MEASURING SUSTAINABLE DEVELOPMENT

APPLICATION OF THE GENUINE PROGRESS INDEX TO NOVA SCOTIA

HEALTH DISPARITIES INDICATORS

BACKGROUND REPORT FOR DEVELOPING HEALTH DISPARITIES INDICATORS IN CANADA

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Paradoxically, many health costs associated with health disparities, including direct medical costs, are included in the Gross Domestic Product (GDP) and are thus conventionally counted as contributions to economic growth and prosperity. An increase in these costs is therefore mistakenly interpreted as a sign that society is “better off.” In the Genuine Progress Index (GPI), by contrast, the costs of illness, accidents, crime, pollution, and other liabilities are counted as costs, not gains, to the economy. Instead, the GPI uses population health indicators to measure progress. In other words, if the population is becoming healthier, then wellbeing and quality of life are also improving.

Because the GDP is our primary measure of progress, increased spending on hospitals, physicians, pharmaceuticals, and other disease-related costs is actually counted as a contribution to our wellbeing and prosperity. The same is true for sickness, crime, gambling, overwork, toxic pollution, divorce, accidents and natural resource depletion. The GDP makes no distinction between economic activities that create benefit and those that cause harm, and thus sends misleading signals to policy makers.

By contrast, the GPI counts the costs of health disparities, including those for poor health, as a loss and a liability that should be deducted, rather than added to the GDP. The GPI explicitly values equity, educational attainment, health, and peace in society as valuable social assets, and regards higher rates of poverty and ill health as signifying a deterioration or depreciation of that social capital. Unlike in the GDP, lower poverty and lower rates of ill health make the GPI go up. Reduced poverty and health costs are regarded as savings that can be invested in more productive activities that contribute to wellbeing and social welfare.

The GPI, consisting of 20 social, economic and environmental components, is intended to provide a more comprehensive assessment of our social wellbeing and quality of life than market statistics alone are able to do. As such, it is a small step towards full cost accounting. It aims to provide annual benchmarks of progress and tell us whether our development strategies and social policies are sustainable and beneficial to society. It is a temporary, but necessary, step in order to overcome the conventional tendency to undervalue the services of unpaid labour, leisure time, natural resources, and other hidden or “free” assets, and in order to make their contribution to prosperity clearly visible.

It is often said that a society measures what is important to it. Measuring and understanding health disparities is a step towards distinguishing between areas of the economy where growth is clearly undesirable and those that bring long-lasting societal benefit. In the long term, this work may help reaffirm that previously-hidden social and natural capital assets and non-material contributions to our quality of life are valuable, and thus bring these values and assets more fully into the policy arena for the wellbeing not only of disadvantaged groups, but also of the populace as a whole.
The Public Health Agency of Canada (PHAC) and Health Canada have recognized that one of the largest health problems in Canada is the extent of health disparities between the most and least disadvantaged groups in the population—which is masked by the excellent health status of Canadians overall.\(^1\) The Canada Senate Subcommittee on Population Health of the Standing Senate Committee on Social Affairs, Science, and Technology defines health disparities as follows:

Health disparities or health inequalities represent the variation or differences in health status, resulting from the distribution of the effects of health determinants between and among different population groups. Some disparities in health are attributable to biological variations or free choice and as such, are essentially unavoidable; others result from the external environment and other conditions that, while largely outside the control of the individuals affected, are amenable to mitigation by the implementation of well-crafted public policy.\(^2\) (emphasis added)

Health Ministries at the national and provincial levels have made commitments to reducing these disparities, which as the Health Council of Canada notes, “need to be tracked in a comprehensive and systematic way so that programs and policies can be targeted to reduce the gap.”\(^3\)

The purpose of this report is to provide the Public Health Agency of Canada (PHAC), and specifically, the Population Health Promotion Expert Group (PHPEG) and the Healthy Living Issue Group (HLIG) of the Pan-Canadian Public Health Network (PHN) with information, analysis and suggestions for a common set of health disparities indicators, and a feasible approach to their implementation in the Canadian context. The objective is to identify indicators that could lead to an agreed upon set of measures that could be used by Federal-Provincial/Territorial (F-P/T) jurisdictions to assess progress in the reduction of health disparities.

Creating a common set of health disparities indicators requires choices to be made among the many factors that could be included. This is particularly challenging because there is compelling evidence that disparities affect health outcomes for almost every health indicator. For example, low income is negatively related to self-reported physical and mental health, mortality and

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morbidity rates associated with major chronic diseases, avoidable injury, behaviour risk factors (e.g., tobacco use, poor diet, and physical inactivity) and health care access and use. In addition, health determinants such as education, employment and working conditions, food and housing security, and the physical environment, to name a few, are also associated with health disparities.

Participants of the first annual Joint Conference of the Association of Local Public Health Agencies and the Ontario Public Health Association have suggested that the most important areas in need of immediate action are income and income distribution, education, employment, housing, food security, and social inclusion. Because of the interconnectedness of all of the areas, without statistical work that compares the magnitude of their influence on health, it is not possible to prioritize the importance of each.

U.K. researchers Hilary Graham and Michael Kelly note that it is important to understand that there is a distinction between health determinant or health status indicators and health disparities indicators. Health determinant indicators indicate the overall level of the determinant in the population, e.g., the proportion of the population who are smokers, or who are unemployed. However, Graham and Kelly point out that “positive trends in health determinants can go hand-in-hand with widening inequalities in their social distribution.”

Therefore, the distinction between health determinant/health status indicators and health disparities indicators is that the latter must indicate the unequal distribution of the health determinant/health status in the population, e.g. the proportion of the low-income population who have diabetes, compared with the proportion of the high-income population who have diabetes, or the proportion of Aboriginal peoples who have diabetes, compared with the proportion of diabetes in the non-Aboriginal population.

They also note that this distinction has implications for policy objectives:

- Objectives for health determinants are likely to focus on reducing overall exposure to health-damaging factors along the causal pathway, e.g., to raise educational standards and living standards and to reduce rates of smoking.

- Objectives for health inequality determinants are likely to focus on leveling up the distribution of major health determinants, e.g., if the goal is to narrow the health gap, the key policies will be those which bring standards of living and diet, housing and local services in the poorest groups closer to those enjoyed by the majority of the population. If the health inequalities goal is to reduce the wider socioeconomic gradient in health, the primary policy objective will be to lift the level of health determinants across society.

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6 Ibid., accessed.
The measurement of health disparities can be approached either by the measurement of the overall population stratified by different socioeconomic status (SES) characteristics such as income, education, or occupation, and/or by the measurement of characteristics of specific disadvantaged population groups, such as those living in low income, or Aboriginal peoples. In this report, both types of measurement, which are also referred to as vertical and horizontal approaches, respectively, are discussed and recommended. Vertical approaches allow a ranking of persons according to their socioeconomic status. Horizontal approaches allow a classification of persons according to factors such as age, gender, and ethnicity, but do not allow ranking.

Determining these disparities and associations requires a number of measurement issues. Paula Braveman, Director of the Center on Social Disparities in Health at the University of California, San Francisco, notes that measuring a health disparity requires three basic components:

- An indicator of health or a modifiable determinant of health, such as health care, living conditions, or the policies that shape them;
- An indicator of social position, i.e., a way of categorizing people into different groups (social strata) based on social advantage/disadvantage, such as income, education, ethnic group, or gender; and
- A method for comparing the health (or health determinant) indicator across the different social strata, such as a ratio of the rates of the health indicator in the least and most advantaged strata.

In addition, three types of data can form the core of a national health disparities monitoring system:

1. Nationally representative, individual-level data on mortality according to socioeconomic indicators, to monitor socioeconomic inequalities in mortality.
2. Nationally representative data from health interview, multi-purpose and similar surveys, to monitor socioeconomic inequalities in self-reported morbidity and access to and utilization of health care.
3. Nationally representative data from routine health records.

Provincial/territorial and regional level data are also needed to indicate health disparities at those levels.

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7 Ibid., accessed.
Suggestions for health disparities indicators are included in Table 1 at the end of the Executive Summary, and repeated in Table 12 at the end of the report. Headline indicators, indicator descriptions, and data sources are included in the Tables.

Choice of health disparities indicators, located in Tables 1 and 12, was based on a number to steps that are detailed in the report:

I. A comprehensive review of international literature to identify health disparities indicators used most often internationally.

In addition to the literature review, the indicators used by the Organisation for Economic Co-operation and Development (OECD), the European Union (EU), England, Sweden, and New Zealand have been collected into a “Compendium of Health Disparities Indicators” that is over 50 pages in length, and can be found in the Appendices attached to this report as a separate document. The Compendium lists the indicators used, and provides a checklist so that the indicator systems can be compared. It also includes a column that shows indicators used to develop Indices of Deprivation in the U.K., New Zealand, Australia, and Quebec. Finally, the indicators for which raw data are available in Canada, data gaps, and recommendations are also identified.

II. An examination of some of the evidence of health disparities in the Canadian context.

Section 5 of this report reviews Canadian evidence of the connections between disadvantaged groups (i.e., children, lone mothers, and Aboriginal peoples living in poverty), socioeconomic status (with a focus on income), and health outcomes. The review also includes evidence of the connections between disparities and selected health determinants, behavioural risk factors for chronic disease, and physical and mental health.

III. A review of basic epidemiological methods, which are important for understanding the range of data needed to estimate health disparities.

Section 6 of this report discusses guidelines and methodologies for monitoring health disparities—mainly as recommended by Dutch researchers Anton Kunst, Vivian Bos, and Johan Mackenbach in a major report sponsored by the European Commission. The monitoring systems of Norway, the Netherlands, New Zealand, and other countries are following these guidelines.

The measurement process produces statistics for indicators that are needed to provide

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evidence to develop health disparities reduction strategies. The approach developed suggests including both vertical and horizontal approaches, and indications of the correlation between social disadvantages—or health determinants—and poor health, as well as indications of possible causal correlations between the two concepts.

The guidelines developed for monitoring socioeconomic inequalities in health involve five steps.

1. Identification of data sources,
2. Measurement of socioeconomic variables,
3. Tabulation of health indicators by socioeconomic status,
4. Measurement of the magnitude of health inequalities, and
5. Evaluation and interpretation of the results.

These steps, with additional suggestions from other sources, are explained in the report.

A second set of recommendations was given that concerns specific methodology issues, and the types of data and indicators needed. These recommendations include that:

1. Estimates of health disparities should be easy to calculate, interpret, and communicate.

2. For health disparities indicators to be feasible, data must be available that are stratified:
   - according to at least 2 of the 3 core socioeconomic indicators (education, income and/or occupational class),
   - for men and women,
   - for all relevant age groups,
   - for different disadvantaged groups,
   - for place of residence (e.g., urban/ rural; municipality/ province; health regions/ province; province/ country; country/ international), and
   - for at least three years in order to determine trends.

3. Socioeconomic indicators should be used to divide individuals into groups or levels.

   Data are needed for the population size of the groups, and the occurrence of health problems by absolute occurrence rates and by probabilities or relative ratios comparing rates among the groups, as described in the next steps.

4. Simple range measures should be used to indicate the disparities.

   At least two socioeconomic status indicators, such as income and educational attainment, should be used to identify disparities between the lowest and highest socioeconomic groups.
Range measures are fairly easy to calculate and understand. Specifically, range measures typically compare a health indicator or health-related factor in one disadvantaged group with the same indicator in the most advantaged group, e.g., the wealthiest/highest-income group for income disparities, or the dominant racial/ethnic group for racial/ethnic disparities. This approach assumes that the ‘best’ rate is theoretically achievable by all other groups.

5. Health disparities indicators should also be expressed both as relative risk ratios and as absolute risk differences—the absolute number of occurrences of “negative” health problems.

