	22.0	28.5	21.5	20.0	23.0	-	-	-
Greenland	-	-	-	-	-	-	-	-	-
- Born in Greenland	-	-	-	-	-	-	-	-	-
Faroe Islands	-	-	-	-	-	-	-	-	-
Iceland	23.5	22.9	24.1	18.9	18.0	19.7	-	-	-
Norway	29.4	26.8	32.1	24.7	23.1	26.4	26.0	25.7	26.3
Nordland	-	-	-	-	-	-	19.8	18.8	20.9
Troms	-	-	-	-	-	-	25.1	23.4	26.7
Finnmark	-	-	-	-	-	-	21.4	17.6	25.2
Northern Norway	-	-	-	-	-	-	*21.8*	*20.1*	*23.5*
Sweden	19.3	17.4	21.3	22.6	19.5	25.8	17.1	16.6	19.6
Västerbotten	-	-	-	-	-	-	19.4	16.6	22.2
Norrbotten	-	-	-	-	-	-	13.6	12.3	16.5
Northern Sweden	-	-	-	-	-	-	*16.5*	*14.5*	*19.4*
Finland	17.1	17.3	16.9	26.5	23.5	29.5	25.0	22.9	27.0
Oulu	-	-	-	-	-	-	22.7	20.2	25.1
Lappi	-	-	-	-	-	-	20.7	17.8	23.6
Northern Finland	-	-	-	-	-	-	*22.1*	*19.5*	*24.7*
Russian Federation	20.7	19.6	21.8	-	-	-	16.0	15.6	16.3
Murmansk Oblast	-	-	-	-	-	-	15.5	15.4	15.5
Kareliya Republic	-	-	-	-	-	-	13.7	11.8	15.3
Arkhangelsk Oblast	-	-	-	-	-	-	12.1	11.7	12.2
- Nenets AO	-	-	-	-	-	-	9.9	8.5	11.3
Komi Republic	-	-	-	-	-	-	12.2	10.8	13.5
Yamalo-Nenets AO	-	-	-	-	-	-	16.8	14.5	19.1
Khanty-Mansi AO	-	-	-	-	-	-	15.9	13.7	18.0
Taymyr AO	-	-	-	-	-	-	13.3	11.3	15.2
Evenki AO	-	-	-	-	-	-	11.5	9.8	13.1
Sakha Republic	-	-	-	-	-	-	14.6	12.4	16.6
Magadan Oblast	-	-	-	-	-	-	15.4	13.2	17.6
Koryak AO	-	-	-	-	-	-	9.9	8.9	11.0
Chukotka AO	-	-	-	-	-	-	14.6	13.5	15.8
Northern Russia	-	-	-	-	-	-	-	-	-

PART G

HEALTH-RELATED BEHAVIOURS

Concepts and Definitions

It is well established that many personal behaviours or lifestyles are associated with the development of many diseases and health problems. Of particular importance are such behaviours as smoking, diet, alcohol and drug use, physical activity, sexual behaviour, and safety practices. The modification of such behaviours has become the core activity of health promotion programs.

Monitoring such behaviours usually require surveys based on interviews with respondents who are asked specific questions. Despite the existence of numerous health interview surveys in all the developed countries, international standardization is rare. Only one behaviour was chosen for inclusion here – smoking. Smoking is among the most important health determinants or risk factors, and it is basic information collected by most health surveys. Even so, there is considerable inconsistency in how smoking is measured and categorized.

On the basis of a set of questions, individuals can be categorized into never smokers, former smokers, and current smokers. Among the last group, it can be further divided into those who smoke daily and those only irregularly, or occasionally. **Table G-1** and **Fig.11** present the **prevalence of daily smoking among adults**. This information is one that is most comparable across countries and surveys, although there are still significant differences, which are highlighted in the following section, and thus caution is needed when interpreting the data.

In the World Health Survey designed by WHO for global implementation in 2002, [www.who.int/healthinfo/survey/instruments/en/index.html] the following questions on tobacco use were chosen:

"Do you currently smoke any tobacco product such as cigarettes, cigars, or pipes?"
[1 = daily; 2 = yes, but not daily; 5= no, not at all]
Daily smokers will answer additional questions:
"For how many years are you smoking daily?"
"On average, how many of the following products do you smoke each day:
- manufactured cigarettes
- hand-rolled cigarettes
- pipefuls of tobacco
- other

In some countries (eg. USA and Finland) there is an additional requirement that a current smoker is someone who has smoked at least a certain amount (100 cigarettes or 100 times) in their lifetime and still smoking.

Although cigarettes are the most widely used vehicles in delivering tobacco, other forms such as pipes, cigars and smokeless tobacco are also used. Although it is not always explicitly stated in survey reports, it is cigarette smoking that is usually asked and recorded. Again, reading the fine print in the survey documentation will allow one to determine if "smoking" refers only to cigarette smoking or to any form of smoking.

In addition to frequency, estimates of the duration of use and the amount consumed per day can also be derived from surveys. Increasingly issues such as ages of initiation and cessation, attempt at quitting, attitudes towards smoking, knowledge of its health effects, and exposure to passive smoking at home and at work are also part of smoking surveys.

Data Sources and Limitations

Table G-1 presents the proportion of daily smokers in the adult population. The lower limit of "adult" differs – 15, 16, 18, etc. Some surveys have no upper age limits, while other surveys are truncated at 75 or even 65. As smoking prevalence is decreasing in most populations, some more rapidly than others, only data from within the 2000-04 period were presented. In the case of annual surveys where all 5 years' data were available, they were pooled (or averaged, depending on the type of data available). Where surveys were conducted less frequently, data from two years near either end of the period, or from one year close to the midpoint of the period, were presented. The upper age limit was set to be as close to 75 as possible, to achieve comparability of the "adult" rate.

