DATA BRIEF FROM THE CIRCUMPOLAR HEALTH OBSERVATORY

Introduction and population [2010-1]

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In this issue, the Journal begins a new series Data brief from the Circumpolar Health Observatory. The series will periodically feature data outputs from the Circumpolar Health Observatory [CircHOB] circhob.circumpolarhealth.org. CircHOB is a project proposed by the Arctic Human Health Expert Group [AHHEG] and authorized by the Arctic Council at a meeting of Senior Arctic Officials in April, 2010.

Background
CircHOB is an international, open access, collaborative health information system, involved in systematic, standardized, and consistent data collection and analysis. It is population-based, and covers all northern regions in all circumpolar countries. CircHOB’s purpose is to monitor trends and patterns in health status, health determinants, and health care, and provide an ongoing and sustainable knowledge base and analytical support for researchers, statisticians, health care providers, public health practitioners and policy makers. CircHOB also serves as a resource for training and research in population health and health systems and enhances partnerships and collaborations among health and statistical agencies in circumpolar countries and regions.

CircHOB extends and updates the data tables, charts and maps originally published in Circumpolar Health Indicators as a Circumpolar Health Supplement, the sister publication of the Journal. Currently, its website provides access to the 2000-2004 datasets and associated thematic mapping tools based on UNESCO’s Flash-based StatPlanet software. The datasets are currently being updated to 2009 and will also be presented for download and interactive visualization. Reference materials and statistical reports related to the data are also being catalogued for a fully searchable online document database.

CircHOB is hosted at the Institute for Circumpolar Health Research data center [www.ichr.ca]. ICHR research affiliates and staff are responsible for database development and maintenance, data retrieval, analysis, and presentation.
Geographical coverage

The northern regions covered by CircHOB are shown in Figure 1 and the key to the 2-letter country and region codes are listed in Table I.

The whole of Alaska and Greenland are included in CircHOB. Northern Canada includes only the three northern territories, all located above 60° N latitude. 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]. Note that in 2010, Finland abolished the lääni and replaced it with the aluehallintovirasto or AVI, translated as regional state administrative agency. For the northern regions of Oulu [now called Pohjois-Suomi] and Lappi, there is little boundary change.

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. An autonomous okrug (AO), with the exception of Chukotka, is generally part of some higher level units such as an oblast or kray, and usually represents the traditional territory of some indigenous ethnic group. Demographic and health data are usually available for these AO separately. Note that as of January 1, 2007, the Taymyr, Evenki and Koryak AO ceased to exist as distinct federal subjects, and were fully absorbed into the Krasnoyarsk kray and Kamchatka kray, although some statistics continue to be produced for these former AOs.

Figure 1. Map showing circumpolar regions and their population density.
Population

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. CircHOB provides the mean or mid-year population and its age-sex distribution aggregated in 5-year age-groups (0-4, 5-9, etc). Other population-related indicators are also included, such as population density (Fig.1), the proportion of indigenous peoples in the population, and the population of selected cities. In health indicators such as age-specific mortality rates, both the numerator (number of deaths) and denominator (size of population) are derived from the same geographical region. Since many regions have small populations, it will frequently be necessary to combine multiple years of event data. It should be noted that population counts are being used as a proxy for person-years at risk, which is the real denominator for incidence rates. That also makes the calculation of confidence intervals more straightforward (compared to the alternative of thinking of rates for a multiple year period as an average of annual rates).

Sources of data and limitations

There are two sources of information on population – the census and population registry. Both are in use in the circumpolar countries. All data presented in CircHOB are retrieved from websites in the public domain which serve as a portal to public access data, supplemented by special requests to the relevant agencies to fill specific data gaps, especially for subnational and regional data.

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). Where mean population is not published, it can be obtained by averaging the Jan 1 or Dec 31 populations of two successive years. Decennial population and housing censuses are also conducted in Norway and Finland (but discontinued in other Nordic countries), primarily to obtain information about living conditions and other characteristics of the population. Iceland plans to reinstate the census in 2011. Other countries rely on special-purpose sample surveys.

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. A new census is scheduled for October 2010. In the “intercensal” years, these jurisdictions produce annual estimates of the population, taking into account data on births, deaths, and migrations. It is these annual estimates (for all years including census years) that are presented in CircHOB. They are preferable to the raw census counts as denominators.

Population data are available from the following websites:

- **Canada** Statistics Canada, www.statcan.ca
- **Denmark** Danmarks Statistik [Statistics Denmark] Statbank, www.statbank.dk
Patterns and trends

The population density (expressed as number of persons per km$^2$) shown in Fig 1., varies from 0.02 in Nunavut to 35 in the Faroe Islands. Table 1 shows the trend in mean population from 1990 to 2009. There has been little change in the mean population of Greenland and the northern regions of the Nordic countries, whereas Alaska, northern Canada and Iceland witnessed substantial growth. Of particular note is the depopulation of many northern Russian regions, with some losing more than half its population in 20 years. In only two regions - Yamalo-Nenets AO and Khanty-Mansi AO - which experienced large scale oil and gas development, did the population increase.