Although many health disparities measurements stop with range measures, Kunst et al. recommend that in order to have a more precise understanding and evidence of the disparities, as well as to be able to measure the social and economic costs of the disparities, more sophisticated methods of measurement are needed. Relative risk ratios compare two contrasting groups, and absolute risk differences measure the absolute difference between the groups. Relative risk ratios are measures of effect that are calculated through statistical regression analysis—often controlling for confounding variables.

6. Relative and absolute risk measures indicate risk at the individual level. In order to indicate the effect of a risk factor upon the community as a whole—which is important for public health policy decisions—population attributable risks (PAR)—also known as population attributable fraction measures (PAF)—need to be estimated. PARs are also needed in order to estimate economic costs related to health disparities.

Epidemiological measures, such as PAR, have direct relevance for public policy and action since these measures focus on differences in proportions in the population—rather than on means and variance that the measures of effect, such as relative risk ratios, supply—and have the ability to separate risk to the population from risk to the individual.

Calculating PAR is a fairly simple statistical method for attributing the proportion of a risk factor or exposure level (e.g., low SES) to another factor such as a health outcome (e.g., cardiovascular disease). In order to calculate PAR, it is necessary to know the relative risk ratio.

Basically, the PAR compares the current situation of ill health with a hypothetical reference situation in which everyone in the disadvantaged group (e.g., lowest-income group) has the same health status as those in the most advantaged group (e.g., highest-income group). The difference between the current and hypothetical situation represents the potential health disparity of a population with low SES, for example. PAR is often used in epidemiology studies that estimate, for example, the proportion
of a disease in the population that can be attributable to smoking or to environmental factors.

Health indicators can be used that show the results of relative risks and the proportion of the total burden of ill health that can be attributed to various factors. For example, PAR can be used as an indicator of the percentage of premature mortality rates that can be associated with low-income disparities, or disparities attributable to specific risk factors such as smoking or physical inactivity.

IV. Standard criteria for indicators, specific Canadian data sources, and examples of health indicators used by Statistics Canada and Canadian Institute for Health Information (CIHI) were reviewed. Major data limitations include:

- Special tabulations of raw data are required in order to access even a minimal level of data that are stratified by income and educational levels.

The Statistics Canada/CIHI data collections include a wealth of health-related data and data needed to indicate SES, such as income adequacy, educational attainment levels, occupational status and other stratification variables. The Canadian Community Health Survey (CCHS) collects all of this information in each survey. However, with very few exceptions, age group and gender are the only breakdowns generally provided.

- Individual-level data on mortality stratified by SES indicators are not available in Canada, since SES information is not collected at the time of death. Therefore, mortality rates by SES can only be produced through ecological measures linking mortality rates to the income quintiles of neighbourhoods of the last place of residence at the time of mortality. Statistics Canada is in the process of developing a new database that will link mortality rates with postal codes, which will facilitate this work.

- CCHS is the only health survey that provides data at the health region level, but health region data are only available for a selection of indicators included in the required component. Many variables in CCHS are included only in an optional component. This component is used every two years as a complement to the required component, and has a range of topics that provinces can elect to include in their survey. Therefore, since all provinces did not choose the same topics, for some key indicators such as the Health Utility Index, it is not possible to provide comprehensive provincial- or regional-level data. This limits the possibilities for comparing health disparities at the local level.

- One of the most important gaps in data availability is that data for Aboriginal peoples are extremely limited. Available data have been not been collected regularly, do not account for major differences between First Nations, Inuit, and Metis peoples, and usually do not include Aboriginal peoples living on reserves—approximately half of
the Aboriginal population.

The most inclusive health data for Aboriginal peoples are available from the First Nations Regional Longitudinal Health Survey (RHS), which surveys First Nations and Inuit peoples living both on and off-reserve. RHS is the only First Nations governed, national health survey in Canada. However, the data cannot be compared with data on non-Aboriginal peoples, which limits their use for health disparities indicators.

- More extensive data analysis is needed to produce quality health disparities indicators that go beyond the description level. Data analysis that would allow comparisons of health determinant or SES data with health outcome data (i.e., identification of relative risk ratios and PARs) has not been done on a routine basis.

V. Finally, the health disparities indicator suggestions were based on recommendations of the PHAC Health Disparities Task Group (HDTG) given in its report titled, Reducing Health Disparities—Roles of the Health Sector: Discussion paper.¹¹

HDTG identified the most prominent factors associated with health disparities in Canada to be: socioeconomic status (e.g., low income, low educational attainment), gender, geographic location, and Aboriginal identity. It reported that a number of non-medical determinants of health underlie these health disparities, and that these determinants lead to the social and economic exclusion of individuals from participation in the life of their communities.

HDTG specifically identified a need for indicators of disparities. It recommended, in part:

- a broad and comprehensive set of indicators—with all indicators broken down by SES group—that would include measures of:
  - the extent of disparities,
  - the causes of disparities,
  - the costs of disparities,
  - the cost-effectiveness of initiatives over time,
  - the impact of health disparities on the economy, community, and individual wellbeing, and
  - the extent to which health sector programs widen or reduce disparities.

- building a disparities perspective and focus into existing health promotion and prevention indicators, such as including a SES breakdown for these indicators; and

• extending the capacities to link health sector data to socio-demographic data and to social and economic indicators.

In sum, in order for the development of health disparities indicators to be feasible, the main recommendations are:

1. To select a manageable list of health disparities indicators from the indicator possibilities, based on potential use and need.

   Headline indicators, which illustrate the more important health disparities indicators, are shown in Tables 1 and 12 of this report, and provide suggestions for a manageable list, but this list may need to be reduced, changed, or expanded.

2. To stratify all of the existing health status and health determinant indicators to be used.

   It is recommended that all indicators should be stratified by SES (e.g., by income and education levels), gender, age group, and place of residence (e.g., urban/ rural, municipality/ province, health regions/ province, province/ country, and/ or country/ international), and that characteristics of disadvantaged groups (e.g., children, lone mothers, seniors, disabled people, Aboriginal peoples, ethnic groups, and immigrants, if possible) should be measured.

3. To start with the simple, descriptive range measures.

   These measures compare the health indicator or health-related factor in the most disadvantaged group (e.g., the group with the lowest income) with the same indicator in the most advantaged group (e.g., the wealthiest/ highest-income group for income disparities, or the dominant racial/ ethnic group for racial/ ethnic disparities)—before attempting a more complex analysis.

4. To identify connections between health determinants and health outcomes through relative risk ratios, absolute differences, and PARs, and to compare these connections between disadvantaged and advantaged groups.

   These more complex analyses are needed to identify causal connections, evaluate the extent to which specific variables contribute to the trends in health disparities, and estimate costs.
EXECUTIVE SUMMARY

1. Introduction

The purpose of this report is to provide the Public Health Agency of Canada (PHAC), and specifically, the Population Health Promotion Expert Group (PHPEG) and the Healthy Living Issue Group (HLIG) of the Pan-Canadian Public Health Network (PHN) with information, analysis and suggestions for a common set of health disparities indicators, and a feasible approach to their implementation in the Canadian context. The objective is to identify indicators that could lead to an agreed upon set of measures that could be used by Federal-Provincial/Territorial (F-P/T) jurisdictions to assess progress in the reduction of health disparities. Specifically, the mandate of the report is to include:

- A comprehensive review of existing Canadian and international data sources to identify indicators of health disparities for which data are available,
- A gap analysis to determine indicators which are desirable and for which data are not being collected, and
- Recommendations for a common set of indicators of health disparities and a feasible approach for their implementation in the Canadian context.

The Public Health Agency of Canada (PHAC) and Health Canada have recognized that one of the largest health problems in Canada is the extent of health disparities between the most and least disadvantaged groups in the population—which is masked by the excellent health status of Canadians overall. Health Ministries at the national and provincial levels have made commitments to reducing these disparities, which as the Health Council of Canada notes, “need to be tracked in a comprehensive and systematic way so that programs and policies can be targeted to reduce the gap.”


Promoting Equity for Vulnerable Populations Initiative Think Tank, held in Ottawa in September 2003, and the Health Disparities Policy Forum consultation, also held in Ottawa in March 2004, which was hosted jointly by CIHR, the Canadian Population Health Initiative (CPHI), Health Canada, and the HDTG.

In the report, HDTG notes that, although Canadians are “among the healthiest people in the world,” health disparities are differentially distributed among specific populations throughout the country. The group notes that health disparities are avoidable and “are inconsistent with Canadian values, threaten the cohesiveness of community and society, challenge the sustainability of the health system, and have an impact on the economy.”

HDTG recommends that improving the health of disadvantaged individuals, populations, and communities is the “most appropriate and effective way to improve overall population health status,” and advises that the health sector and other sectors give priority to reducing health disparities, which includes addressing the determinants of health through intersectorial action. It also points to the experiences of other countries in reducing health disparities, and notes that the approaches in these countries began with documenting the extent of disparities, developing policies, and evaluating interventions. Therefore, as key to advancing policy development, it recommends that the knowledge base in Canada be further developed and expanded.

HDTG identified the most prominent factors associated with health disparity in Canada to be:

- socioeconomic status,
- gender,
- geographic location, and
- Aboriginal identity.

It reported that a number of non-medical determinants of health underlie these health disparities, and that these determinants lead to the social and economic exclusion of individuals from participation in the life of their communities. It notes that socioeconomic status (SES) or position relates to the broad categories of income, education, and occupation, and that low SES results in low self-esteem, an unhealthy physical environment, precarious employment, stress related to working for low wage, and behaviour risks. When low SES concentrates in identifiable groups, the effects—such as ill-health, stigma, and hopelessness—result in social, cultural, and economic exclusion.

HDTG also points out that health disparities are expensive—it attributes at least 20% of total health care spending in Canada to avoidable health disparities. In addition, it notes that, because there is a gradient of health status across the range of SES, reducing health disparities will also improve the health of the entire nation. It recommends that improving the income and other non-medical determinants of the lowest two income quintiles would help reduce health disparities in

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15 Ibid., accessed. p. 25.
16 Ibid., accessed. p. iv.
17 Ibid., accessed. p. v.
the total population, and is key to improving the health of disadvantaged populations.

HDTG specifically identified a need for indicators of disparities. It recommended a broad and comprehensive set of indicators—with all indicators broken down by SES group—that would include measures of:

- the extent of disparities,
- the causes of disparities,
- the costs of disparities,
- the cost-effectiveness of initiatives over time,
- the impact of health disparities on the economy, community, and individual wellbeing, and
- the extent to which health sector programs widen or reduce disparities.

In connection with indicators, HDTG also recommends:

- building a disparities perspective and focus into existing health promotion and prevention indicators, such as including a SES breakdown for these indicators;
- the indicator set include a supporting information framework and a performance framework oriented to reducing disparities;
- the focus should be on both long- and short-term outcomes; and
- the capacities to link health sector data to socio-demographic data and to social and economic indicators should be extended.\(^{18}\)

Peter Tugwell, Canada Research Chair in Health Equity at the University of Ottawa, et al. recently recommended that the measurement of health inequalities should include population groups defined by socioeconomic, demographic, or geographic factors.\(^{19}\) They use the acronym PROGRESS, first presented by Evans and Brown, to summarize these factors: Place of residence (urban/ rural), Race/ ethnicity, Occupation, Gender, Religion, Education, Socioeconomic status, and Social capital/ resources.\(^{20}\)

\(^{18}\) Ibid., accessed.


2. Definitions: health disparities, inequalities, and inequities

The Canada Senate Subcommittee on Population Health of the Standing Senate Committee on Social Affairs, Science, and Technology (hereafter referred to as the “Canada Senate”) notes that “thinking and communicating clearly about population health concepts is essential for policymakers, politicians and the public to improve understanding of population health and take action to reduce health disparities.”

It defines health disparities as follows:

Health disparities or health inequalities represent the variation or differences in health status, resulting from the distribution of the effects of health determinants between and among different population groups. Some disparities in health are attributable to biological variations or free choice and as such, are essentially unavoidable; others result from the external environment and other conditions that, while largely outside the control of the individuals affected, are amenable to mitigation by the implementation of well-crafted public policy.