For the United States nationally, data from the 2002-2004 National Health Interview Survey (NHIS) were reported in the table (National Center for Health Statistics 2006, Table 4.2). Daily smokers were defined as current smokers who had smoked 100 cigarettes in their lifetime and still smoked everyday. The age range was 18 and above, although for Table G-1, the highest age group was limited to 65-74. The NHIS is a major national survey of a representative sample of the U.S. civilian, noninstitutionalized household population.

For Alaska and Alaska Natives, data from the Behavioral Risk Factor Surveillance System (BRFSS) were presented. BRFSS is an annual telephone survey conducted by the CDC and state health departments. To increase sample size, the 2001, 2002, and 2003 surveys were combined. In order to generate data comparable to other regions in Table G-1, the datasets were downloaded from the BRFSS website and analysed. Documentation on the BRFSS methodology is available from:
http://www.cdc.gov/brfss/technical_infodata/index.htm
For a descriptive report on BRFSS data related to Alaska Natives, see Wells (2004).

Canadian national and territorial data were obtained by combining the 2000/01 and 2003 cycles of the Canadian Community Health Survey (CCHS), conducted by Statistics Canada, available from CANSIM Table 105-0027 and 105-0227. Although the surveys covered ages 12 and above, only data from individuals aged 15 and above were presented. The daily smoking indicator was derived from the question "at the present time, do you smoke cigarettes daily, occasionally, or not alt all"

Denmark data were obtained by averaging results from the 2000 and 2005 Health and Morbidity Surveys [Sundheds- og sygelighedsundersøgelserne (SUSY)], as reported by the National Institute of Public Health [http://susy2.si-folkesundhed.dk]. The age groups were 16-24, 25-44, 45-66, and 67+. For a description of the design of SUSY, see Davidsen and Kjøller (2002). Daily smokers were those responding "yes" to the question: "Do you smoke daily?".

Greenland-wide surveys on smoking habits have not been conducted. For native Greenlanders, data from the Greenland Population Study [*Befolkningsundersøgelsen i Grønland / Nunatsinni peqqissuujumalluni periaatsit*] were used. This study was conducted by the National Institute of Public Health's Centre for Research in Greenland between 1999 and 2002 in three towns and four villages in West Greenland. Further details on survey design can be found in Bjerregaard (2003).

Data for Faroes Islands were only available for all adults aged 15+, as reported by NOMESCO (2005, 2006). The prevalence for 2003 and 2004 was averaged.

In Iceland, three surveys on tobacco use among the adult population 15-89 old are conducted yearly for the Public Health Institute of Iceland, and annualized data are available from the Statistics Iceland website. Data for 2000-04 were averaged. However, age groups were defined

as 15-19, and thereafter in 10-year intervals (20-29, etc). Some extrapolations were needed to produce data that roughly corresponded to the broader age groups in Table G-1. Also, the upper age limit was set at 79.

Norwegian national and regional data were accessed from the Norgeshelsa interactive website, which provided data from Statistics Norway's Travel and Holiday Survey [*Reise- og ferieundersøkelse*], conducted quarterly among adults aged 16-74. These had been summed annually and averaged over the 5 year period 2000-2004.

Sweden national and regional data were obtained from Statistics Sweden's interactive database, derived from the annual Survey of Living Conditions [*Undersökningarna av levnadsförhållanden (ULF)*] conducted annually among adults aged 16-84. Data for 2002-2004 were combined. Further information about ULF data on tobacco can be found in Statistika centralbyrån (2007).

Finland data were from the National Public Health Institute's annual survey called Health Behaviour and Health among Finnish Adult Population [*Suomalaisen aikuisväestön terveyskäyttäytyminen ja terveys (AVTK)*]. Data were not available for Oulu and Lappi individually, but combined as a northern region, based on the survey design and sampling strategy. Daily smokers were defined as individuals who had ever smoked at least 100 times [note: not 100 cigarettes], who had ever smoked daily, and who last smoked either today or yesterday. Data for 2000-2004 were combined, obtained from published annual reports of the survey (Helakorpi et al, 2000-2004). This survey only covered the age group 15-64. For the elderly aged 65-84, there is a separate survey (see Sulander et al 2004). However, the two surveys could not be combined to produce an "adult" population that is comparable to the other countries. Also, separate data for the North were not reported.

Russian national data were from WHO's World Health Survey report for Russia (Table 4.1)[www.who.int/healthinfo/survey/whsrus-russia.pdf]. Although representative of the country as a whole, no regional data were available. Note that the age groups used in the report were 18-29, 30-44, 45-59 and 60-69. Smoking data from Russia were also available from the National Assessment of Household Well-being and Involvement in Social Programs [*Natsional'noye obsledovaniye blagnososto yaniya domohozyuistv i uchastiya sotsial'nih programmah (NOBUS)*] as reported in Public Health in Russia 2005 (Table 11.5). The survey was conducted in 2003 as part of the World Bank assistance project to restructure the social security system. This survey was sufficiently large (45,000 households) to generate regional estimates, although these were not available from published sources.