While indigenous people are a population of special interest, not all circumpolar regions provide statistical data that can be disaggregated by ethnicity. A future data brief will discuss the problems associated with enumerating circumpolar indigenous people.

Concluding remarks

CircHOB is a new open access online resource designed to serve the needs of researchers, statisticians, health care providers, public health practitioners, and policy makers in all circumpolar countries. The Data Brief series will present different health indicators, inform readers of data availability, highlight methodological issues and summarize changes and new developments at the Observatory. While this first Data Brief focuses on population data, future changes will be noted on the website or through any of the affiliated subscription-based social media tools (RSS Feeds, Facebook, Twitter). Feedback from users is essential for the continuous improvement and sustainability of CircHOB. A monitored wiki mechanism is also being developed and will be used to provide a regulated mechanism for feedback, keep the site contents current, and enhance data quality. Readers are encouraged to visit the site and provide feedback specific to the population data or other comments.

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Table 1. Trend in mean population, 1990-2009.

| Code | Country/Region         | 1990   | 2000   | 2009   | % change 2009/1990 |
|------|------------------------|--------|--------|--------|-------------------|
| US   | United States          | 249622814 | 282171957 | 307006550 | 23.0              |
| Ak   | Alaska                 | 553290  | 627499  | 698473  | 26.2              |
| CA   | Canada                 | 27697530 | 30685730 | 33739859 | 21.8              |
| Yk   | Yukon                  | 27774   | 30431   | 33653   | 12.1              |
| Nt   | Northwest Territories  | 37330   | 40480   | 43439   | 14.6              |
| Nu   | Nunavut                | 21580   | 27498   | 32183   | 49.1              |
|      | Northern Canada        | 86684   | 98409   | 109275  | 26.1              |
| DK   | Denmark                | 5140939 | 5337344 | 5519441 | 7.4               |
| Gl   | Greenland              | 55589   | 56176   | 56323   | 1.3               |
| Fo   | Faroe Islands          | 47559   | 45749   | 48676   | 2.3               |
| IS   | Iceland                | 254788  | 281154  | 319246  | 25.3              |
| NO   | Norway                 | 4241473 | 4490967 | 4828726 | 13.8              |
| Nd   | Nordland               | 239468  | 238702  | 235826  | -1.3              |
| Tr   | Troms                  | 146705  | 151469  | 156024  | 6.4               |
| Fm   | Finnmark               | 74369   | 74073   | 72674   | -2.3              |
|      | Northern Norway        | 460542  | 464244  | 464523  | 0.9               |
| SE   | Sweden                 | 8558835 | 8872110 | 9298515 | 8.6               |
| Vb   | Västerbotten           | 251054  | 256177  | 258180  | 2.8               |
| Nb   | Norrbotten             | 263289  | 257168  | 249348  | -3.3              |
|      | Northern Sweden        | 514343  | 513345  | 507528  | -1.3              |
| FI   | Finland                | 4986431 | 5176209 | 5338871 | 7.1               |
| Ou   | Oulu                   | 442004  | 457573  | 473543  | 7.1               |
| La   | Lappi                  | 200324  | 193060  | 183856  | -8.2              |
|      | Northern Finland       | 642328  | 650633  | 657399  | 2.3               |
| RU   | Russian Federation     | 14796941 | 14659670 | 14191563 | 4.1               |
| Mu   | Murmansk Oblast        | 1190127 | 931969  | 839413  | -29.5              |
| Ka   | Kareliya Republic      | 791589  | 732138  | 685889  | -6.2              |
| Ar   | Arkhangelsk Oblast     | 1572231 | 1379726 | 1258422 | -9.9              |
| Ne   | Nenets AO              | 51830   | 41053   | 42184   | -18.6              |
| Ko   | Komi Republic          | 1244388 | 1050377 | 954807  | -9.1              |
| Yn   | Yamalo-Nenets AO       | 488869  | 497282  | 544911  | 11.5              |
| Km   | Khanty-Mansi AO        | 1273585 | 1371548 | 1529213 | 20.1              |
| Tm   | Taymyr AO              | 51316   | 38257   | 36852   | -23.2             |
| Ev   | Evenki AO              | 24148   | 18241   | 16391   | -21.2             |
| Sk   | Sakha Republic         | 1115232 | 959993  | 949630  | 4.8               |
| Ma   | Magadan Oblast         | 387401  | 197960  | 162097  | -32.8             |
| Ky   | Koryak AO              | 37666   | 26238   | 20724   | -45.0             |
| Ck   | Chukotka AO            | 160096  | 59574   | 49046   | -69.4             |
|      | Northern Russia        | 8336644 | 7263303 | 7047392 | -15.5             |
|      | Total Northern Regions | 10951766 | 10000512 | 9908834 | -9.5              |

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