The Canada Senate explains that terminologies used in Canada to refer to health disparities are different from those used by other countries. For example, Canadians and Americans use the term “health disparities,” and Europeans more often refer to “health inequalities.” However, the Canada Senate’s definition of “health disparities” given above equates health disparities with “health inequalities.”

Throughout this report, the terms that are used by the original author, or organization/country of interest are retained.

Also, the term “equity” is often used in Canada, as in Statistics Canada’s health indicator framework. The World Health Organization (WHO) and other international sources frequently use the term “equity” in reference to avoidable and unjust health disparities. WHO notes that the concept of health equity is the explicit foundation of the work of the WHO Commission on the Social Determinants of Health (CSDH), and defines health equity as:

… the absence of unfair and avoidable or remediable differences in health among population groups defined socially, economically, demographically or geographically. In essence, health inequities are health differences which are: socially produced; systematic

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22 Ibid., accessed. p. 3.
23 Ibid., accessed. p. 3. There was no explanation of the differences in terminology used between countries, or why Canada has chosen to use the terminology it does.
in their distribution across the population; and unfair. Identifying a health difference as inequitable is not an objective description, but necessarily implies an appeal to ethical norms.  

According to U.S. researcher David Kindig:

An important issue here is whether the most commonly used term [in the U.S.], disparity, means just inequality or difference or whether it incorporates the ethical connotation of being unjust or unfair. While some have considered disparity as limited to inequality, others have argued that disparity includes injustice and thus is more equivalent to inequity. … The dimensions of being avoidable or unnecessary have often been added to this concept.

Throughout the literature, researchers often use the terms health disparities/ inequalities/ inequities interchangeably. For example, Nancy Krieger, of the Harvard School of Public Health, remarks:

*Social inequalities (or inequities)* in health refer to health disparities, within and between countries, that are judged to be unfair, unjust, avoidable, and unnecessary (meaning: are neither inevitable nor unremediable) and that systematically burden populations rendered vulnerable by underlying social structures and political, economic, and legal institutions.

In Canada, the term “health determinants” is used, while in Europe they discuss “social determinants of health.” Social determinants of health occur in all areas, including those related to social factors, economic factors, environmental factors, etc. The term “social” as a qualifier to health determinants refers to the fact that the determinants are socially constructed, and as such, can be changed. It does not refer specifically to determinants in the social area. Graham and Kelly remark:

A key feature of the determinants … is that they are themselves socially determined. The labour market and education system which structure access to employment and income are powerfully influenced by the wider society. So, too, are the inequalities associated with socioeconomic position, gender, ethnicity and sexuality. National policies, regional strategies and services at local and community level also act directly on the environment to which we are exposed, the habits we develop, and the healthcare system to which we turn in times of need. This suggests that the scope for policy intervention is

\begin{footnotesize}
\begin{enumerate}
\item Ibid., accessed. p. 7.
\item The term “social determinants” refers to the concept that factors that determine health are socially constructed and as such, can be changed, rather than to determinants being those in social areas alone. Determinants of health can be social, economic, environmental, etc.
\end{enumerate}
\end{footnotesize}
In addition, the term “social exclusion” is often used as a summary concept for a wide-array of consequences and impacts of health disparities. A Health Canada report on a conference held at York University entitled “Social Determinants of Health Across the Life-Span,” defined social exclusion as follows:

Social exclusion describes the structures and dynamic processes of inequality among groups in society. In the Canadian context, social exclusion refers to the inability of certain groups or individuals to participate fully in Canadian life due to structural inequalities in access to social, economic, political and cultural resources. These inequalities arise out of oppression related to race, class, gender, disability, sexual orientation, immigrant status and religion.

**Distinction between health determinant/ health status indicators and health disparities indicators**

Finally, as noted by U.K. researchers Hilary Graham and Michael Kelly, it is important to understand that there is a distinction between health determinant or health status indicators and health disparities indicators. Health determinant indicators indicate the overall level of the determinant in the population, e.g., the proportion of the population who are smokers, or who are unemployed. However, Graham and Kelly point out that “positive trends in health determinants can go hand-in-hand with widening inequalities in their social distribution.”

Therefore, the distinction between health determinant/ health status indicators and health disparities indicators is that the latter must indicate the unequal distribution of the health determinant/ health status in the population, e.g. the proportion of the low-income population who are smokers, compared with the proportion of the high-income population who are smokers, or the proportion of Aboriginal peoples who are smokers, compared with the proportion of smokers in the general population.

They also note that this distinction has implications for policy objectives:

- Objectives for health determinants are likely to focus on reducing overall exposure to health-damaging factors along the causal pathway, e.g., to raise educational standards and living standards and to reduce rates of smoking.

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32 Ibid., accessed.
Objectives for health inequality determinants are likely to focus on leveling up the distribution of major health determinants, e.g., if the goal is to narrow the health gap, the key policies will be those which bring standards of living and diet, housing and local services in the poorest groups closer to those enjoyed by the majority of the population. If the health inequalities goal is to reduce the wider socioeconomic gradient in health, the primary policy objective will be to lift the level of health determinants across society towards the levels in the highest socioeconomic group.33

3. Health disparities framework

In order to develop indicators, it is important to have a conceptual framework that structures the indicators and helps clarify connections between the various elements that are important to measure.34 Two frameworks that have been developed by the World Health Organization Commission on Social Determinants of Health (CSDH) are used in this report. The first is from a recent publication from CSDH, A Conceptual Framework for Action on the Social Determinants of Health, which is particularly inclusive, and shows the broad conceptual framework that CSDH uses to put health equities into a socioeconomic and political context.35 It outlines the connections between contextual factors, health determinants, and the impact on health equity/inequity. This framework is discussed more fully in Section 3.1, and a diagram is reproduced in Figure 2 of that Section.

The second framework is a simplified and more workable version of the first. This basic schematic framework, which is shown in Figure 1 below, is comprehensive, inclusive, clear, easy to understand, and useful as an indicator framework.36 It is used in this report to organize both the suggested health disparities indicators (included at the end of this summary in Table 1 and in Section 10.5, Table 12) and the Compendium of Health Disparities Indicators (located in the Appendices.)

The framework has three dimensions of activities—intervention, analysis, and measurement—and five levels that move from the societal level, to the individual level, and back to the societal level. Each of the five levels also represent points where interventions to reduce disparities might be beneficial, and areas that are important to measure. In the diagram below, the small circles with crosses indicate the different levels of measurement and the large circle represents an overall measure (if one is desired).

The five levels start with socioeconomic context and position (society level), and continue to

33 Ibid., accessed.
differential exposures in the social and physical environment (i.e., risk factors and other health determinants), to differential vulnerability of population groups (i.e., groups with low socioeconomic positions), to differential individual health outcomes, and finally to differential consequences or impacts, which lead back to the society level. It also integrates socioeconomic contexts and positions with health determinants in the social and physical environment, with the population groups that are affected, and finally connects the outcomes with health, and individual and societal impacts. Therefore, the framework includes the most important dimensions in a health disparity indicator system.

Figure 1. Simplified schematic framework for developing health disparities indicators

CSDH describes the levels as follows:

- **Socio-economic context and position (Society).** Social position exerts a powerful influence on the type, magnitude and distribution of health in societies. The different levels of power and resources generate stratifications and are reflected in institutional, legal arrangements as well as in political and market forces. While social stratification is often seen as the responsibility of other policy sectors and not central to the health sector per se, addressing stratification is critical to decrease the impact on health and health equity. Factors defining positions include: development, economic, trade, labour market, education, and family welfare policies, which can be reviewed in the context of each public health condition. These factors constitute the global, national and sub-national contexts for health.

- **Differential exposure (Social and physical environment).** Exposure to almost all risk factors (material, psychosocial and behavioural) is inversely related to social position. Many health programmes do not differentiate exposure or risk reduction strategies according to social position. However, if analysis was done for each socio-economic group, it would become clear which risk factors were important to which group and whether these were different from those important to the overall population. Understanding these causes behind the causes are important for developing appropriate equity-oriented strategies for health. There is increasing evidence of differential exposures of people in disadvantaged positions, e.g., with respect to natural or man-made crises, unhealthy housing, dangerous working conditions, food availability and quality, barriers to adopting healthy behaviours, etc.

- **Differential vulnerability (Population group).** The same level of exposure may have different effects on different socio-economic groups, depending on their social, cultural and economic environments and cumulative life-course factors. Clustering of risk factors such as social exclusion, low income, alcohol abuse, cramped housing and poor access to health services may be as important as the individual exposure itself. Further, co-existence of other health problems, such as, e.g., co-infections, often augment vulnerability. The evidence base on the synergetic effects of reinforcing factors is still limited. However, they are known to exist for low-income populations and marginalized groups and when attempting to reduce or eliminate them the key issue is to identify appropriate entry points for breaking the vicious circles.

- **Differential health outcome (Individual).** Equity in health implies that ideally everyone attain their full health potential regardless of their social position or other socially determined circumstances. The outcome should be the reduction of all systematic differences in health between different socioeconomic groups in a way that levels everyone up to the health of the most advantaged. The effects of the three framework levels above may be further aggravated by treatment and care responses by the health services, which are not appropriate for certain population groups or disadvantaged people.
• **Differential consequences of ill-health (Individual level leading back to societal level).** Poor health may have several social and economic consequences, including loss of earnings, loss of ability to work, social isolation or exclusion. Further, sick people often face additional financial burdens to pay for health care and drugs. While advantaged population groups are better protected, e.g., in terms of job security, health insurance—for the disadvantaged, ill-health might result in further socioeconomic degradation, accelerating a downwards spiral that further damages health.\(^3\)

The CSDH presents the final level in terms of the impacts on individual health, but these impacts can accumulate in societies and lead to aggregate societal conditions that have impacts on productivity, crime, urban–rural disparities, and other societal factors. In this way, a downward spiral develops that reinforces socioeconomic health disparities, and forms a feedback loop back to level 1 of the framework.

### 4. Review of international health disparities indicators

In this report, the identification of health disparities indicators was approached through several steps, with the first being a review of health disparities indicators used internationally. The review is discussed more fully in Section 4 of this report. Basically, the use of health disparities indicators was reviewed in 10 European countries, the United States, New Zealand, and Australia. Five of the countries had fairly comprehensive systems, but only England, Sweden, and New Zealand had indicator systems sufficiently developed to serve as potential models.

In addition, international systems used in the European Union and the Organisation for Economic Co-operation and Development (OECD) were reviewed, as was recent work that has been produced by WHO. The OECD social indicator set was the most comprehensive of the indicator sets. \(^3\)

OECD identifies a number of indicators as having a specific equity focus, but over 50 of the general social indicators compare groups by socioeconomic status, and, therefore, actually are health disparities indicators. The OECD indicators have the advantage of being internationally comparable, and having available data.

The indicators used by OECD, the EU, England, Sweden, and New Zealand have been collected into a “Compendium of Health Disparities Indicators” that is over 50 pages in length, and can be found in the Appendices attached to this report as a separate document. The Compendium lists the indicators used and provides a checklist so that the indicator systems can be compared. It also includes a column that shows indicators used to develop Indices of Deprivation in the U.K., New Zealand, Australia, and Quebec. Finally, the indicators for which raw data are available in Canada, data gaps, and recommendations are also identified.

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Most developed countries include the reduction of health disparity among their populations as an important public health goal. Some countries, such as England and Sweden have well-developed policies, while others are in the initial stages of developing their approach. However, while there are many differences between the countries, there are also many similarities. For example, the Nordic countries, and especially Sweden, have focused on social inequalities in health for the last two decades, and, in both England and Sweden, reducing social determinants of health inequalities is the overarching policy goal that informs all governmental departments.39

A few countries are especially concerned with specific disadvantaged populations such as New Zealand, Australia, Norway, Ireland, and the United States. These countries have relatively large Aboriginal and ethnic populations—Maori and Pacific people in New Zealand, Aboriginal peoples in Australia, Sami in Norway, and Travellers, or Pavees, in Ireland. The United States routinely compares health disparities across people with low incomes, disabled people, and ethnic groups—African Americans, Hispanics, Asians, American Indians, and Europeans.