Tables

G-1 Prevalence of daily smoking among adults

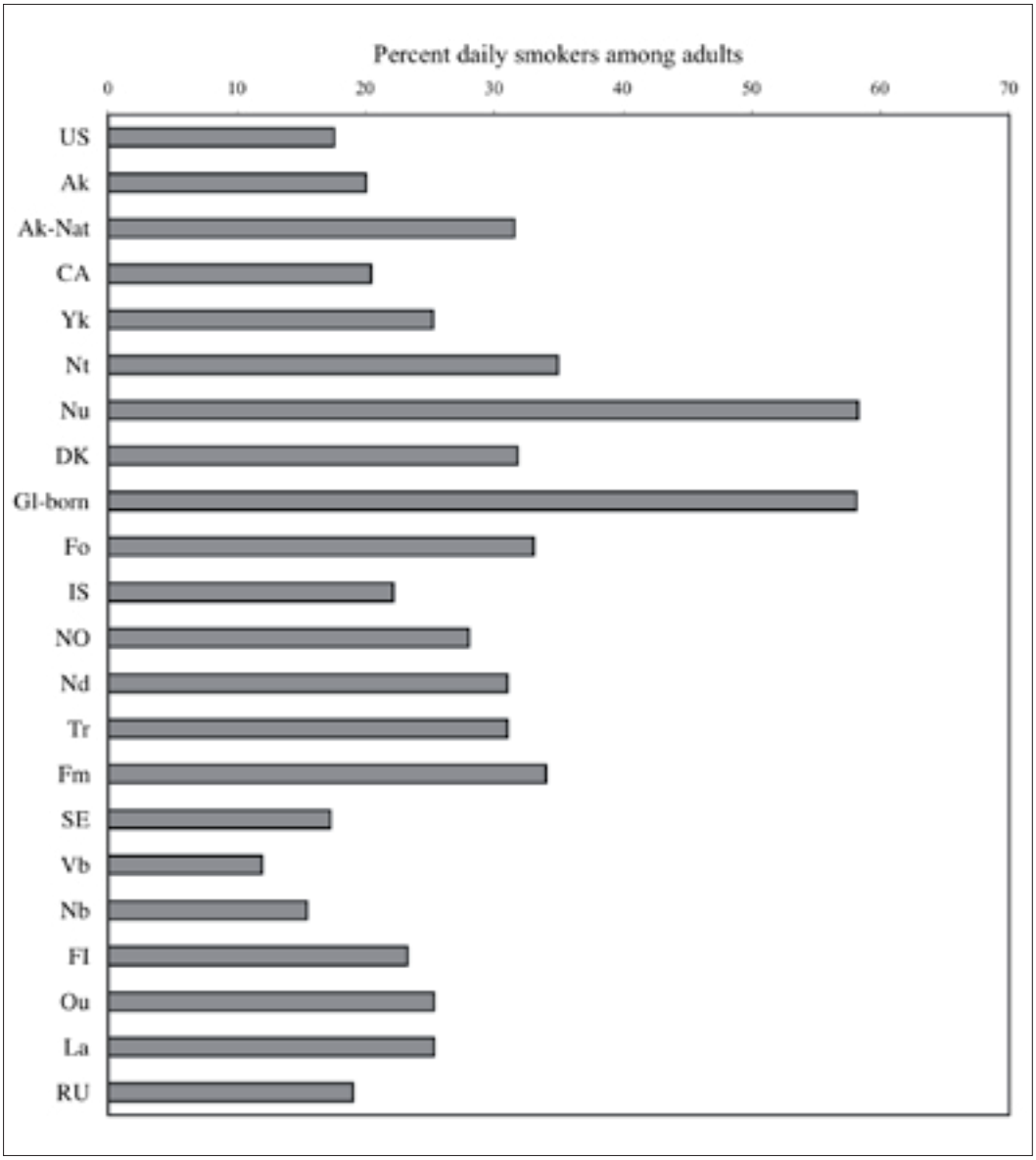

Fig. 11. Prevalence of daily smoking among adults: circumpolar countries and northern regions.
Note: See list of country and regional codes on page 11.

Table G-1. Prevalence of Daily Smoking among Adults.

Country/region	Total	Male	Female	Age group			
				15-24	25-44	45-64	65+
United States	17.5	19.3	15.6	19.2	20.0	19.0	10.1
Alaska	20.0	21.5	18.5	23.3	21.3	19.6	10.3
- Alaska Natives	31.5	17.5	51.1	21.1	53.8	21.3	15.5
Canada	20.4	22.4	18.5	20.5	24.1	21.0	9.8
Yukon	25.2	27.3	23.1	26.6	27.2	22.8	21.6
Northwest Territories	34.9	35.9	33.8	38.7	35.7	32.0	26.5
Nunavut	58.2	59.1	57.2	70.6	59.5	42.2	45.9
Northern Canada	*36.6*	*38.0*	*35.1*	*43.7*	*38.4*	*29.8*	*27.4*
Denmark	31.8	34.0	29.8	28.0	32.2	35.7	26.1
Greenland	-	-	-	-	-	-	-
- Born in Greenland	58.1	60.6	56.0	63.3	61.7	56.6	40.9
Faroe Islands	33.0	34.0	32.0	-	-	-	-
Iceland	22.1	23.4	21.0	15.8	24.6	23.0	15.3
Norway	28.0	28.0	27.0	26.0	30.0	30.0	20.0
Nordland	31.0	29.0	34.0	27.0	34.0	34.0	23.0
Troms	31.0	31.0	30.0	32.0	32.0	34.0	22.0
Finnmark	34.0	37.0	32.0	33.0	37.0	39.0	17.0
Northern Norway	*32.0*	*31.0*	*32.0*	*30.0*	*34.0*	*35.0*	*22.0*
Sweden	17.2	16.0	18.3	13.2	16.2	22.9	11.7
Västerbotten	11.9	12.1	11.8	7.9	9.0	19.5	7.4
Norrbotten	15.4	12.9	17.3	7.6	12.1	24.8	8.9
Northern Sweden	*13.2*	*12.4*	*13.9*	*7.8*	*10.1*	*21.7*	*8.1*
Finland	23.2	27.3	19.7	23.4	25.1	21.4	-
Oulu	25.3	30.2	21.1	24.6	29.9	21.6	-
Lappi	25.3	30.2	21.1	24.6	29.9	21.6	-
Northern Finland	*25.3*	*30.2*	*21.1*	*24.6*	*29.9*	*21.6*	-
Russian Federation	19.0	40.8	6.9	22.1	25.7	23.7	14.2
Murmansk Oblast	-	-	-	-	-	-	-
Kareliya Republic	-	-	-	-	-	-	-
Arkhangelsk Oblast	-	-	-	-	-	-	-
- Nenets AO	-	-	-	-	-	-	-
Komi Republic	-	-	-	-	-	-	-
Yamalo-Nenets AO	-	-	-	-	-	-	-
Khanty-Mansi AO	-	-	-	-	-	-	-
Taymyr AO	-	-	-	-	-	-	-
Evenki AO	-	-	-	-	-	-	-
Sakha Republic	-	-	-	-	-	-	-
Magadan Oblast	-	-	-	-	-	-	-
Koryak AO	-	-	-	-	-	-	-
Chukotka AO	-	-	-	-	-	-	-
Northern Russia	-	-	-	-	-	-	-

