

Analysis of Arctic Children and Youth Health Indicators

**Produced for the Arctic Council
Sustainable Development Working Group**

**Future of Children and Youth of the Arctic Initiative,
Report of the Health Programme**



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The Health Expert Group would like to thank the following people for their work in preparing this report:

Health Programme Leads:

Judith (Ross) Stanway, Health Canada (until May 2003)

Andy Gilman, Health Canada (until September 2004)

Margaret Moyston Cumming, Health Canada

Tracy Gibbons, Health Canada

Future of Children and Youth of the Arctic Initiative:

Lee-Anne Hermann, Foreign Affairs Canada

Valerie Hume, Indian Affairs and Northern Development, Canada (until October 2003)

Principal Author:

Don Wigle, Institute of Population Health, University of Ottawa, Canada

Authors:

Andy Gilman, Health Canada

Ken McAllister, Health Canada

Tracy Gibbons, Health Canada

Contributors:

Valery Klopov, Russian Federation

Eiri Sohlman, Finland

Jon Øyvind Odland, Norway

Nina K. Johansen, Norway

Cecilia Vold, Norway

Torbjorn Messner, Sweden

Geir Gunnlaugsson, Iceland

Kristin Ólafsdóttir, Iceland

Birger Aaen-Larsen, Greenland

Henning Sloth Petersen, Greenland

David Kinloch, Canada

Bryce Larke, Canada

Andrew Langford, Canada

Jessi Mahon, Canada

Sylvia Healey, Canada

James Berner, United States of America

Health Expert Group Members

Arctic Council Permanent Participants:

Tove Sövdahl Petersen, Indigenous Peoples Secretariat
John Crump, Indigenous Peoples Secretariat
Chester Reimer, Indigenous Peoples Secretariat
Larisa Abryutina, Russian Association of Indigenous Peoples of the North (RAIPON)
Nuka Møller, Inuit Circumpolar Conference, Greenland
Sheila Watt-Cloutier, Inuit Circumpolar Conference, Canada
Siv Kvernmo, Saami Council

Arctic Council Member Countries:

Jon Øyvind Odland, University of Tromsø, Norway
His Excellency Johan L. Løvald, Embassy of Norway (in Canada)
Jack Anawak, Ambassador for Circumpolar Affairs, Canada
Mary Simon, Ambassador for Circumpolar Affairs, Canada (until October 2003)

Göran Carlsson, County Council of Västernorrland, Sweden
Kerstin Ödman, Ministry of Health and Social Affairs, Sweden
Lars Smedman, Karolinska Institutet, Sweden

Riittakerttu Kaltiala-Heino, University of Tampere, Finland
Eiri Sohlman, University of Lapland, Finland
Arja Rimpelä, University of Tampere, Finland

Geir Gunnlaugsson, Centre for Child Health Services, Iceland

Henning Sloth Pedersen, Primary Health Care Centre, Greenland
Mariekatrine Poppel, Greenland
Bodil Karlshøj Poulson, Greenland

Jay van Oostdam, Health Canada
Bryce Larke, Government of Yukon, Canada
Paul Harris, Government of Yukon, Canada
Penny Ballantyne, Government of the Northwest Territories, Canada
Andrew Langford, Government of the Northwest Territories, Canada
Maria Santos, Government of the Northwest Territories, Canada
Sylvia Healey, Government of Nunavut, Canada
Chris DaSilva, Nunavut, Canada
Lynn Brodsky, Health Canada
Gordon Trueblood, Consultant, Canada
Gary Pekeles, McGill University, Canada

James Berner, Alaska Native Tribal Health Consortium, United States of America
Sarah K. Brandel, State Department, United States of America

Arctic Council Observers:

Anastassia Bozhedonova, Northern Forum (Sakha Republic, Russian Federation)
Michael E. K. Moffatt, International Union for Circumpolar Health, Canada
Guy Lindström, Standing Committee of Parliamentarians of the Arctic Region (Finland)
Peter J. Ewins, World Wildlife Fund, Canada
Susan Sang, World Wildlife Fund Canada

Other Invited Experts:

Hanne Petersen, AMAP Working Group Chair, Denmark
Jens C. Hansen, Centre for Arctic Environmental Medicine, AMAP Human Health Assessment Group Chair, Denmark
Valery Tchernjavskii, Eurohealth Program, World Health Organization, Europe
Assia Brandrup-Lukanow, World Health Organization, Europe

The following individuals provided advice and logistical support to the project:

Suzanne Steensen, Canadian Embassy, Denmark
Guudungia LaBoucan, Foreign Affairs Canada
Bernard Funston, Consultant, Canada
Jutta Paczulla, Indian Affairs and Northern Development, Canada
Anna Naumova, Children Single-purpose Hospital of Reconstruction Treatment, Russian Federation
Christian Garrow, Human Resources Development Canada
John Reid, Environment Canada

Editor: Matthew Thompson, Canada

Executive Summary

In 1998, the Sustainable Development Working Group, a working group of the Arctic Council,¹ established the Future of Children and Youth of the Arctic Initiative to improve the health and well-being of children and youth in the Arctic and to increase awareness and understanding of sustainable development. The initiative consists of two components: the Health Programme, which promotes the health and well-being of children and youth in the circumpolar Arctic; and the Networking Programme, which engages youth on issues of sustainable development, culture and community. The Health Programme's first objective was to examine and identify gaps in the existing data and studies related to the health of children and youth in the Arctic. Accordingly, the Health Programme's first project, the "Analysis of Arctic Children and Youth Health Indicators," was designed to provide the Arctic Council with a snapshot of the health of children and youth in the Arctic.

The Health Expert Group, which was convened in March 1999 to oversee the Health Programme, agreed to focus the analysis on 16 key health indicators.² These health measures were divided into two broad categories: biophysical, which includes demography, maternal behaviour, preventive health services and health outcomes; and psychosocial, which includes education, behaviour of children and youth, and health outcomes. Data for these indicators were thought to be available, internationally comparable and suitable for identifying possible key disparities across nations, Arctic regions and Indigenous groups.

The following section summarizes the main findings of this report.

¹ The Arctic Council is a high-level forum that promotes cooperation, coordination and interaction among the Arctic states, and involves Arctic Indigenous communities and others on common Arctic issues, particularly sustainable development and environmental protection.

² The Health Expert Group originally considered over 100 health indicators.

Biophysical Indicators

- **Population “Youthfulness”:**

The Indigenous populations in Arctic Canada, Alaska and Greenland were proportionately younger than corresponding national populations. Conversely, Norway, the Russian Federation, Finland and Sweden reported similar proportions of youth in national and Arctic populations.

- **Maternal Age:**

The average maternal age of Indigenous populations in Alaska and Arctic Canada was lower than the average maternal age of other Arctic and national populations, and was significantly lower than the average maternal age in the United States and Canada.

- **Breastfeeding:**

Breastfeeding prevalence was higher in Arctic regions than national regions in Norway, Finland, the United States and Canada. Breastfeeding prevalence was lowest in the Russian Federation, the United States, Arctic Canada and the Indigenous population of Arctic Canada.

- **Prenatal Care:**

High proportions of mothers in Iceland, Arctic Sweden, Greenland, Sweden and the United States received complete prenatal care. Rates of complete prenatal care were significantly lower among Indigenous women in Arctic Canada and Alaska.

- **Immunization:**

Most countries had high rates of immunization for common diseases such as diphtheria, pertussis, tetanus, measles, mumps, rubella, polio and Haemophilus influenzae type b. Although immunization rates for children in Alaska, Arctic Sweden and Greenland were similar to rates for respective national populations, children in Arctic Canada were immunized at lower rates than other children across Canada.

- **Preterm Birth:**

Preterm birth rates were highest among Indigenous women in Alaska, women in the United States and Indigenous women in Arctic Canada. Preterm birth rates were considerably lower in other countries and regions.

- **Low Birth Weight:**

Women in the United States, Canadian Arctic Indigenous women and women in the Russian Federation reported the highest rates. Women in Sweden, Finland, Iceland and Arctic Sweden reported the lowest rates.

- **Infant Mortality:**

Infant mortality rates (neonatal and postneonatal combined) were lowest in Iceland, Norway, Sweden, Arctic Sweden and Finland, considerably higher in the Indigenous population in Arctic Canada, Greenland and the Russian Federation, and highest in the Indigenous population of Arctic Russia.

- **Cause-specific Non-communicable Diseases:**

Greenland reported the highest incidence of cancer. Finland and Arctic Canada reported the lowest incidence. Cancer mortality rates were highest in the Russian Federation and were consistently higher for males than females.

- **Major Notifiable Infectious Diseases:**

TB incidence was highest for all ages in Greenland, the Russian Federation, Arctic Canada and the Indigenous population of Alaska. Childhood TB incidence was higher in Arctic Canada, compared with the national population of Canada. The incidence of HIV/AIDS was highest in the Russian Federation, the United States, Canada and Denmark. Chlamydia incidence was highest in Greenland, Arctic Canada and the Alaskan Indigenous population, and lowest in Sweden, Finland, Arctic Sweden and Canada.

Psychosocial Indicators

- **Education:**

The percentage of population age 25 years or older with incomplete lower secondary (high school) education was highest in the Russian Federation, Norway, Finland and Canada, and considerably lower in the United States and Denmark.

- **Tobacco Use:**

Youth smoking prevalence for males and females was highest in Greenland, the Canadian Arctic Indigenous population and Arctic Canada. The prevalence of youth smoking was substantially lower in other countries and regions. Excluding the United States, Iceland and the Russian Federation, the prevalence of youth smoking was higher for females than males.

- **Substance Abuse:**

The rates of alcohol use were generally higher among young males than females. The rates of youth solvent abuse were highest in Alaska, the United States and in the Alaskan Indigenous population, and significantly lower in Iceland, Norway, Finland and Canada. The rates of illicit drug use were highest among youth in Iceland, Arctic Canada, Greenland, Alaska, the Indigenous population of Alaska and the United States. Lower rates of illicit drug use were reported in Canada, Arctic Finland, Norway and Finland.

- **Child Abuse and Neglect:**

The prevalence of reported child abuse and neglect was highest in Greenland, lower in Iceland, Finland, Canada and Arctic Finland, and lowest in the United States.

- **Unintentional Injuries:**

Total unintentional injury death rates were consistently higher in Alaska and in the Indigenous population of Arctic Canada, compared with corresponding national populations. Unintentional injury death rates were generally higher for males, and higher in Arctic and Indigenous populations.

- **Suicide:**

Suicide death rates were much higher in Alaskan and Canadian Indigenous populations and in Greenland, compared with corresponding national populations. Suicide death rates were considerably higher for males than females, and were higher in Indigenous populations and Arctic regions than national populations.

The Health Expert Group noted that significant improvements have been made in the health of children and youth in many regions of the Arctic. Nonetheless, disparities in health status between Arctic, Indigenous and national populations remain. Policy prescriptions designed to address these disparities will require standardized data that are comparable across nations, Arctic regions and Indigenous groups.

This report aims to improve understanding of the unique health challenges facing Arctic children and youth, to provide a benchmark for analyzing their health and well-being and to put forward recommendations to address their specific health needs.

Introduction

The Future of Children and Youth of the Arctic initiative was developed to promote sustainable development in northern regions and to improve the health and well-being of children and youth in the Arctic. The initiative, which was undertaken by the Arctic Council's Sustainable Development Working Group (SDWG) and endorsed by the eight Arctic Council member countries³ in September 1998, comprises two programs: health and networking. The Health Programme promotes the health of Arctic children and youth; the Networking Programme engages and empowers Arctic children and youth on issues of sustainable development, culture and community.

A Health Expert Group was formed in March 1999 at the initial planning meeting in Toronto, Canada to oversee the Health Programme and define its parameters. This group was composed of representatives from the Arctic Council member countries, the six permanent participant groups⁴ and representatives of regional governments and non-governmental organizations. Acting on behalf of the SDWG, Health Canada assumed leadership of the Health Programme and provided funding for research, data analysis, project coordination and costs related to the Health Expert Group meetings.

The Health Expert Group acknowledged that the health of children and youth is an essential component of sustainable development. Children and youth need healthy, safe environments to achieve their full potential, and the environment needs caretakers who understand and respect the links between health and sustainable development. The Health Expert Group also recognized the value of evidence-based approaches as the foundation of efficient and effective health policies.

The Health Programme was designed to study the unique issues surrounding the health and well-being of children and youth in the Arctic, using a broad framework of inter-related

³ The eight Arctic Council member countries are: Canada, Denmark, Finland, Iceland, Norway, the Russian Federation, Sweden, and the United States of America.

⁴ The six Arctic Indigenous permanent participant groups are: the Inuit Circumpolar Conference; the Saami Council; the Russian Association of Indigenous Peoples of the North; the Aleut International Association; the Arctic Athabaskan Council; and the Gwich'in Council International.

socio-economic and cultural conditions, including access to health services, nutrition, biophysical health, reproductive health, psychosocial well-being and environmental contamination.

The Health Programme consists of three objectives:

1. examine existing baseline data and research and identify gaps in key areas related to the health of children and youth in circumpolar regions;
2. assess international, national, regional and community processes and approaches that might provide models for Arctic regions; and
3. develop an action plan—based on the results of objectives 1 and 2 and relevant scientific and traditional knowledge—to eliminate or mitigate the most pressing health-related issues facing Arctic children and youth.

The purpose of this report is to fulfill the first Health Programme objective. Accordingly, the Health Expert Group selected 16 biophysical and psychosocial indicators for which data were considered available, internationally comparable and suitable for identifying possible key disparities across nations, Arctic regions and Indigenous groups.⁵ These indicators were considered an appropriate basis for developing recommendations to improve the health of Arctic children and youth and to contribute to a sustainable future for Arctic peoples.

BIOPHYSICAL INDICATORS	
Demography	
1.	Population “Youthfulness”
2.	Maternal Age
Maternal Behaviour	
3.	Breastfeeding
Preventive Health Services	
4.	Prenatal Care
5.	Immunization
Health Outcomes	
6.	Preterm Birth
7.	Low Birth Weight
8.	Infant Mortality
9.	Cause-specific Non-communicable Diseases
10.	Major Notifiable Infectious Diseases
PSYCHOSOCIAL INDICATORS	
Education	
11.	Education
Behaviour of Children and Youth	
12.	Tobacco Use
13.	Substance Abuse (alcohol, solvents and illicit drugs)
Health Outcomes	
14.	Child Abuse and Neglect
15.	Unintentional Injuries
16.	Suicide

⁵ Due to limitations in the availability of data, the impacts of environmental contaminants on the health of children and youth in the Arctic have been excluded from this report. The AMAP Human Health Assessment Reports (1995 and 2000) provide extensive information on blood levels for pregnant women between 20 and 30 years of age for the most persistent organic pollutants (POPs) and metals of concern.

Health Expert Group researchers reviewed relevant national and international databases and surveyed developmental and behavioural research provided by scientists, health professionals and statisticians.

The guidelines for data collection were:

1. data should be collected on Indigenous groups;
2. national and regional (Arctic) data should be collected (along with municipal data, where feasible);⁶
3. data should be provided by sex and age group, up to but not exceeding age 25, unless otherwise stated;
4. annual data should be provided from 1992 onward.

International statistical analyses are often hampered by data limitations, statistical inconsistencies and methodological variation across nations and regions. The Health Expert Group discovered that in some cases, data were unavailable, while in others, existing data were limited or were not always comparable due to variable periods, age groups or definitions.

Furthermore, the relatively small size of Arctic populations can reduce the ability to generalize the results. Additionally, comparisons between geographical regions can be misleading because the proportion of Indigenous peoples varies greatly. Specifically, in regions where Indigenous peoples form a small proportion of the population, indicators may not reflect health problems specific to Indigenous populations.

Due to these data issues the findings contained in this report must be interpreted cautiously.

⁶ The definition of Arctic geographical areas will conform to that established by the Arctic Monitoring and Assessment Program (AMAP).

Throughout this report, each of the 16 indicators is discussed in the text and depicted in an accompanying chart. The footnotes for each chart provide greater detail about the data submitted by Arctic Council countries, such as the source, year and age range.⁷ Where possible, comparisons have been made across nations and regions, between national and Indigenous populations, and between age groups and by sex. Throughout the text, national data are identified by country name (e.g. data for Canada) and data on Arctic or Indigenous populations are displayed clearly (e.g. data for Arctic Canada or the Indigenous population of Arctic Canada). Articles for further reading are also suggested.

The table below displays the eight Arctic Council nations and the corresponding regions and Indigenous populations for which data have been presented.

Arctic Nations, Regions and Indigenous Populations

Nation	Arctic Region	Indigenous Population within Arctic Regions include:
United States	Alaska	Aleuts, Inuit and Indians
Canada	Arctic Canada (Yukon, Northwest Territories and Nunavut)	Inuit, Métis and First Nations (Dene, Gwich'in and Athabaskans)
Denmark	Greenland	Inuit
Iceland	Not applicable	No Indigenous population
Norway	Arctic Norway (Troms)	Saami
Sweden	Arctic Sweden (Norrbotten)	Saami
Finland	Arctic Finland (Lapland)	Saami
Russian Federation	Arctic Russia (Chukotka)	Dolgans, Nganasans, Nenets, Saami, Khanty, Chukchi, Evenks, Evens, Enets, Yupik, Yukaghirs, Selkups, Chuvans, Mansi, Kets and Koryaks

⁷Empty cells signify that data were not provided. Note that throughout this report, there are instances where data were provided, but are not displayed in the charts due to compatibility problems.

A. Biophysical Indicators

The Health Expert Group selected ten biophysical health indicators: demography (population “youthfulness,” maternal age), maternal behaviour (breastfeeding), preventive health services (prenatal care, immunization) and health outcomes (preterm birth, low birth weight, infant mortality, cause-specific non-communicable diseases, major notifiable infectious diseases).

A.1 Demography

A.1.1 Population “Youthfulness”

Overview

This indicator was defined as the proportion of population age 0 to 19 years.

Population “youthfulness” is a key element in developing health profiles to design, target and evaluate health services. The proportion of youth in any population depends mainly on the number of women of childbearing age (15 to 44 years) and their fertility rate.⁸ High proportions of children and youth increase the need for specific services, such as housing, education and health care, and increase demand for employment.

The United States, Canada, Denmark, Iceland, Norway, Sweden, Finland and the Russian Federation provided national and Arctic (excluding Iceland) data on this indicator.

Chart Highlights

The highest proportion of youth age 0 to 19 years was reported among the Indigenous populations of Arctic Canada (49.5%) and Alaska (45.1%)—considerably higher than the proportion of youth in the national populations of Canada (26%) and the United States (28.7%). A similar pattern was reported in Denmark: 37% of the Indigenous population in Greenland was

⁸ The annual number of live births per 1000 women age 15–44 years.

age 0 to 19 years, compared with 23.7% in Denmark. In contrast, the proportion of children and youth in the Arctic populations of Norway, the Russian Federation, Finland and Sweden (23.8% to 26.6%) were very similar to those in respective national populations (24.1% to 26.3%). In Iceland, 31.3% of the population was age 0 to 19, the highest national rate among reporting countries (chart 1).

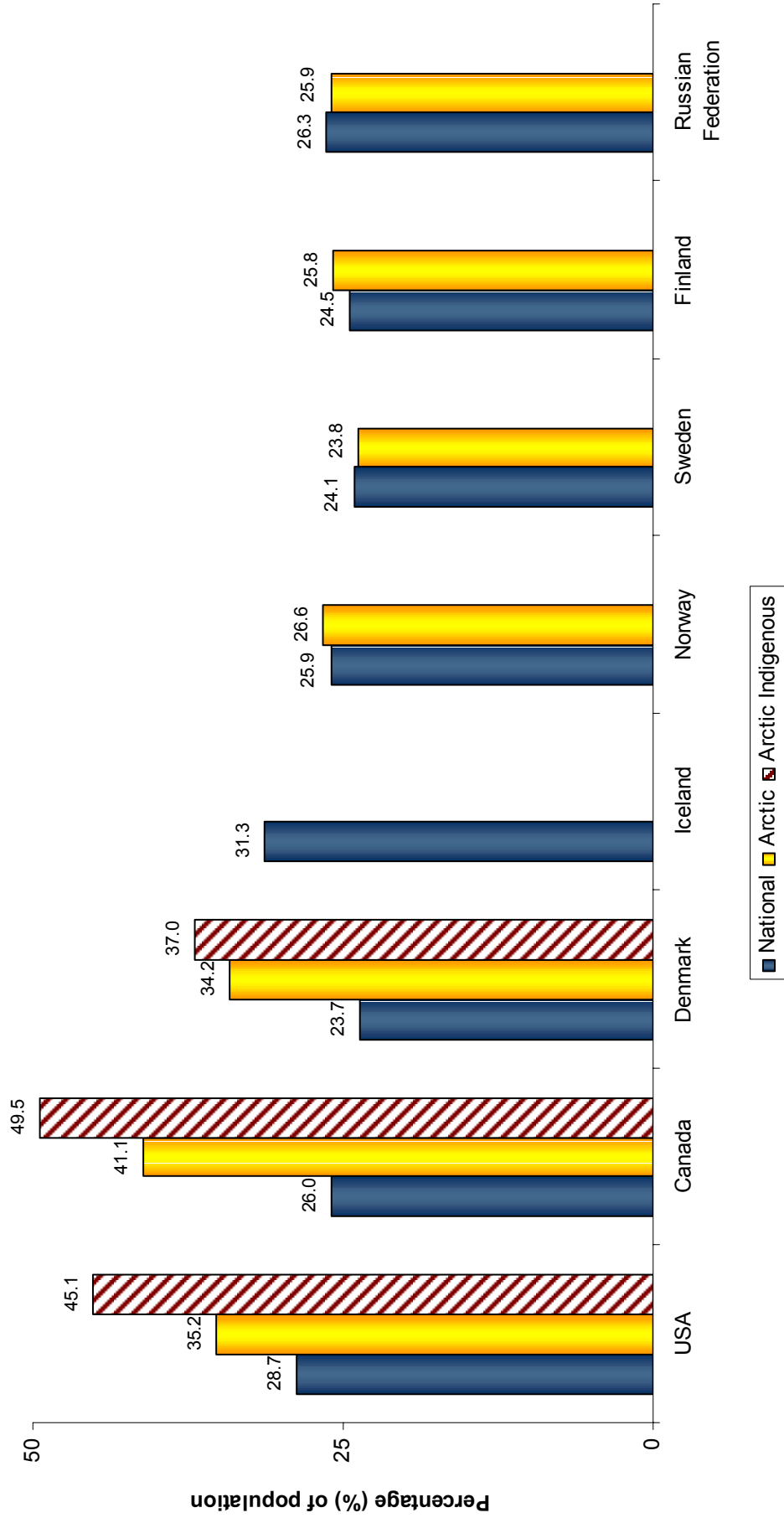
Summary

The Indigenous populations in Arctic Canada, Alaska and Greenland were proportionately younger than corresponding national populations. In Norway, the Russian Federation, Finland and Sweden, similar proportions of youth age 0 to 19 years were reported in national and Arctic populations.

Recommendations

Additional population data, particularly for Arctic regions, are needed to achieve a useful Arctic population profile. Data from all Arctic nations should include data for Indigenous populations, to allow comparisons of health indicators and to identify specific population groups that may be at risk.

Chart 1: Percentage of population age 0–19 years



Footnotes: Percentage of population age 0–19 years

Country	Region/ Ethnicity	Source	Year(s)	Age Range	Notes
USA	National	US Census Bureau.	1999	0–19	Aggregated 5-year age groups.
	Alaska	Alaska Bureau of Vital Statistics: 1998 Annual Report.	1998	0–19	Aggregated 5-year age groups.
	Alaska Indigenous	Alaska Bureau of Vital Statistics: 1998 Annual Report.	1998	0–19	Aggregated 5-year age groups.
Canada	National	Statistics Canada: 1996 Census.	1996	0–19	Aggregated 5-year age groups.
	Arctic Canada	NWT/NU: Health Canada in cooperation with GNWT; Yukon: Statistics Canada. CANSIM Table #051-0001.	1996	0–19	Aggregated 5-year age groups.
	Arctic Canada Indigenous	NWT/NU: Health Canada in cooperation with GNWT.	1996	0–19	Aggregated 5-year age groups. Indigenous values include only NWT and NU.
Denmark	National	US Census Bureau, International Data Base.	2000	0–19	Aggregated 5-year age groups.
	Greenland	Greenland Statistical Department.	1998	0–19	Aggregated 5-year age groups.
	Greenland Indigenous	Greenland Statistical Department.	1998	0–19	Aggregated 5-year age groups.
Iceland	National	Statistics Iceland (monthly statistics).	1999	0–19	Aggregated 5-year age groups.
Norway	National	Statistics Norway.	2000	0–19	Aggregated 5-year age groups.
	Troms	Statistics Norway.	2000	0–19	Aggregated 5-year age groups.
Sweden	National	Torbjorn Messner, Department of Internal Medicine, Kiruna District Hospital, Sweden.	2000	0–19	Aggregated 5-year age groups.
	Norrbottn	Torbjorn Messner, Department of Internal Medicine, Kiruna District Hospital, Sweden.	2000	0–19	Aggregated 5-year age groups.
Finland	National	Statistics Finland (Tilastokeskus), National Research and Development Centre for Health and Welfare, (STAKES).	2000	0–19	Aggregated 5-year age groups.
	Lapland	Statistics Finland (Tilastokeskus), National Research and Development Centre for Health and Welfare, (STAKES).	2000	0–19	Aggregated 5-year age groups.
Russian Federation	National	US Census Bureau, International Data Base.	2000	0–19	Aggregated 5-year age groups.
	Chukotka	Valery Klopov, Regional Institute “Monitoring the Arctic,” St. Petersburg, Russia.	1999	0–19	Aggregated 5-year age groups; count based on crude addition of percentages (0–19) within specific age categories multiplied by the overall population value.

Legend

NWT: Northwest Territories

NU: Nunavut

GNWT: Government of the Northwest Territories

CANSIM: Canadian Socioeconomic Information Management System

STAKES: The National Research and Development Centre for Welfare and Health

A.1.2 Maternal Age

Overview

This indicator was defined as the average age of women delivering live births or stillbirths in a given population and period.

Maternal age is a significant indicator of infant health and childhood development. Infants of teen mothers tend to have higher rates of neonatal and postneonatal mortality and morbidity (Health Canada, 2000).

The United States, Canada, Iceland, Norway, Sweden and Finland provided national data for this indicator. The United States, Canada, Denmark, Norway, Sweden and Finland provided Arctic data.

Chart Highlights

National average maternal age ranged from 28 years in the United States to 30.1 years in Sweden. Indigenous populations in Alaska and Arctic Canada reported the lowest average maternal age (25.6 years and 24.2 years)—2.4 years and 4.2 years lower than corresponding national averages (28 years in the United States; 28.4 years in Canada). In Norway, Sweden and Finland there was little variation between the average maternal age of national and Arctic populations (chart 2).

Summary

The average maternal age of Indigenous populations in Alaska and Arctic Canada was lower than the average maternal age of other Arctic or national populations, and lower than the average maternal age in the United States and Canada. National average maternal age was very similar across other countries, and showed little variation between national and Arctic populations.

Recommendations

The Health Expert Group suggested modifying this indicator to reflect the number of live births to teen mothers expressed as a proportion of all live births in a population, which would be consistent with European Union and United Nations health indicators and would reflect both teen birth rates and population age structure. However, age-specific live birth rates directly measure birth rates⁹ among teens and other age groups, and provide a more specific health indicator for future use.

Future collection and analysis of average maternal age data should include live births, stillbirths and age-specific birth rates, to provide accurate assessments of the rates and significance of births to young mothers.