Most countries measure health disparities by comparing the health of individuals in the lowest-income group with the health of individuals in the highest-income group. However, some countries, such as the Nordic and United Kingdom countries, focus on measuring health disparities between specific geographic regions. All of the countries report gender disparities in health, income, and other areas. Generally, disparities are stratified by socioeconomic position as measured by income, educational attainment, or social class/occupation in the case of the United Kingdom, and by geographic location, gender, ethnic status, and age group.

Also, countries are beginning to broaden poverty measures in their indicator systems to include health determinants, such as housing and homelessness, the environment, and food insecurity. However, health determinant indicators usually measure the determinant itself, without connecting it with health, per se, and without measuring health determinant disparities. These health determinant indicators are more often found in the social inclusion/exclusion literature, which is somewhat more developed than the health disparities literature. Although it was beyond the scope of this report to comprehensively review the social exclusion literature, a few initiatives from this field, such as indicators included in the New Zealand Social Report, which were designed to complement the disparity indicators, are included.40

WHO recently reviewed public health approaches and policies related to health inequalities in 13 developed countries, which is reported in Closing the Health Inequalities Gap: An International Perspective.41 Ian Crombie, et al., the authors of the report, found that all public health policies

in the countries reviewed had overarching goals to reduce inequalities in health.\textsuperscript{42} They noted that many of the countries focus on socioeconomic differences in the health of children, and use indicators in areas such as antenatal health, smoking during pregnancy, low birth weight, breastfeeding, infant mortality, dental health, accidents, and physical activity levels. Child poverty is also highlighted with indicators on the proportion of children living in low income or jobless households. For youth, socioeconomic inequalities in teenage pregnancy rates, accident rates, smoking, alcohol and drug use, and attempted suicides are common.

For adults, disparities in health behaviours are routine indicators, such as indicators concerned with smoking, consumption of fruit and vegetables, levels of obesity, physical inactivity and alcohol use. Also common are indicators of disparities in self-reported health status, disability prevalence, mental health, mortality from major diseases such as cardiovascular disease and cancer, and morbidity from diabetes, hypertension, and breast and cervical cancer. Crombie, et al. note that other common indicators include:

> unemployment rates among specific groups; literacy and educational opportunities; accident mortality and road traffic casualties; accessibility to buildings by people with disabilities; and participation in drug rehabilitation programmes. Among older people, while all countries use mortality rates from chronic disease, New Zealand and England also include uptake of influenza vaccination and the proportion of older people living independently. More general indicators include housing quality, fuel poverty, air quality in cities and burglary rates. Finally, there are several indicators of access to health care services for all people, particularly primary care and child health services.\textsuperscript{43}

The authors also note that socioeconomic and environmental indicators are mainly found in social inclusion initiatives, which have developed indicators that cover a range of topics such as unemployment, literacy, fuel poverty, and environmental measures such as housing quality, air quality, and crime rates. They also note that England, Sweden, and Northern Ireland describe these topics in their public health policy documents.

A few highlights of the health disparities indicator systems used in the EU, England, Sweden, New Zealand, Australia, and the United States, and described in Section 4 of this report, are noted below.

**European Union – “Laeken” or “Common” indicators**

In Europe, health inequalities are included in initiatives to indicate and reduce social exclusion, and to increase social cohesion. Social indicators specifically focused on poverty and social

\textsuperscript{42} The countries reviewed were Australia, Canada, Denmark, England, Finland, Ireland, New Zealand, Northern Ireland, Norway, Scotland, Sweden, United States, and Wales.

\textsuperscript{43} Crombie, Irvine, Elliott, and Wallace. *Closing the Health Inequalities Gap: An International Perspective*, accessed. p. 34.
inclusion/exclusion have been adopted at the EU level. The Social Inclusion Process in Europe led to the 2001 European Council high-level conference, held at Laeken Castle in Brussels, and the adoption of 18 social inclusion outcome indicators, which are referred to as “Laeken indicators,” or “Common indicators.”

The development of Laeken indicators, according to a Luxembourg Income Study report, was strongly influenced by the work of Sir Anthony Atkinson, et al. in the U.K., who subsequently released *Social Indicators: The EU and Social Inclusion*. The indicators measure social inclusion gaps within four basic thematic areas—income, employment, education, and health, and have the objectives of facilitating participation in employment and access by all to resources, rights, goods and services; preventing the risk of exclusion; helping the most vulnerable; and mobilizing all relevant parties. The indicators, which now number 21, are calculated and regularly updated by Eurostat, with data from EU Statistics on Income and Living Conditions (EU–SILC), and are present on the Eurostat website. These indicators are included in the “Compendium of Health Disparities Indicators” in the Appendices of this report.

**England**

The 2008 Canada Senate review of international population health policies notes that England “is the first, if not only, country with a whole-of-government policy to reducing health disparities and improving overall population health.” All government departments are required to conduct a health impact assessment—taking health impacts and health inequalities into account—when formulating new policy proposals, and are given extra resources if they meet agreed goals or

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targets. As Sir Michael Marmot, a leading U.K. health inequalities researcher who is also chair of the CSDH, notes:

The level of information to monitor health, inequalities in health, and their determinants is high in this country… Having high-quality information is essential to monitoring progress in this area. This country has been at the forefront in documenting health inequalities, in analyzing the causes of the problem, determining what can be done, putting policies in place and now monitoring progress.

England has systems for monitoring health inequalities at the national and local levels. At the national level, indicators include two overarching Public Serve Agreement (PSA) target indicators and 12 national headline indicators. It has also produced a “basket” of 70 indicators for use at the local level, from which communities can choose to indicate their particular needs. These indicators are described in Section 4.3.1 of this report, and are also included in the Compendium of Health Disparities Indicators in the Appendices.

Sweden

The Canada Senate report refers to the Swedish health system as a “comprehensive, ‘whole-of-government’ approach to population health. Its population health policy is enshrined in legislation.” Adopted in 2003, the Public Health Objectives Act establishes a national comprehensive population health policy, and commits Sweden to health equality among its population, irrespective of gender, class, sexual orientation, ethnic background or disability. The Canada Senate report notes that the Act is “Sweden’s first formal population health policy statement and one of the world’s first explicit strategies employing a determinants of health approach.” The Act includes improving public health as a policy goal of all government departments, and emphasizes that a gender and class perspective should be incorporated into all

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The public health policy objectives are organized into 11 domains that represent structural determinants and lifestyle determinants. Sweden has prioritized 42 “proposals for action” that are based on these determinant domains. Developments within these domains are measured using 83 indicators—36 principle indicators and 47 sub-indicators—which form the Basic Public Health Statistics for Local Authorities (BPHS) system. These indicators are also included in the Appendices Compendium. Generally, the statistics are:

- disaggregated by age group, gender, type of family, socioeconomic group, geographical level, and ethnicity where possible,
- able to compare municipalities with Sweden’s counties and Sweden as a whole,
- presented in different ways—most often as a percentage, but sometimes as a number per 1,000, 10,000, or 100,000, and
- not age-standardized in order not to bias the statistics (therefore caution is recommended if the area has a high/low population of a particular age group, e.g., seniors); age-standardized data for causes of death are being incorporated into the database.

Sweden has developed a “Gender Equality Index,” or EqualX, which it uses as an indicator. This indicator is a summary measure that is a weighted sum based on 13 variables, for which individual data can be seen on the Swedish National Institute of Public Health (SNIPH) website. This index compares regions, which are ranked by the size of the difference of rates for each variable between men and women. The index score is the average of these rates.

Statistics and data for the Swedish indicators can be accessed on an interactive Internet portal in three forms—fact sheets, databases, and interactive maps, which are all in Swedish (with a few examples in English). Statistics are presented for Sweden’s 290 municipalities and three largest cities, 21 counties, and the nation as a whole. The statistics are intended to help municipalities and others monitor public health in their areas, and are updated once a year. In addition, SNIPH is required to publish an extensive report on trends for these indicators every four years. The first report, *The 2005 Public Health Policy Report*, was released in 2005, but only a summary is available in English. It provides an overview of the indicators and lists the 42 proposals in connection with the domains.

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New Zealand

Adopted in 2000, the New Zealand Health Strategy explicitly addresses reducing health disparities between population groups, with special attention given to the Māori and Pacific peoples, and other low-income groups. The whole-of-government strategy has 10 goals: a healthy social environment; reducing inequalities in health status; Māori development in health; a healthy physical environment; healthy communities, families, and individuals; healthy lifestyles; better mental health; better physical health; injury prevention; and accessible and appropriate health care.

As noted by the Canada Senate report, New Zealand has a well-documented system of health indicators, which includes indicators of health inequalities. The Director-General of Health and Minister of Health, the Minister of Disability Issues, and the Minister of Social Development all present annual reports to Parliament on the New Zealand Health Strategy, the New Zealand Disability Strategy, and the Social Report, respectively. In 2006-2007, 41 government departments and agencies participated in these reports. In part, these reports use indicators recommended by the New Zealand Ministry of Health in two major reports—*Indicators of Inequality: Classification and Selection of Ethnic Health Disparity Indicators*, and *Monitoring Inequalities in Health*. These reports are described in some detail in Section 4.3.3 of this review. All of the indicators are disaggregated by age group, socioeconomic position (income, employment, and education), ethnic identity, geographic region (place of residence), and gender.

The Ministry of Health annual health monitoring report—the latest being *An Indication of New Zealanders Health 2007*—uses 71 indicators that include indicators of demographic and socioeconomic factors (i.e., low income, education, unemployment, household crowding, not living in own home, no access to telephone and internet, and no access to motor vehicle), health outcomes, and risk factors that are broken down by ethnic groups (Maori, Pacific, Asian, and European/Other), gender, and age group. Rate ratios for the indicators are given for small geographic areas (District Health Board regions) compared with New Zealand as a whole.

Data are not available for all of the health inequalities indicators that the Ministry of Health has recommended. For example, because of data availability, all-cause and specific-cause mortality indicators are used more often than morbidity indicators to report ethnic and socioeconomic

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63 Ibid., accessed.
health disparities. Data used are from the New Zealand Census–Mortality Study—funded by the Ministry of Health—which links mortality and census records for three years following each census since 1981.

The New Zealand Census–Mortality Study links mortality and census data to analyze inequalities in mortality rates on both absolute and relative scales (i.e., absolute rate differences and rate ratios) for ethnic inequalities in mortality, and regression-based measures (i.e., Slope Index of Inequality and Relative Index of Inequality) for socioeconomic inequalities in mortality. Socioeconomic status is these reports is indicated by equivalized household income. Socioeconomic inequalities are also calculated based on education, automobile access, housing tenure, neighbourhood deprivation, labour force status, and occupational class. Mortality rates in these reports are calculated by age group (ages 1 – 74) and gender for four ethnic groups (Maori, Pacific, Asian, and European/ Other), and by either three (terciles) or five income groups (quintiles).

As previously noted, the Ministry of Social Development produces an annual Social Report that presents a series of indicators of social and economic wellbeing. Since both this report and the annual health report include indicators of health inequalities, they are complementary. The Canada Senate report notes that the indicators used are relevant to population health. A selection of these indicators and those from the Ministry of Health are included in the Compendium found in the Appendices of this report.