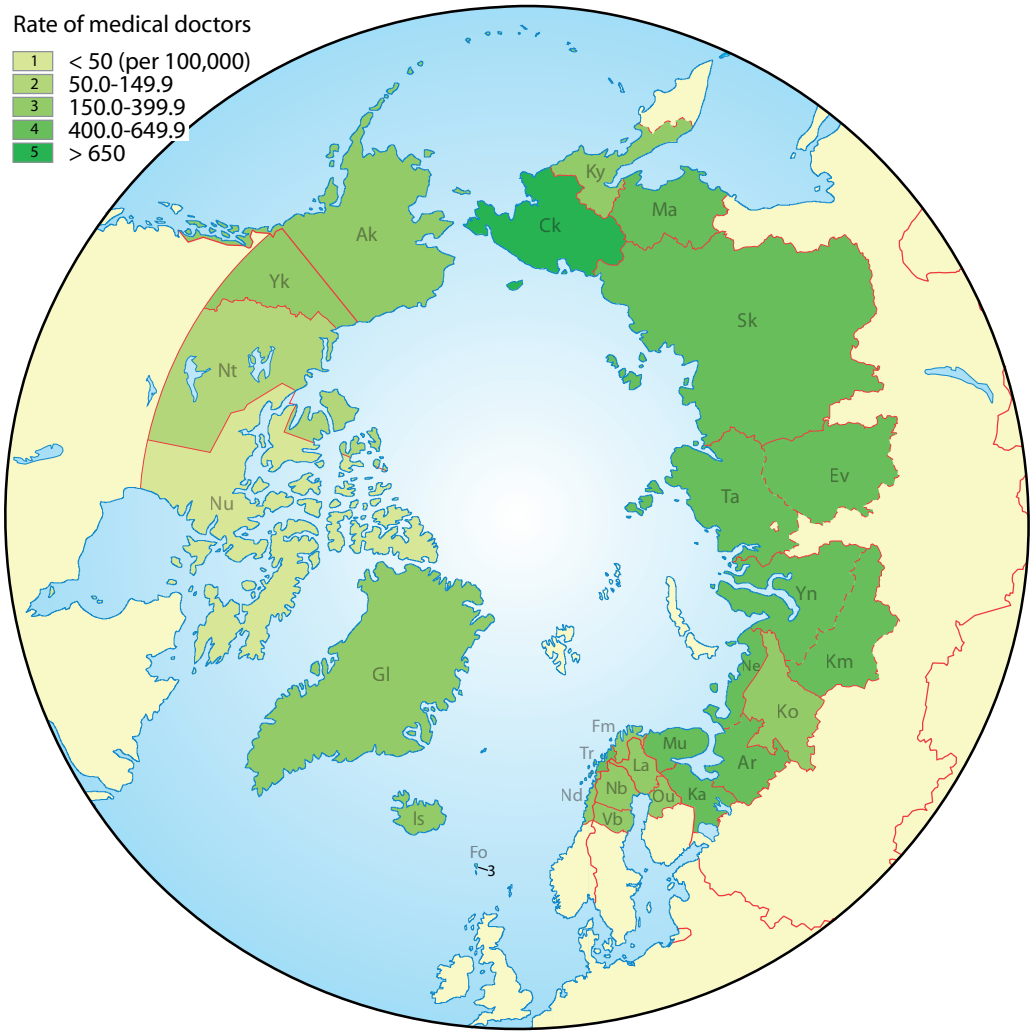

Fig. 12. Variation in physician-population ratio among northern regions.
Note: See list of country and regional codes on page 11.

PART G

HEALTH CARE RESOURCES

Concepts and Definitions

Three types of health care resources are presented in this monograph – health care expenditures, health care facilities, and health care personnel. For **health care expenditures (Table H-1)**, international organizations such as OECD and NOMESCO extract data from various national accounts to generate the total health expenditures, per capita expenditures, health care's share of GDP, and the distribution between the "public" and "private" sectors. In Table H-1, USD-PPP (previously discussed in Part F) were used in comparing countries, and various national currencies - US dollars (USD), Canadian dollars (CAD), euros, and Swedish and Norwegian kroner (SEK, NOK) - were used for within-country and intra-Nordic comparisons. Per capita data were computed from population denominators in Table A-1.

The estimation of health care expenditures is technically complex, although there is international agreement on the inclusion criteria and classification of types of expenditures. The International Classification of Health Accounts (ICHA) recognizes health care (HC) and health care-related (HC.R) expenditures, with the following codes. The ICHA is presented in the OECD manual A System of Health Accounts available from www.oecd.org/health/sha.