Further Reading

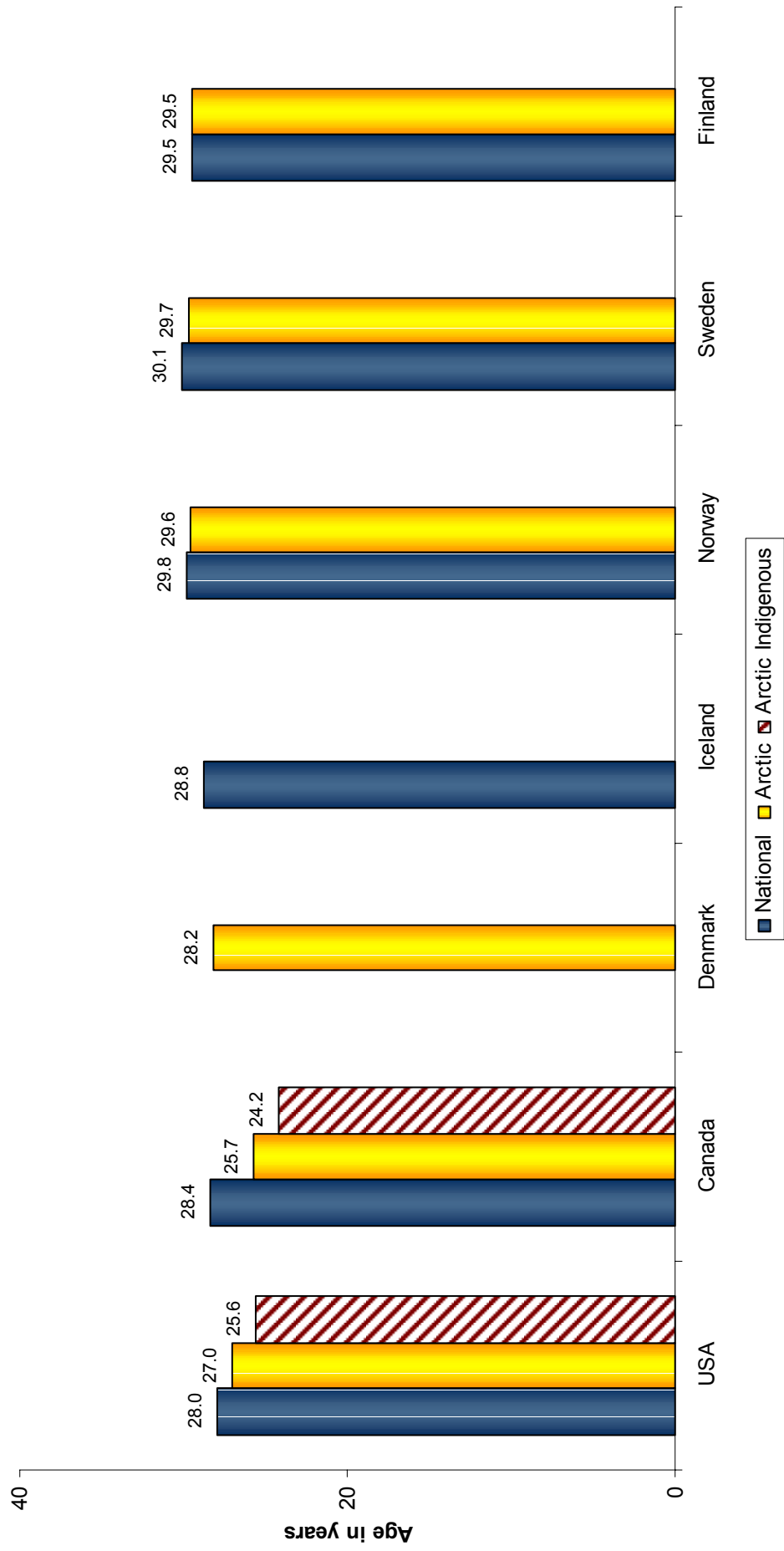
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⁹ The annual number of live births per 1000 females in a population.

Chart 2: Maternal age



Footnotes: Maternal age

Country	Region/Ethnicity	Source	Year(s)	Age Range	Notes
USA	National	National Vital Statistics Report, Vol. 51, No. 1.	2000		Includes live births, order not stated.
	Alaska	Alaska Bureau of Vital Statistics: 1997 Annual Report.	1997	15+	Calculations based on data provided within the source report.
	Alaska Indigenous	Alaska Bureau of Vital Statistics: 1997 Annual Report.	1997	15+	Calculations based on data provided within the source report.
Canada	National	Statistics Canada, Vital statistics compendium 1996 - 84-214-XIE.	1996		
	Arctic Canada	Health Canada in cooperation with GNWT.	1990–1998		Data represent NWT and NU.
	Arctic Canada Indigenous	Health Canada in cooperation with GNWT.	1990–1998		Indigenous values include only NWT and NU.
Denmark	National				
	Greenland	Greenland Statistical Department.	1998	15–46	Arithmetic mean represented.
Iceland	National	Statistics Iceland (monthly statistics).	1998	All	
Norway	National	Statistics Norway.	2001	15–46	Mean age at birth of first child.
	Troms	Statistics Norway.	2001	15–46	Based on actual births in the period.
Sweden	National	Torbjorn Messner, Department of Internal Medicine, Kiruna District Hospital, Sweden.	2001	All	
	Norrbottnen	Torbjorn Messner, Department of Internal Medicine, Kiruna District Hospital, Sweden.	2001	All	
Finland	National	Finnish Perinatal Statistics 1997–1998/ Statistical Report 41/1999; National Research and Development Centre for Welfare and Health, (STAKES).	1998		
	Lapland	Finnish Perinatal Statistics 1997–1998/ Statistical Report 41/1999; National Research and Development Centre for Welfare and Health, (STAKES).	1999		
Russian Federation	National				
	Chukotka				

Legend

GNWT: Government of the Northwest Territories

NWT: Northwest Territories

NU: Nunavut

STAKES: The National Research and Development Centre for Welfare and Health

A.2 Maternal Behaviour

A.2.1 Breastfeeding

Overview

This indicator was defined as the percentage of mothers of live-born infants in a given population and period who breastfed either exclusively or partially for at least three to four months.

The relatively low prevalence of breastfeeding in some countries or regions may reflect variable survey design or other differences in methodology or data definitions.

The United States, Canada, Denmark, Iceland, Norway, Sweden, Finland and the Russian Federation provided national data for this indicator. The United States, Canada, Denmark, Norway, Sweden and Finland provided Arctic data.

Chart Highlights

The prevalence of exclusive breastfeeding was higher in Arctic regions than national regions in Norway (90% compared with 88%), Finland (85% compared with 74%), the United States (53% compared with 41%) and Canada (41% compared with 35%). Breastfeeding prevalence was lowest in the Russian Federation (42%), the United States (41%), Arctic Canada (41%), the Inuit population of Arctic Canada (39%), Canada (35%) and the Dene population of Arctic Canada (24%) (chart 3).

Summary

In Norway, Finland, the United States and Canada, breastfeeding prevalence was higher in Arctic regions than in national regions. Breastfeeding prevalence was lowest in the Russian Federation, the United States, Arctic Canada, the Inuit population of Arctic Canada, Canada and the Dene population of Arctic Canada.

Recommendations

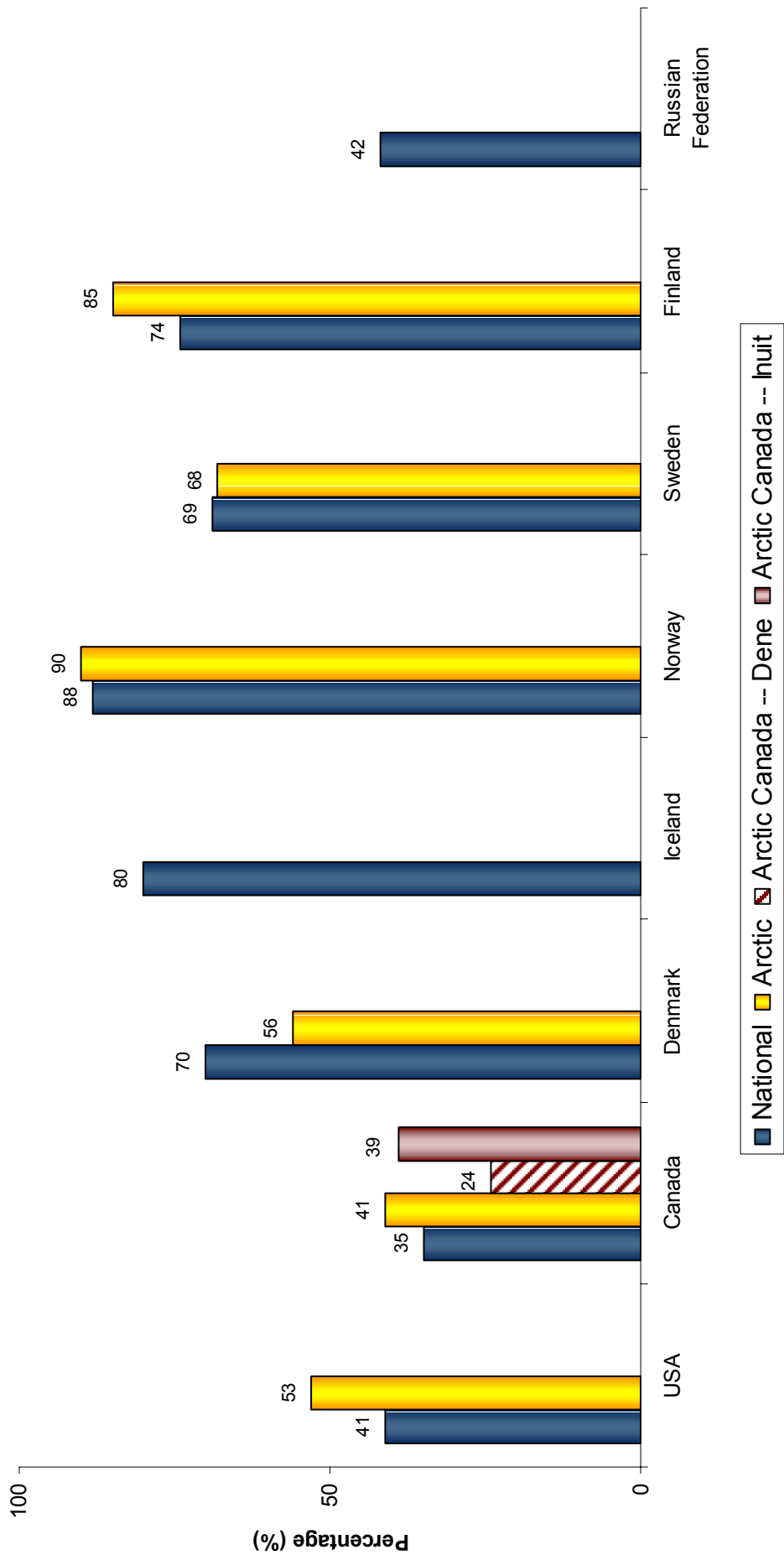
The Health Expert Group recommended that circumpolar countries adopt World Health Organization (WHO) standards for data collection on this indicator: (i) the percentage of women who initiate breastfeeding, (ii) the percentage who breastfeed exclusively for three months, and (iii) the percentage who breastfeed exclusively for six months.

Further Reading

Health Canada. 2000. Perinatal health indicators for Canada: a resource manual. Ottawa: Minister of Public Works and Government Services Canada.

Phares, T.M., et al. 2004. Surveillance for disparities in maternal health-related behaviors - selected states, Pregnancy Risk Assessment Monitoring System (PRAMS), 2000-2001. MMWR Surveill. Summ. 53(SS-4): 1-13.

Chart 3: Breastfeeding - at least three months



Footnotes: Breastfeeding

Country	Region/Ethnicity	Source	Year(s)	Duration	Notes
USA	National	2003 National Immunization Survey, Centers for Disease Control and Prevention, Department of Health and Human Services.	2003	3 months	Exclusive breastfeeding (defined in this survey as only breast milk and water—no solids or other liquids); 95% confidence intervals provided.
	Alaska	2003 National Immunization Survey, Centers for Disease Control and Prevention, Department of Health and Human Services.	2003	3 months	Exclusive breastfeeding (defined in this survey as only breast milk and water—no solids or other liquids); 95% confidence intervals provided.
	Alaska Indigenous				
Canada	National	Statistics Canada, Health Indicators, December 2001.	1996–1997	At least 3 months	Mothers age 15–49 years.
	Arctic Canada	Department of Health and Social Services, GNWT, Database on Breastfeeding, 1993.	1993	3 months	Exclusive breastfeeding; duration and proportion of respondents in NWT and NU (less community of Holman).
	Arctic Canada Indigenous	Department of Health and Social Services, GNWT, Database on Breastfeeding, 1993.	1993	3 months	Inuit and Dene represented separately; proportion of respondents in NWT and NU (less community of Holman).
Denmark	National	WHO/Europe, HFA Database, June 2002.	1992	3 months	% of infants reaching their first birthday in the given calendar year who were breastfed, at least partially, at 3 months.
	Greenland	Health Survey of Greenland, 1993–94.	1985–1994	4+ months	Breastfeeding for 4+ months.
Iceland	National	Geir Gunnlaugsson, Centre for Child Health Services.	2003	4 months	Value is based on the recordings of 8054 children born between 1999 and 2001; information from 55 health centres.

Legend

GNWT: Government of the Northwest Territories
 NWT: Northwest Territories
 NU: Nunavut
 WHO: World Health Organization
 HFA Database: European Health for all Database

Footnotes: Breastfeeding (continued)

Country	Region/Ethnicity	Source	Year(s)	Duration	Notes
Norway	National	WHO/Europe, HFA Database, June 2002.	1999	3 months	% of infants reaching their first birthday in the given calendar year who were breastfed, at least partially, at 3 months.
	Troms	Jon Øyvind Odland, University of Tromsø, Norway.	1997	3 months	
Sweden	National	Torbjorn Messner, Department of Internal Medicine, Kiruna District Hospital, Sweden.	1999	4 months	Exclusively breastfed at 4 months.
	Norrbottn	Torbjorn Messner, Department of Internal Medicine, Kiruna District Hospital, Sweden.	1999	4 months	Exclusively breastfed at 4 months.
Finland	National	WHO/Europe, HFA Database, June 2002.	2000	3 months	% of infants reaching their first birthday in the given calendar year who were breastfed, at least partially, at 3 months.
	Lapland	AMAP project in Finland involving 96 mothers from Lapland.		4+ months	4+ months breastfeeding with supplementary feeding.
Russian Federation	National	WHO/Europe, HFA Database, June 2002.	2000	3 months	% of infants reaching their first birthday in the given calendar year who were breastfed, at least partially, at 3 months.
	Chukotka				

<p>Legend WHO: World Health Organization HFA Database: European Health for all Database AMAP: Arctic Monitoring and Assessment Programme</p>
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A.3 Preventive Health Services

A.3.1 Prenatal Care

Overview

This indicator was defined as the percentage of women giving birth in a given population and period who received varying levels of prenatal care: complete care (at least five prenatal visits), delayed care (prenatal visits starting in the third trimester) or no care.

Prenatal care enables public health agencies to provide early support to pregnant women and their families by identifying pregnancies that are likely to have adverse outcomes, such as low birth weight and infant mortality.

The United States, Iceland and Sweden reported national data on prenatal care. The United States, Canada, Denmark and Sweden provided Arctic data.

Chart Highlights

The highest rates of complete prenatal care were reported among mothers in Iceland (98%), Arctic Sweden (98%), Greenland (90%), Sweden (88%) and the United States (83.4%). Lower rates of complete prenatal care were reported among Indigenous women in Arctic Canada (67%) and Alaska (50.2%). Rates of complete prenatal care for Indigenous women in Alaska (50.2%) were significantly lower than rates for women in the United States (83.4%) (chart 4).

Summary

The highest rates of complete prenatal care were reported by mothers in Iceland, Arctic Sweden, Greenland, Sweden and the United States.

Indigenous women in Arctic Canada and Alaska reported the lowest rates of complete prenatal care. Alaskan Indigenous mothers had much lower rates of prenatal care than other mothers in the United States.

Recommendations

All circumpolar countries should provide national and Arctic data on this indicator, to assess current access to prenatal care.

Further Reading

Banta, D. 2003. What is the efficacy/effectiveness of antenatal care? World Health Organization Regional Office for Europe's Health Evidence Network (HEN): 1–17.

Carroli G., et al. 2001. WHO systematic review of randomised controlled trials of routine antenatal care. *Lancet* 357: 1565–1570.

US Department of Health and Human Services. Health Resources and Services Administration, Maternal and Child Health Bureau. 2002. *Child Health USA 2002*. Rockville, Maryland: US Department of Health and Human Services.

US Department of Health and Human Services. Health Resources and Services Administration, Maternal and Child Health Bureau. 2002. *Women's Health USA 2002*. Rockville, Maryland: US Department of Health and Human Services.

Chart 4: Prenatal care (complete, delayed or no care)

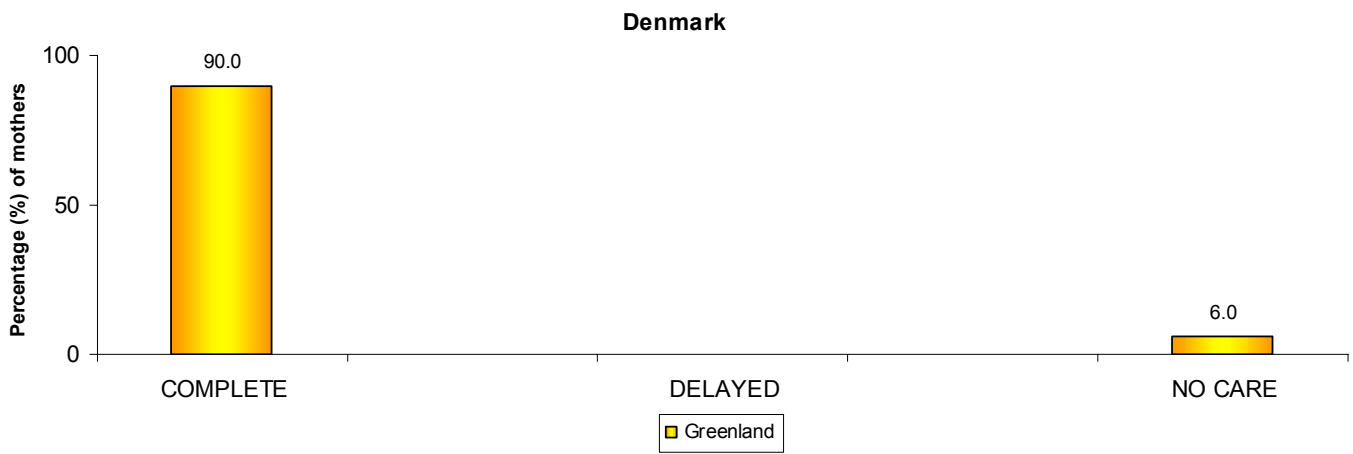
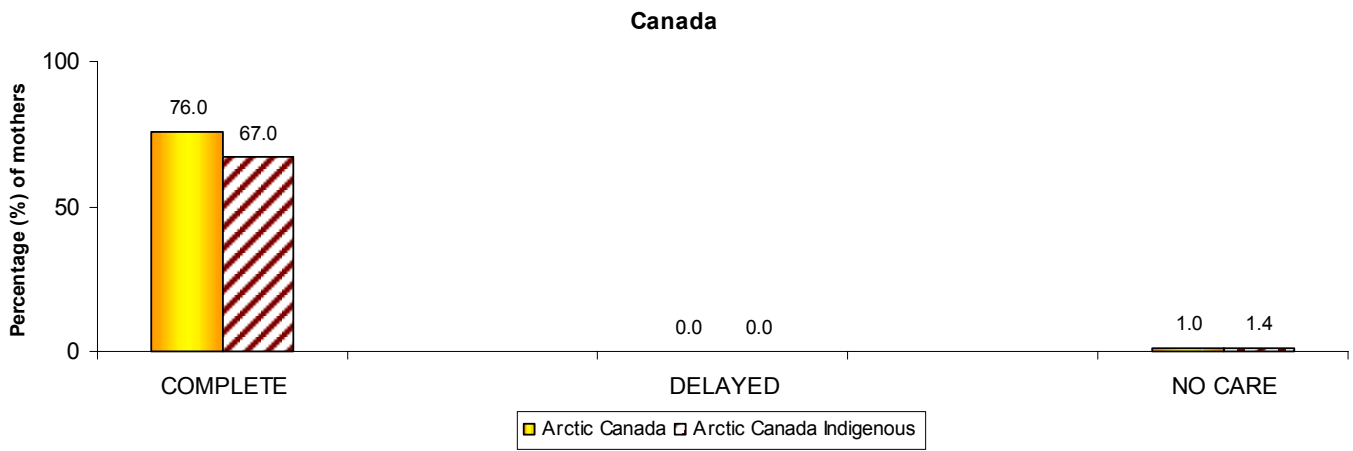
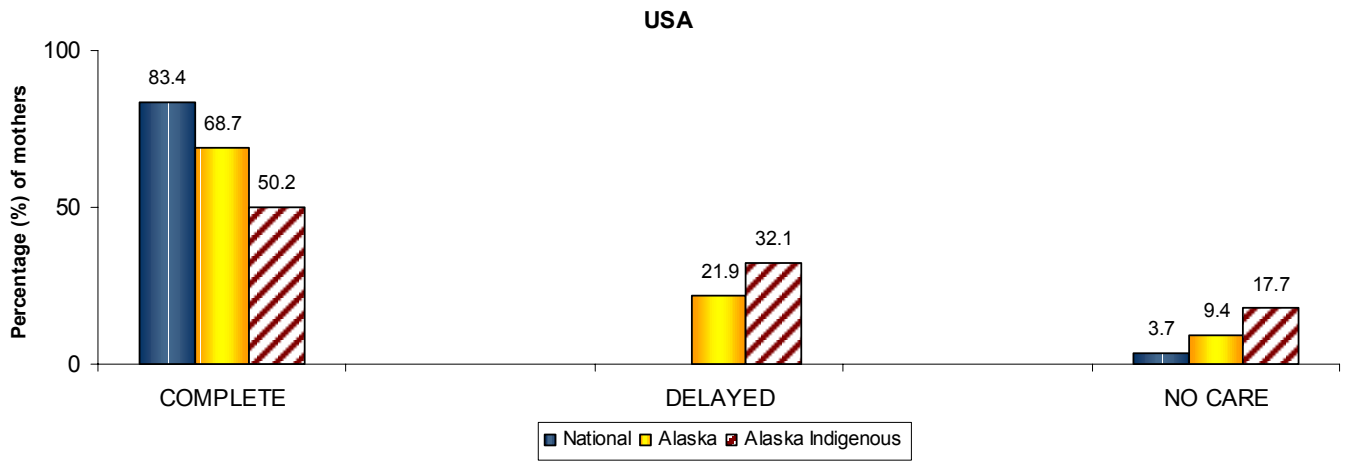
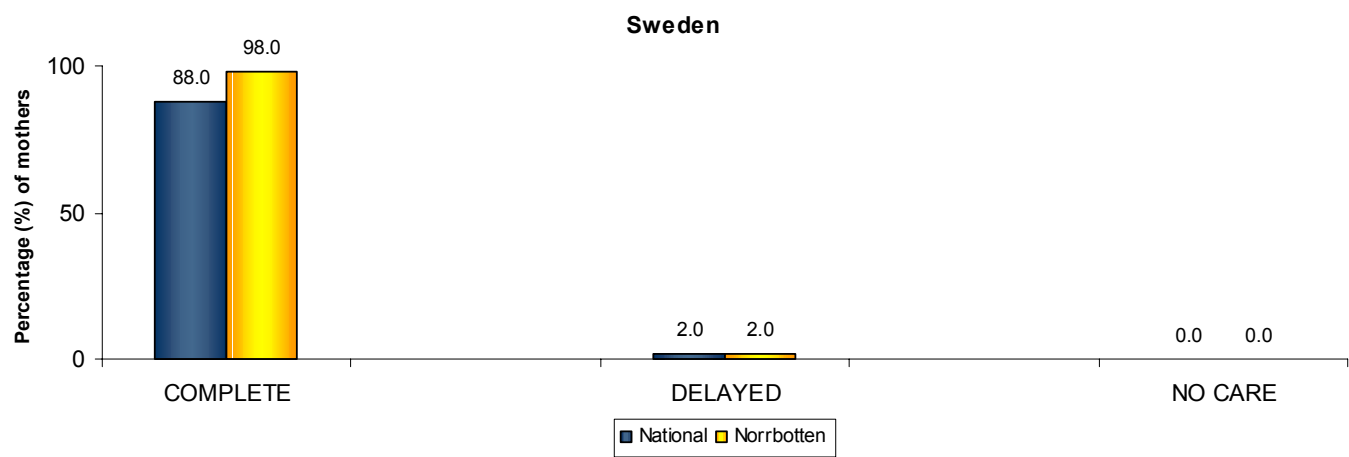
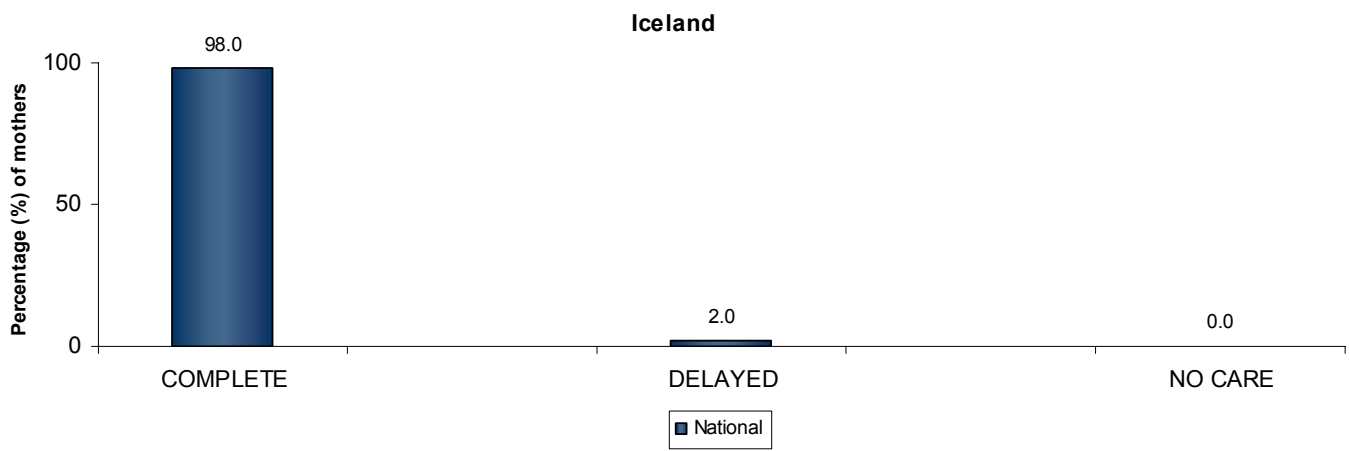


Chart 4: Prenatal care (complete, delayed or no care) (continued)



Footnotes: Prenatal care

Country	Region/Ethnicity	Source	Year(s)	Notes
USA	National	National Vital Statistics Report; Vol. 51, No. 2.	2001	Care defined as: 1) prenatal care began during the first trimester; 2) prenatal care began during the 3rd trimester or no prenatal care.
	Alaska	Alaska Bureau of Vital Statistics: 1998 Annual Report.	1998	Care defined based on the Kessner Index to evaluate levels of prenatal care.
	Alaska Indigenous	Alaska Bureau of Vital Statistics: 1998 Annual Report.	1998	Care defined based on the Kessner Index to evaluate levels of prenatal care.
Canada	National			
	Arctic Canada	Community Health Management Information System (CHMIS), NWT.	1999	Care defined as per the indicator definition – early care: first prenatal assessment by physician or community health nurse prior to start of 3rd trimester; ≥5 prenatal visits during pregnancy; late care: first prenatal assessment by physician or community health nurse during 3rd trimester; no care: no reported prenatal care prior to one week before birth. Data represent NWT.
	Arctic Canada Indigenous	Community Health Management Information System (CHMIS), NWT.	1999	Care defined as per the indicator definition. Indigenous values include only NWT.
Denmark	National			
	Greenland	State Medical Officer.	1998	Defined as 1) no care 2) 1–5 visits 3) the level of prenatal care was not provided or was inconclusive. Categorized as visits to 1) doctor 2) midwife.
Iceland	National	Directorate of Health.	2002	
Norway	National			
	Troms			
Sweden	National	Torbjorn Messner, Department of Internal Medicine, Kiruna District Hospital, Sweden.	2000	Care defined as per the indicator definition.
	Norrbotten	Torbjorn Messner, Department of Internal Medicine, Kiruna District Hospital, Sweden.	2000	Care defined as per the indicator definition.
Finland	National			No comparable information of completeness of care (information provided on timing of first visit and visits to outpatient clinics).
	Lapland			
Russian Federation	National			
	Chukotka			

Legend

CHMIS: Community Health Management Information System

NWT: Northwest Territories

A.3.2 Immunization

Overview

This indicator was defined as the percentage of children in a given population and period who were fully immunized against diphtheria, pertussis, tetanus, measles, mumps, rubella, polio and Haemophilus influenzae type b. Since national immunization schedules included different vaccines and target age groups, this indicator represented the percentage of children who completed their country's vaccination protocol.