Australia

According to the Canada Senate report, Australia does not have a national population health policy concerning health disparities. However, mainly through the work of the Australian Research Program on Health Inequalities, it is concentrating on developing a strong evidence base of collaborative research on health inequalities and building comprehensive social health databases. For example, Gavin Turrell, et al. recently produced an extensive report describing health inequalities in Australia by area-level socioeconomic disadvantage, income, education, occupation, and gender and age for a large number of morbidity, health behaviour, social determinant of health risk factor, and health service use indicators, using data from Australian

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70 Ibid., accessed. Australia has seven priority areas, which account for almost 80% of the burden of disease—cancer control, cardiovascular health, injury prevention and control, mental health, diabetes, asthma, and arthritis and musculoskeletal conditions.
71 Ibid., accessed. Australia has seven priority areas, which account for almost 80% of the burden of disease—cancer control, cardiovascular health, injury prevention and control, mental health, diabetes, asthma, and arthritis and musculoskeletal conditions.
Bureau of Statistics (ABS) national health surveys.\textsuperscript{72}

Turrell, et al. use an area-based measure of socioeconomic disadvantage called the Index of Relative Socioeconomic Disadvantage (IRSD), which is one of several Socioeconomic Indexes for Areas (SEIFA) developed by the ABS using population census data.\textsuperscript{73, 74} The widely-used IRSD is compiled at the ‘collector’s district’ (CD) level that comprises approximately 250 dwellings in urban areas, and fewer dwellings in rural areas. Survey respondents can be classified into quintiles of socioeconomic disadvantage according to the value of the IRSD for their CD of residence, with quintile 1 being the least disadvantaged, and quintile 5 being the most disadvantaged. Weighted variables used to construct the index are shown in Table 1 of the Appendices.

Australia has also developed a series of interactive “social health atlases” that are designed to highlight the relationships between socioeconomic inequalities indicators and inequalities in health status.\textsuperscript{75, 76} Using online, interactive maps, the public is able to view small-area, geographic distributions of the population for a range health indicators (some of which are listed in footnote 62 below). These can be displayed by socioeconomic status and geographic area quintiles of socioeconomic disadvantage.

United States

According to the Canadian Health Disparities Task Group (HDTG), the United States dialogue focuses mainly on access to health care, the consequences of inadequate health insurance, and the responsiveness to health care needs of racial and ethnic groups.\textsuperscript{77, 78} The U.S. produces a...
number of regular reports on health disparities. For example, the Agency for Healthcare Research and Quality (AHRQ) is required by federal law to annually publish a National Healthcare Disparities Report, which summarizes access to health care and health care quality among “priority populations”—racial and ethnic minorities, low-income groups, women, children, elderly, residents of rural areas, and the disabled. However, the report does not consider broader determinants of health.

A number of “chartbooks,” that report health status, health care utilization, and a limited number of risk factors (e.g., smoking) by socioeconomic status, and some by racial and ethnic status, have also been produced. The U.S. National Institutes of Health have produced a recent book, Examining the Health Disparities Research Plan of the National Institutes of Health: Unfinished Business, which provides extensive information on conceptual and methodological issues involved in defining and measuring health disparities and is available online.

In 2000, the U.S. launched the Healthy People 2010 initiative, which defines “eliminating health disparities” as one of two goals—the other being “to increase the quality and years of healthy life.” Prior to the launch, a U.S. Department of Health and Human Services working group reported on possibilities for choosing health indicators to reflect progress toward the goals. In 2002, John Aberle-Grasse of the National Center for Health Statistics reported that no method
for measuring health disparity had been specified, but that a working group had been established to recommend methodologies.\textsuperscript{86} Apparently by 2006, these methodologies had not been established. According to Nancy Adler of the University of California, writing in 2006:

> One important role for NIH-funded research in this domain is to develop the best measures and approaches for assessing and monitoring disparities for public health monitoring activities, as well as ongoing surveys. This requires research on: what needs to be monitored (e.g., socioeconomic factors, gender, race/ethnicity, and area of residence), how these can best be measured (e.g., meaningful measures of SES for specific populations, diseases, and questions), and which factors are most critical to monitor (e.g., the importance of measuring race/ethnicity and SES together). Such data will, in turn, be an important source for research on disparities.\textsuperscript{87}

However, in 2007, Kenneth Keppel of the U.S. National Center for Health Statistics reported that progress toward the goal of eliminating health disparities among subgroups of the U.S. population is now being evaluated for 498 population-based objectives, each of which is monitored by a specific health indicator.\textsuperscript{88} He notes that “the Healthy People 2010 database (http://wonder.cdc.gov/DATA2010) represents a unique compilation of information about racial and ethnic disparities for an extensive array of indicators,” which provide “race- and ethnicity-specific data for indicators representing a very broad array of outcomes, behaviors, risk factors, and health services.”\textsuperscript{89}

Keppel also notes that race- and ethnicity-specific data are routinely published for most of the indicators, which are based on the characteristics of persons in the population. The population groups include: American Indian or Alaska Native; Asian or Pacific Islander (broken down by native Hawaiian and other Pacific Islander);\textsuperscript{90} Hispanic or Latino; Black or African American non-Hispanic; and White non-Hispanic. The National Health Interview Survey collects data for these groups—along with data on gender, age, education level, family income level, geographic location (urban/rural), disability status, health insurance status, and sexual orientation.\textsuperscript{91} The Healthy People 2010 data are not available for all of the racial/ethnic groups for all indicators. In particular, data for native Hawaiian and other Pacific Islander groups, and for those who identify with two or more groups, are limited and not reported.


\textsuperscript{89} Ibid. p. 97.

\textsuperscript{90} There are plans to separate this category so that data for Asians will be reported separately.

\textsuperscript{91} Aberle-Grasse. "Measuring Disparity in Health Indicators - Healthy People 2010's 2nd Goal."
Relative disparities are measured as ratios/percent of deviation between the group with the best rate and the rate among the groups associated with the characteristic that is being measured. Keppel notes, however, that using only a relative perspective—and not including an absolute perspective as well—masks the size of the absolute difference between groups and the size of the public health impact.\(^{92}\) Because of the large number of indicators (498) and the fact that they are all measured by socioeconomic/ethnic disparity status, they are not listed in the Compendium of health disparities indicators in the Appendices.

### 5. Canadian evidence of health disparities

The second step in the approach to identifying potential indicators was to examine some of the evidence from Canadian research for the connections between disadvantaged groups (i.e., children, lone mothers, and Aboriginal peoples living in poverty), socioeconomic status (with a focus on income), and the consequences in regards to health outcomes. Section 5 briefly reviews this evidence for the above-mentioned three groups, and for selected health determinants, behavioural risk factors for chronic disease, and physical and mental health.

There is compelling evidence that disparities affect health outcomes for almost every health indicator. For example, low income is negatively related to self-reported physical and mental health, mortality and morbidity rates associated with major chronic diseases, avoidable injury, behaviour risk factors (e.g., tobacco use, poor diet, and physical inactivity) and health care access and use.\(^{93}\) In addition, health determinants such as education, employment and working conditions, food and housing security, and the physical environment, to name a few, are also associated with health disparities. According to Katherine Frolich, et al. who summarized some of the main health disparities in Canada, especially in relation to Aboriginal status, income, and place, the main disparities can be seen in rates of life expectancy at birth, infant mortality, diabetes, lung cancer, and infectious diseases.\(^{94}\) Other researchers have identified obesity, potential years of life lost due to unintentional injuries, asthma, chronic disease and mortality connected with tobacco use, and suicide rates as showing the most disparities between groups.

A few indicators do not show the same pattern, and rates either show no differences between socioeconomic groups, or are actually higher in the higher socioeconomic groups. For example, disparities in family violence rates between high and low socioeconomic groups have been found to be negligible. There is inconclusive evidence for socioeconomic disparities in relation to victims or perpetrators of crime, and for alcohol and illicit drug use and misuse. Rates of cannabis use, motor vehicle collisions, and breast cancer are actually higher in the highest socioeconomic group. Rates of obesity for males are also highest in the highest socioeconomic group.

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\(^{92}\) Keppel. "Ten Largest Racial and Ethnic Health Disparities in the United States Based on Healthy People 2010 Objectives ".


6. Guidelines and methodologies for monitoring health disparities

Understanding basic epidemiological methods is important for understanding the range of data needed to estimate health disparities. Section 6 of this report discusses these methodologies and guidelines for monitoring health disparities—mainly as recommended by Dutch researchers Anton Kunst, Vivian Bos, and Johan Mackenbach. Kunst et al. suggest that estimates should be easy to calculate, interpret, and communicate. They recommend that simple range measures—which use socioeconomic status indicators such as income and educational attainment—should be used to identify disparities between the lowest and highest socioeconomic groups. Range measures are fairly easy to calculate and understand. Specifically, range measures typically compare a health indicator or health-related factor in the most disadvantaged group, e.g., the lowest-income group or the racial/ethnic group, with the same indicator in the most advantaged group, e.g., the wealthiest/highest-income group for income disparities, or the dominant racial/ethnic group for racial/ethnic disparities. This approach assumes that the ‘best’ rate is theoretically achievable by all other groups.

In addition, Kunst, et al. suggest that health disparities indicators should be expressed as both relative rates as well as the absolute number of occurrences of “negative” health problems. Rate ratios compare two contrasting groups, and rate differences measure the absolute difference between the groups. Kunst, et al. also recommend using a simple summary measure, such as the Population Attributable Risk (PAR) measure, to indicate the strength of associations between the prevalence, or risk factor such as a health determinant, with a health outcome. This approach is also referred to as the Population Attributable Fraction (PAF) measure.

Rate ratios, or relative risk ratios, are calculated through statistical regression analysis, and indicate the degree of risk at the individual level. In order to indicate the effect of a risk factor upon the community as a whole—which is important for public health policy decisions—population attributable risks (PAR) need to be estimated. According to U.S. researchers Keith Scott, et al., epidemiological measures, such as PAR, have direct relevance to public policy and action since these measures focus on differences in proportions in the population—rather than the on means and variance that the measures of effect supply—and have the ability to separate risk to the population from risk to the individual.


Ibid.
Basically, the PAR compares the current situation of ill health with a hypothetical reference situation in which everyone in the population would have the same health status as those with a high SES, for example. The difference between the current and hypothetical situation represents the potential health disparity of a population with low SES.\textsuperscript{100} PAR is often used in epidemiology studies that estimate, for example, the proportion of a disease that can be attributable to smoking or to environmental factors. Calculating PAR is a fairly simple statistical method for attributing the proportion of a risk factor or exposure level (e.g., cardiovascular disease) to another factor such as a health determinant (e.g., poverty). However, in order to calculate PAR, it is necessary to know the relative risk ratio.

Health indicators can be used that show the results of relative risks and the proportion of the total burden of ill health that can be attributed to various factors. For example, as noted, PAR can be used as an indicator of the percentage of premature mortality rates that can be associated with low-income or specific risk factors such as smoking or obesity.

### 7. Criteria for health disparities indicator selection

In this report, the indicators suggested for use as health disparities indicators are based on their use in other countries, recommendations given by the PHAC–HDTG, the reviewed evidence for health disparities, and the standard international model for indicator criteria. Among these criteria, which are discussed more fully in Section 7, are that indicators should capture the essence of the problem, have a clear and accepted normative interpretation, be valid and reliable, and use data that are available or which are feasible to develop.\textsuperscript{101}

Kunst, et al. recommend that health disparity indicators should be presented:

- according to at least 2 of the 3 core socioeconomic indicators (education, income and/or occupational class),
- for men and women, and for all relevant age groups, and
- for different disadvantaged groups.\textsuperscript{102}

In Canada, the indicators also need to be presented on a regional (if possible), provincial, territorial, and national level, and for at least three years in order to determine trends.


8. Data sources and needs

Section 8 of this report reviews key Canadian sources for data needed to fulfill the above recommendations. Statistic Canada has an extensive collection of valid and reliable data that come from Vital Birth and Death Statistics, and surveys such as the Canadian Census, the Canadian Community Health Survey (CCHS), the longitudinal National Population Health Survey (NPHS), and the National Longitudinal Survey of Children and Youth (NLSCY). These databases are available to PHAC, Health Canada, and provincial ministries of health, with the permission of survey respondents—which is about 95% of respondents—through Statistics Canada’s “Share files.” The Share files are weighted so that they produce comparable results to the Master files. Qualified researchers can access many of the data through the Public Use Microdata Files (PUMFs) through universities or Statistics Canada Regional Data Centres.