HC.1 Services of curative care
HC.2 Services of rehabilitative care
HC.3 Services of long-term nursing care
HC.4 Ancillary services to health care
HC.5 Medical goods dispensed to out-patients
HC.1 to HC.5 = total expenditures on personal health care

HC.6 Services of prevention and public health
HC.7 Health administration and health insurance
HC.6 to HC.7 = total expenditures on collective health care
HC.1 to HC.7 = total current expenditure
HC.R1 Investment (gross capital formation) in health
HC.1 to HC.7 + HC.R1 = total health expenditures

The following health-related expenditures are NOT included:

HC.R2 Education and training of health personnel
HC.R3 Research and development in health
HC.R4 Food, hygiene and drinking water control
HC.R5 Environmental health
HC.R6 Administration and provision of social services in kind to assist living with disease and impairment
HC.R7 Administration and provision of health-related cash-benefits

Public expenditure on health care refers to health expenditure incurred by public funds. Public funds are those provided by national, regional and local government bodies and social security schemes. Public capital formation on health includes publicly financed investment in health facilities plus capital transfers to the private sector for hospital construction and equipment. Privately funded sources of total health expenditure include out-of-pocket payments (both over-the-counter and cost-sharing), private insurance programmes, charities and occupational health care.

Health care expenditures based on OECD methodology are not generally produced for regions within countries. For regional comparison within countries, different data sources are used and only certain types of expenditures are available. These sources are explained in further detail under "Data Sources and Limitations". The main purpose is to compare the northern regions with their respective national figure on the same type of expenditure, and not to compare totally different types of expenditures in different countries.

Under health care facilities, only one indicator, that of the **number and rates of hospital beds (Table H-2)** is chosen because of the availability of data for most countries. While there is some standardization of definitions, such as those used by the OECD, there are fine print exceptions which should make one cautious in making international comparisons. Three sets of data were presented: OECD, NOMESCO and national estimates, centred on 2004 or as close to it as possible. In Table F-2 counts for both "total beds" and a more restricted type of bed were extracted from OECD and NOMESCO. Data from national agencies referred to the more restricted definition. The population denominators were obtained from Table A-1, and rates were expressed as per 100,000 persons.

The OECD data refer to total beds and "acute care beds", the latter excluding beds for psychiatric care, rehabilitation, long-term care and palliative care, whether these are provided in general hospitals or specialized institutions.

For NOMESCO data, the sum of medical and surgical beds and "total beds" were provided, the latter including psychiatry and "others". According to NOMESCO, in Finland, Iceland and Greenland, a number of beds are attached to health centres, some of which are used for the care of elderly people, which are categorized as "others". In Finland in particular, there are over 20,000 such beds, accounting for over half of all beds in the country. Note that for Finland, the number of beds was computed by NOMESCO from the number of bed-days divided by 365. Within the Nordic countries, the term "somatic" care or beds is used, which corresponds to general acute care hospitals elsewhere, and excludes psychiatric and long-term care beds.

Under health care personnel, the number and rates for four types of **health care professionals (Table H-3)** were provided, centred on the year 2004 or as close to it as possible. Rates are per 100,000, calculated with denominator from Table A-1. There is more or less common understanding of what physicians, dentists, nurses and midwives are in the circumpolar countries, with variation in their training, licensure/registration requirements, and how statistics on employment are collected. There are usually two ways to count workers, by a head count or the number of full-time equivalent (FTE). It is difficult to apply the FTE concept to self-employed professionals who do not have regular hours of work. Counting heads is also not entirely simple, as a distinction needs also be made between those who maintain their professional status with some professional licensure/registration body but are not engaged in active clinical practice.

OECD refers to "practising" physicians, dentists and nurses, excluding students, the unemployed or retired, or those working outside the country, even though they may continue to be licensed/registered, but including both salaried and self-employed professionals and foreign nationals practising in the country.

- Physicians include interns/residents, who have graduated from medical school but are undergoing further clinical training; and also salaried physicians, but exclude those involved exclusively in research or administration. Table G-3 combines general practitioner/family physicians and specialists. US data include doctors of osteopathy.
- Dentists also include interns and residents, but exclude non-clinical dentists (those working in research and administration), with the exception of Finland.
- Nurses: excludes nursing aides, or "practical" nurses. OECD data for USA, Canada and Iceland also include midwives. In some countries, midwives have separate licensure bodies from nurses. While some midwives are also registered nurses - the two groups are thus not mutually exclusive - they also do not overlap entirely. Separate data for midwives are not provided by OECD.

Data Sources and Limitations

Health expenditures

For health expenditures, OECD countries data (in USD-PPP) were for 2004, from *OECD Health Data 2007*, which did not include Russia. Russia data were obtained from *OECD Economic Surveys: Russian Federation* (2006 no.17, Chapter 5). Nordic countries data (in Euros), including Greenland and Faroes Islands, were from NOMESCO's *Health Statistics in the Nordic Countries 2004* (Table 5.1.2 and 5.1.3). Faroe Islands data referred to 2003, all others were for 2004.

Where data for a country were available from both OECD and NOMESCO, the % GDP and % public sector that were reported in Table G-1 were taken from OECD, although the results only differed slightly.

For within-country comparisons, the OECD method may not be consistently applied or used at all. United States data (in US dollars) are from the National Health Expenditures Accounts maintained by the Centers for Medicare and Medicaid Services (CMS). Data on personal health care only (ie. HC.1 to HC.5) were available by "state of provider", which referred to services provided in that state for residents and non-residents. For per capita expenditure, CMS recommended using the "state of residence data", but the most recent data available were for 1998. For Table G-1, per capita expenditure was calculated using the 2004 state of provider data, recognizing its limitation [www.cms.hhs.gov/NationalHealthExpendData].

Canada national and regional data (in Canadian dollars) were from the Canadian Institute for Health Information's National Health Expenditure Database as reported in Table 7 of *National Health Expenditure Trends, 1975-2006*. It followed closely OECD methods.

For the Nordic countries and Russia, only selected types of health expenditures were available regionally from published sources.