Although immunization status is not a health outcome, it determines the risk of vaccine-preventable infectious diseases and reflects a community's commitment to preventive public health efforts. Low or declining immunization rates increase the risk of infectious disease outbreaks and may reflect changes in policies and program priorities or capacities.

Comparisons of immunization rates across countries and regions were hampered by variable methodology, definitions and target age groups.

The United States, Canada, Denmark, Iceland, Norway, Sweden, Finland and the Russian Federation reported data for this indicator. The United States, Canada, Denmark and Sweden provided Arctic data.

Chart Highlights

Most countries had close to 90% coverage or higher for diphtheria, pertussis, tetanus, measles, mumps, rubella, polio and Haemophilus influenzae type b. Immunization rates for children in Alaska, Arctic Sweden and Greenland were the same or similar to rates for respective national populations, but children in Arctic Canada were immunized at rates 6.9% to 13.7% lower than national rates for Canada (chart 5).

Summary

Most countries had high rates of coverage for common diseases such as diphtheria, pertussis, tetanus, measles, mumps, rubella, polio and Haemophilus influenzae type b.

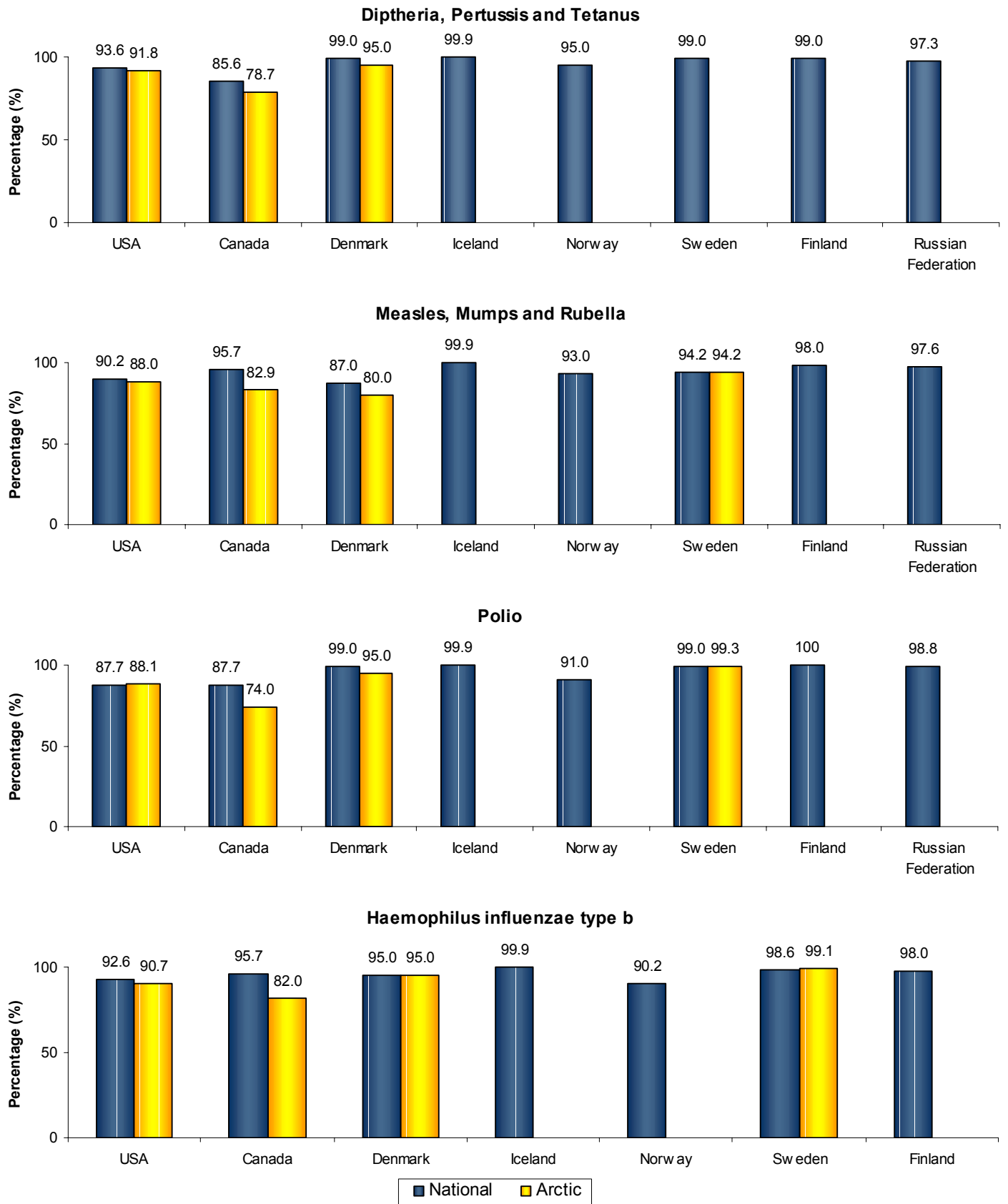
Most countries reported little variation in the rates of immunization between national and regional populations. However, immunization rates for children in Arctic Canada were lower than rates for other children across Canada.

Recommendations

Since immunization is essential to prevent a number of virulent and potentially fatal diseases, circumpolar nations should continue to collect and improve data to enhance this indicator.

Revision of this indicator based on a core set of vaccines for infants and children would facilitate comparisons between populations.

Chart 5: Immunization



Footnotes: Immunization

Country	Region/ Ethnicity	Source	Year(s)	Age Range	Notes
USA	National	National Immunization Survey from CDC.	2001	19–35 months	
	Alaska	National Immunization Survey from CDC.	2001	19–35 months	
	Alaska Indigenous				
Canada	National	Health Canada, Measuring Up: Results from the National Immunization Survey, 2002.	1994–95 (except Hib: 1990–91)	Coverage at 7th birthdate	Percentage coverage at 7 years of age by birth cohort surveyed. DTP based on 4 doses, MMR based on 1 dose, polio based on ≥ 3 doses, Hib based on ≥ 1 dose.
	Arctic Canada	Community Health Management Information System (CHMIS), NWT.	1997	Coverage at 7th birthdate	1997 cohort born calendar year 1990. DTP based on 5 doses, MMR based on 2, 1, 1 doses respectively, polio based on 4 doses, Hib based on ≥ 1 dose. Indigenous data based on an averaging of sex-specific percentages. Data represent NWT.
	Arctic Canada Indigenous				
Denmark	National	WHO/Europe, HFA Database, June 2002.	1999 (except polio: 1998)	Various, see notes	MMR: reaching 2nd birthday in a given calendar year (measles - 1 dose, mumps and rubella - fully immunized); DTP: reaching first birthday in a given calendar year (diphtheria - 3 doses of DTP or DT, diphtheria and tetanus - fully immunized); poliomyelitis: reaching first birthday in a given calendar year (3 doses); Hib: reaching first birthday in a given calendar year (fully immunized).
	Greenland	State Medical Officer.	2001		Precise information about the status is not available. From 2001 the status is followed by the State Medical Officer. Ranges given for percentages, lowest value applied.

Legend

CDC: Centers for Disease Control and Prevention
 Hib: Haemophilus influenzae type b
 DTP: Diphtheria, Tetanus and Pertussis
 MMR: Measles, Mumps and Rubella
 CHMIS: Community Health Management Information System
 NWT: Northwest Territories
 WHO: World Health Organization
 HFA Database: European Health for all Database
 DT: Diphtheria and Tetanus

Footnotes: Immunization (continued)

Country	Region/ Ethnicity	Source	Year(s)	Age Range	Notes
Iceland	National	WHO/Europe, HFA Database, June 2002.	1999		
Norway	National	WHO/UNICEF Review of National Immunization Coverage, 2001; WHO/Europe, HFA Database, June 2002 (Hib only).	1999	Various, see notes	All values based on WHO/UNICEF estimates. Hib: reaching first birthday in a given calendar year (fully immunized).
	Troms				
Sweden	National	Torbjorn Messner, Department of Internal Medicine, Kiruna District Hospital, Sweden.	1998		DT ≥ 3 doses, poliomyelitis ≥ 3 doses, Hib ≥ 3 doses, morbilli/parotitis/rubella ≥ 3 doses.
	Norrbottn	Torbjorn Messner, Department of Internal Medicine, Kiruna District Hospital, Sweden.	1998		DT ≥ 3 doses, poliomyelitis ≥ 3 doses, Hib ≥ 3 doses, morbilli/parotitis/rubella ≥ 3 doses.
Finland	National	National Public Health Institute.	1998	Under age 2	
	Lapland				
Russian Federation	National	WHO/Europe, HFA Database, June 2002.	1999	Various, see notes	MMR: reaching 2nd birthday in a given calendar year (measles - 1 dose, mumps and rubella - fully immunized); DTP: reaching first birthday in a given calendar year (diphtheria - 3 doses of DTP or DT, diphtheria and tetanus - fully immunized); poliomyelitis: reaching first birthday in a given calendar year (3 doses).
	Chukotka				

Legend

WHO: World Health Organization
HFA Database: European Health for all Database
UNICEF: United Nations Children's Fund
Hib: Haemophilus influenzae type b
DT: Diphtheria and Tetanus
MMR: Measles, Mumps and Rubella
DTP: Diphtheria, Tetanus and Pertussis

A.4 Health Outcomes

A.4.1 Preterm Birth

Overview

This indicator was defined as the annual number of preterm births (gestational age less than 37 completed weeks at birth) per 1000 total live births in a population.

Prematurity at birth is the leading cause of neonatal morbidity and mortality (Robinson, 2001). Although preterm births comprise less than 10% of live births, they account for over 80% of neonatal deaths (Health Canada, 2000).

Without uniform estimates of gestational age, preterm birth rates may not be strictly comparable across circumpolar countries.

The United States, Canada, Iceland, Norway, Sweden and Finland provided national data for this indicator. The United States, Canada, Denmark, Norway and Sweden provided Arctic data.

Chart Highlights

The highest rates of preterm birth were reported by Indigenous women in Alaska (132.5 per 1000 live births), women in the United States (111), Indigenous women in Arctic Canada (98.5), and women in Alaska (97.8) and Arctic Canada (91.3). Preterm birth rates in Greenland, Finland, Canada, Norway and Sweden ranged from 57.4 to 72.3 per 1000 births (chart 6).

Summary

Preterm birth rates varied markedly across circumpolar populations, but were highest among Indigenous women in Alaska, women in the United States, Indigenous women in Arctic Canada, and women in Alaska and Arctic Canada. Preterm birth rates were considerably lower in other countries and regions.

Recommendations

Since preterm birth is the major cause of neonatal morbidity and mortality, circumpolar nations should continue to monitor and improve gestational age data, as well as monitor low birth weight rates. Arctic nations should also evaluate current access to prenatal ultrasound, which is essential for differentiating preterm births from intrauterine growth restrictions, and for interpreting and comparing preterm birth rate data.

Further Reading

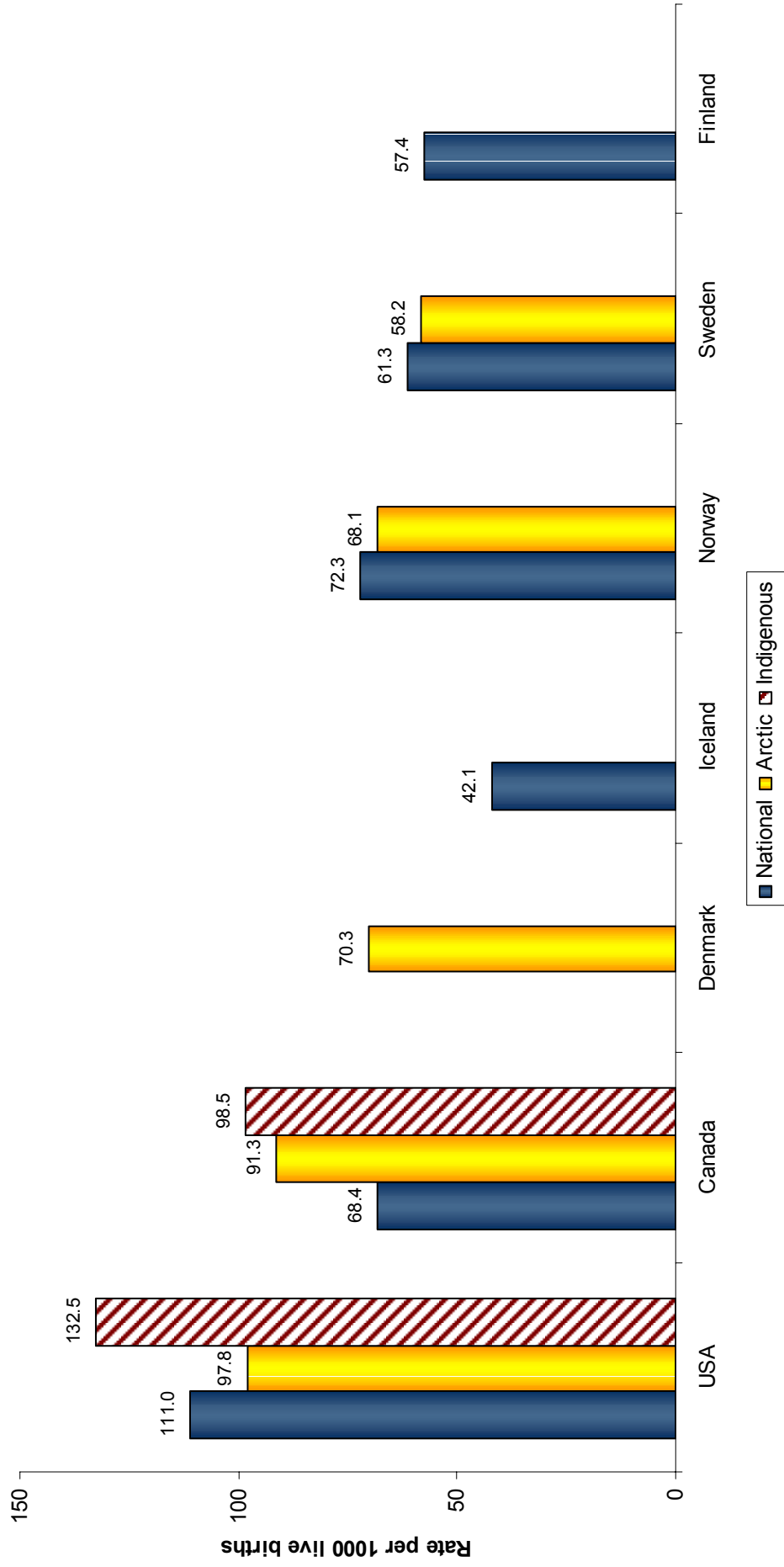
Health Canada. 2000. Perinatal health indicators for Canada: a resource manual. Ottawa: Minister of Public Works and Government Services Canada.

Knoches, A.M., and L.W. Doyle. 1993. Long-term outcome of infants born preterm. *Baillière's Clin. Obstet. Gynaecol.* 7: No. 3: 633–651.

Luo, Z.C., et al. 2004. Risks of adverse pregnancy outcomes among Inuit and North American Indian women in Quebec, 1985–97. *Paediatr. Perinat. Epidemiol.* 18: 40–50.

Robinson, J.N., et al. 2001. The epidemiology of preterm labor. *Semin. Perinatol.* 25: No. 4: 204–214.

Chart 6: Preterm birth, aggregated rates



Footnotes: Preterm birth

Country	Region/Ethnicity	Source	Year(s)	Notes
USA	National	National Vital Statistics Report, Vol. 52, No. 10, December 17, 2003.	1992–1998	Converted from a percentage.
	Alaska	Alaska Bureau of Vital Statistics: 1995–1998 Annual Reports.	1995–1998	Converted from a percentage.
	Alaska Indigenous	Alaska Bureau of Vital Statistics: 1995–1998 Annual Reports.	1995–1998	Converted from a percentage.
Canada	National	Statistics Canada, Vital statistics compendium 1996 - 84-214-XIE.	1992–1996	Converted from a percentage.
	Arctic Canada	Health Canada in cooperation with GNWT.	1992–1998	Data represent NWT and NU.
	Arctic Canada Indigenous	Health Canada in cooperation with GNWT.	1992–1998	Indigenous values include only NWT and NU.
Denmark	National			
	Greenland	State Medical Officer.	1992–1998	Converted from a percentage.
Iceland	National	Directorate for Health.	1992–1998	
Norway	National	Jon Øyvind Odland, University of Tromsø, Institute of Community Medicine, Norway.	1992–1998	
	Troms	Jon Øyvind Odland, University of Tromsø, Institute of Community Medicine, Norway.	1992–1998	
Sweden	National	Torbjorn Messner, Department of Internal Medicine, Kiruna District Hospital, Sweden.	1992–1998	
	Norrbottnen	Torbjorn Messner, Department of Internal Medicine, Kiruna District Hospital, Sweden.	1992–1998	
Finland	National	SOTKA.	1992–1998	Converted from a percentage.
	Lapland			
Russian Federation	National			
	Chukotka			

Legend

GNWT: Government of the Northwest Territories

NWT: Northwest Territories

NU: Nunavut

SOTKA: Statistics Finland, online statistical database

A.4.2 Low Birth Weight

Overview

This indicator was defined as the annual number of live-born infants weighing less than 2500 grams, per 1000 live births in a population.

The United States, Canada, Denmark, Iceland, Norway, Sweden, Finland and the Russian Federation provided national data for this indicator. The United States, Canada, Denmark, Norway and Sweden provided Arctic data.

Chart Highlights

Women in the United States (73 per 1000), Canadian Arctic Indigenous women (65) and women in the Russian Federation (62) reported the highest rates of low birth weights. Women in Sweden (44), Finland (42), Iceland (39) and Arctic Sweden (39) reported the lowest rates. Indigenous women in Alaska, and women in Denmark, Greenland, Norway and Arctic Norway reported intermediate rates between 49 and 57 (chart 7).

Summary

Women in the United States, Canadian Arctic Indigenous women and women in the Russian Federation reported the highest rates. Women in Sweden, Finland, Iceland and Arctic Sweden reported the lowest rates.

Recommendations

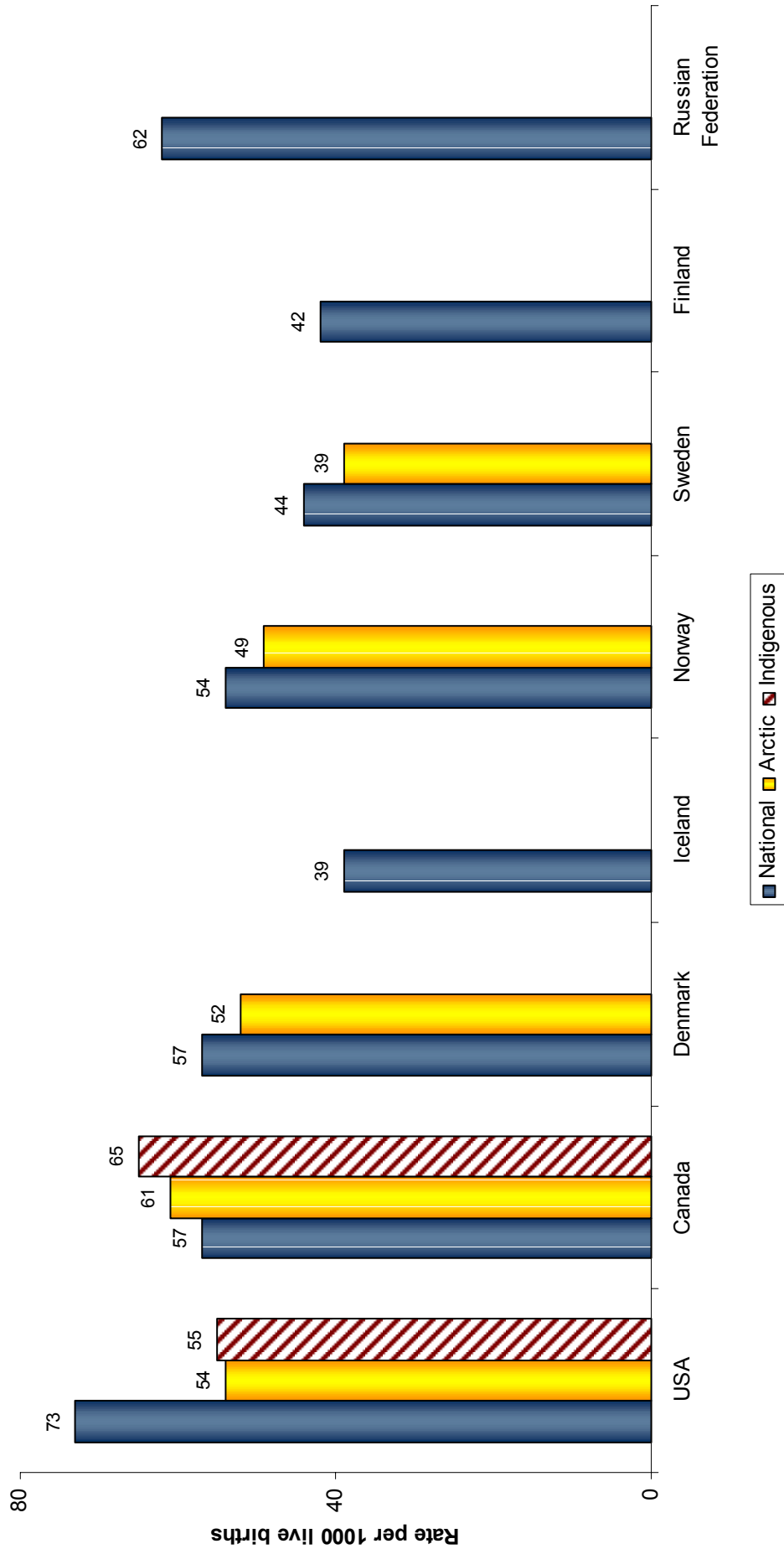
Circumpolar nations should collect data that will differentiate intrauterine growth restrictions from preterm births, since these outcomes require different preventive health strategies. This distinction will require uniform data on gestational age, preferably based on prenatal ultrasound examinations.

Since infants with low (or high) birth weight for gestational age face increased health risks, circumpolar nations should monitor birth weight distributions in addition to low birth weight rates.

Further Reading

Anderson, P., and L.W. Doyle. 2003. Neurobehavioral outcomes of school-age children born extremely low birth weight or very preterm in the 1990s. *JAMA*. 289: 3264–3272.

Chart 7: Low birth weight rate



Footnotes: Low birth weight

Country	Region/ Ethnicity	Source	Year(s)	Notes
USA	National	National Vital Statistics Report, Vol. 51, No. 2, December 18, 2002.	1992–1998	Converted from a percentage.
	Alaska	Alaskan Bureau of Vital Statistics: 1995–1998 Annual Reports; 1992–1994 from Kids Count 2003 Data Book Online.	1992–1998	Converted from a percentage.
	Alaska Indigenous	Alaskan Bureau of Vital Statistics: 1995–1998 Annual Reports.	1995–1998	Converted from a percentage.
Canada	National	Statistics Canada (CANSIM II).	1992–1998	Per 1000 live births.
	Arctic Canada	Health Canada in cooperation with GNWT.	1992–1998	Per 1000 live births. Data represent NWT and NU.
	Arctic Canada Indigenous	Health Canada in cooperation with GNWT.	1992–1998	Indigenous values include only NWT and NU.
Denmark	National	WHO/Europe, HFA Database, January 2003.	1992–1998	Converted from a percentage.
	Greenland	State Medical Officer.	1992–1998	Per 1000 live births.
Iceland	National	WHO/Europe, HFA Database, June 2002.	1992–1998	Converted from a percentage.
Norway	National	Jon Øyvind Odland, University of Tromsø, Norway.	1992–1998	Per 1000 live births.
	Troms	Jon Øyvind Odland, University of Tromsø, Norway.	1992–1998	Per 1000 live births.
Sweden	National	Torbjorn Messner, Department of Internal Medicine, Kiruna District Hospital, Sweden.	1992–1998	Per 1000 live births.
	Norrbottnen	Torbjorn Messner, Department of Internal Medicine, Kiruna District Hospital, Sweden.	1992–1998	Per 1000 live births.
Finland	National	National Research and Development Centre for Welfare and Health, (STAKES).		Converted from a percentage.
	Lapland			
Russian Federation	National	WHO/Europe, HFA Database, June 2002.	1992–1998	Converted from a percentage.
	Chukotka			

Legend

CANSIM II: Canadian Socioeconomic Information Management System

GNWT: Government of the Northwest Territories

NWT: Northwest Territories

NU: Nunavut

WHO: World Health Organization

HFA Database: European Health for all Database

STAKES: The National Research and Development Centre for Welfare and Health

A.4.3 Infant Mortality

Overview

This indicator was defined as the number of deaths of live-born infants before age one year, per 1000 live births in a given population and period. This indicator includes neonatal deaths (0 to 27 days) and postneonatal deaths (28 days to one year).

The United States, Canada, Denmark, Iceland, Norway, Sweden, Finland and the Russian Federation provided national data for this indicator. The United States, Canada, Denmark, Sweden and the Russian Federation provided Arctic data.

Chart Highlights

Neonatal mortality rates per 1000 live births were three or less in Iceland, Norway, Sweden and Arctic Sweden, and over 10 in Greenland, the Russian Federation and the Indigenous population of Arctic Russia (chart 8).

Postneonatal mortality rates ranged from less than five in the United States, Alaska, Canada, Denmark, Iceland, Norway, Sweden, Arctic Sweden and Finland, to 9.9 in the Indigenous population of Arctic Canada and 19 in the Indigenous population of Arctic Russia.

Infant mortality rates (neonatal and postneonatal combined) varied from less than five deaths per 1000 live births in Iceland, Norway, Sweden, Arctic Sweden and Finland, to over 15 in the Indigenous population of Arctic Canada, Greenland and the Russian Federation, and over 30 in the Indigenous population of Arctic Russia.

Summary

Infant mortality rates (neonatal and postneonatal combined) were lowest in Iceland, Norway, Sweden, Arctic Sweden and Finland, considerably higher in the Indigenous population of Arctic Canada, Greenland and the Russian Federation, and highest in the Indigenous population of Arctic Russia. Infant mortality rates were generally higher for Arctic Indigenous populations than national populations.