The Statistics Canada data collection includes the data needed to indicate socioeconomic status, such as income adequacy, educational attainment levels, occupational status and other stratification variables. CCHS collects all of this information in each survey. However, with very few exceptions, age group and gender are the only breakdowns publicly provided. Therefore, special tabulations are required in order to access even a minimal level of data that are stratified by income and educational levels.

In addition, one of the limitations of the CCHS is that many variables are included in an optional component. This component is used every two years as a complement to the required component, and has a range of topics that provinces can elect to include in their survey. Therefore, since all provinces did not choose the same topics, for some key indicators such as the Health Utility Index, it is not possible to provide comprehensive provincial-level data.

9. Examples of Statistic Canada indicators

Section 9 of this report provides examples of the more than 80 health indicators jointly produced by Statistics Canada and the Canadian Institute for Health Information (CIHI). The indicators are organized by Statistics Canada into four categories: health status, non-medical determinants of health, health system performance, and community and health system characteristics. Although there are indicators of health determinants, these are not indicators of health determinant disparities.

In 2006, Statistics Canada/CIHI produced two indicators stratified by income. These were “Health adjusted life expectancy, at birth and at age 65, by sex and income group, Canada and provinces, occasional (years), 2001”—HALE—and “Life-expectancy, by sex and income group, Canada and provinces, occasional (years), 2001.”

However, the indicators have only been produced for 2001, and, therefore, do not meet the criteria that indicators need to be able to express trends in disparities. An ecological approach was taken in developing these indicators, which used mortality data linked to postal codes and enumeration areas in order to express small-area level disparities.

The most important gap in data availability is that data for Aboriginal peoples are extremely limited. Research has found severe Aboriginal health disparities in indicators of education, income, and housing, which are associated with other health determinants such as tobacco and alcohol use, and with rates of life expectancy, mortality, infant mortality, diabetes, accidental injury, infectious diseases such as HIV/AIDS and tuberculosis, and suicides. However, these data have not been collected regularly, do not account for major differences between First Nations, Inuit, and Metis peoples, and usually do not include Aboriginal peoples living on reserves—approximately half of the Indigenous population. Indian and Northern Affairs Canada and Health Canada are currently working with Aboriginal communities to remedy this problem. Janet Smylie and Marcia Anderson discuss these limitations more fully in an article recently published in the *Canadian Medical Association Journal*, titled “Understanding the Health of Indigenous peoples in Canada: Key methodological and conceptual challenges.”

In addition, in order to produce quality health disparities indicators that go beyond the description levels that range measures provide, more extensive data analysis is needed. In Canada, data analysis that would allow comparisons of health determinant or SES data with health outcome data has not been done on a routine basis. For example, relative risk ratios and population attributable fractions are needed in order to understand the proportion of health outcomes in the populace that can be attributable to health determinant disparities (e.g., low-education levels, low-income, ethnic status, food insecurity, etc.). These measures are generally not widely available, although the analysis has been done fairly recently for some health determinants such as smoking, substance abuse, and the environment and health. In 2002,
Russell Wilkins, et al, of Statistics Canada, used this methodology with 1997 data to associate urban-area income quintiles with many causes of mortality.\textsuperscript{111}

10. Conclusion and indicator suggestions

The final mandate for this report was to provide recommendations for a common set of indicators of health disparities. A list of suggested health disparity indicators that could be useful in the Canadian context is provided in Table 1 below and repeated in Table 12 in Section 10.5. In part, the list is based on the reviewed evidence, as well as the indicator comparisons in the Compendium that is included in the Appendices of this report. It contains indicators that are the most commonly used internationally, and, thus could provide a foundation for comparison.

The suggested common indicator list is representative of major health disparities in Canada, and is fairly comprehensive. A smaller number of possible headline indicators are also highlighted. The data that are available for indicators included in the list mainly come from key Statistics Canada data sources, such as the Census, CCHS, and NLSCY. They all have the stratification limitations discussed above, and, as noted, special tabulations would be needed to access the necessary data. Known data gaps are also noted in the Table. More detailed descriptions for many of the indicators can be found in the Appendices.

Also, it is important to note that each indicator should show the range between the highest and lowest groups—either by SES or educational attainment—although this is not always specified in the indicator description. All of the indicators could be used to estimate disparities for major subgroups, including all age groups across the life course—with the data limitations, especially for Aboriginal people, noted above.

The indicators do not include estimates of health disparities across the socioeconomic gradient. Although this might be a long-range goal, to date, other countries have not attempted this level of complication.

Therefore, in order to make a collection of health disparities indicators feasible, the main recommendation is to start with the simple, descriptive range measures before attempting the more complex analysis needed to identify causal connections, and eventually the health disparities gradient that shows disparities between each socioeconomic level, from the lowest to the highest.


It is hoped that this report will help in the establishment of a common set of indicators of health disparities in Canada. Unless Canada has a comprehensive surveillance and monitoring system for health disparities, these disparities will remain invisible, but will continue to have a harmful effect on individuals and communities, as well as the nation as a whole.

Addendum

Work on reducing health disparities in Canada is ongoing. Canada has made a commitment to reducing health disparities, has contributed to the international conceptual understanding of health determinants, and has created specific initiatives toward addressing health disparities, such as the Healthy Living Strategy. The theme of the Canadian Public Health Association’s Annual Conference, held in June 2008, was “Public Health in Canada: Reducing Health Inequalities Through Evidence and Action.”

Three major reports are scheduled to be released later in 2008—two are from Canada, and the third is the final report from the WHO Commission on the Social Determinants of Health (CSDH), to which Canada has contributed. According to David Butler-Jones, Canada’s Chief Public Health Officer and head of PHAC, in 2008 he will release the first Chief Public Health Officer’s report on the state of public health in Canada, which “will focus on the country’s health inequalities.” The Chief Public Health Officer is required to submit this report annually within six months after the end of the fiscal year. (Note: This report was released in July 2008, but because of time limitations, it could not be reviewed for this report.)

The second Canadian report will be the final report from the Canada Senate’s Subcommittee on Population Health of the Standing Senate Committee on Social Affairs, Science and Technology. Twenty years after the first call to reduce health disparities, in February 2007, the Canada Senate authorized the Standing Senate Committee on Social Affairs, Science and Technology:

[T]o examine and report on the impact of the multiple factors and conditions that contribute to the health of Canada's population—known collectively as the social determinants of health—including the effects of these determinants on the disparities and inequities in health outcomes that continue to be experienced by identifiable groups or categories of people within the Canadian population.

Between February 2007 and February 2008, the Senate Committee heard directly from 67 Canadian and international expert “witnesses,” including Aboriginal leaders. To date it has produced four reports—the latest, which was released in May 2008, is concerned with disparity

issues and public options for their reduction. The Committee has called for written submissions to be submitted by June 30, 2008, and is holding public hearings and consultations with Canadians across the country throughout 2008. The Senate Committee expects to table the final report containing its recommendations in December 2008.

These reports will undoubtedly add much to the discussion of health disparities.

115 Ibid., accessed.  
116 Ibid., accessed.
Table 1. Suggested health disparities indicators

<table>
<thead>
<tr>
<th>INDICATOR</th>
<th>DESCRIPTION</th>
<th>Headline indicator</th>
<th>Data source</th>
</tr>
</thead>
</table>

Notes: This Table includes a common list of health disparities indicators, with the headline, or main, indicators identified by the symbol “H.” The list is comprehensive and includes most of the areas where health disparities have been found in Canada. The list can provide an all-inclusive list of health disparities indicators, or indicators can be chosen from it, depending on research and other needs. The number of headline indicators is also extensive, but they represent the most commonly used indicators, and can provide a more manageable group of indicators than the more comprehensive list. The indicators are based on their common use in other countries, recommendations given by the PHAC–Health Disparities Task Group (HDTG), the reviewed evidence for health disparities in Canada, and the standard international model for indicator criteria.

Although not always specified in the indicator description, each indicator should show the range between the highest and lowest groups by socioeconomic status (especially equivalent household income by quintiles, based on after taxes and/or before taxes, and educational attainment). In addition, all of the indicators should be broken down by gender, age group, geographic location (national, provincial, territorial, regional, urban–rural), and by ethnicity or disadvantaged group, if possible. Generally, this will require special tabulations by Statistics Canada or CIHI, since indicators are normally presented only by age and gender. Statistics Canada also presents most of the indicators with available data by province, and by health region if they are from the Canadian Community Health Survey.

In this Table, if data are available to enable creating the indicator presented, no symbol is used, and the indicator is assumed to have data available. However, the available data represent “raw” data that have not been disaggregated as described above. Because data are not routinely available that compare the distribution of the indicator across the population or disadvantaged groups, none of the indicators listed actually have readily available data, which are needed to populate the health disparities indicators. Therefore, special tabulations and considerable analyses are needed before the indicator can be created.

In addition, the capacity to link health sector data to sociodemographic data and to social and economic indicators is limited and should be extended by Statistics Canada, which is presently working on creating new, linked databases, and new health indicators. Portions of indicators that would benefit from this linkage are place within parentheses in the Table.

Symbols used:
* – extended description of the indicator is available in the Appendices
H – suggested headline/ main indicator
G – Gap, there are no known data available to create the indicator, or source of data is unknown. (See notes above for more detail).
<table>
<thead>
<tr>
<th>INDICATOR</th>
<th>DESCRIPTION</th>
<th>Headline indicator</th>
<th>Data source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Socioeconomic context and position (Society)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Policy effectiveness</td>
<td>Extent that policies, programs, and interventions have widened or reduced health disparities</td>
<td>H</td>
<td>G</td>
</tr>
<tr>
<td>Interventions</td>
<td>Extent of interventions to reduce health disparities and the cost-effectiveness of initiatives over time</td>
<td></td>
<td>G</td>
</tr>
<tr>
<td>Relation between healthcare spending and health outcome</td>
<td>Variation between health spending and health outcome – e.g., Health care spending per capita and potential years of life lost</td>
<td></td>
<td>G</td>
</tr>
<tr>
<td>Health Impact Assessments (HIA)</td>
<td>Percentage of established and mainstream policies that have been examined with HIA, and proportion of policies that are contributing to health disparities.</td>
<td></td>
<td>G</td>
</tr>
<tr>
<td>Commitment of governmental departments to promote public health in policies</td>
<td>Incidence of public health orientation as a strategy for more effective health and medical care</td>
<td></td>
<td>G</td>
</tr>
<tr>
<td>*Public social spending</td>
<td>Gross public social expenditure by broad policy area, in % of GDP, including income support for the working-age population, old age/survivor’s pensions, and all social services including health</td>
<td>Stat Can, CIHI</td>
<td></td>
</tr>
</tbody>
</table>

Acronyms:
- HLS – Healthy Living Strategy target area
- Stat Can – Statistics Canada – generally released indicator
- CIHI – Canadian Institute for Health Information – generally released indicator
- Health Canada
- CMHC – Canada Mortgage and Housing Corporation
- EC – Environment Canada
- HRSDC – Human Resources and Social Development Canada

Major surveys:
- CCHS – Canadian Community Heath Survey
- CCJS – Canadian Centre for Justice Statistics
- GSS – General Social Survey
- IALS – International Adult Literacy Survey
- NLSCY – National Longitudinal Survey of Children and Youth
- NPHS – National Population Health Survey
- PISA – Programme for International Student Assessment (OECD)
- RHS – First Nations Regional Longitudinal Health Survey