- For Finland, the comparison (in euros) was for "net expenditures of the municipal health sector" in 2004, available from SOTKAnet, the interactive indicator bank of STAKES. It referred to health services provided by the municipality to its inhabitants or purchased from other municipalities, the central government or private providers. Operating costs included operating costs and depreciation. Net expenditures referred to operating costs less operating income (such as payment transfers).
- Sweden data (in Swedish kroner SEK) were from Table 5 of *Statistik over kostnader for hälso- och sjukvården 2004* (Socialstyrelsen 2005), and included primary care, specialized somatic and psychiatric care (ie. hospitals), dental and other services.

- Norway data (in Norwegian kroner NOK) were from the Statistics Norway Statbank website, and referred to specialized health services only, which included general and psychiatric hospitals, ambulances, substance abuse treatment, and patient transportation, personnel recruitment and administration. Specialized health services in Norway are organized into 5 regions, with the Northern region comprising the three northernmost counties.
- For Russia, expenditures of the "consolidated budget for health care and physical education" by regions were available from Table 8.6 in *Public Health in Russia 2005*

Hospital beds and health care personnel

Hospital beds and health professionals data referred to 2004 or the year closest to it for which data were available:

- OECD data for member countries were from the *Health Data 2007* interactive database.
- NOMESCO data for Nordic countries were from *Health Statistics in the Nordic Countries 2004* Table 5.3.1 for hospital beds and Table 5.2.1 for health professionals. Finland data included only public sector employees. For Finland, NOMESCO determined the number of hospital beds by dividing the total number of bed days by 366.
- United States: There is no single source of information on health human resources or health facilities. For the former one needs to obtain data from the American Medical Association, American Dental Association, etc, and for hospital beds and other data from the American Hospital Association. For hospital beds in the "community hospital" category (ie. short-term general hospitals), the data presented were from NCHS. *Health United States 2006* Table 112 and 114. For nurses, the *2004 National Sample Survey of Registered Nurses* conducted by the Bureau of Health Professions (BHP), Health Resources and Services Administration (HSRA), Department of Health and Human Resources (DHHS) provided both national and state level estimates. Nurses referred to nurses employed in nursing. The report *The United States Health Workforce Profile* prepared for the HSRA by the New York Center for Health Workforce Studies (2006) collated conveniently in one volume relevant statistics (for 2004) on a variety of health professions, including the four categories in Table G-3.
- Canada: Hospital beds data were from Canadian Management Information System Database (CMDB), accessible in the CIHI website. Data referred to "general hospitals" during fiscal year 4/2004 to 3/2005. Health professionals data were from *Health Personnel Trends in Canada* (CIHI 2006) Tables Dent-2, Mid-2, NP-1, Phys-2, and RN-1. CIHI table RN-1 also distinguished nurses employed in nursing (direct care, research, teaching and administration), employed other than in nursing, or not employed. Only nurses employed in nursing were included in the Canada national column in Table G-3. Although CIHI included separate data for nurse-practitioners [of which there were 878 in Canada and 16 in the Northwest Territories and Nunavut in 2004], these individuals were also registered nurses.
- Iceland data (rates only, calculated from bed-days) were obtained from the Directorate of Health website and included both somatic and psychiatric wards.

- Norway: Hospital beds refer to "general hospitals and other institutions", or "*somatiske institusjoner*", ie. excluding psychiatric and drug treatment units. National data were from Statistics Norway's StatBank Table 4434. Regional data were by special request from Statistics Norway, excluding private hospitals. Health professionals data were Table 3448 and 3491, and referred to "persons aged 16-66 with health care education employed in region".
- Finland: Hospital beds data were from SOTKAnet of STAKES, and referred to "specialized somatic health care", including hospitals in both the private and public sector, but excluding psychiatric beds and nursing-home type beds operated by municipal health centres. Bed number was calculated from bed-days. Health care personnel data were based on rates published by STAKES (Vaalgamaa 2004). Oulun lääni data were obtained by combining data from Kainuu and Pohjois-Pohjanmaa.
- Sweden health personnel data for 2004 were from the Socialstyrelsen statistical database. Hospital beds data for 2004 were from Table 569 in the *Swedish Statistical Yearbook 2006.*
- Russia data for 2004 were from *Public Health in Russia 2005* (Tables 3.16, 4.23, 4.25 and 4.28). Hospitals included general and specialized hospitals, but excluded psychiatric and narcological centres. Included under "dentists" in Table G-3 were stomatologists (who are medical specialists) but not the middle-level *zubnye vrachi*. The number of stomatologists, however, was deducted from the total number of physicians. Nurses (*medicinskie sestry*) and midwives (*akusherki*) are middle-level health staff who, together with various health care technicians and assistants, are referred to as supporting medical personnel.

Tables

Table H-1. Health Care Expenditures.