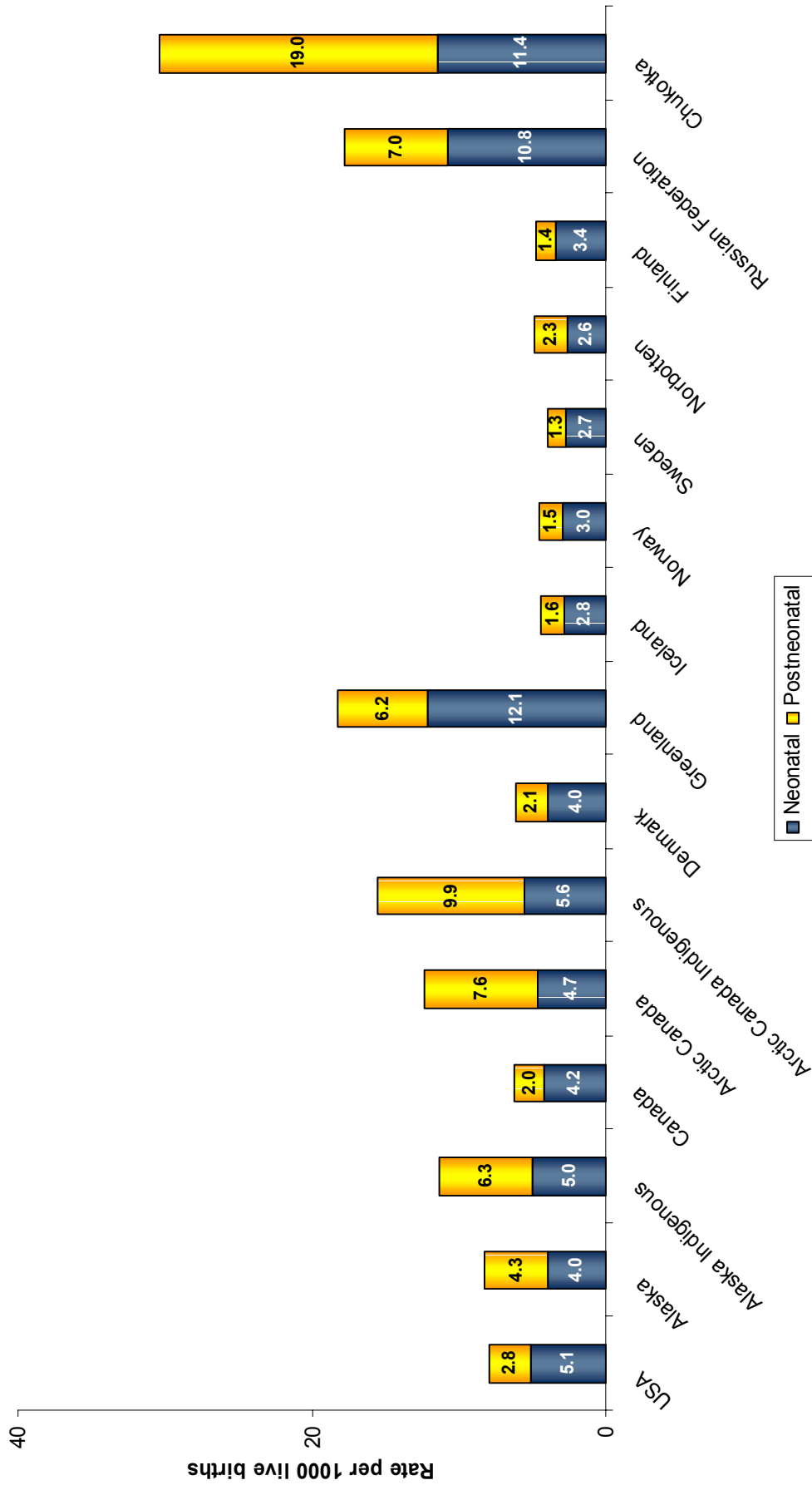
Recommendations

Continued prenatal and postnatal education programs are recommended to ensure further reductions in infant mortality rates, particularly in Indigenous populations.

Further Reading

- Baldwin, L.M., et al. 2002. Perinatal and infant health among rural and urban American Indians/Alaska Natives. *Am. J. Public Health.* 92: No. 9: 1491–1497.
- Lukacs, S.L., and K.C. Schoendorf. 2004. Racial/ethnic disparities in neonatal mortality - United States, 1989–2001. *CDC MMWR Morb. Mortal. Wkly. Rep.* 53: 655–658.
- Luo, Z.C., et al. 2004. Risks of adverse pregnancy outcomes among Inuit and North American Indian women in Quebec, 1985–1997. *Paediatr. Perinat. Epidemiol.* 18: 40–50.
- Rhoades, E.R., et al. 1992. Mortality of American Indian and Alaska native infants. *Annu. Rev. Public Health* 13: 269–285.
- Scott, C.L., et al. 1998. Postneonatal mortality surveillance - United States, 1980–1994. *CDC MMWR Surveill. Summ.* 47(SS-2): 15–30.
- VanLandingham, M.J., and C.J. Hogue. 1995. Birthweight-specific infant mortality risks for Native Americans and whites, United States, 1960 and 1984. *Soc. Biol.* 42: No. 1-2: 83–94.

Chart 8: Infant mortality (aggregated average of rates)



Footnotes: Infant mortality

Country	Region/ Ethnicity	Source	Year(s)	Notes
USA	National	National Centre for Health Statistics.	1990–2000	Aggregate data based on an average of rates for a specified period.
	Alaska	Alaska data from IHS Reports MINFDTHS-01 & MINFDTHS-02.	1990–1999	Aggregate data based on an average of rates for a specified period.
	Alaska Indigenous	Alaska data from IHS Reports MINFDTHS-01 & MINFDTHS-02.	1990–1999	Indigenous figures based on 3-year rates. Aggregate data based on an average of rates for a specified period.
Canada	National	Statistics Canada, Vital statistics compendium 1996.	1990–1996	Aggregate data based on a mean period rate (# of deaths divided by # of live births multiplied by 1000).
	Arctic Canada	Health Canada in cooperation with GNWT.	1990–1998	Aggregate data based on a mean period rate (# of deaths divided by # of live births multiplied by 1000). Data represent NWT and NU.
	Arctic Canada Indigenous	Health Canada in cooperation with GNWT.	1990–1998	Aggregate data based on a mean period rate (# of deaths divided by # of live births multiplied by 1000). Indigenous values include only NWT and NU.
Denmark	National	WHO/Europe, HFA Database, January 2003.	1990–1998	Aggregate data based on an average of rates for a specified period.
	Greenland	Birger Aaen-Larsen, MPH-thesis; Goeteborg School of Public Health, 2000.	1992–1999	Aggregate data based on a mean period rate (# of deaths divided by # of live births multiplied by 1000).
Iceland	National	Statistics Iceland.	1991–1999	Aggregate data based on a mean period rate (# of deaths divided by # of live births multiplied by 1000).
Norway	National	Jon Øyvind Odland, University of Tromsø, Norway.	1992–2000	Aggregate data based on an average of rates for a specified period.
	Troms			
Sweden	National	Torbjorn Messner, Department of Internal Medicine, Kiruna District Hospital, Sweden.	1992–2000	Aggregate data based on a mean period rate (# of deaths divided by # of live births multiplied by 1000).
	Norrbottn	Torbjorn Messner, Department of Internal Medicine, Kiruna District Hospital, Sweden.	1992–2000	Aggregate data based on a mean period rate (# of deaths divided by # of live births multiplied by 1000).
Finland	National	WHO/Europe, HFA Database, January 2003.	1990–1996	Aggregate data based on an average of rates for a specified period.
	Lapland			
Russian Federation	National	WHO/Europe, HFA Database, January 2003.	1992–1999	Aggregate data based on an average of rates for a specified period.
	Chukotka	Valery Klopov, Regional Institute “Monitoring the Arctic,” St. Petersburg, Russia.	1992–1999	Aggregate data based on an average of rates for a specified period.

Legend

IHS Reports, MINFDTHS-01 & MINFDTHS-02: Indian Health Service, report codes

GNWT: Government of the Northwest Territories

NWT: Northwest Territories

NU: Nunavut

WHO: World Health Organization

HFA Database: European Health for all Database

A.4.4 Cause-specific Non-communicable Diseases

Overview

This indicator comprises incidence, prevalence or mortality rates of major non-communicable diseases (cases per 100,000 population, per year).

Reporting inconsistencies complicated comparisons between Arctic Indigenous populations.

Cancer

The United States, Canada, Denmark, Iceland, Norway and Finland provided national data for childhood and youth cancer incidence. Canada and Denmark provided Arctic data on childhood and youth cancer incidence.

The United States, Canada, Denmark, Iceland, Norway, Sweden, Finland and the Russian Federation provided national data for cancer mortality.

Chart Highlights

Greenland reported the highest incidence of cancer (32.6 cases per 100,000 population, age 0 to 19 years, per year), and Finland (9.8) and Arctic Canada (8) reported the lowest incidence. Cancer incidence ranged from 14.1 to 16.1 in the United States, Canada, Denmark, Norway and Iceland. Since cancer is relatively rare in this age range, incidence for small Arctic populations should be interpreted cautiously (chart 9).

Cancer mortality rates for males and females age 0 to 24 years were highest in the Russian Federation (7.9 and 6.3 deaths per 100,000 population, per year) and lower in other countries and regions (3.9 to 4.8 for males; 1.6 to 4.1 for females). Cancer mortality rates were higher for males than females in all countries studied (chart 10).

Summary

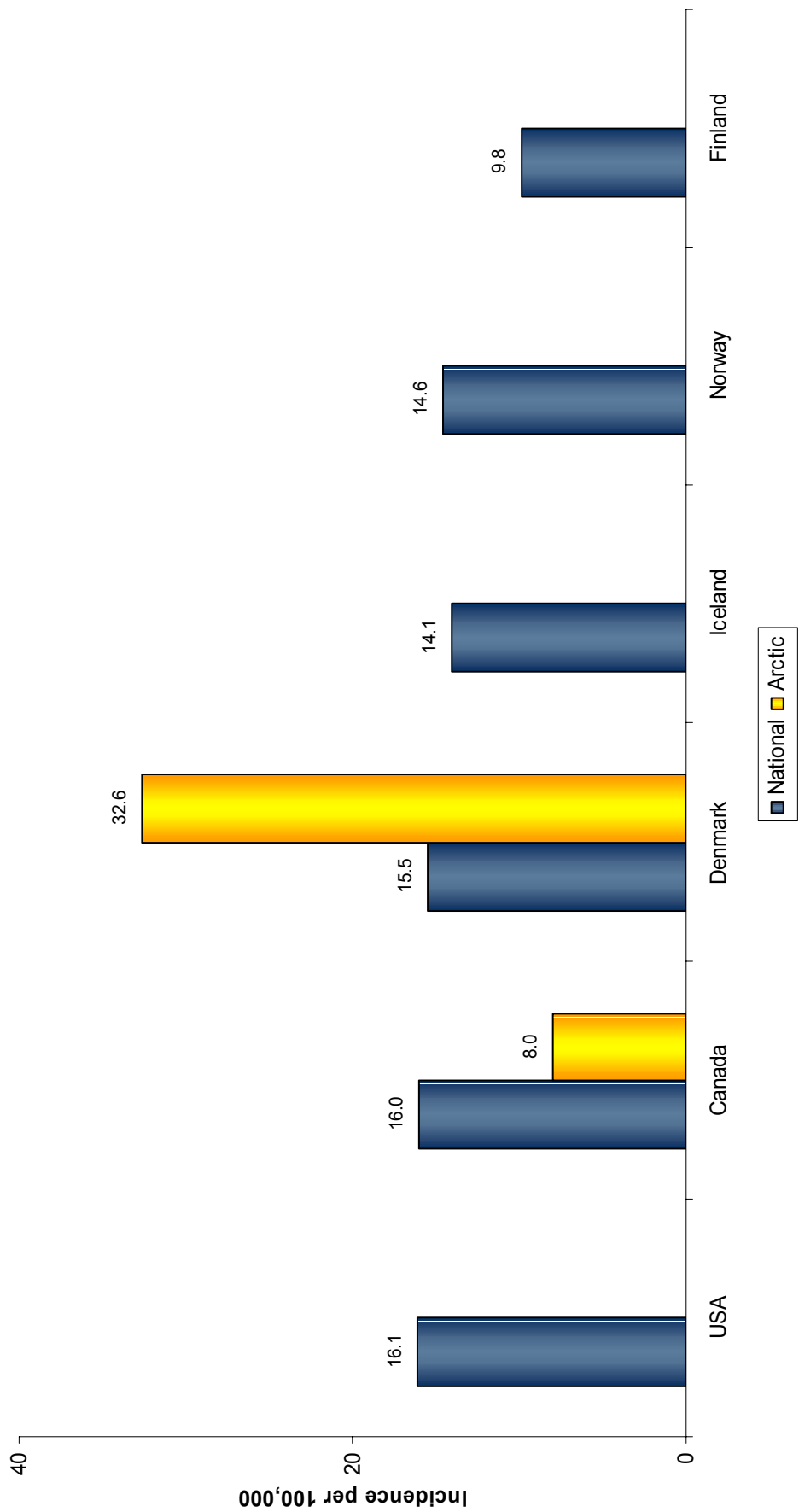
Greenland reported the highest incidence of cancer, and Finland and Arctic Canada reported the lowest incidence. Since cancer is relatively rare in this age range, incidence for small Arctic populations should be interpreted cautiously.

Cancer mortality rates were highest in the Russian Federation and were consistently higher for males than females. High cancer mortality rates may reflect reporting differences, high incidence and/or relatively low survival rates due to inadequate treatment.

Recommendations

The Health Expert Group recommended continued monitoring of the incidence and prevalence of major non-communicable diseases, such as childhood cancer.

Chart 9: Cancer incidence, age 0–19 years



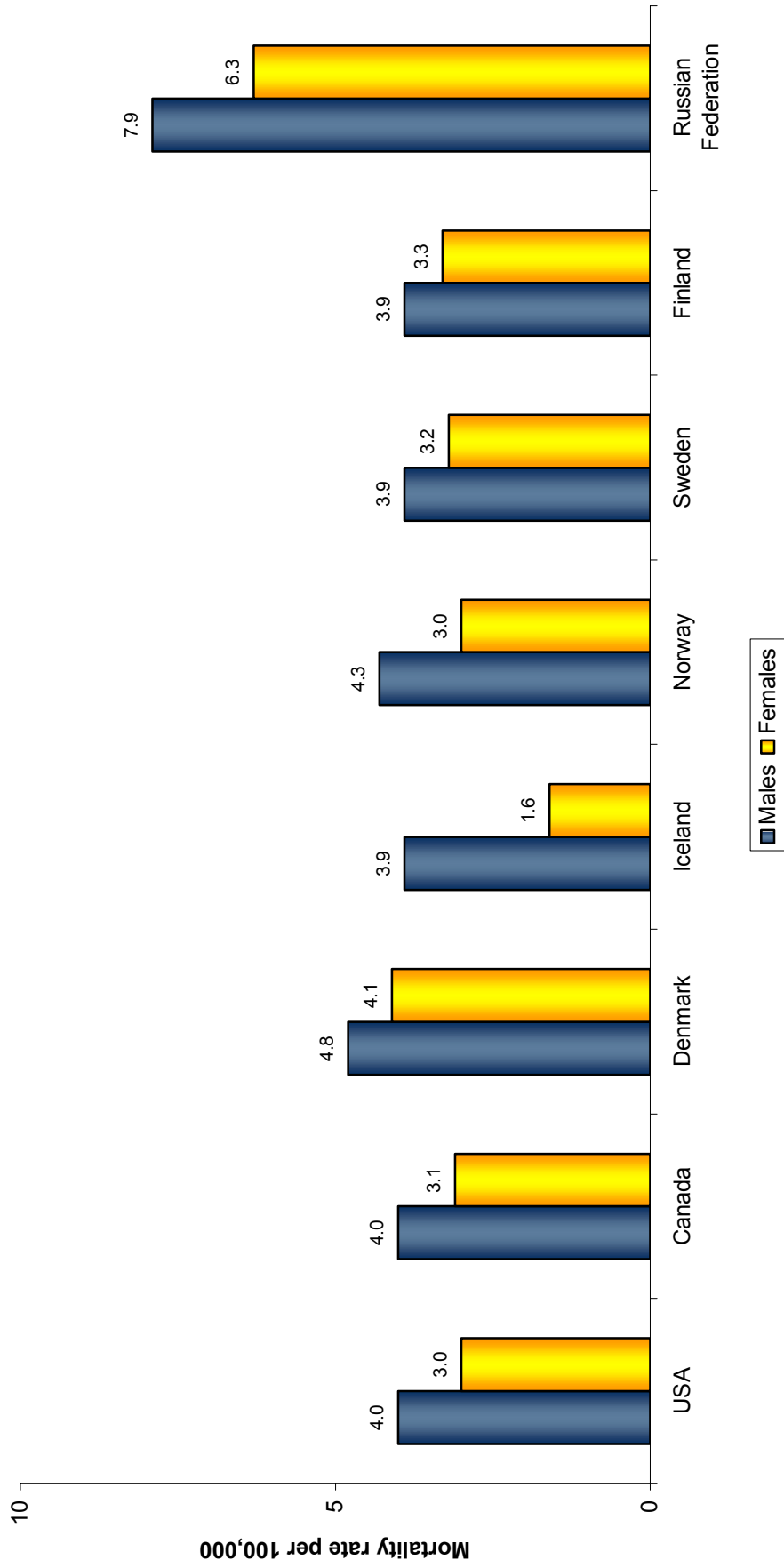
Footnotes: Cancer incidence

Country	Region/ Ethnicity	Source	Year(s)	Cases	Notes
USA	National	National Cancer Institute - SEER Cancer Statistics Review 1975–2001.	1997–2000		Age-adjusted rates; 0–4 age range broken down into <1 and 1–4 years of age; 1–4 years used as the 0–4 value.
	Alaska				
	Alaska Indigenous				
Canada	National	Health Canada, Surveillance and Risk Assessment Division, CCDPC, Statistics Canada and the Canadian Council of Cancer Registries.	1990–2000	<1: 1021, 1–4: 3610, 5–9: 2519, 10–14: 2607, 15–19: 4247	Age-standardized rate. (0–4 age range broken down into <1 and 1–4 years of age; 1–4 years used as the 0–4 value).
	Arctic Canada	Health Canada in cooperation with GNWT.	1989–1998	0–4: 14, 5–9: 7, 10–14: 5, 15–19: 10	Data represent NWT and NU.
	Arctic Canada Indigenous	Health Canada in cooperation with GNWT.	1989–1998	0–4: 8, 5–9: <5, 10–14: 5, 15–19: <5	Data either not provided or incompatible.
Denmark	National	International Agency for Research on Cancer - ACCIS - Denmark National Cancer Registry.	1978–1997	0–4: 1209, 5–9: 769, 10–14: 766, 15–19: 1367	
	Greenland	Greenland Statistical Department.	1995–2000	0–4: 1, 5–9: 2, 10–14: 1, 15–19: 7	
Iceland	National	International Agency for Research on Cancer - ACCIS - Iceland National Cancer Registry.	1970–2000	0–4: 104, 5–9: 67, 10–14: 83, 15–19: 121	
Norway	National	International Agency for Research on Cancer - ACCIS - Norway National Cancer Registry.	1970–1997	0–4: 1594, 5–9: 837, 10–14: 863, 15–19: 1573	
	Troms				
Sweden	National				
	Norrbottnen				
Finland	National	International Agency for Research on Cancer - ACCIS - Finland National Cancer Registry.	1968–1998	0–4: 2153, 5–9: 1179, 10–14: 1265, 15–19: 1974	
	Lapland				
Russian Federation	National				
	Chukotka				

Legend

SEER: Surveillance, Epidemiology and End Results
 CCDPC: Centre for Chronic Disease Prevention and Control
 GNWT: Government of the Northwest Territories
 NWT: Northwest Territories
 NU: Nunavut
 ACCIS: Automated Childhood Cancer Information System

Chart 10: Cancer mortality rates, age 0–24 years



Footnotes: Cancer mortality rates¹⁰

Country	Region/ Ethnicity	Source	Year(s)	Deaths	Notes
USA	National	Cancer Mortality Database; mortality data by country, extracted from the WHO databank.	1990–1998	Male: 17,499 Female: 12,591	WHO age group world standard population.
	Alaska				
	Alaska Indigenous				
Canada	National	Cancer Mortality Database; mortality data by country, extracted from the WHO databank.	1990–1997	Male: 1650 Female: 1213	WHO age group world standard population.
	Arctic Canada	Health Canada in cooperation with GNWT.	1989–1998	Male: 5 Female: 8	Data either not provided or incompatible.
	Arctic Canada Indigenous	Health Canada in cooperation with GNWT.	1989–1998	Male: 2 Female: 7	Data either not provided or incompatible.
Denmark	National	Cancer Mortality Database; mortality data by country, extracted from the WHO databank.	1990–1996	Male: 283 Female: 233	WHO age group world standard population.
	Greenland	Greenland Statistical Department.	1992–2000	Male: 4 Female: 0	Data either not provided or incompatible. Country-wide screening for cervix uteri dysplasia and carcinoma initiated in 1998.
Iceland	National	Cancer Mortality Database; mortality data by country, extracted from the WHO databank.	1990–1996	Male: 16 Female: 6	WHO age group world standard population.
Norway	National	Cancer Mortality Database; mortality data by country, extracted from the WHO databank.	1990–1997	Male: 266 Female: 174	WHO age group world standard population.
	Troms				
Sweden	National	Cancer Mortality Database; mortality data by country, extracted from the WHO databank.	1990–1996	Male: 392 Female: 299	WHO age group world standard population.
	Norrbottnen	Statistics Sweden.	1992–1999	Male: 13 Female: 13	Data either not provided or incompatible.
Finland	National	Cancer Mortality Database; mortality data by country, extracted from the WHO databank.	1990–1998	Male: 292 Female: 235	WHO age group world standard population.
	Lapland	SOTKA.	1992–1993, 1995	Male: 3 Female: 7	Data either not provided or incompatible.

Legend

WHO: World Health Organization

GNWT: Government of the Northwest Territories

SOTKA: Statistics Finland, online statistical database

¹⁰ Note: rates were standardized using the WHO ‘Age Standardization of Rates,’ available at: http://www.emro.who.int/ncd/publications/WHO_pop_standard.pdf

Footnotes: Cancer mortality rates (continued)

Country	Region/ Ethnicity	Source	Year(s)	Deaths	Notes
Russian Federation	National	Cancer Mortality Database; mortality data by country, extracted from the WHO databank.	1990–1998	Male: 18,783 Female: 14,235	WHO age group world standard population.
	Chukotka				

Legend

WHO: World Health Organization

A.4.5 Major Notifiable Infectious Diseases

Overview

This indicator was defined as the incidence (cases per 100,000 population, per year) of selected notifiable infectious diseases that can cause epidemics. Monitoring the incidence of notifiable infectious diseases is essential for identifying high-risk groups and regions and for assessing preventive interventions.

Chart Highlights

The notifiable infectious diseases considered by the Health Expert Group were tuberculosis (TB), Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome (HIV/AIDS) and chlamydia.

TB

The United States, Canada, Denmark, Iceland, Norway, Sweden, Finland and the Russian Federation provided national TB incidence data. The United States, Canada, Denmark and Sweden provided Arctic data. Canada (national and Arctic) and Denmark (Arctic) provided age-specific TB incidence data.

Among all age groups, TB incidence was highest in Greenland (99 cases per 100,000 population, per year), followed by the Russian Federation (95), Arctic Canada (56.2) and the Alaskan Indigenous population (39.4). TB incidence was significantly lower in other populations and regions, ranging from 3.9 in Arctic Sweden to 12.1 in Finland (chart 11). Throughout the age-specific groups from 0 to 24 years, TB incidence was substantially higher in Arctic Canada, compared with the national population of Canada (chart 12).

Chart 11: Tuberculosis age-standardized incidence (cases per 100,000 population, per year, all ages)