Other surveys or data sources routinely used by Statistics Canada or CIHI to create statistics, such as the Canadian Census, Labour Force Survey, or the Cancer Registry, are not listed. These sources are described in Section 8 of this report.
<table>
<thead>
<tr>
<th>INDICATOR</th>
<th>DESCRIPTION</th>
<th>Headline indicator</th>
<th>Data source</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Health determinants</strong></td>
<td><strong>Differential exposure (social and physical environment)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*Material (multiple) deprivation</td>
<td>Share of households declaring that they could not afford different items and activities. Based on an Index of Multiple Deprivation (full index)</td>
<td>G</td>
<td></td>
</tr>
<tr>
<td><strong>Environment</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Second-hand smoke</td>
<td>Self-reported exposure to second-hand smoke, SES</td>
<td>H</td>
<td>CCHS</td>
</tr>
<tr>
<td>Persistent organic pollutants (POP)</td>
<td>Extent of POPs in breast milk, by SES status</td>
<td></td>
<td>G</td>
</tr>
<tr>
<td>Neighbourhood quality</td>
<td>Various indicators – access to green space, grocery shopping, recreation, public transport, and active living routes (walking/bicycle paths, etc.), neighbourhood average household income</td>
<td></td>
<td>CCHS, Stat Can</td>
</tr>
<tr>
<td><strong>Employment</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working poor</td>
<td>Proportion of full-time employed persons whose total wages/salary do not allow the person to rise above the poverty line, (SES comparison with self-rated health)</td>
<td>H</td>
<td>Stat Can, (CCHS)</td>
</tr>
<tr>
<td>*Persistent unemployment</td>
<td>Incidence -persons unemployed for 12 months &gt;, %, aged 15 &gt; (compared by SES)</td>
<td>H</td>
<td>Stat Can</td>
</tr>
<tr>
<td>Work/life balance and stress</td>
<td>Average time spent in paid work, unpaid work, personal care, and leisure (SES, self-reported stress level)</td>
<td></td>
<td>GSS HRSDC</td>
</tr>
<tr>
<td><strong>Income / Poverty</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Income inequality</td>
<td>Ratio based on Gini coefficient or related health inequality measure such as Slope Index of Inequality (absolute health disparities), and Relative Index of Inequality (relative health disparities)</td>
<td>H</td>
<td>Stat Can (Gini coefficient), G</td>
</tr>
<tr>
<td>*Income distribution</td>
<td>High/low income quintile ratios, gross earnings of full-time employees (comparison with self-reported health)</td>
<td>H</td>
<td>Stat Can</td>
</tr>
<tr>
<td>Poverty or at-risk-of-poverty rate (after tax)</td>
<td>Proportion of population below the standard poverty line (Canada – Low-Income Cut-Off; EU – below 60% of national equivalized median income), based on equivalent household income, after transfers and taxes; by household type; by work intensity of household members (by self-reported health)</td>
<td>H</td>
<td>Stat Can</td>
</tr>
<tr>
<td>Depth of poverty</td>
<td>Relative median poverty risk gap – difference between the median equivalized income of persons aged 0+ living below the poverty line and the poverty line itself, expressed as % of poverty line (by self-reported health)</td>
<td></td>
<td>Stat Can</td>
</tr>
<tr>
<td>INDICATOR</td>
<td>DESCRIPTION</td>
<td>Headline indicator</td>
<td>Data source</td>
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<tr>
<td>----------------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
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<td>----------------------</td>
</tr>
<tr>
<td><strong>Housing / homelessness</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Housing affordability</em></td>
<td>Spending on housing, based on spending more than 30% of household disposable income on housing (including utilities) (by self-reported health)</td>
<td>H</td>
<td>Stat Can</td>
</tr>
<tr>
<td>Media access</td>
<td>Access to television and internet in the home, SES (lack of access increases disparities)</td>
<td>H</td>
<td>CCHS NLSCY</td>
</tr>
<tr>
<td>Homelessness</td>
<td>Number of homeless families with children in temporary accommodation, arranged by local authorities, by type of accommodation</td>
<td></td>
<td>Stat Can (discontinued)</td>
</tr>
<tr>
<td>Living space</td>
<td>Proportion of people living in overcrowded accommodations</td>
<td></td>
<td>Stat Can (discontinued) CMHC</td>
</tr>
<tr>
<td>Housing quality</td>
<td>Proportion of population living in substandard housing, including poor air quality, mold, poor heating, general poor condition of housing – by sector/vulnerable household status/non-vulnerable status, ethnic identity</td>
<td></td>
<td>CMHC</td>
</tr>
<tr>
<td>Access to potable water</td>
<td>Proportion of population who do not have access to potable water</td>
<td></td>
<td>Environment Canada</td>
</tr>
<tr>
<td><strong>Food security</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Food insecurity</td>
<td>Proportion of the population who experience multiple food deprivation issues, such a use of food banks, going without fresh fruit and vegetables, and buying cheap food to make ends meet.</td>
<td>H</td>
<td>CCHS</td>
</tr>
<tr>
<td><strong>Adult education, literacy, health literacy</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Educational attainment</td>
<td>Proportion of adult population (aged 25–29) in different groups who did not complete high school</td>
<td>H</td>
<td>Stat Can</td>
</tr>
<tr>
<td>Training</td>
<td>Proportion of adult population aged 18–64 who do not have any training qualifications</td>
<td></td>
<td>HRSDC</td>
</tr>
<tr>
<td>Health literacy among adults</td>
<td>Proportion of adult population who can read at basic levels, and understand medical instructions</td>
<td></td>
<td>IALS</td>
</tr>
<tr>
<td><strong>Health behaviours</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tobacco use</td>
<td>Self-reported tobacco use, age group, high/low SES groups</td>
<td>H</td>
<td>CCHS</td>
</tr>
<tr>
<td>Diet (HLS target)</td>
<td>Fruit/vegetable consumption (proportion of adult population who eat at least 500 g fruit and/or vegetables per day), high/low income quintile, gender</td>
<td>H</td>
<td>CCHS</td>
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<tr>
<td>INDICATOR</td>
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</tbody>
</table>
| **Overweight and obesity, Body Mass Index (BMI) (HLS target)** | Proportion of overweight adults in the population, aged 24–64 (BMI = 25-29.9)  
Proportion of obese adults (BMI>30) in the population  
Proportion of underweight, overweight children aged below <16, obese young people aged 16-24, and seniors aged 65> in the population | H                  | CCHS        |
| **Physical activity level (HLS target)** | Proportion of adults who are physically active on at least a moderately intensive level at least 30 minutes per day  
Proportion of adults with a sedentary leisure time; SES | H                  | CCHS        |

**Health care system**

<table>
<thead>
<tr>
<th>Physician/hospital use</th>
<th>Physician/ hospital use by low/ high SES</th>
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<th>CIHI</th>
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</thead>
<tbody>
<tr>
<td>Wait times</td>
<td>Wait times for various surgeries and self-reported wait times, by SES</td>
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<tr>
<td>Patient satisfaction</td>
<td>Proportion of population who are satisfied with their health care, by SES</td>
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<tr>
<td>“Out of pocket” medical expenses</td>
<td>Percentage of income used to pay for “out of pocket” medical expenses</td>
<td></td>
<td>G</td>
</tr>
</tbody>
</table>

**Differential vulnerability**

**Population groups**

**Children**

<p>| Child poverty                           | Proportion of children living in low-income households, for both relative and absolute low-income measures and across all low-income thresholds, on both before and after housing cost measures, trends (England uses a Child Poverty Index for this indicator), (by health status, e.g., asthma/ respiratory infections, Attention Deficit Hyperactivity Disorder – ADHD) | H                  | Stat Can, CCHS |
| Infant mortality                        | SES gap in infant mortality (deaths per 1, 000 live births)                                                                                                                                                   | H                  | CIHI        |
| Early childhood learning                | Proportion of children participating in ECL programs (by SES, education of mother and mother’s health status)                                                                                                    | H                  | Stat Can    |
| Low birth weight                        | SES gap in proportion of newborns weighing less than 2 500g, by high/low parental income quintiles. Numbers of low birth weight infants per 1,000 live births                                                                 |                    | CIHI        |
| Maternal smoking during pregnancy       | Percent of mothers who smoke throughout pregnancy, as proportion of total maternities, by SES                                                                                                                    |                    | CCHS        |</p>
<table>
<thead>
<tr>
<th>INDICATOR</th>
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</thead>
<tbody>
<tr>
<td>Breastfeeding frequency</td>
<td>Proportion of infants exclusively and partially breastfed up to four and six months of age respectively; and % of mothers who initiate breastfeeding at birth, by SES</td>
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<tr>
<td>Respiratory infections, asthma</td>
<td>Number of emergency admissions of children aged under 16 with lower respiratory infections, per 100,000 children (age, sex standardized), SES</td>
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<tr>
<td>ADHD</td>
<td>Proportion of children who have been diagnosed with Attention Deficit Hyperactivity Disorder, SES</td>
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<td>Dental care</td>
<td>Proportion of children with active dental decay, SES</td>
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<td><strong>Youth</strong></td>
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<tr>
<td>High school drop outs (Early school leavers)</td>
<td>% of persons aged 24+ who left school before completing high school (and are not in continuing education or training), by self-reported health physical and mental health status</td>
<td><strong>H</strong></td>
<td>Stat Can</td>
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<td>Youth smoking</td>
<td>Prevalence of smoking in those aged 12–15, and 16+</td>
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<tr>
<td>Teenage pregnancy</td>
<td>Number of births and abortions/ 1,000 women 15-19 years (by SES)</td>
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<tr>
<td>Youth physical activity/ physical education (PE)</td>
<td>Percentage of youth who spend a minimum of two hours each week on high-quality PE and school sport within and beyond the curriculum (by SES)</td>
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<td>Youth physical inactivity; (HLS target)</td>
<td>Proportion of youth who are physically inactive, gender, SES</td>
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<td>CCHS, NLSCY</td>
</tr>
<tr>
<td>Diet (HLS target)</td>
<td>Dietary intakes of fruit and vegetables, and sugar, carbohydrates, soda pop, and fast food and % of total food intake</td>
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<tr>
<td>Diseases spread through sexual conduct</td>
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<tr>
<td>Youth suicide</td>
<td>Proportion of suicides (by ratio – high/ low income)</td>
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<tr>
<td>*Intergenerational mobility – student comparisons</td>
<td>Point differences in students’ test scores in maths, relative to other students, based on parent’s education, income, and health status (OECD)</td>
<td></td>
<td>PISA</td>
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<td><strong>Disabled</strong></td>
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<tr>
<td>Disability rates</td>
<td>Proportion of population with limiting long term illness, by age, SES</td>
<td><strong>H</strong></td>
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</table>
## GPIAtlantic