	OECD (25-64)				NOMESCO	National agencies			Ratio
Country/Region	Total (million)	Per capita	% GDP	% public	Per capita	Per capita		% GDP	
United States	1,772,844	6,037	15.2	45	-	5,283	USD	13.3	1.0
Alaska	-	-	-	-	-	6,340	USD	11.6	1.2
Canada	101,073	3,160	9.8	70	-	4,109	CAD	10.2	1.0
Yukon	-	-	-	79	-	5,464	CAD	11.9	1.3
Northwest Territories	-	-	-	90	-	6,969	CAD	7.2	1.7
Nunavut	-	-	-	96	-	10,411	CAD	29.3	2.5
Denmark	16,052	2,972	9.2	84	3,110 €	-	-	-	1.0
Greenland	-	-	9.1	100	2,123 €	-	-	-	0.7
Faroe Islands	-	-	8.5	89	2,309 €	-	-	-	0.7
Iceland	975	3,332	10.0	83	3,554 €	-	-	-	1.0
Norway	18,840	4,103	9.7	84	4,352 €	14,300	NOK	-	1.0
Nordland	-	-	-	-	-				
Troms	-	-	-	-	-	17,500	NOK	-	1.2
Finnmark	-	-	-	-	-				
Sweden	25,422	2,827	9.1	85	2,845 €	15,535	SEK	-	1.0
Västerbotten	-	-	-	-	-	15,930	SEK	-	1.0
Norrbotten	-	-	-	-	-	17,304	SEK	-	1.1
Finland	11,513	2,202	7.4	77	2,150 €	1,214	€	-	1.0
Oulu	-	-	-	-	-	1,230	€	-	1.0
Lappi	-	-	-	-	-	1,311	€	-	1.1
Russian Federation	-	441	4.6	43	-	2,233	r	-	1.0
Murmansk Oblast	-	-	-	-	-	3,065	r	-	1.4
Kareliya Republic	-	-	-	-	-	2,757	r	-	1.2
Arkhangelsk Oblast	-	-	-	-	-	2,504	r	-	1.1
- Nenets AO	-	-	-	-	-	-	-	-	-
Komi Republic	-	-	-	-	-	3,647	r	-	1.6
Yamalo-Nenets AO	-	-	-	-	-	9,378	r	-	4.2
Khanty-Mansi AO	-	-	-	-	-	9,414	r	-	4.2
Taymyr AO	-	-	-	-	-	12,856	r	-	5.8
Evenki AO	-	-	-	-	-	10,572	r	-	4.7
Sakha Republic	-	-	-	-	-	5,607	r	-	2.5
Magadan Oblast	-	-	-	-	-	6,653	r	-	3.0
Koryak AO	-	-	-	-	-	10,513	r	-	4.7
Chukotka AO	-	-	-	-	-	19,626	r	-	8.8

Table H-2. Number and Rates of Hospital Beds.

Country/Region	OECD				NOMESCO				National agencies	
	Acute care		Total beds		Medical-surgical		Total beds			
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
United States	808,813	275	955,885	326	-	-	-	-	808,127	275
Alaska	-	-	-	-	-	-	-	-	-	220
Canada	91,397	286	109,941	344	-	-	-	-	63,370	198
Yukon	-	-	-	-	-	-	-	-	59	191
Northwest Territories	-	-	-	-	-	-	-	-	251	586
Nunavut	-	-	-	-	-	-	-	-	34	115
Northern Canada	-	-	-	-	-	-	-	-	*344*	*333*
Denmark	16,779	311	20,646	382	15,858	294	19,356	358	-	-
Greenland	-	-	-	-	108	190	406	713	-	-
Faroe Islands	-	-	-	-	188	390	264	547	-	-
Iceland	-	-	-	-	-	-	-	-	-	248
Norway	14,228	310	16,881	368	13,170	287	16,178	352	17,096	372
Nordland	-	-	-	-	-	-	-	-	788	333
Troms	-	-	-	-	-	-	-	-	612	401
Finnmark	-	-	-	-	-	-	-	-	161	220
Northern Norway	-	-	-	-	-	-	-	-	*1,561*	*337*
Sweden	20,022	223	-	-	22,581	251	27,088	301	22,454	250
Västerbotten	-	-	-	-	-	-	-	-	899	351
Norrbotten	-	-	-	-	-	-	-	-	668	264
Northern Sweden	-	-	-	-	-	-	-	-	*1,567*	*308*
Finland	15,579	298	36,880	705	11,613	222	36,830	704	11,623	222
Oulu	-	-	-	-	-	-	-	-	982	214
Lappi	-	-	-	-	-	-	-	-	477	256
Northern Finland	-	-	-	-	-	-	-	-	*1,459*	*226*
Russian Federation	-	-	-	-	-	-	-	-	1,393,673	969
Murmansk Oblast	-	-	-	-	-	-	-	-	8,795	1,004
Kareliya Republic	-	-	-	-	-	-	-	-	7,077	1,003
Arkhangelsk Oblast	-	-	-	-	-	-	-	-	14,503	1,106
- Nenets AO	-	-	-	-	-	-	-	-	575	1,373
Komi Republic	-	-	-	-	-	-	-	-	9,785	977
Yamalo-Nenets AO	-	-	-	-	-	-	-	-	5,495	1,058
Khanty-Mansi AO	-	-	-	-	-	-	-	-	13,294	909
Taymyr AO	-	-	-	-	-	-	-	-	813	2,063
Evenki AO	-	-	-	-	-	-	-	-	477	2,732
Sakha Republic	-	-	-	-	-	-	-	-	12,127	1,277
Magadan Oblast	-	-	-	-	-	-	-	-	2,487	1,409
Koryak AO	-	-	-	-	-	-	-	-	824	3,420
Chukotka AO	-	-	-	-	-	-	-	-	1,182	2,315
Northern Russia	-	-	-	-	-	-	-	-	76,859	1,077
Total Northern Regions	-	-	-	-	-	-	-	-	-	-

Table H-3. Number and Rates of Health Professionals.