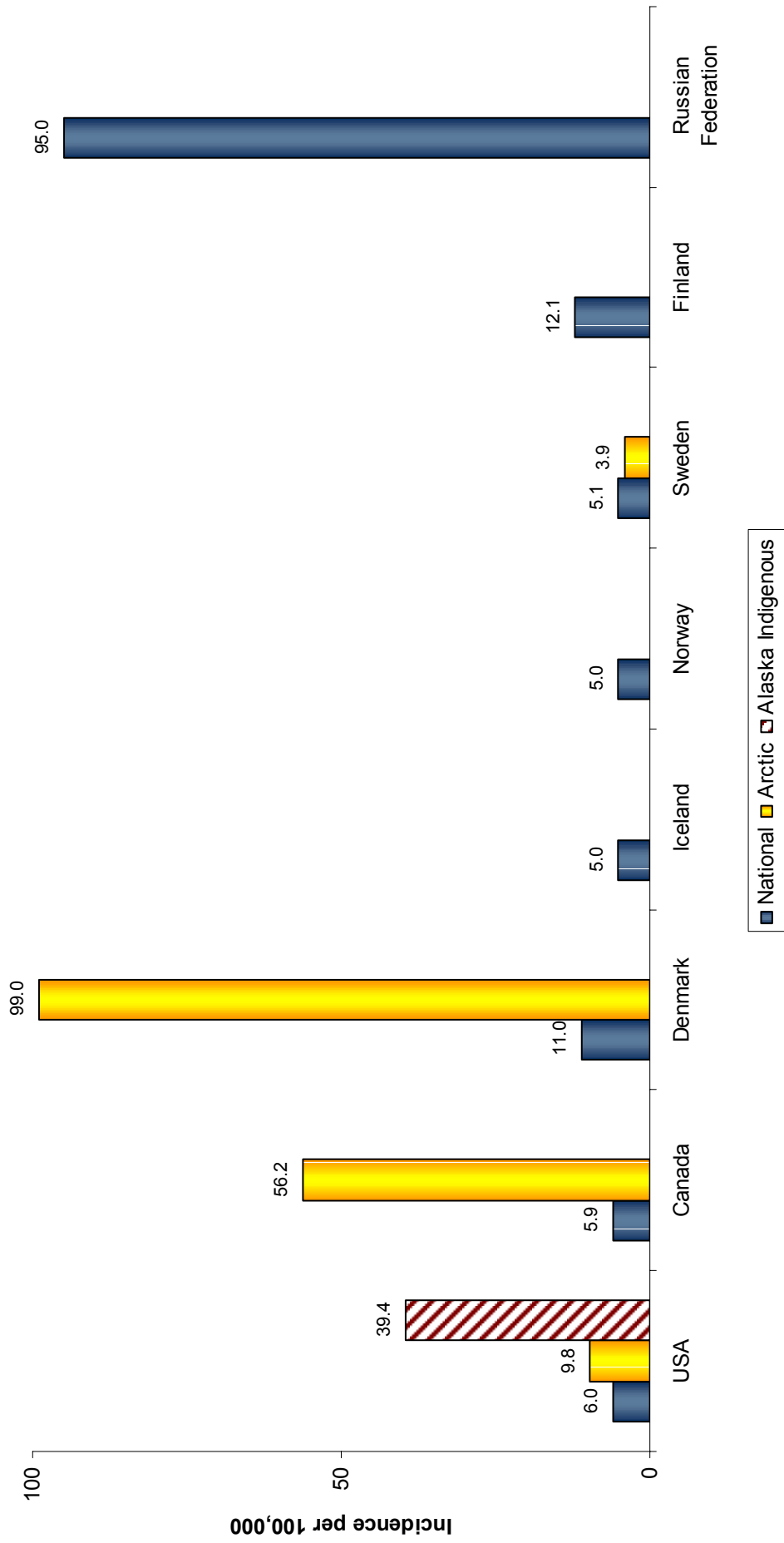
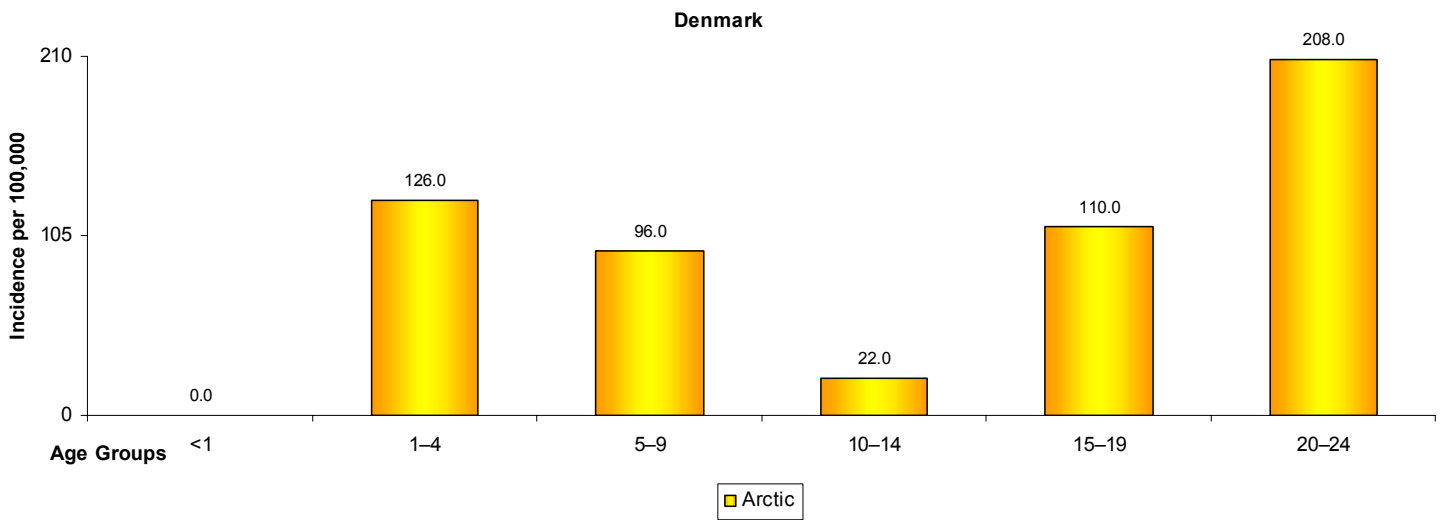
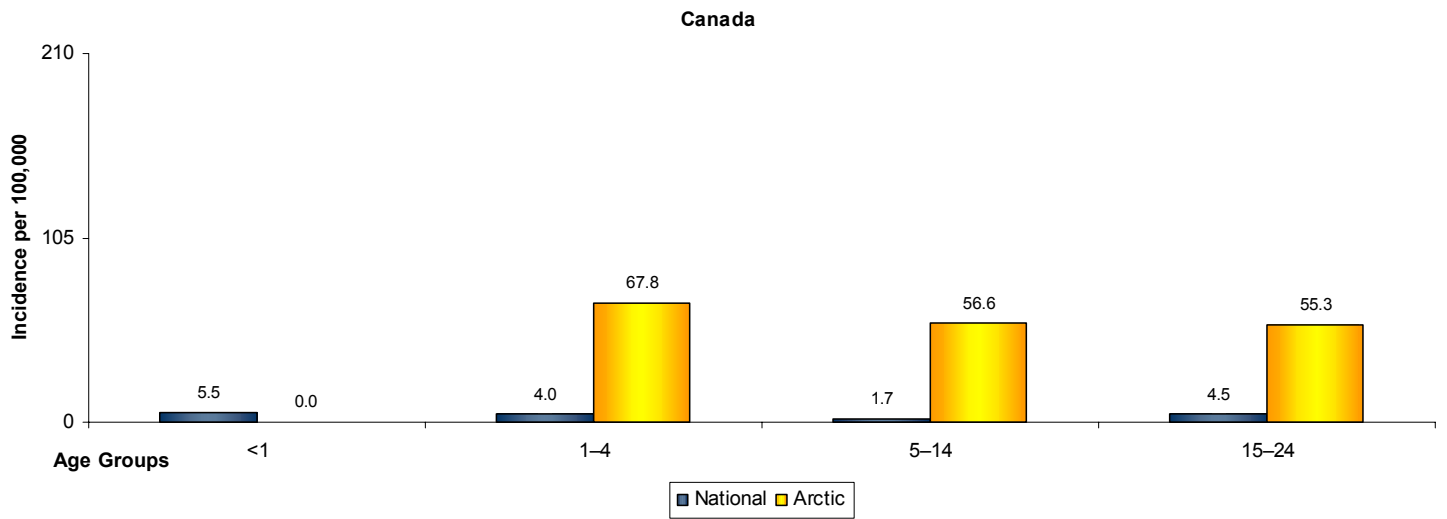


Chart 12: Tuberculosis age-specific incidence (cases per 100,000 population, per year, age 0–24 years)



Footnotes: Tuberculosis

Country	Region/ Ethnicity	Source	Year(s)	Age Range	Cases	Notes
USA	National	Global TB control, WHO report 2002.	2000	0–14, 15–24, whole population	0–14: 22, 15–24: 612, whole pop.: 5862	Based on smear-positive cases in DOTS areas.
	Alaska	State of Alaska Epidemiology Bulletin 23.	1999	<15 years of age and whole population	<15: 2, whole pop.: 61	Based on the number of TB cases.
	Alaska Indigenous	State of Alaska Epidemiology Bulletin 23.	1999	Whole population		Based on the number of TB cases.
Canada	National	Health Canada, Tuberculosis in Canada 1998.	1998	<1, 1–4, 5–14, 15–24, whole population	<1: 19, 1–4: 61, 5–14: 71, 15–24: 186, whole pop.: 1796	Based on reported active and relapsing TB cases.
	Arctic Canada	Health Canada, Tuberculosis in Canada 1998.	1998	<1, 1–4, 5–14, 15–24, whole population	<1: 0, 1–4: 4, 5–14: 8, 15–24: 6, whole pop.: 38	Based on reported active and relapsing TB cases. Data represent NWT and NU.
	Arctic Canada Indigenous					
Denmark	National	Global TB control, WHO report 2002.	2000	0–14, 15–24, whole population	0–14: not provided, 15–24: not provided, whole pop.: 171	Based on smear-positive cases in DOTS areas. Data were incompatible.
	Greenland	Greenland Statistical Department.	1992–2000	<1, 1–4, 5–9, 10–14, 15–19, 20–24	<1: 4, 1–4: 50, 5–9: 26, 10–14: 25, 15–19: 23, 20–24: 45, total pop.: 173	
Iceland	National	Global TB control, WHO report 2002.	2000	0–14, 15–24, whole population	0–14: not provided, 15–24: not provided, whole pop.: 13	Based on smear-positive cases in DOTS areas.
Norway	National	Global TB control, WHO report 2002.	2000	0–14, 15–24, whole population	0–14: 1, 15–24: 4, whole pop.: 37	Based on smear-positive cases in DOTS areas.
	Troms					

Legend

TB: Tuberculosis
 WHO: World Health Organization
 DOTS: Directly Observed Therapy Short-course
 NWT: Northwest Territories
 NU: Nunavut

Footnotes: Tuberculosis (continued)

Country	Region/ Ethnicity	Source	Year(s)	Age Range	Cases	Notes
Sweden	National	Torbjorn Messner, Department of Internal Medicine, Kiruna District Hospital, Sweden.	2000	<1, 1–4, 5–9, 10–14, 15–19, 20–24		
	Norrbotten	Torbjorn Messner, Department of Internal Medicine, Kiruna District Hospital, Sweden.	2000	Whole population	10	
Finland	National	National Public Health Institute.	1998	0–4, 5–9, 10–14, 15–19, 20–24, whole population	0–4: 2, 5–9: 0, 10– 14: 4, 15–19: 7, 20–24: 12, whole pop.: 626	
	Lapland					
Russian Federation	National	Global TB control, WHO report 2002.	2000	0–14, 15–24, whole population	0–14: 2, 15–24: 338, whole pop.: 26,123	Based on smear- positive cases in DOTS areas.
	Chukotka					

Legend

TB: Tuberculosis

WHO: World Health Organization

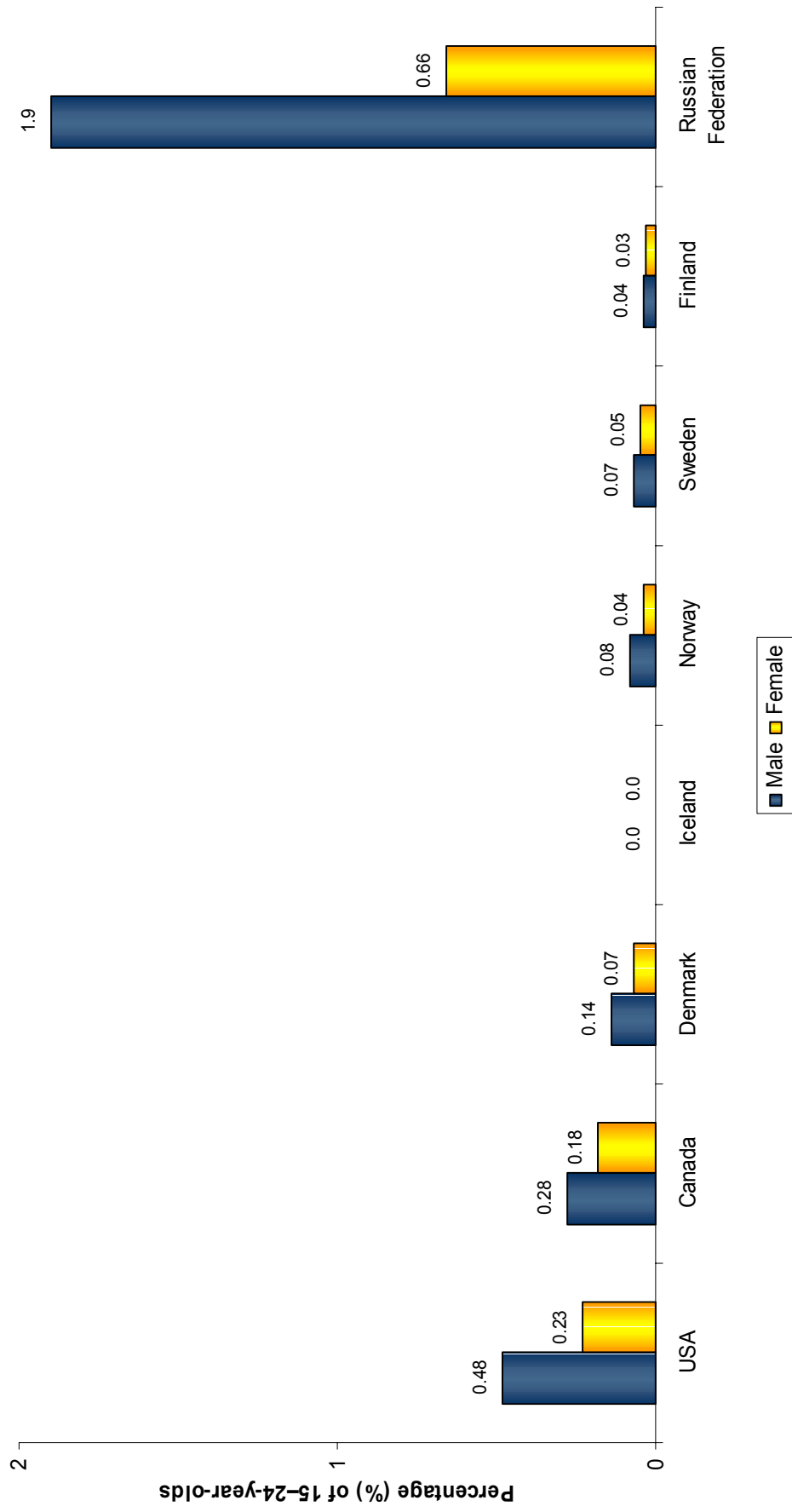
DOTS: Directly Observed Therapy Short-course

HIV/AIDS

The United States, Canada, Denmark, Iceland, Norway, Sweden, Finland and the Russian Federation provided national data for HIV/AIDS incidence for males and females age 15 to 24 years (no countries included data for Arctic regions).

Among males and females age 15 to 24 years, HIV/AIDS incidence was highest in the Russian Federation (1.9% for males; 0.66% for females), the United States (0.48%; 0.23%), Canada (0.28%; 0.18%) and Denmark (0.14%; 0.07%), and substantially lower in other countries and regions. In all countries, the incidence of HIV/AIDS among 15-to-24-year-olds was higher for males than females (chart 13).

Chart 13: HIV/AIDS: percentage of youth age 15–24 years with HIV/AIDS



Footnotes: HIV/AIDS

Country	Region/ Ethnicity	Source	Year(s)	Cases				Notes
				Males		Females		
				Low	High	Low	High	
USA	National	UNICEF, Joint United Nations Programme on HIV/AIDS and WHO, 2002 - Young People and HIV/AIDS: Opportunity in Crisis.	2001	76,000	110,000	34,000	51,000	The estimated number of young people (age 15–24) with HIV/AIDS at the end of 2001 divided by the 2001 total number of young people age 15–24. Low and high percentages averaged.
	Alaska							
	Alaska Indigenous							
Canada	National	UNICEF, Joint United Nations Programme on HIV/AIDS and WHO, 2002 - Young People and HIV/AIDS: Opportunity in Crisis.	2001	4600	6900	2800	4200	The estimated number of young people (age 15–24) with HIV/AIDS at the end of 2001 divided by the 2001 total number of young people age 15–24. Low and high percentages averaged.
	Arctic Canada							
	Arctic Canada Indigenous							
Denmark	National	UNICEF, Joint United Nations Programme on HIV/AIDS and WHO, 2002 - Young People and HIV/AIDS: Opportunity in Crisis.	2001	330	490	150	230	The estimated number of young people (age 15–24) with HIV/AIDS at the end of 2000 divided by the 2001 total number of young people age 15–24. Low and high percentages averaged.
	Greenland							

Legend

UNICEF: United Nations Children’s Fund
HIV: Human Immunodeficiency Virus
AIDS: Acquired Immunodeficiency Syndrome
WHO: World Health Organization

Footnotes: HIV/AIDS (continued)

Country	Region/ Ethnicity	Source	Year(s)	Cases				Notes
				Males		Females		
				Low	High	Low	High	
Iceland	National	UNICEF, Joint United Nations Programme on HIV/AIDS and WHO, 2002 - Young People and HIV/AIDS: Opportunity in Crisis.	2001	0	0	0	0	The estimated number of young people (age 15–24) with HIV/AIDS at the end of 2001 divided by the 2001 total number of young people age 15–24. Low and high percentages averaged.
Norway	National	UNICEF, Joint United Nations Programme on HIV/AIDS and WHO, 2002 - Young People and HIV/AIDS: Opportunity in Crisis.	2001	160	240	<100	120	The estimated number of young people (age 15–24) with HIV/AIDS at the end of 2001 divided by the 2001 total number of young people age 15–24. Low and high percentages averaged.
	Troms							
Sweden	National	UNICEF, Joint United Nations Programme on HIV/AIDS and WHO, 2002 - Young People and HIV/AIDS: Opportunity in Crisis.	2001	270	410	180	260	The estimated number of young people (age 15–24) with HIV/AIDS at the end of 2001 divided by the 2001 total number of young people age 15–24. Low and high percentages averaged.
	Norrbottnen							

Legend

UNICEF: United Nations Children’s Fund
HIV: Human Immunodeficiency Virus
AIDS: Acquired Immunodeficiency Syndrome
WHO: World Health Organization

Footnotes: HIV/AIDS (continued)

Country	Region/ Ethnicity	Source	Year(s)	Cases				Notes
				Males		Females		
				Low	High	Low	High	
Finland	National	UNICEF, Joint United Nations Programme on HIV/AIDS and WHO, 2002 - Young People and HIV/AIDS: Opportunity in Crisis.	2001	<100	150	<100	<100	The estimated number of young people (age 15–24) with HIV/AIDS at the end of 2001 divided by the 2001 total number of young people age 15–24. Low and high percentages averaged.
	Lapland							
Russian Federation	National	UNICEF, Joint United Nations Programme on HIV/AIDS and WHO, 2002 - Young People and HIV/AIDS: Opportunity in Crisis.	2001	170,000	260,000	60,000	91,000	The estimated number of young people (age 15–24) living with HIV/AIDS at the end of 2001 divided by the 2001 total number of young people age 15–24. Low and high percentages averaged.
	Chukotka							

Legend

UNICEF: United Nations Children's Fund
HIV: Human Immunodeficiency Virus
AIDS: Acquired Immunodeficiency Syndrome
WHO: World Health Organization

Chlamydia

The United States, Canada, Iceland, Sweden and Finland provided national data for chlamydia incidence. The United States, Canada, Denmark and Sweden provided Arctic data. The United States provided age-specific data on chlamydia incidence.

Chlamydia incidence among children and youth age 15 to 19 years was highest in Greenland (11,433 cases per 100,000 population, per year), Arctic Canada (4066) and the Indigenous population of Alaska (3422); considerably lower in Alaska (1497) and the United States (1411); and lowest in Sweden (821), Finland (741), Arctic Sweden (687) and Canada (650) (chart 14). Age-specific chlamydia incidence among 10-to-24-year-olds was substantially higher in the Alaskan Indigenous population than in the populations of the United States and Alaska (chart 15).

Chart 14: Chlamydia incidence age 15–19 (cases per 100,000 population, per year)

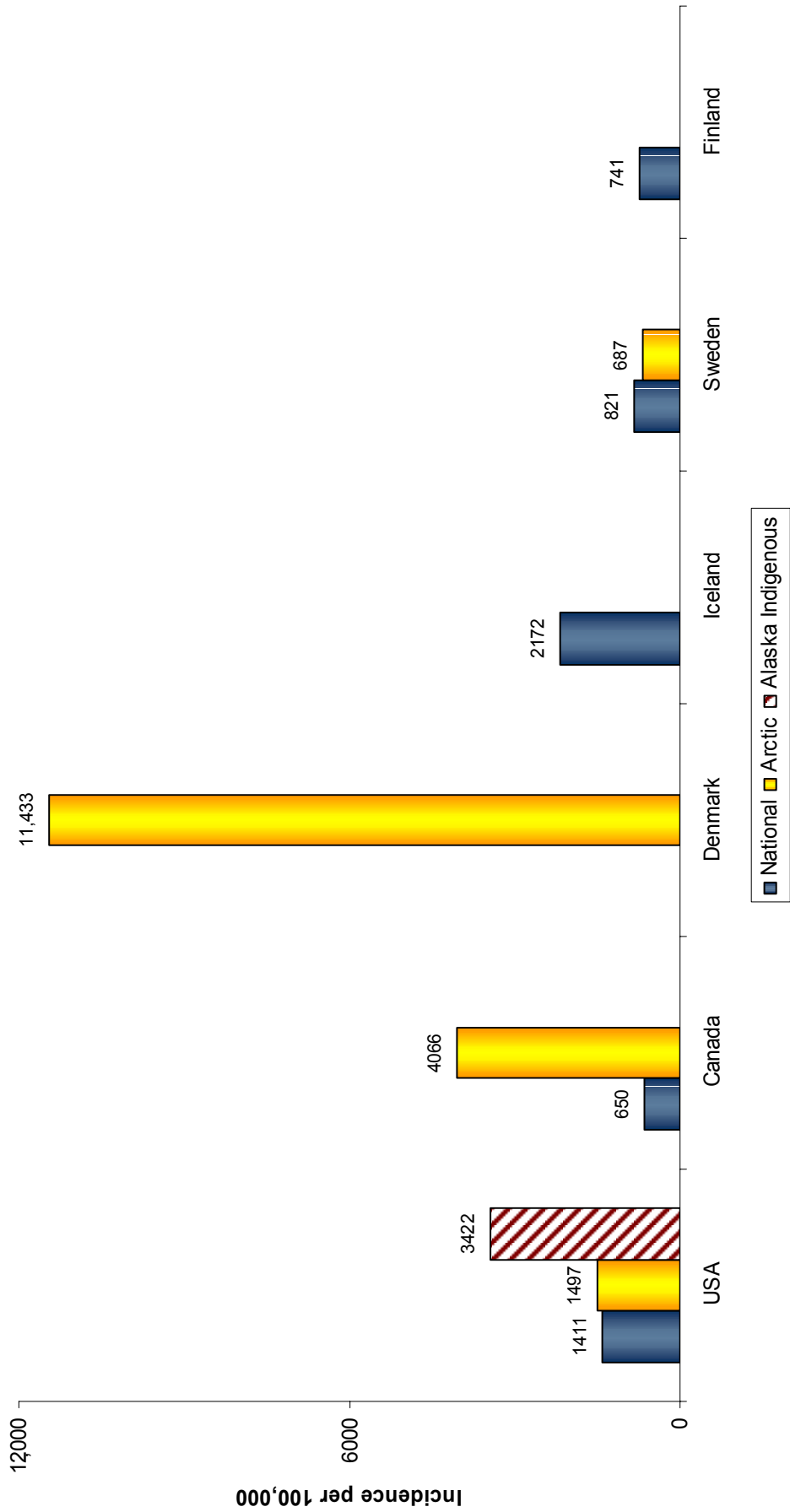
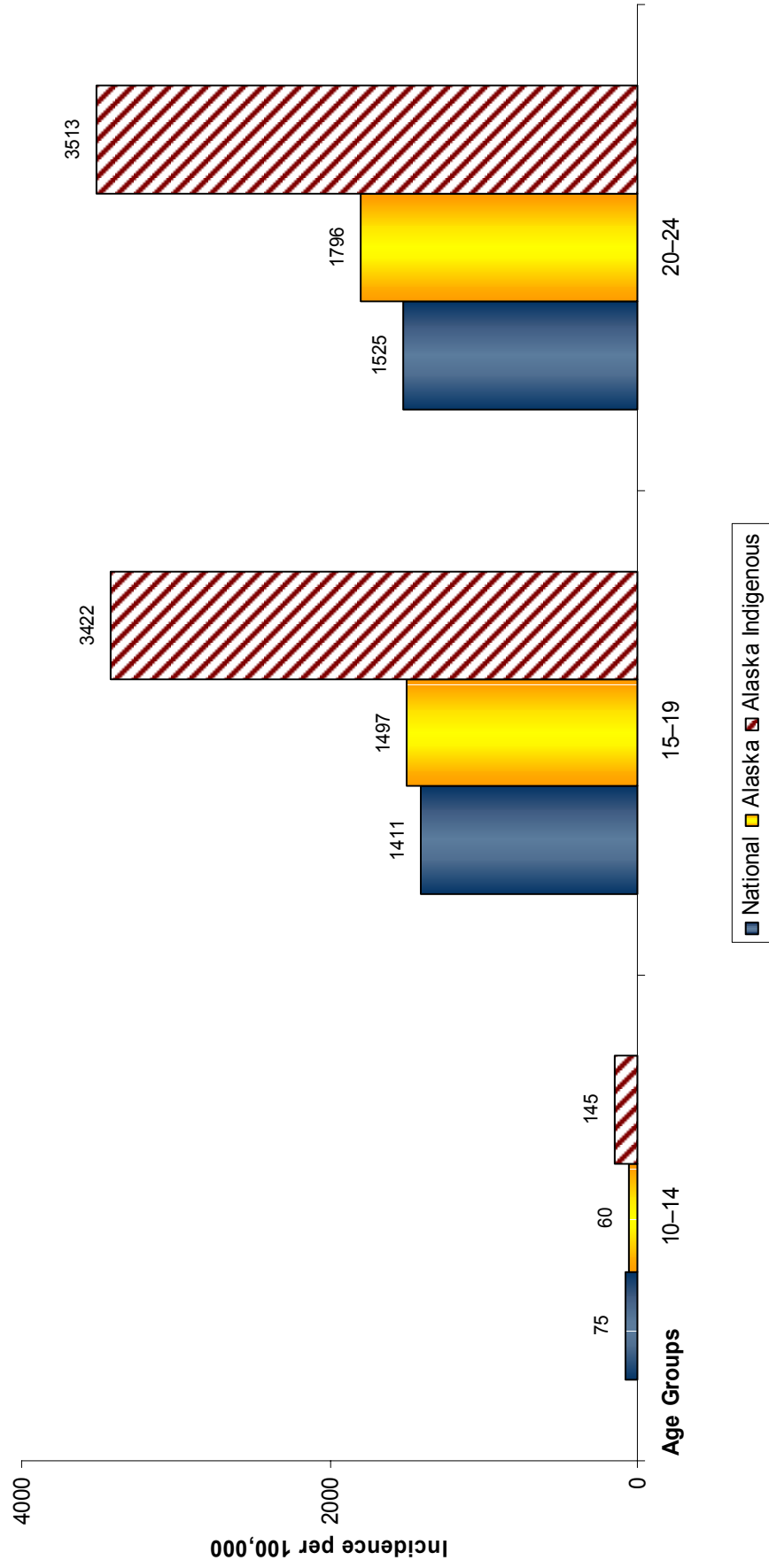


Chart 15: Chlamydia age-specific incidence (cases per 100,000 population, per year)

USA



Footnotes: Chlamydia

Country	Region/ Ethnicity	Source	Year(s)	Age Range	Cases	Notes
USA	National	CDC, Division of STD Prevention.	2001	15–19		
	Alaska	State of Alaska Epidemiology Bulletin, Vol. 4, No. 5, 2000.	1999	15–19		Age groupings provided: 0–4, 5–9, 10–14, 15–19, 20–24.
	Alaska Indigenous	State of Alaska Epidemiology Bulletin, Vol. 4, No. 5, 2000.	1999	15–19		Age groupings provided: 0–4, 5–9, 10–14, 15–19, 20–24.
Canada	National	Health Canada, Centre for Infectious Disease Prevention and Control 2003.	1999	15–19		Age groupings provided: <1, 1–4, 5–9, 10–14, 15–19, 20–24.
	Arctic Canada	Health Canada, Centre for Infectious Disease Prevention and Control 2003.	1999	15–19		Age groupings provided: <1, 1–4, 5–9, 10–14, 15–19, 20–24.
	Arctic Canada Indigenous					
Denmark	National					
	Greenland	State Medical Officer.	1992–1999	15–19		Age groupings provided: 0, 1–14, 15–19, 20–24.
Iceland	National	Geir Gunnlaugsson, Centre for Child Health Services.	1996	15–24		Age group represented is 15–24-year-olds.
Norway	National					
	Troms					
Sweden	National	Torbjorn Messner, Department of Internal Medicine, Kiruna District Hospital, Sweden.	2000	15–19		Age groupings provided: <1, 1–4, 5–9, 10–14, 15–19, 20–24.
	Norrbotten	Torbjorn Messner, Department of Internal Medicine, Kiruna District Hospital, Sweden.	2000	15–19		Age groupings provided: <1, 1–4, 5–9, 10–14, 15–19, 20–24.
Finland	National	National Public Health Institute.	1998	15–19		Age groupings provided: 0–4, 5–9, 10–14, 15–19, 20–24.
	Lapland					
Russian Federation	National					
	Chukotka					

Legend

CDC: Centres for Disease Control and Prevention

STD: Sexually transmitted disease

Summary

The incidence of TB among all age groups was highest in Greenland, the Russian Federation, Arctic Canada and the Indigenous population of Alaska. Childhood TB incidence was considerably higher in Arctic Canada, compared with the national population of Canada.

Among males and females age 15 to 24 years, HIV/AIDS prevalence was highest in the Russian Federation, the United States, Canada and Denmark, and substantially lower in other countries and regions. Variable reporting practices and insufficient data about the prevalence of HIV/AIDS in Arctic regions suggest that these findings should be interpreted cautiously.

Chlamydia incidence among youth age 15 to 19 years was highest in Greenland, Arctic Canada and the Alaskan Indigenous population, and lowest in Sweden, Finland, Arctic Sweden and Canada.

Recommendations

Given the public health implications and the high profile of infectious diseases, circumpolar nations should continue to collect and improve data on the incidence of major notifiable infectious diseases.

B. Psychosocial Indicators

The Health Expert Group selected six psychosocial health indicators: education, behaviour of children and youth (tobacco, substance abuse) and health outcomes (child abuse and neglect, unintentional injuries, suicide).

B.1 Education

Overview

This indicator was defined as the percentage of population age 25 years or older with incomplete lower secondary (high school) education.

The United States, Canada, Denmark, Iceland, Norway, Sweden, Finland and the Russian Federation provided national data for this indicator. Arctic data were not included.

Chart Highlights

The percentage of population age 25 years or older with incomplete lower secondary (high school) education was highest in the Russian Federation (49%), Norway (36.4%), Finland (35.3%) and Canada (34.3%). Considerably lower percentages were reported in the United States (5.5%) and Denmark (3.4%) (chart 16).

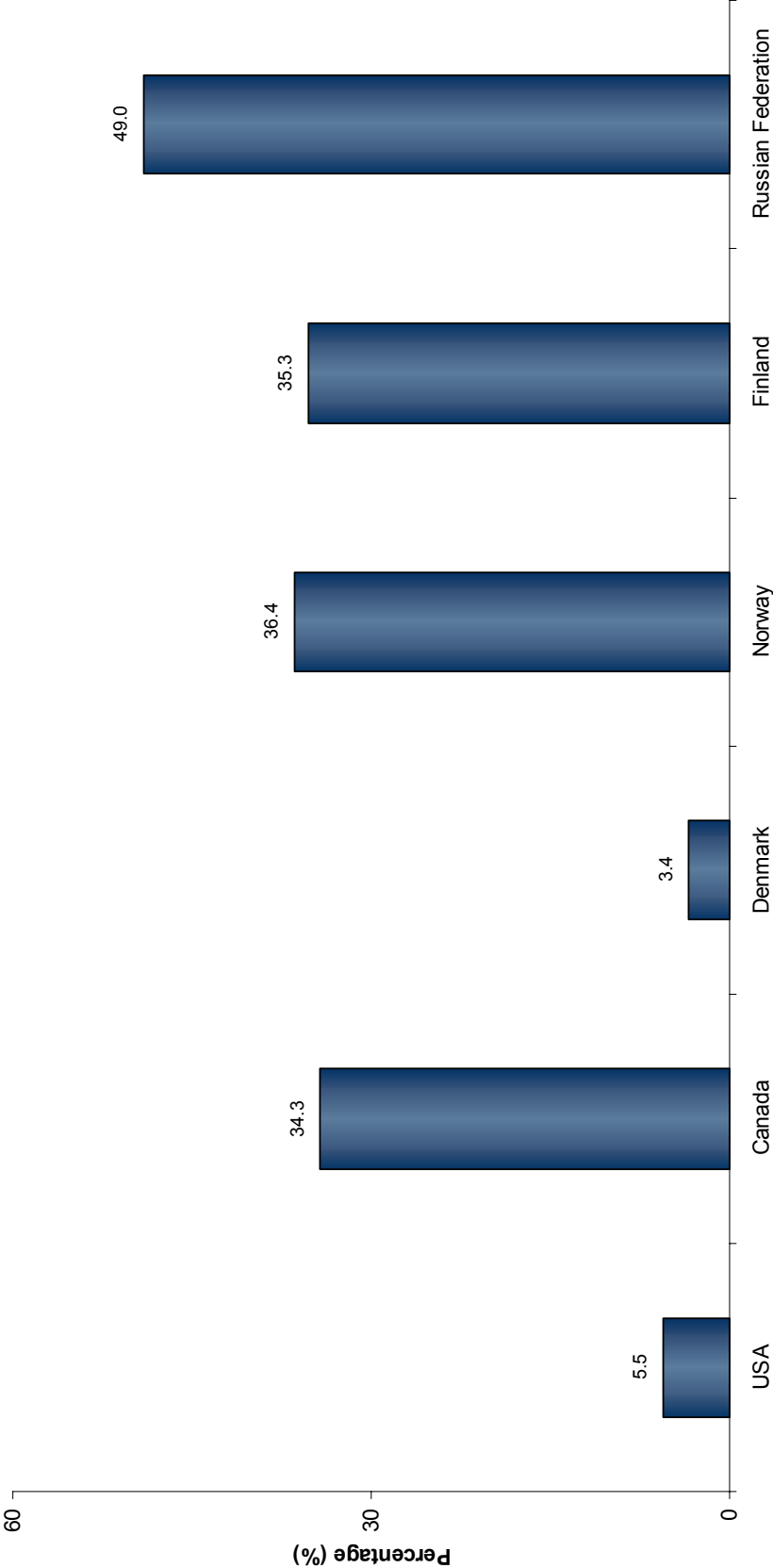
Summary

The Russian Federation, Norway, Finland and Canada reported the highest percentages of population age 25 years or older with incomplete lower secondary (high school) education. The United States and Denmark reported the lowest percentages.

Recommendations

The Health Expert Group recommended that circumpolar nations produce comparable national, Arctic and Indigenous data on the percentage of population age 25 or older with incomplete lower secondary (high school) education.

Chart 16: Education: percentage of national population age 25 years or older with incomplete lower secondary (high school) education



Footnotes: Education

Country	Region/ Ethnicity	Source ¹¹	Year(s)	Age Range	Notes
USA	National	UNESCO Institute for Statistics.	1999–2000		Age range can be determined based on entrance age and duration for each stage of education.
	Alaska				
	Alaska Indigenous				
Canada	National	UNESCO Institute for Statistics.	1999–2000		Age range can be determined based on entrance age and duration for each stage of education.
	Arctic Canada				
	Arctic Canada Indigenous				
Denmark	National	UNESCO Institute for Statistics.	1999–2000		Age range can be determined based on entrance age and duration for each stage of education.
	Greenland				
Iceland	National	UNESCO Institute for Statistics.	1999–2000		Data either not provided or incompatible.
Norway	National	UNESCO Institute for Statistics.	1999–2000		Age range can be determined based on entrance age and duration for each stage of education.
	Troms				
Sweden	National	UNESCO Institute for Statistics.	1999–2000		Data either not provided or incompatible.
	Norrbottn				
Finland	National	UNESCO Institute for Statistics.	1999–2000		Age range can be determined based on entrance age and duration for each stage of education.
	Lapland				
Russian Federation	National	UNESCO Institute for Statistics.	1999–2000		Age range can be determined based on entrance age and duration for each stage of education.
	Chukotka				

Legend

UNESCO: United Nations Educational, Scientific and Cultural Organization

¹¹ These data are based on the respective national educational systems, then converted to a set of indicators, which may be internationally comparable. Limitations still apply.

B.2 Behaviour of Children and Youth

B.2.1 Tobacco Use

Overview

This indicator was defined as the percentage of children and youth who reported smoking tobacco regularly. Tobacco use remains one of the most significant preventable youth health risks, particularly since most smokers become addicted as teenagers. Additionally, prenatal maternal smoking and postnatal exposure to second-hand tobacco smoke are associated with a host of significant health risks for the fetus and for the developing infant.

Incomplete or inconsistent reporting complicates comparisons of youth smoking behaviour across national and Indigenous populations. For example, age ranges surveyed and the definition of “regular use” varied widely among reporting countries.

The United States, Canada, Denmark, Iceland, Norway, Sweden, Finland and the Russian Federation provided national data for this indicator. The United States, Canada and Denmark provided Arctic data.

Chart Highlights

The prevalence of youth smoking approached 60% among Canadian Arctic Indigenous females and females in Greenland and about 45% among males in both regions. Youth smoking in Arctic Canada was 44% for females and 33% for males. The prevalence of youth smoking was much lower (21% or less) for males and females in other countries and regions. Excluding the United States, Iceland and the Russian Federation, the prevalence of youth smoking was higher for females than males (chart 17).

Summary

The highest prevalence of youth smoking was reported in Greenland, the Canadian Arctic Indigenous population and Arctic Canada. In contrast, the prevalence of youth smoking for males and females was considerably lower in other countries and regions. The prevalence of youth smoking was higher for females than males in all countries and regions except for the United States, Iceland and the Russian Federation.

Recommendations

Circumpolar nations should monitor tobacco use among Indigenous and non-Indigenous children and youth and adhere to WHO-defined age groups (ages 10–14 and 15–19 years) and standard definitions for surveys on tobacco use.

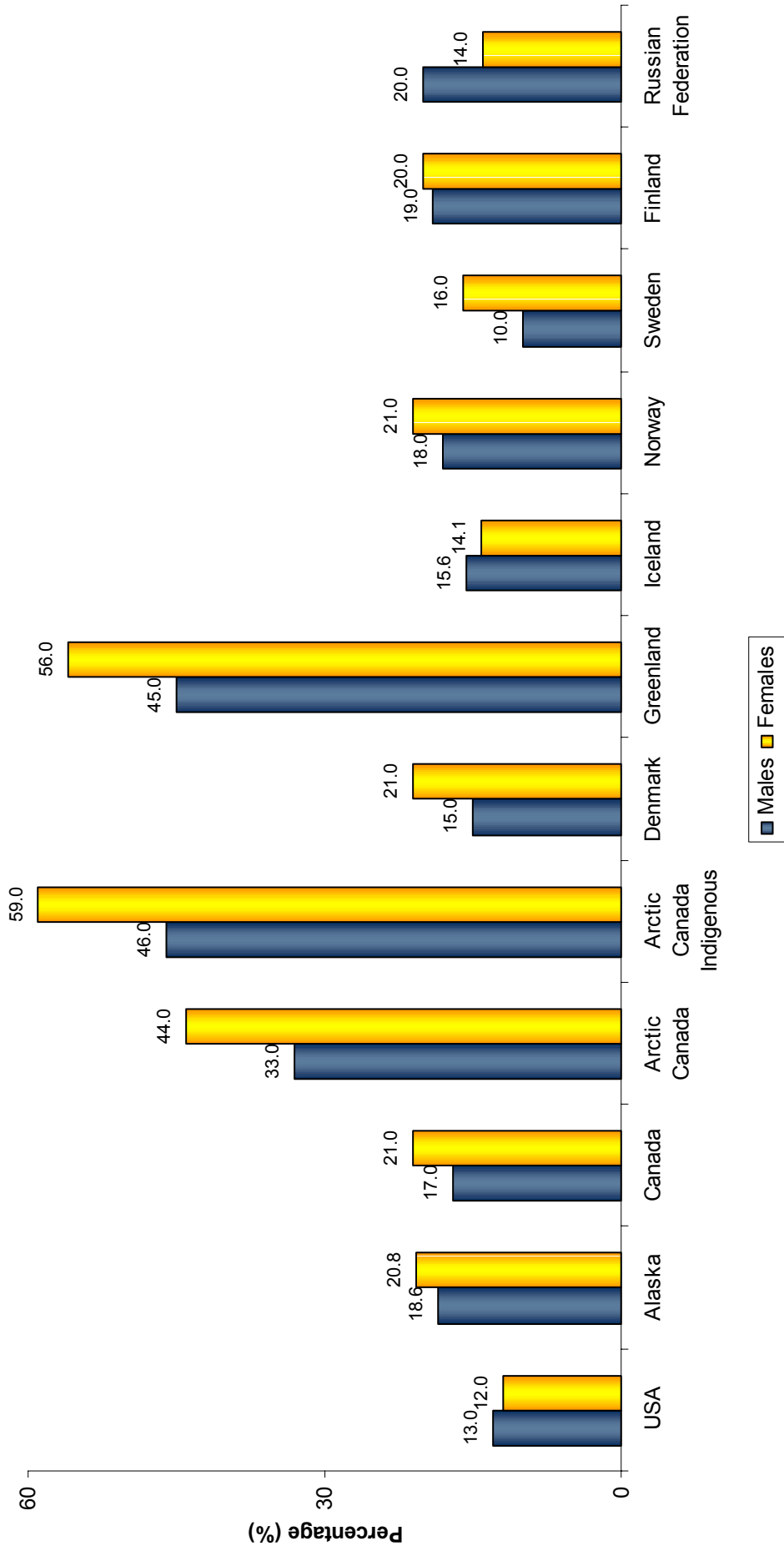
Since most smokers of any age become addicted as teenagers, circumpolar nations should consider tobacco use a major youth health hazard.

Given the major adverse affects of prenatal maternal smoking and prenatal and postnatal second-hand tobacco smoke exposure, circumpolar nations should monitor tobacco use among reproductive-age women, pregnant women and other persons in households with children.

Further Reading

Phares, T.M., et al. 2004. Surveillance for disparities in maternal health-related behaviors - selected states, Pregnancy Risk Assessment Monitoring System (PRAMS), 2000-2001. CDC MMWR Surveill. Summ. 53(SS-4): 1–13.

Chart 17: Tobacco use: prevalence of daily smoking, age 15 years



Footnotes: Tobacco use

Country	Region/ Ethnicity	Source	Year(s)	Age Range	Notes
USA	National	Health Behaviour in School-aged Children - 1997–1998, a WHO Cross-national Study.	1997–1998	15-year-olds	Students who reported smoking daily.
	Alaska	YRBSS: Youth Online Comprehensive Results http://apps.nccd.cdc.gov/yrbss/ .	1995	Grade 9 students	Smoked on 20 or more of the 30 days.
	Alaska Indigenous				
Canada	National	Health Behaviour in School-aged Children - 1997–1998, a WHO Cross-national Study.	1997–1998	15-year-olds	Students who reported smoking daily.
	Arctic Canada	The Facts About Smoking in the Northwest Territories 2001.	1999	15–17-year-olds	Defined as current daily smoker. Data represent NWT.
	Arctic Canada Indigenous	The Facts About Smoking in the Northwest Territories 2001.	1999	15–17-year-olds	Defined as current daily smoker. Indigenous values include only NWT.
Denmark	National	Health Behaviour in School-aged Children - 1997–1998, a WHO Cross-national Study.	1997–1998	15-year-olds	Students who reported smoking daily.
	Greenland	Health Behaviour in School-aged Children - 1997–1998, a WHO Cross-national Study.	1997–1998	15-year-olds	Students who reported smoking daily.
Iceland	National	Geir Gunnlaugsson, Centre for Child Health Services.	1998	15-year-olds	Daily smokers.
Norway	National	Health Behaviour in School-aged Children - 1997–1998, a WHO Cross-national Study.	1997–1998	15-year-olds	Students who reported smoking daily.
	Troms				
Sweden	National	Health Behaviour in School-aged Children - 1997–1998, a WHO Cross-national Study.	1997–1998	15-year-olds	Students who reported smoking daily.
	Norrbottnen				
Finland	National	Health Behaviour in School-aged Children - 1997–1998, a WHO Cross-national Study.	1997–1998	15-year-olds	Students who reported smoking daily.
	Lapland				
Russian Federation	National	Health Behaviour in School-aged Children - 1997–1998, a WHO Cross-national Study.	1997–1998	15-year-olds	Students who reported smoking daily.
	Chukotka				

Legend

WHO: World Health Organization

YRBSS: Youth Risk Behavior Surveillance System

NWT: Northwest Territories

B.2.2 Substance Abuse (alcohol, solvents and illicit drugs)

Overview

This indicator was defined as the prevalence of alcohol, solvent and illicit drug use by children and youth.

Methodological variation between countries and regions hindered comparisons and prevented definitive conclusions.

Chart Highlights

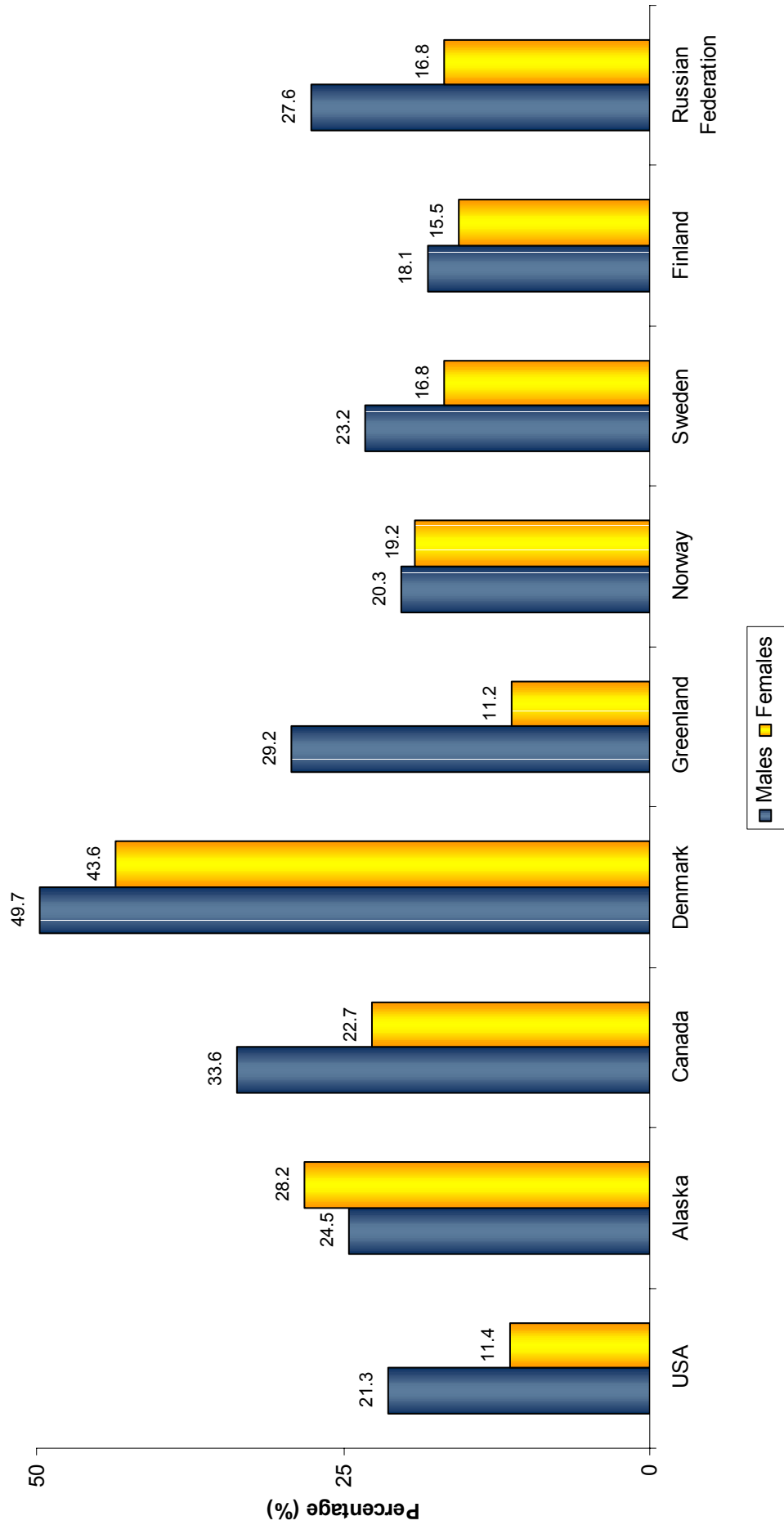
Alcohol

The United States, Canada, Denmark, Norway, Sweden, Finland and the Russian Federation provided national data for this indicator. The United States and Denmark provided Arctic data.

Among males age 15 years, the rates of alcohol consumption were highest in Denmark (49.7%), Canada (33.6%), Greenland (29.2%), the Russian Federation (27.6%), Alaska (24.5%) and Sweden (23.2%). Rates of male alcohol consumption were lowest in the United States (21.3%), Norway (20.3%) and Finland (18.1%) (chart 18).

Among females age 15 years, the highest rates of alcohol consumption were reported in Denmark (43.6%), Alaska (28.2%) and Canada (22.7%). Rates of female alcohol consumption were lower in the Russian Federation (16.8%), Sweden (16.8%), Finland (15.5%), the United States (11.4%) and Greenland (11.2%). Rates of alcohol consumption were substantially lower for females than males, except in Alaska, where the female rate exceeded the male rate, and in Norway, where the female rate was marginally lower than the male rate (chart 18).

Chart 18: Alcohol: percentage of population age 15 years who reported drinking alcohol



Footnotes: Alcohol

Country	Region/ Ethnicity	Source	Year(s)	Age Range	Notes
USA	National	Health Behaviour in School-aged Children - 2000–2001, a WHO Cross-national Study.	2000–2001	15-year-olds	Young people who drink any alcohol weekly.
	Alaska	YRBSS: Youth Online: Comprehensive Results http://apps.nccd.cdc.gov/yrbss/ .	2003	Grade 9 students	Students who had one drink of alcohol on one or more of the past 30 days.
	Alaska Indigenous				
Canada	National	Health Behaviour in School-aged Children - 2000–2001, a WHO Cross-national Study.	2000–2001	15-year-olds	Young people who drink any alcohol weekly.
	Arctic Canada				
	Arctic Canada Indigenous				
Denmark	National	Health Behaviour in School-aged Children - 2000–2001, a WHO Cross-national Study.	2000–2001	15-year-olds	Young people who drink any alcohol weekly.
	Greenland	Health Behaviour in School-aged Children - 1997–1998, a WHO Cross-national Study.	1997–1998	15-year-olds	Young people who drink any alcohol weekly.
Iceland	National				
Norway	National	Health Behaviour in School-aged Children - 2000–2001, a WHO Cross-national Study.	2000–2001	15-year-olds	Young people who drink any alcohol weekly.
	Troms				
Sweden	National	Health Behaviour in School-aged Children - 2000–2001, a WHO Cross-national Study.	2000–2001	15-year-olds	Young people who drink any alcohol weekly.
	Norrbottn				
Finland	National	Health Behaviour in School-aged Children - 1997–1998, a WHO Cross-national Study.	2000–2001	15-year-olds	Young people who drink any alcohol weekly.
	Lapland				
Russian Federation	National	Health Behaviour in School-aged Children - 2000–2001, a WHO Cross-national Study.	2000–2001	15-year-olds	Young people who drink any alcohol weekly.
	Chukotka				

Legend

WHO: World Health Organization

YRBSS: Youth Risk Behavior Surveillance System

Solvents

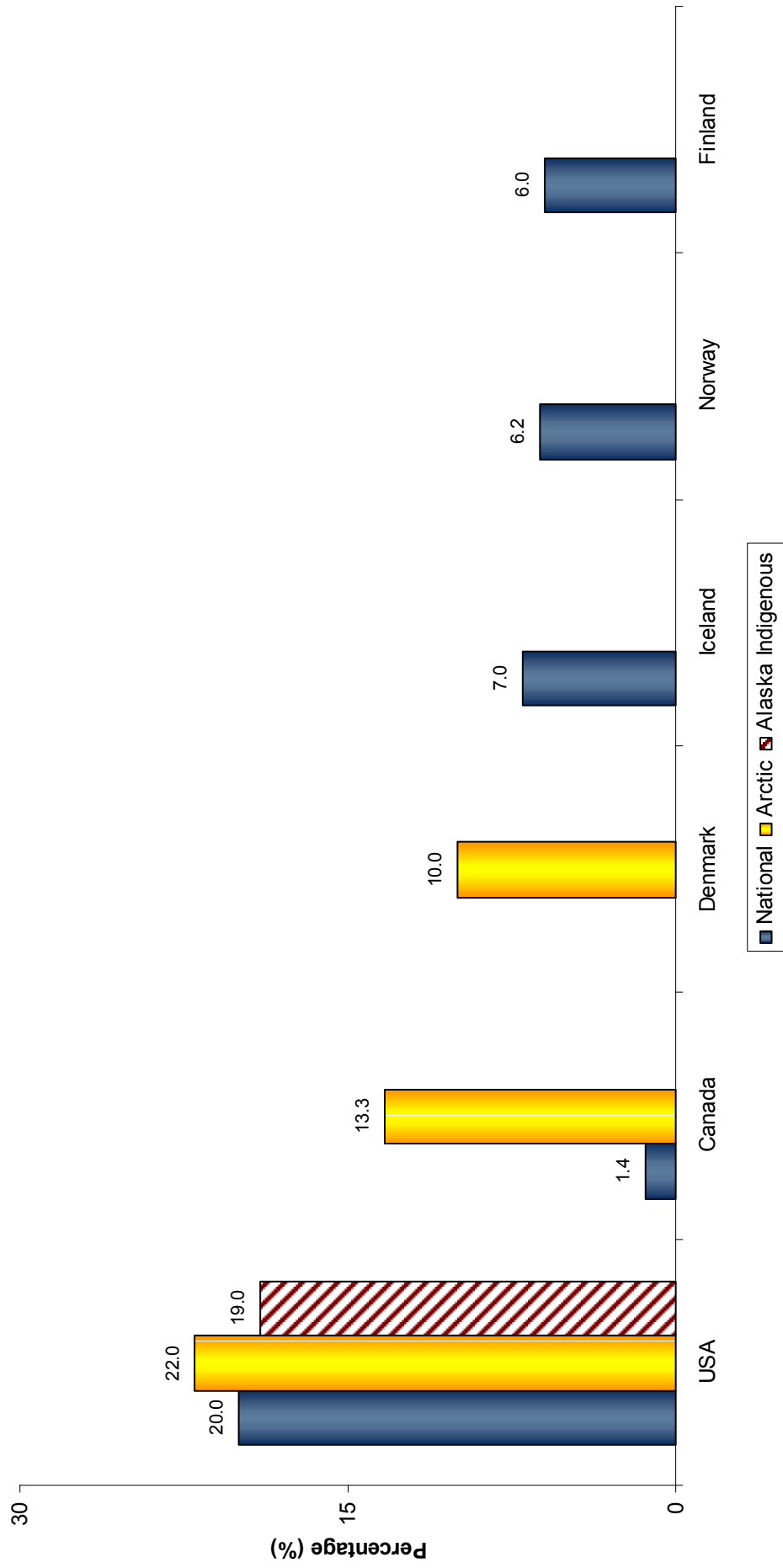
Solvent use includes gasoline, glue and aerosol propellants.

The United States, Canada, Iceland, Norway and Finland provided national data for this indicator.

The United States, Canada and Denmark and Finland provided Arctic data.

The rates of reported solvent use were highest in Alaska (22%), the United States (20%) and in the Indigenous population of Alaska (19%), significantly lower in Arctic Canada (13.3%) and Greenland (10%), and lowest in Iceland (7%), Norway (6.2%), Finland (6%) and Canada (1.4%) (chart 19).