Country/Region	Physicians						Dentists					
	OECD		NOMESCO		National		OECD		NOMESCO		National	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
United States	700,287	238	-	-		214	168,000	57	-	-	174,430	59
Alaska	-	-	-	-		217	-	-	-	-	490	74
Canada	68,171	213	-	-	68,171	213	18,313	57	-	-	18,313	57
Yukon	-	-	-	-	61	197	-	-	-	-	30	97
Northwest Territories	-	-	-	-	51	119	-	-	-	-	41	96
Nunavut	-	-	-	-	7	24	-	-	-	-	11	37
Northern Canada	-	-	-	-	*119*	*115*	-	-	-	-	*82*	*79*
Denmark	19,287	357	16,439	304	-	-	5259	97	4,616	85	-	-
Greenland	-	-	87	153	-	-	-	-	29	51	-	-
Faroe Islands	-	-	90	186	-	-	-	-	40	83	-	-
Iceland	1,056	361	1,056	361	-	-	287	98	287	98	-	-
Norway	16,064	350	15,960	348	17,512	381	3704	81	3,675	80	3,853	84
Nordland	-	-	-	-	793	335	-	-	-	-	170	72
Troms	-	-	-	-	896	587	-	-	-	-	140	92
Finnmark	-	-	-	-	269	368	-	-	-	-	52	71
Northern Norway	-	-	-	-	*1,958*	*423*	-	-	-	-	*362*	*78*
Sweden	30,553	340	29,190	325	28,501	317	7396	82	7281	81	7,396	82
Västerbotten	-	-	-	-	976	381	-	-	-	-	232	90
Norrbotten	-	-	-	-	543	215	-	-	-	-	192	76
Northern Sweden	-	-	-	-	*1,519*	*298*	-	-	-	-	*424*	*83*
Finland	12,730	243	11,492	220	16,633	315	4550	87	2,395	46	4,607	88
Oulu	-	-	-	-	-	349	-	-	-	-	-	90
Lappi	-	-	-	-	-	187	-	-	-	-	-	67
Northern Finland	-	-	-	-	-	*302*	-	-	-	-	-	*84*
Russian Federation	-	-	-	-	627,395	436	-	-	-	-	60,805	42
Murmansk Oblast	-	-	-	-	3,916	447	-	-	-	-	384	44
Kareliya Republic	-	-	-	-	3,377	478	-	-	-	-	123	17
Arkhangelsk Oblast	-	-	-	-	5,955	454	-	-	-	-	845	64
- Nenets AO	-	-	-	-	181	432	-	-	-	-	19	45
Komi Republic	-	-	-	-	3,984	398	-	-	-	-	416	42
Yamalo-Nenets AO	-	-	-	-	2,388	460	-	-	-	-	212	41
Khanty-Mansi AO	-	-	-	-	6,343	434	-	-	-	-	657	45
Taymyr AO	-	-	-	-	180	457	-	-	-	-	20	51
Evenki AO	-	-	-	-	94	538	-	-	-	-	6	34
Sakha Republic	-	-	-	-	4,415	465	-	-	-	-	285	30
Magadan Oblast	-	-	-	-	928	526	-	-	-	-	72	41
Koryak AO	-	-	-	-	89	369	-	-	-	-	11	46
Chukotka AO	-	-	-	-	363	711	-	-	-	-	37	72
Northern Russia	-	-	-	-	*32,032*	*449*	-	-	-	-	*3,068*	*43*
Total Northern Regions												

Table H-3. Number and Rates of Health Professionals (continued).

Country/Region	Nurses						Midwives			
	OECD		NOMESCO		National		NOMESCO		National	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
United States	2,274,080	774	-	-	2,421,351	825	-	-	-	150
Alaska	-	-	-	-	6,777	1,030	-	-	-	38
Canada	315,106	985	-	-	246,575	771	-	-	509	2
Yukon	-	-	-	-	283	916	-	-	0	0
Northwest Territories	-	-	-	-	930	2,173	-	-	4	6
Nunavut	-	-	-	-	258	871	-	-		
Northern Canada	-	-	-	-	*1,471*	*1,424*	-	-	*4*	*4*
Denmark	41,614	770	51,557	955	-	-	1,279	24	-	-
Greenland	-	-	243	427	-	-	16	28	-	-
Faroe Islands	-	-	354	705	-	-	19	38	-	-
Iceland	3,999	1,367	2,525	863	-	-	200	68	-	-
Norway	68,215	1,486	68,304	1,487	73,838	1,608	2,309	50	2,478	54
Nordland	-	-	-	-	3,629	1,532	-	-	137	58
Troms	-	-	-	-	2,914	1,909	-	-	112	73
Finnmark	-	-	-	-	1,084	1,482	-	-	50	68
Northern Norway	-	-	-	-	*7,627*	*1,648*	-	-	*299*	*65*
Sweden	94,959	1,056	87,012	967	94,959	1,056	6,123	68	6,468	72
Västerbotten	-	-	-	-	3,294	1,285	-	-	171	67
Norrbotten	-	-	-	-	2,716	1,075	-	-	176	70
Northern Sweden	-	-	-	-	*6,010*	*1,180*	-	-	*347*	*68*
Finland	39,900	763	46,838	896	-	-	1,682	32	-	-
Oulu	-	-	-	-	-	-	-	-	-	-
Lappi	-	-	-	-	-	-	-	-	-	-
Northern Finland	-	-	-	-	-	-	-	-	-	-
Russian Federation	-	-	-	-	1,046,030	727	-	-	68,742	48
Murmansk Oblast	-	-	-	-	8,359	954	-	-	412	47
Kareliya Republic	-	-	-	-	5,972	846	-	-	384	54
Arkhangelsk Oblast	-	-	-	-	12,961	988	-	-	781	60
- Nenets AO	-	-	-	-	237	566	-	-	23	55
Komi Republic	-	-	-	-	9,020	901	-	-	671	67
Yamalo-Nenets AO	-	-	-	-	4,765	918	-	-	350	67
Khanty-Mansi AO	-	-	-	-	13,567	927	-	-	932	64
Taymyr AO	-	-	-	-	361	916	-	-	33	84
Evenki AO	-	-	-	-	95	544	-	-	13	74
Sakha Republic	-	-	-	-	8,591	904	-	-	830	87
Magadan Oblast	-	-	-	-	1,723	976	-	-	91	52
Koryak AO	-	-	-	-	211	876	-	-	32	133
Chukotka AO	-	-	-	-	471	922	-	-	37	72
Northern Russia	-	-	-	-	*66,333*	*930*	-	-	*4,589*	*64*

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