Chart 19: Solvents: percentage of population age 15–24 years who reported using solvents



Footnotes: Solvents

Country	Region/ Ethnicity	Source	Year(s)	Age Range	Notes
USA	National	Youth Risk Behavior Survey Alaska Report, 1995.	1995	High school students	Ever used inhalants.
	Alaska	Youth Risk Behavior Survey Alaska Report, 1995.	1995	High school students	Ever used inhalants.
	Alaska Indigenous	Youth Risk Behavior Survey Alaska Report, 1995.	1995	High school students	Ever used inhalants.
Canada	National	Canada's Alcohol and Other Drugs Survey, 1994.	1994	15–24	Ever sniffed solvents or aerosols.
	Arctic Canada	1996 NWT Alcohol and Drug Survey.	1996	15–24	Ever sniffed solvents or aerosols.
	Arctic Canada Indigenous				
Denmark	National				
	Greenland	JM Pedersen. Solvent abuse among school children in Greenland 1992. Ugeskr Laeger 1994; 156 (27): 4036–8.	1994		
Iceland	National	Geir Gunnlaugsson, Centre for Child Health Services.	2001	15-year-olds	Any use.
Norway	National	Jon Øyvind Odland, University of Tromsø, Norway.	1997–1999	15–20	
	Troms				
Sweden	National				
	Norrbottnen				
Finland	National	Quick facts about alcohol and drugs, Year 2000, National Research and Development Centre for Welfare and Health, (STAKES).	1999	15-year-olds	Based on the interpretation of a bar graph depicting experimental use of drugs.
	Lapland	School Health 2000: School Experiences, Health and Health Experiences in Lapland. National Research and Development Centre for Welfare and Health, (STAKES).		Secondary school	Frequency not defined. Data were incompatible.
Russian Federation	National				
	Chukotka				

Legend

NWT: Northwest Territories

STAKES: The National Research and Development Centre for Welfare and Health

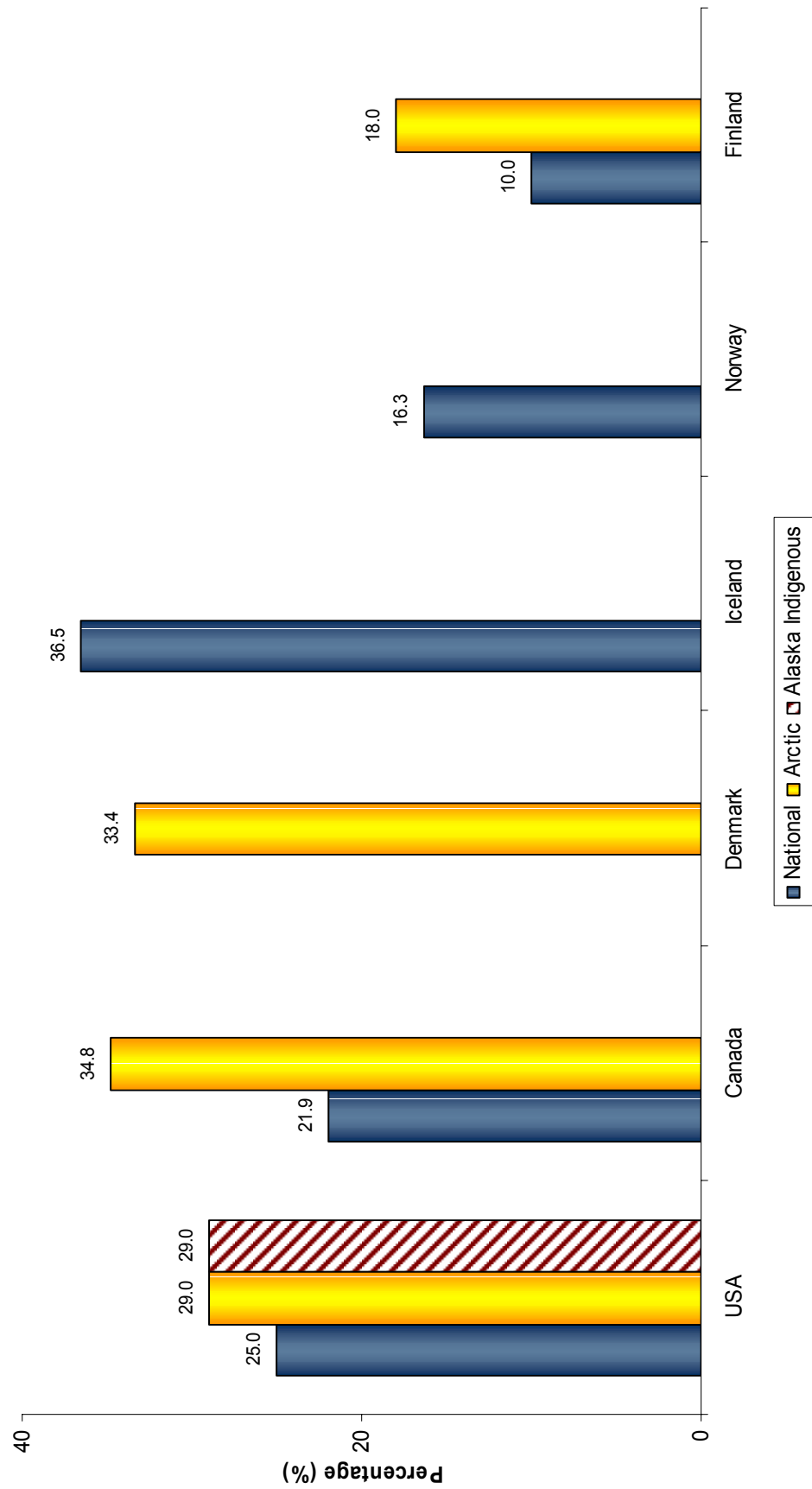
Illicit drugs

The United States, Canada, Iceland, Norway and Finland provided national data for this indicator.

The United States, Canada, Denmark and Finland provided Arctic data.

The rates of reported illicit drug use were highest among youth in Iceland (36.5%), Arctic Canada (34.8%), Greenland (33.4%), Alaska (29%), the Indigenous population of Alaska (29%) and the United States (25%). Lower rates of youth illicit drug use were reported in Canada (21.9%), Arctic Finland (18%), Norway (16.3%) and Finland (10%) (chart 20).

Chart 20: Illicit drugs: percentage of population age 15–24 years who reported using illicit drugs



Footnotes: Illicit drugs

Country	Region/ Ethnicity	Source	Year(s)	Age Range	Notes
USA	National	Youth Risk Behavior Survey Alaska Report, 1995.	1995	High school students	Based on current marijuana use (used in the past 30 days).
	Alaska	Youth Risk Behavior Survey Alaska Report, 1995.	1995	High school students	Based on current marijuana use (used in the past 30 days).
	Alaska Indigenous	Youth Risk Behavior Survey Alaska Report, 1995.	1995	High school students	Based on current marijuana use (used in the past 30 days).
Canada	National	Canada's Alcohol and Other Drugs Survey, 1994.	1994	15–24	Surveyed drug use for cannabis and hash.
	Arctic Canada	1996 NWT Alcohol and Drug Survey.	1996	15–24	Surveyed drug use for cannabis and hash.
	Arctic Canada Indigenous				
Denmark	National				
	Greenland	WHO, 1998.	1994	15–17	Based on 1998 WHO survey: have you ever tried cannabis?
Iceland	National	Geir Gunnlaugsson, Centre for Child Health Services.	2001	18–24	Cannabis: any use.
Norway	National	Jon Øyvind Odland, University of Tromsø, Norway.	1997– 1999	15–20	Ever used substance (cannabis only).
	Troms				
Sweden	National				
	Norrbotten				
Finland	National	Quick facts about alcohol and drugs, Year 2000, National Research and Development Centre for Welfare and Health, (STAKES).	1999	15-year-olds	Based on the interpretation of a bar graph depicting experimental use of drugs.
	Lapland	School Health 2000: School Experiences, Health and Health Experiences in Lapland. National Research and Development Centre for Welfare and Health, (STAKES).		Secondary school students	Frequency not defined.
Russian Federation	National				
	Chukotka				

<p>Legend NWT: Northwest Territories WHO: World Health Organization STAKES: The National Research and Development Centre for Welfare and Health</p>

Summary

The rates of youth alcohol consumption among males were highest in Denmark, Canada, Greenland, the Russian Federation, Alaska and Sweden, and lowest in the United States, Norway and Finland. Among females, the rates of youth alcohol consumption were highest in Denmark, Alaska and Canada, and lower in the Russian Federation, Sweden, Finland, the United States and Greenland. Rates of alcohol use were generally higher among young males than females, except in Alaska, where the female rate was higher, and in Norway, where there was little variation between sexes.

The rates of reported solvent use were highest among youth in Alaska, the United States and the Indigenous population of Alaska, and lowest in Iceland, Norway, Finland and Canada.

The rates of reported illicit drug use were highest among youth in Iceland, Arctic Canada, Greenland, Alaska, the Indigenous population of Alaska and the United States, and lowest in Canada, Arctic Finland, Norway and Finland.

Recommendations

Standardization of data collection for monitoring substance abuse would enable international comparisons for this indicator.

Given the preventability and the serious health consequences associated with the use of alcohol, solvents and illicit drugs, Arctic nations should continue to monitor this behaviour to assess the need for and effectiveness of intervention programs. Additionally, considering the major adverse health effects associated with prenatal maternal substance abuse, circumpolar nations should initiate monitoring of these behaviours among reproductive-age and pregnant women.

Further Reading

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- Zebrowski, P.L., and R.J. Gregory. 1996. Inhalant use patterns among Eskimo school children in western Alaska. *J. Addict. Dis.* 15: No. 3: 67–75.

B.3 Health Outcomes

B.3.1 Child Abuse and Neglect

Overview

This indicator was defined as the prevalence of child abuse and neglect cases confirmed by child protection agencies (number of cases per 1000 children age 0 to 18). The WHO definition of child abuse or maltreatment considers all forms of physical and/or emotional ill-treatment, sexual abuse, neglect or negligent treatment, or commercial or other exploitation resulting in actual or potential harm to the child's health, survival, development or dignity in the context of a relationship of responsibility, trust or power. Within the broad definition of child maltreatment, four subtypes have been distinguished: physical abuse, sexual abuse, emotional abuse and neglect (Krug et al., 2002).

The United States, Canada, Iceland and Finland provided national data for this indicator. Denmark and Finland reported Arctic data.

Chart Highlights

The highest prevalence of reported child abuse and neglect was found in Greenland (24.2 cases per 1000 children under age 18). The prevalence of child abuse and neglect was significantly lower in Iceland (13.8), Finland (11), Canada (9.3) and Arctic Finland (8). The lowest prevalence of child abuse and neglect was reported in the United States (2.5) (chart 21).

Summary

The prevalence of reported child abuse and neglect was highest in Greenland and lowest in the United States.

Given the data limitations, including variable definitions, survey methods and age ranges, these results should be interpreted cautiously. More systematic data collection on this indicator is essential to assess the need for and effectiveness of child abuse and neglect intervention programs.

Recommendations

Given the prevalence and enormous social costs of child abuse and neglect, circumpolar nations should adopt a standard definition and continue to monitor this indicator.

Further Reading

Dong, M., et al. 2004. The interrelatedness of multiple forms of childhood abuse, neglect, and household dysfunction. *Child Abuse Negl.* 28: 771–784.

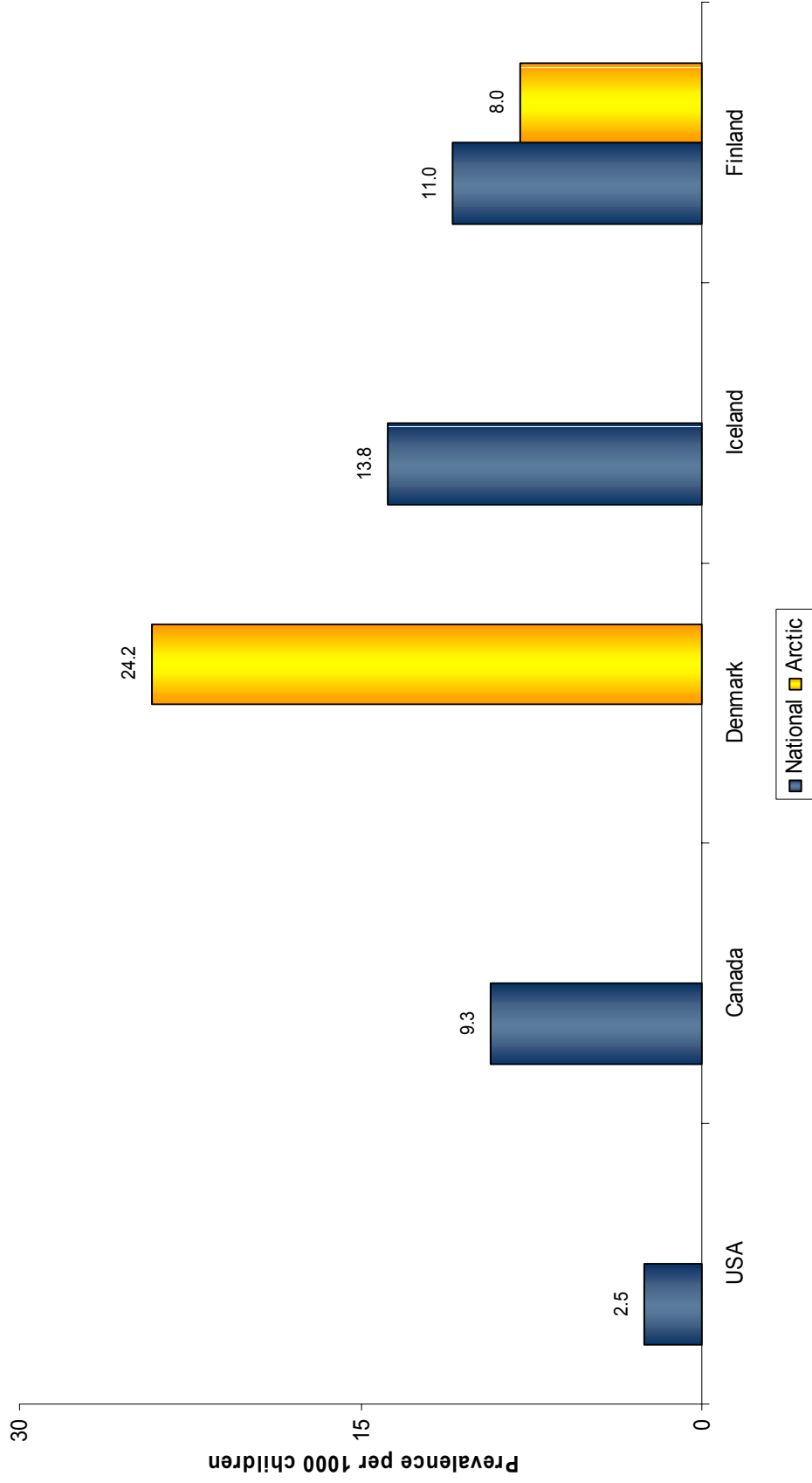
Gessner, B.D., et al. 2004. The incidence of infant physical abuse in Alaska. *Child Abuse Negl.* 28: 9–23.

Krug E.G., et al., eds. 2002. *World report on violence and health*. Geneva, World Health Organization.

Trocme, N.M., et al. 2003. Major findings from the Canadian incidence study of reported child abuse and neglect. *Child Abuse Negl.* 27: 1427–1439.

Walsh, C., H.L. MacMillan, and E. Jamieson. 2003. The relationship between parental substance abuse and child maltreatment: findings from the Ontario Health Supplement. *Child Abuse Negl.* 27: 1409–1425.

Chart 21: Child abuse and neglect prevalence, age 0–18



Footnotes: Child abuse and neglect

Country	Region/ Ethnicity	Source	Year(s)	Age Range	Cases	Notes
USA	National	Child Maltreatment 1999 Reports from the States to the National Child Abuse and Neglect Data System, US Department of Health and Human Services.	1999	0–17		
	Alaska					
	Alaska Indigenous					
Canada	National	Statistics Canada: Canadian Incidence Study of Reported Child Abuse and Neglect 2001.	1998	16–17	3806 (1903 sub- stantiated)	Value based on substantiated cases only.
	Arctic Canada					
	Arctic Canada Indigenous					
Denmark	National					
	Greenland	Kreutzmann G., Department of Social Affairs, Greenland Home Rule 1994.	1994	0–17	violence: 33 neglect: 318	Based on a report of 728 children and youth placed outside their family by the social agencies in 1992.
Iceland	National	Barnaverndarstofa 2000, Reykjavik.	1999	0–18	1067	
Norway	National					
	Troms					
Sweden	National					
	Norrbottn					
Finland	National	Statistical Yearbook of Finland 2000.	1999	0–17		Based on children and young persons placed outside own home.
	Lapland	Statistical Yearbook of Finland 2000.	1999	0–17	374	
Russian Federation	National					
	Chukotka					

B.3.2 Unintentional Injuries

Overview

This indicator comprises age and sex-specific injury fatality rates per 100,000 population, age 0 to 24 years.

Unintentional injury death rates reflect the effectiveness of preventive efforts, such as regulatory, educational and other measures aimed at improving consumer product and environmental safety; and intervention programs, such as timely access to emergency and medical services.

The United States, Canada, Denmark, Iceland, Norway, Sweden, Finland and the Russian Federation provided national data for this indicator. Data provided by Iceland, Norway, Finland and the Russian Federation are stated in the accompanying footnote table. The United States, Canada, Denmark and Sweden provided national and Arctic data (charts 22, 23 and 24).

Chart Highlights

Total unintentional injury death rates were consistently higher in Alaska and in the Indigenous population of Arctic Canada, compared with national rates for the United States and Canada (charts 22 and 23). Similarly, unintentional injury death rates in Greenland were higher than those in Denmark (chart 24). In the three populations for which unintentional injury death rates were available for infants age less than one year (Canada, Denmark and Sweden), rates were generally higher in Arctic regions and among Indigenous populations, compared with national populations (charts 23 and 24).

Generally, male unintentional injury death rates were higher than female rates, except for females age 0 to 1 in Greenland and Sweden. In Arctic regions, other contributing factors to higher unintentional injury death rates likely include extreme climate, type of transportation (e.g. snowmobiles), reduced access to health care (for timely treatment of life-threatening injuries) and prevalence of risk-taking behaviours such as substance abuse.

Summary

Total unintentional injury death rates were higher in Alaska, the Indigenous population of Arctic Canada and Greenland, compared with national rates for the United States, Canada and Denmark.

Generally, unintentional injury death rates were higher for males than females and higher in Arctic regions and Indigenous populations, compared with national populations.

Recommendations

Considering that unintentional injuries are preventable, are often associated with tragic personal, familial and social circumstances and can result in potentially debilitating consequences, circumpolar nations should standardize data reporting by age range and calendar year.

Arctic countries should consider incorporating data on hospital discharges and aggregating data across several years to enable analyses of subcategories of unintentional injuries (e.g. drownings, fires and motorized transportation accidents).

Chart 22: Unintentional injury death rates, age-specific, age 0–24 years

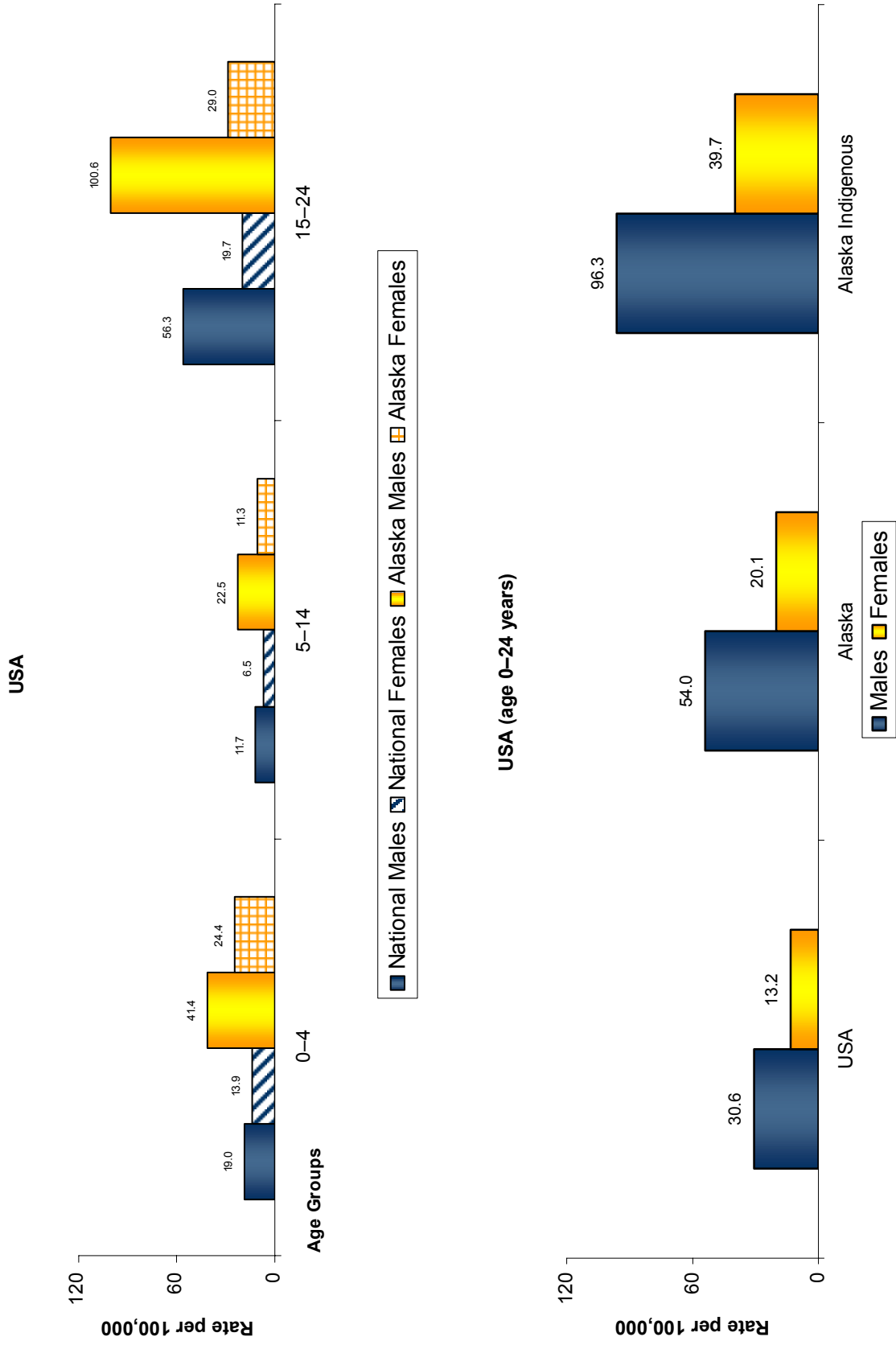


Chart 23: Unintentional injury death rates, age-specific, Canada

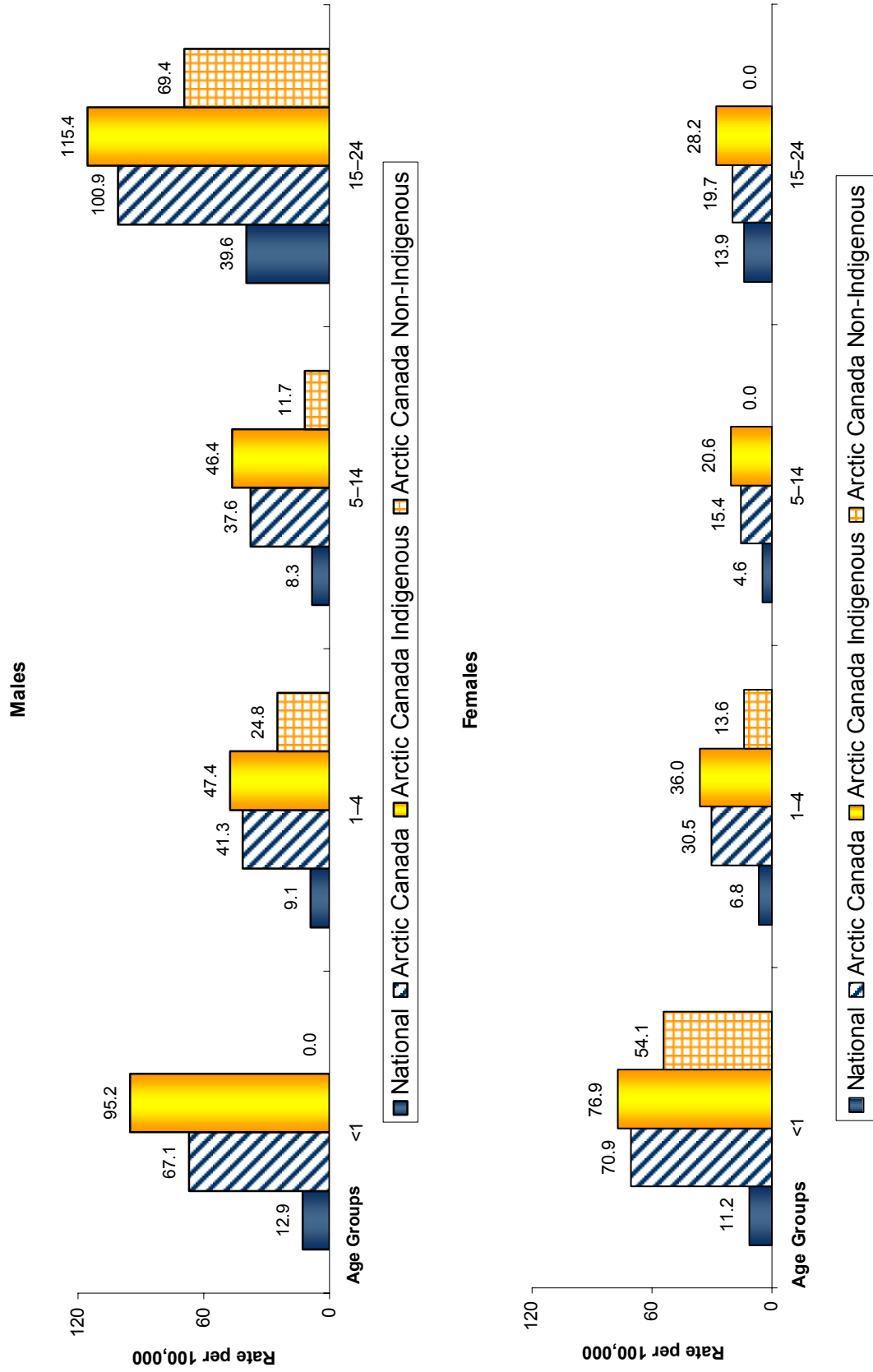
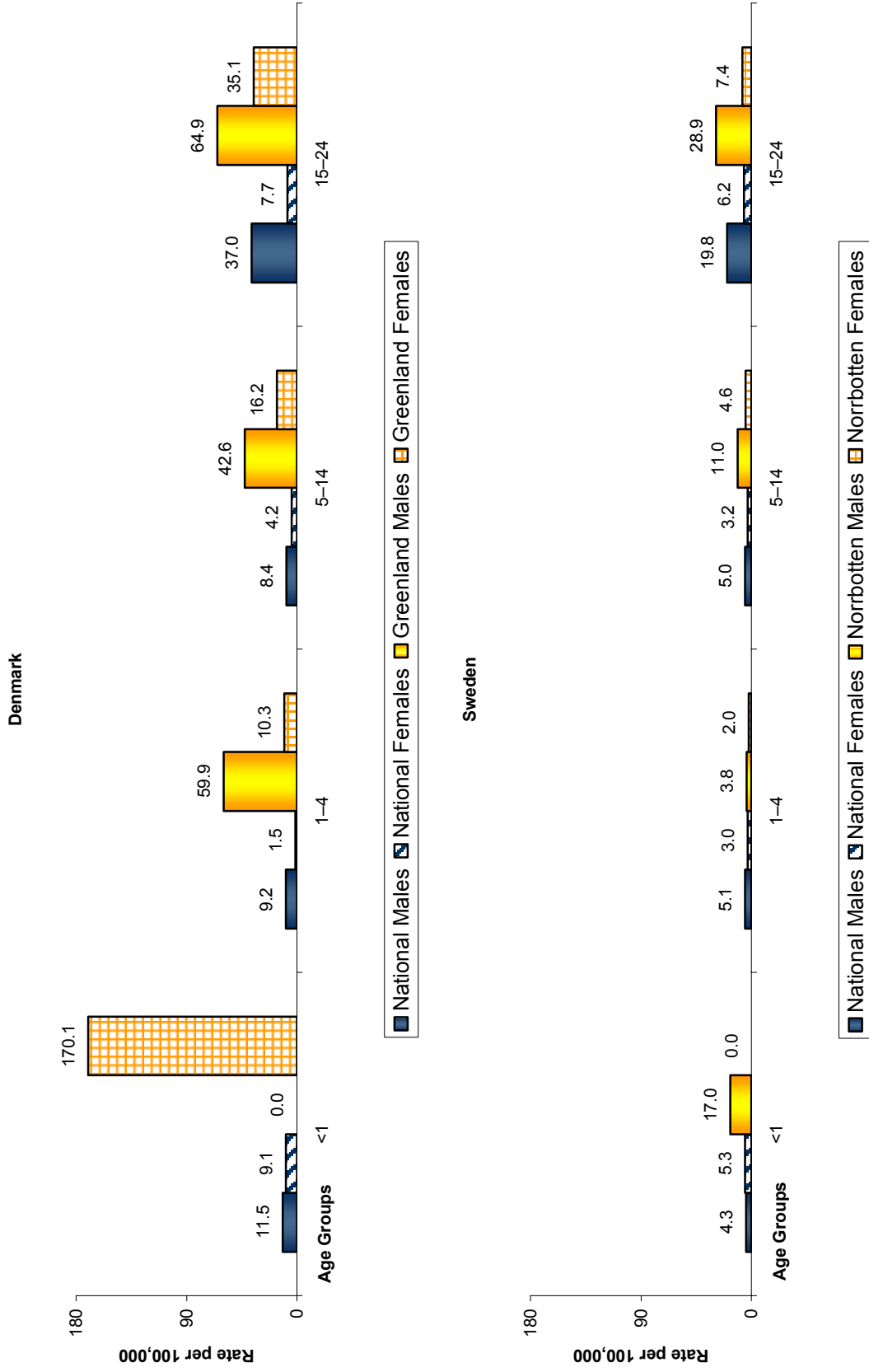


Chart 24: Unintentional injury death rates, age-specific



Footnotes: Unintentional injuries

Country	Region/ Ethnicity	Source	Year(s)	Age Range	Deaths		Notes
					Males	Females	
USA	National	1. WHO 2. Office of Statistics and Programming, National Center for Injury Prevention and Control, CDC.	1. 1997 2. 1990– 1998	1. <1, 1–4, 5–14, 15– 24; 2. 0–4, 5–9, 10– 14, 15–19, 20–24	1. <1: 430, 1–4: 1192, 5–14: 2110, 15–24: 9791; 2. 0– 4: 16,976, 5–9: 9170, 10–14: 11,240, 15– 19: 42,920, 20–24: 52,619	1. <1: 335, 1–4: 813, 5– 14: 1261, 15–24: 15–24: 3576; 2. 0– 4: 11,803, 5–9: 5440, 10–14: 10–14: 5424, 15– 19: 17,384, 20–24: 14,489	1. Age-specific death rates per 100,000 population (ICD-BTL Codes E47-E53). 2. Population estimates are aggregated from multi-year reports to produce rates.
	Alaska	Office of Statistics and Programming, National Center for Injury Prevention and Control, CDC.	1990– 1998	<1, 1–4, 5–14, 15– 24	0–4: 102, 5– 9: 49, 10– 14: 61, 15– 19: 174, 20– 24: 224	0–4: 57, 5– 9: 27, 10– 14: 25, 15– 19: 41, 20– 24: 58	Population estimates are aggregated from multi-year reports to produce rates.
	Alaska Indigenous	Office of Statistics and Programming, National Center for Injury Prevention and Control, CDC.	1990– 1998	<1, 1–4, 5–14, 15– 24	0–4: 49, 5– 9: 17, 10– 14: 21, 15– 19: 55, 20– 24: 71	0–4: 27, 5– 9: 15, 10– 14: 6, 15– 19: 18, 20– 24: 18	Population estimates are aggregated from multi-year reports to produce rates. Rates based on 20 or fewer deaths may be statistically unstable; use with caution.
Canada	National	WHO.	1997	<1, 1–4, 5–14, 15– 24	<1: 23, 1–4: 73, 5–14: 172, 15–24: 823	<1: 19, 1–4: 52, 5–14: 91, 15–24: 275	Age-specific death rates per 100,000 population (ICD-BTL Codes E47- E53).
	Arctic Canada	Health Canada in cooperation with GNWT.	1989– 1998	<1, 1–4, 5–14, 15– 24	<1: ≤5, 1–4: 13, 5–14: 26, 15–24: 53	<1: ≤5, 1–4: 9, 5–14: 10, 15–24: 10	Age-specific death rates based on 1996 population counts. Rates aggregated from WHO-defined 5-year age groupings.
	Arctic Canada Indigenous	Health Canada in cooperation with GNWT.	1989– 1998	<1, 1–4, 5–14, 15– 24	<1: ≤5, 1–4: 11, 5–14: 24, 15–24: 42	<1: ≤5, 1–4: 8, 5–14: 10, 15–24: 10	Age-specific death rates based on 1996 population counts. Rates aggregated from WHO-defined 5-year age groupings.

Legend

WHO: World Health Organization

CDC: Centers for Disease Control and Prevention

ICD-BTL Codes E47-E53: International Statistical Classification of Diseases and Related Health Problems: Accidents

GNWT: Government of the Northwest Territories

Footnotes: Unintentional injuries (continued)

Country	Region/ Ethnicity	Source	Year(s)	Age Range	Deaths		Notes
					Males	Females	
Denmark	National	WHO.	1996	<1, 1-4, 5-14, 15- 24	<1: 4, 1-4: 13, 5-14: 25, 15-24: 129	<1: 3, 1-4: 2, 5-14: 12, 15-24: 26	Age-specific death rates per 100,000 population (ICD-10 Codes V01-X59, Y40-Y86, Y88).
	Greenland	Statistics Greenland.	1992- 2000	<1, 1-4, 5-14, 15- 24	<1: 0, 1-4: 12, 5-14: 19, 15-24: 22	<1: 8, 1-4: 2, 5-14: 7, 15-24: 11	
Iceland	National	WHO.	1995	<1, 1-4, 5-14, 15- 24	<1: 0, 1-4: 6, 5-14: 3, 15-24: 10	<1: 0, 1-4: 3, 5-14: 8, 15-24: 3	Age-specific death rates per 100,000 population (ICD-BTL Codes E47-E53).
Norway	National	WHO.	1995	<1, 1-4, 5-14, 15- 24	<1: 0, 1-4: 9, 5-14: 23, 15-24: 115	<1: 2, 1-4: 10, 5-14: 3, 15-24: 28	Age-specific death rates per 100,000 population (ICD-BTL Codes E47-E53).
	Troms						
Sweden	National	1. WHO 2. Torbjorn Messner, Department of Internal Medicine, Kiruna District Hospital, Sweden.	1. 1996; 2. 1992- -1999	<1, 1-4, 5-14, 15- 24	1. <1: 2, 1-4: 12, 5-14: 27, 15-24: 100; 2. <1: 18, 1-4: 95, 5- 14: 223, 15- 24: 965	1. <1: 2, 1-4: 4: 5, 5-14: 13, 15-24: 28; 2. <1: 21, 1-4: 52, 5- 14: 134, 15- 24: 291	1. Age-specific death rates per 100,000 population (ICD-10 Codes V01-X59, Y40-Y84, Y88). 2. Rates were aggregated from the original pre-defined age groups (<1, 1-4, 5-9, 10-14, 15-19, 20-24).
	Norrbotten	Torbjorn Messner, Department of Internal Medicine, Kiruna District Hospital, Sweden.	1992- 1999		<1: 2, 1-4: 2, 5-14: 15, 15-24: 44	<1: 0, 1-4: 1, 5-14: 6, 15-24: 10	Rates were aggregated from the original pre-defined age groups (<1, 1-4, 5-9, 10-14, 15-19, 20-24).
Finland	National	WHO.	1996	<1, 1-4, 5-14, 15- 24	<1: 2, 1-4: 3, 5-14: 31, 15-24: 95	<1: 1, 1-4: 11, 5-14: 11, 15-24: 24	Age-specific death rates per 100,000 population (ICD-10 Codes V01-X59, Y40-Y86, Y88).
	Lapland						
Russian Federation	National	WHO.	1997	<1, 1-4, 5-14, 15- 24	<1: 568, 1-4: 1100, 5-14: 3484, 15-24: 11,850	<1: 379, 1-4: 4: 773, 5-14: 1395, 15-24: 3085	Age-specific death rates per 100,000 population (ICD-BTL Codes E47-E53).
	Chukotka						

Legend

WHO: World Health Organization

ICD-10 Codes V01-X59: International Statistical Classification of Diseases and Related Health Problems: Accidents

ICD-10 Codes Y40-Y86: International Statistical Classification of Diseases and Related Health Problems: Complications of medical and surgical care

ICD-10 Code Y88: International Statistical Classification of Diseases and Related Health Problems: Sequelae with surgical and medical care as external cause

ICD-BTL Codes E47-E53: International Statistical Classification of Diseases and Related Health Problems: Accidents

B.3.3 Suicide

Overview

This indicator comprises sex-specific suicide death rates per 100,000 population, age 15 to 24 years.

Suicides are preventable deaths that reflect inadequacies in socio-economic conditions, social support systems, and preventive and therapeutic health services. High suicide death rates indicate a need for intervention programs, including education, improved treatment of depression, and counselling and support services.

The United States, Canada, Denmark, Iceland, Norway, Sweden, Finland and the Russian Federation reported national data on suicide death rates. Data for Iceland, Norway, Finland and the Russian Federation are stated in the accompanying footnote table. The United States, Canada, Denmark and Sweden provided national and Arctic data on suicide death rates (charts 25 and 26).

Chart Highlights

Suicide death rates were considerably higher for males than females, and were higher in Indigenous populations and Arctic regions than national populations. In Greenland, the male suicide death rate was 395.5 per 100,000, compared with 76.6 per 100,000 for females. For the Indigenous population in Arctic Canada, the male suicide death rate was 237.1, compared with 75.2 for females. In the Alaskan Indigenous population, the male suicide death rate was 180.4, compared with 34.8 for females (charts 25 and 26).

Suicide death rates were generally higher in Arctic Indigenous populations than national populations. The greatest disparities in male suicide death rates were observed between Denmark (13.2 per 100,000) and Greenland (395.5 per 100,000); the United States (21) and the Indigenous population in Alaska (180.4); and Canada (22.4) and the Indigenous population in Arctic Canada (237.1). The male suicide death rate in Arctic Sweden was considerably lower (21.6), but was still double the male rate in Sweden (11.1) (charts 25 and 26).

Summary

In all countries and regions, suicide death rates were higher for males than females.

Suicide death rates were considerably higher in the Alaskan and Canadian Arctic Indigenous populations and in Greenland, compared with the national populations of the United States, Canada and Denmark.

Recommendations

Standardizing this indicator for the age range 15 to 24 would enhance comparability between countries, Arctic regions and Indigenous populations.

Arctic countries should report the number of attempted suicides along with suicide death rates, to assess potential variation due to small case numbers.

Chart 25: Suicide death rates, age 0–24 years

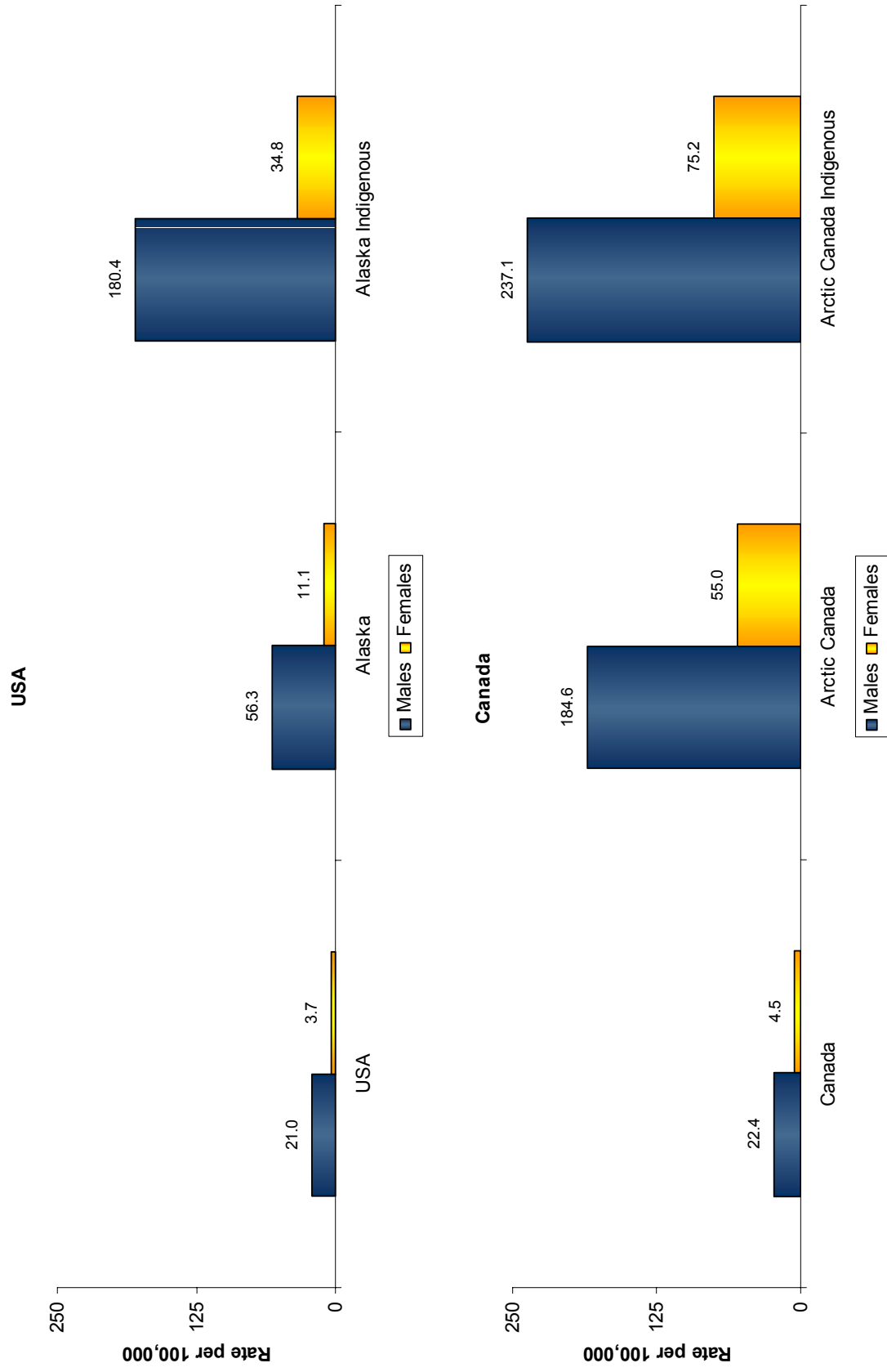
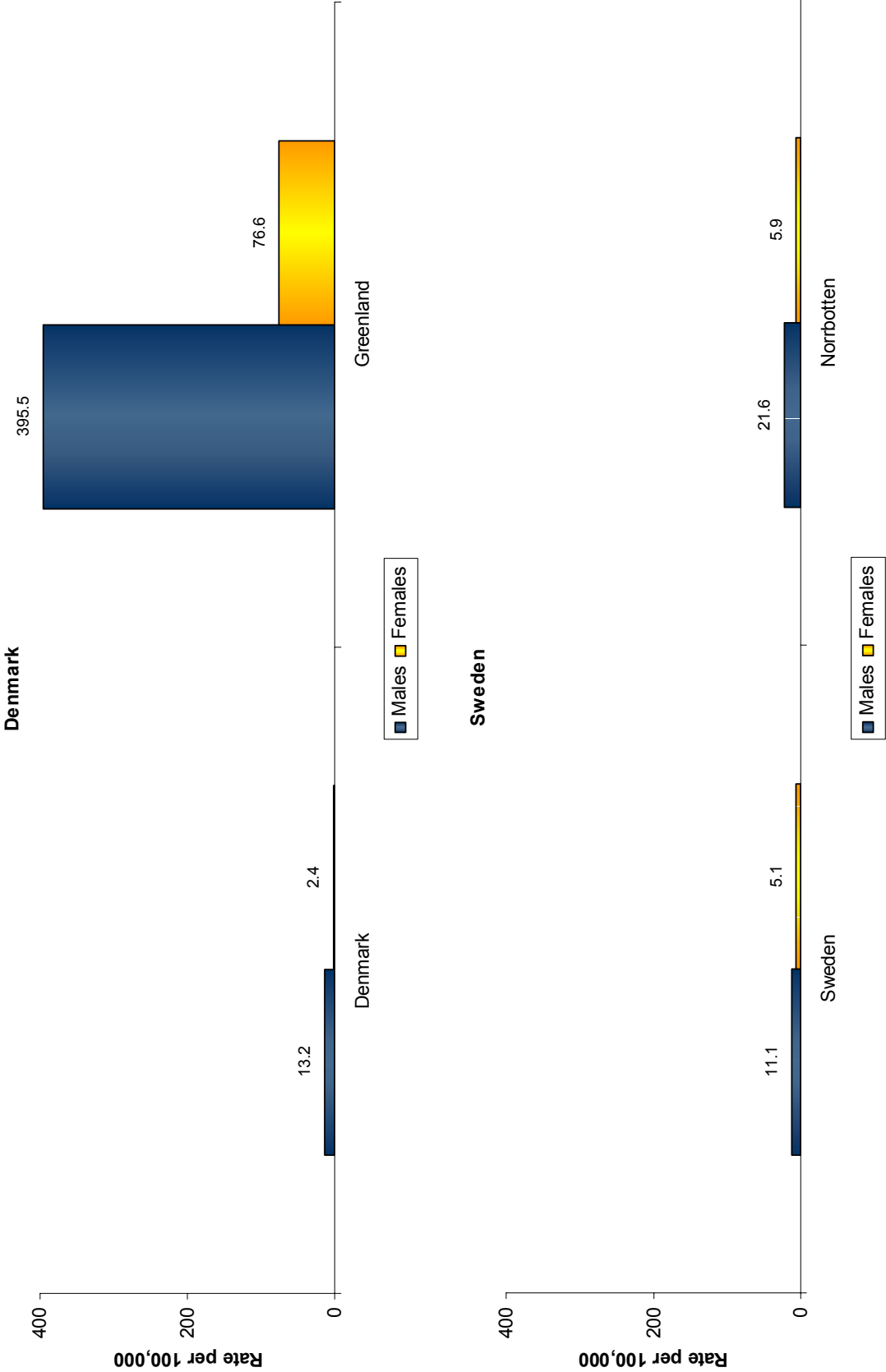


Chart 26: Suicide death rates, age 0–24 years



Footnotes: Suicide

Country	Region/ Ethnicity	Source	Year(s)	Age Range	Deaths		Notes
					Males	Females	
USA	National	1. WHO. 2. Office of Statistics and Programming, National Center for Injury Prevention and Control, CDC.	1. 1997 2. 1990– 1998	1. <1, 1– 4, 5–14, 15–24; 2. 0–4, 5–9, 10–14, 15–19, 20–24	1. <1: 0, 1–4: 0, 5–14: 233, 15–24: 3559; 2. 0–4: 0, 5– 9: 40, 10–14: 2021, 15–19: 14,079, 20– 24: 21,566	1. <1: 0, 1–4: 0, 5–14: 74, 15–24: 627; 2. 0–4: 0, 5–9: 9, 10–14: 687, 15–19: 2724, 20–24: 3212	1. Age-specific death rates per 100,000 population (ICD- BTL Code E54). 2. Population estimates are aggregated from multi-year reports to produce rates.
	Alaska	Office of Statistics and Programming, National Center for Injury Prevention and Control, CDC.	1990– 1998	1. <1, 1– 4, 5–14, 15–24	0–4: 0, 5–9: 1, 10–14: 6, 15–19: 100, 20–24: 122	0–4: 0, 5–9: 0, 10–14: 4, 15– 19: 18, 20–24: 20	Population estimates are aggregated from multi-year reports to produce rates.
	Alaska Indigenous	Office of Statistics and Programming, National Center for Injury Prevention and Control, CDC.	1990– 1998	1. <1, 1– 4, 5–14, 15–24	0–4: 0, 5–9: 1, 10–14: 3, 15–19: 58, 20–24: 63	0–4: 0, 5–9: 0, 10–14: 4, 15– 19: 11, 20–24: 11	Population estimates are aggregated from multi-year reports to produce rates. Rates based on 20 or fewer deaths may be statistically unstable; use with caution.
Canada	National	WHO.	1997	<1, 1–4, 5–14, 15–24	<1: 0, 1–4: 0, 5–14: 39, 15– 24: 464	<1: 0, 1–4: 0, 5–14: 12, 15– 24: 90	Age-specific death rates per 100,000 population (ICD- BTL Code E54).
	Arctic Canada	Health Canada in cooperation with GNWT.	1989– 1998	<1, 1–4, 5–14, 15–24	<1: 0, 1–4: 0, 5–14: ≤5, 15–24: 97	<1: 0, 1–4: 0, 5–14: 5, 15– 24: 28	Age-specific death rates based on 1996 population counts. Rates aggregated from WHO-defined 5-year age groupings.
	Arctic Canada Indigenous	Health Canada in cooperation with GNWT.	1989– 1998	<1, 1–4, 5–14, 15–24	<1: 0, 1–4: 0, 5–14: 24, 15– 24: 87	<1: 0, 1–4: 0, 5–14: 5, 15– 24: 27	Age-specific death rates based on 1996 population counts. Rates aggregated from WHO-defined 5-year age groupings.

Legend

WHO: World Health Organization

CDC: Centers for Disease Control and Prevention

ICD-BTL Code E54: International Statistical Classification of Diseases and Related Health Problems: Suicide and self-inflicted injury

GNWT: Government of the Northwest Territories

Footnotes: Suicide (continued)

Country	Region/ Ethnicity	Source	Year(s)	Age Range	Deaths		Notes
					Males	Females	
Denmark	National	WHO.	1996	<1, 1-4, 5-14, 15-24	<1: 0, 1-4: 0, 5-14: 1, 15- 24: 46	<1: 0, 1-4: 0, 5-14: 0, 15- 24: 8	Age-specific death rates per 100,000 population (ICD-10 Codes X60-X84).
	Greenland	Statistics Greenland.	1992-2000	<1, 1-4, 5-14, 15-24	<1: 0, 1-4: 0, 5-14: 8, 15- 24: 134	<1: 0, 1-4: 0, 5-14: 2, 15- 24: 24	
Iceland	National	WHO.	1995	<1, 1-4, 5-14, 15-24	<1: 0, 1-4: 0, 5-14: 0, 15- 24: 4	<1: 0, 1-4: 0, 5-14: 0, 15- 24: 0	Age-specific death rates per 100,000 population (ICD-BTL Code E54).
Norway	National	WHO.	1995	<1, 1-4, 5-14, 15-24	<1: 0, 1-4: 0, 5-14: 7, 15- 24: 68	<1: 0, 1-4: 0, 5-14: 2, 15- 24: 16	Age-specific death rates per 100,000 population (ICD-BTL Codes E47-E53).
	Troms						
Sweden	National	1. WHO. 2. Torbjorn Messner, Department of Internal Medicine, Kiruna District Hospital, Sweden.	1. 1996 2. 1992-1999	<1, 1-4, 5-14, 15-24	1. <1: 0, 1-4: 0, 5-14: 1, 15-24: 66; 2. <1: 0, 1-4: 0, 5-14: 16, 15-24: 539	1. <1: 0, 1-4: 0, 5-14: 1, 15-24: 24; 2. <1: 0, 1-4: 0, 5-14: 9, 15-24: 238	1. Age-specific death rates per 100,000 population (ICD-BTL Codes E54). 2. Rates were aggregated from the original pre-defined age groups (<1, 1-4, 5-9, 10-14, 15-19, 20-24).
	Norrbottn	Torbjorn Messner, Department of Internal Medicine, Kiruna District Hospital, Sweden.	1992-1999		<1: 0, 1-4: 0, 5-14: 2, 15-24: 33	<1: 0, 1-4: 0, 5-14: 1, 15-24: 8	Rates were aggregated from the original pre-defined age groups (<1, 1-4, 5-9, 10-14, 15-19, 20-24).

Legend

WHO: World Health Organization

ICD-10 Codes X60-X84: International Statistical Classification of Diseases and Related Health Problems: Intentional self-harm

ICD-BTL Code E54: International Statistical Classification of Diseases and Related Health Problems: Suicide and self-inflicted injury

ICD-BTL Codes E47-E53: International Statistical Classification of Diseases and Related Health Problems: Accidents

Footnotes: Suicide (continued)

Country	Region/ Ethnicity	Source	Year(s)	Age Range	Deaths		Notes
					Males	Females	
Finland	National	WHO.	1996	<1, 1-4, 5-14, 15-24	<1: 0, 1-4: 0, 5-14: 3, 15- 24: 110	<1: 0, 1-4: 0, 5-14: 3, 15- 24: 21	Age-specific death rates per 100,000 population (ICD-10 Codes V01-X59, Y40-Y86, Y88).
	Lapland						
Russian Federation	National	WHO.	1997	<1, 1-4, 5-14, 15-24	<1: 0, 1-4: 0, 5-14: 346, 15-24: 5780	<1: 0, 1-4: 0, 5-14: 76, 15- 24: 945	Age-specific death rates per 100,000 population (ICD-BTL Codes E54).
	Chukotka						

Legend

WHO: World Health Organization

ICD-10 Codes V01-X59: International Statistical Classification of Diseases and Related Health Problems: Accidents

ICD-10 Codes Y40-Y86: International Statistical Classification of Diseases and Related Health Problems: Complications of medical and surgical care

ICD-10 Code Y88: International Statistical Classification of Diseases and Related Health Problems: Sequelae of intentional self-harm

ICD-BTL Code E54: International Statistical Classification of Diseases and Related Health Problems: Suicide and self-inflicted injury

Conclusions

This report identified the 16 health indicators selected by the Health Expert Group for their relevance to the health of Arctic children and youth. This undertaking represents a necessary first step along the path to improving understanding of the unique health issues faced by children and youth in northern circumpolar regions. Producing this report proved to be an ambitious, yet informative, undertaking for the SDWG. Nonetheless, one of the clear conclusions is that there is ample room for further work in this area.

The indicators selected proved to be appropriate choices for developing a snapshot of the health needs of this population and they underscored the necessity of having a comparable and valid set of health measures.

This report has provided insights into the availability and comparability of many of the 16 health indicators. As a result of this undertaking, a number of serious data limitations for this population have been brought to the fore. These limitations have been explicitly identified in the document. Deficiencies in the data remain one of the key challenges that need to be addressed in order to develop a more complete profile of the health of Arctic children and youth.

A positive element of this report—and one that needs to be emphasized—is that most of the indicators measured behaviours and outcomes that are potentially preventable, and that can be modified and improved. Baseline information contained in this document can be used to improve and/or design effective prevention and treatment programs to target those at greatest risk and thereby reduce existing health disparities.

Overall, this report captures the commonalities and differences between national, Arctic and Indigenous populations, and reveals some cause for optimism. For example, the rates of immunization coverage for the majority of Arctic regions are high both in absolute terms and relative to national measures. Also, some Arctic regions (in Norway, Finland, the United States

and Canada) had higher prevalence for breastfeeding than national populations. Additionally, a higher proportion of women in Arctic Sweden took advantage of prenatal care services, compared with other women in Sweden. At the same time, as is evident with the above-mentioned indicators (and other indicators in this report) a broad range of health outcomes and significant disparities can co-exist between Arctic Indigenous populations in different countries as well as across national, Arctic and Indigenous populations.

The purpose of this report was to fulfill the first objective of the Health Programme by identifying key gaps and disparities related to the health and well-being of children and youth in circumpolar regions. Addressing these disparities would be facilitated by more comprehensive knowledge of Arctic children and youths' access to existing health and social services and the adequacy of existing services, including support services (such as families and outreach activities). Furthermore, a range of other societal institutions influence the health and well-being of children and youth. In this regard, the role played by schools and communities in the health of Arctic children and youth must be considered, assessed and optimized.

Next steps

In addition to considering the recommendations proposed by the Health Expert Group, a number of other associated activities could be contemplated. In the immediate and short-term, the data gaps identified in this report need to be addressed, to complete the profile for this population and to serve as a foundation upon which trend data can be added. During the development of this report, more recent data have become available. These data could potentially supplement this report by enabling trends to be monitored and comparing health indicators over subsequent years.

In the long-term, this report could become a catalyst for the eventual establishment of a much-needed virtual Arctic database on the health of northern children and youth, which would provide information on health indicators at the international, national, Arctic and community levels. This database could be developed in partnership with existing pan-arctic institutions such as the Arctic Council and the University of the Arctic, and could be used to inform and empower governments, health care practitioners and Indigenous communities.

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