<table>
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<tr>
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<tr>
<td><strong>Seniors</strong></td>
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<tr>
<td>Home care</td>
<td>Share of home care recipients aged 65+, by SES and health need</td>
<td>H</td>
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<tr>
<td>Age at retirement</td>
<td>Comparison by SES and disability status</td>
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<tr>
<td>Hypothermia / falls</td>
<td>Admissions to hospital of people aged 75 or over due to hypothermia or injury caused by a fall per 1,000 population aged 75 and over, by gender (SES)</td>
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<tr>
<td><strong>Gender</strong></td>
<td>Note: Disparities between women of different SES, and between men and women should be included for all indicators</td>
<td></td>
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<tr>
<td>Lone mothers</td>
<td>Proportion of lone mothers living below poverty line, stress levels and self-reported health, compared with lone mothers with high SES, and coupled-mothers</td>
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<tr>
<td>*Childcare costs</td>
<td>Childcare cost faced by parents (% of household net income) - 2 earner family; lone parents; health status</td>
<td></td>
<td>GSS, G</td>
</tr>
<tr>
<td>Domestic and sexual violence</td>
<td>Proportion of women who have experienced personal domestic or sexual violence</td>
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<tr>
<td>*Gender equality</td>
<td>*Gender Equality Index [Sweden]</td>
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</tr>
<tr>
<td><strong>Aboriginal peoples</strong></td>
<td>Aboriginal peoples should be included in all indicators. Important indicators to compare Aboriginal/ non-Aboriginal population include: self-reported mental and physical health, life expectancy, infant mortality, youth and adult premature mortality, accidental injury, suicide, infectious diseases (esp. HIV/AIDS and TB), diabetes, CVD, cancers, smoking, education, income, housing and neighbourhood quality</td>
<td>H</td>
<td>Stat Can, CCHS (off-reserve), RHS, G</td>
</tr>
<tr>
<td><strong>Differential health outcomes (individual or area levels)</strong></td>
<td>All outcomes stratified by place (urban / rural), income, education, gender, age, and Aboriginal status (if possible)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Summary measures</strong></td>
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<tr>
<td>Life expectancy</td>
<td>Life expectancy at birth, in years, and at aged 65 between men and women (Relative gap between lowest/ highest income quintile)</td>
<td>H</td>
<td>Stat Can, (G)</td>
</tr>
<tr>
<td>PYLL</td>
<td>Potential Years of Life Lost, all-cause (by income disparity)</td>
<td>H</td>
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<tr>
<td>Health adjusted life expectancy HALE</td>
<td>At birth and aged 65&gt; By income (2001 only year available)</td>
<td></td>
<td>Stat Can</td>
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<tr>
<td>INDICATOR</td>
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<tr>
<td>Mortality</td>
<td>Note: Individual mortality rates are not available by SES, which can only be captured in small-area rates with linked data, by neighbourhood income quintiles.</td>
<td>H</td>
<td>Stat Can (database under development)</td>
</tr>
<tr>
<td>Chronic diseases</td>
<td>Premature mortality-rate comparisons between groups for AMI, stroke, cancers, and diabetes</td>
<td></td>
<td>CIHI</td>
</tr>
<tr>
<td>*Health inequalities</td>
<td>Standard deviation in the age at death above age 10, for men and women and combined (Ratio of the premature mortality rates between less and more educated people)</td>
<td>H</td>
<td>G</td>
</tr>
<tr>
<td>Unintentional injury</td>
<td>Age-standardised mortality rate (direct standardised mortality rate per 100,000 population) for unintentional injury (excluding motor vehicle collisions)</td>
<td>H</td>
<td>CIHI</td>
</tr>
<tr>
<td><strong>Mental health</strong></td>
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<tr>
<td>Life stress</td>
<td>Self-reported life-stress levels by SES (based on a series of 18 questions in CCHS)</td>
<td>H</td>
<td>CCHS</td>
</tr>
<tr>
<td>Depression, anxiety</td>
<td>Proportion of adults suffering from depression, mood or anxiety disorders SES</td>
<td>H</td>
<td>CCHS</td>
</tr>
<tr>
<td>Mental Health Index</td>
<td>SF36-MCS, Short Form 36 mental component score</td>
<td></td>
<td>CCHS</td>
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<tr>
<td><strong>Morbidity</strong></td>
<td></td>
<td></td>
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<tr>
<td>Self-rated health</td>
<td>By SES, across groups</td>
<td>H</td>
<td>CCHS</td>
</tr>
<tr>
<td>Functional health</td>
<td>Health Utility Index, Population aged 12&gt; reporting measures of overall functional health based on 8 dimensions of functioning (vision, hearing, speech, mobility, dexterity, feelings, cognition and pain), SES</td>
<td>H</td>
<td>CCHS – G - not all provinces</td>
</tr>
<tr>
<td>Chronic disease incidence</td>
<td>Cancer, CVD, asthma, diabetes, standardized incidence ratio, SES</td>
<td>H</td>
<td>CCHS, Stat Can</td>
</tr>
<tr>
<td>Injuries</td>
<td>Directly age-standardized hospital episode rates for serious accidental injury requiring a stay exceeding 3 days per 100,000 population, SES</td>
<td>H</td>
<td>CIHI</td>
</tr>
<tr>
<td>Notifiable infectious diseases</td>
<td>Incidence of selected notifiable infectious diseases, By SES, gender, age, Aboriginal status Newly notified HIV infections Tuberculosis Clinically notified cases of chlamydia Number of reported cases of acute hepatitis B infections Number of reported cases of legionnaire’s disease</td>
<td>H</td>
<td>CIHI</td>
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<td>INDICATOR</td>
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<tr>
<td>Work-related health outcomes</td>
<td>Self-rated, work-related ill-health (e.g., stress), by occupation, age, and gender (Strain injury index– accumulated strain – Sweden)</td>
<td></td>
<td>CCHS, NPHS, (G)</td>
</tr>
<tr>
<td><strong>Differential consequences</strong></td>
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<tr>
<td><strong>Impact of health disparities on the economy, community, and individual wellbeing</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>*Intergenerational mobility</td>
<td>Intergenerational earnings elasticity, income inequality and returns to education (indicates impact of growing up in disadvantaged circumstances on adult disparities)</td>
<td>H</td>
<td>Stat Can</td>
</tr>
</tbody>
</table>
| Security in the local environment and fear of crime | Safe and secure surroundings  
(a) Percentage of residents surveyed who feel ‘fairly safe’ or ‘very safe’ after dark while outside in their local area  
(b) Percentage of residents surveyed who feel ‘fairly safe’ or ‘very safe’ during the day while outside in their local area, SES | H                  | CCHS        |
| Suicides                         | Suicide rate per 100,000 persons, by gender, age, SES, and health status                                                                                                                                     | H                  | Stat Can    |
| *Life satisfaction               | Share of respondents reporting a high level of life satisfaction, by gender, age, education, marital status, income  
Average life satisfaction depends on a range of features – trust in people, trust in parliament, inflation rates, annual hours worked | H                  | CCHS        |
| Community belonging              | Proportion of the population who feel a strong sense of community belonging, SES, self-reported health                                                                                                    |                    | CCHS        |
| Potential years of life lost     | Potential years of life lost (PYLL) from premature mortality  
(also listed as health outcome summary measure)                                                                                                                                                          |                    | CIHI        |
<p>| *Work Accidents                  | Fatal and non-fatal accidents per 100,000 workers, lost workdays per worker                                                                                                                                   |                    | CIHI, HRSDC |
| Labour market productivity       | Effects of ill-health in lower socioeconomic groups on labour participation, productivity, and national income                                                                                            |                    | Stat Can, CCHS |
| Social support                   | Receipt/ giving of emotional and practical support                                                                                                                                                           |                    | CCHS, NPHS  |</p>
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</thead>
<tbody>
<tr>
<td>Helping others</td>
<td>The extent of informal volunteering (a) Percentage of people surveyed who have done any of a specified list of actions, unpaid, for someone who is not a relative in the past 12 months (b) Percentage of people surveyed who have received any of a specified list of actions, unpaid, by someone who is not a relative in the past 12 months, by SES, stress level, self-rated health</td>
<td></td>
<td>GSS, CCHS</td>
</tr>
<tr>
<td>Economic costs</td>
<td>Economic costs of health disparities for government, business, the healthcare system, and individuals</td>
<td>H</td>
<td>G</td>
</tr>
<tr>
<td>Interventions</td>
<td>Extent of interventions to reduce health disparities and the cost-effectiveness of initiatives over time</td>
<td>H</td>
<td>G</td>
</tr>
</tbody>
</table>
1. Introduction

The purpose of this report is to provide the Public Health Agency of Canada (PHAC), and specifically, the Population Health Promotion Expert Group (PHPEG) and the Healthy Living Issue Group (HLIG) of the Pan-Canadian Public Health Network (PHN) with information, analysis and suggestions for a common set of health disparities indicators, and a feasible approach to their implementation in the Canadian context. The objective is to identify indicators that could lead to an agreed upon set of measures that could be used by Federal-Provincial/Territorial (F-P/T) jurisdictions to assess progress in the reduction of health disparities. Specifically, the mandate of the report is to include:

- A comprehensive review of existing Canadian and international data sources to identify indicators of health disparities for which data are available,
- A gap analysis to determine indicators which are desirable and for which data are not being collected, and
- Recommendations for a common set of indicators of health disparities and a feasible approach for their implementation in the Canadian context.

According to the Health Council of Canada:

The biggest health problem in Canada is inequality. The overall improvement in our health status masks the grim reality that health inequalities among social classes are growing. …The numbers are not getting better over time; in fact, they are getting worse. They need to be tracked in a comprehensive and systematic way so that programs and policies can be targeted to reduce the gap.  

Over two decades ago Canada made a commitment to reducing health disparities in the population. In 1986, the Canadian government, following the lead of the World Health Organization (WHO), defined health as a “state of complete physical, mental and social well-being,” and explicitly identified disparities in health as one of the largest challenges facing health promotion. At the First International Conference on Health Promotion, which met in Ottawa between November 17–21, 1986, Jake Epp, Minister of Health and Welfare at the time, released Achieving Health for All: A Framework for Health Promotion. In this report, Epp identified disadvantaged groups as having a significantly lower life expectancy, poorer health, and a higher prevalence of disability than the average Canadian. He identified addressing health disparities as being one of the major challenges that were not being adequately addressed by health policies and practices:

119 Ibid., accessed.
• The first challenge we face is to find ways of reducing inequities in the health of low-versus high-income groups in Canada. There is disturbing evidence which shows that despite Canada's superior health services system, people's health remains directly related to their economic status.  

The World Health Organization, Health and Welfare Canada, and the Canadian Public Health Association jointly organized the 1986 First International Conference on Health Promotion, which was attended by 212 participants from 38 countries. A Charter for Action, which came to be known as the “Ottawa Charter” was developed and adopted at the conference. This charter specifically addressed health disparities and the social determinants of health. For example, it states:

• The fundamental conditions and resources for health are peace, shelter, education, food, income, a stable eco-system, sustainable resources, social justice and equity.
• Health promotion focuses on achieving equity in health. Health promotion action aims at reducing differences in current health status and ensuring equal opportunities and resources to enable all people to achieve their fullest health potential.
• Health promotion policy … is coordinated action that leads to health, income and social policies that foster greater equity.

In addition, all participants to the conference, including those from Canada, made a commitment to health promotion, and specifically pledged “to advocate a clear political commitment to health and equity in all sectors” and “to respond to the health gap within and between societies, and to tackle the inequities in health produced by the rules and practices of these societies.” The participants also addressed determinants of health by pledging, in part:

• to counteract the pressures towards harmful products, resource depletion, unhealthy living conditions, and environments, and bad nutrition;
• to focus attention on public health issues such as pollution, occupational hazards, housing and settlements; and to address the overall ecological issue of our ways of living.

Subsequent policies in Canada have reinforced the commitment to reducing health disparities. In 2002, the Canada Research Chairs Program established the Canada Research Chair in Health Equity at the University of Ottawa. In 2002 and 2003, the First Ministers’ Health Accords made national commitments to reducing health disparities, and in 2004, in consultation with

120 Ibid., accessed. p. 3.
122 Ibid., accessed. pp. 2, 3.
123 Ibid., accessed. p. 4.
124 Ibid., accessed. p. 5.
Aboriginal leaders, agreed to measures that address the health disparities of Aboriginal peoples. In 2005, the Ministers of Health also approved the PHAC strategic framework of the Healthy Living Strategy, which includes reducing health disparities as one of its goals.

PHAC has also established the Canadian Reference Group to inform the World Health Organization’s (WHO) Commission on Social Determinants of Health (CSDH), and to advance action on determinants of health. Among its mandates, the Canadian Reference Group is committed to creating greater knowledge about health disparities, and policies to address them. It has identified three streams of work that are necessary to reduce health inequalities—systemic change, public awareness and engagement, and measurement/monitoring and accountability. It has also proposed “building on current efforts to develop indicators for measuring health disparities.”

In 2004, the Health Disparities Task Group (HDTG) of the Advisory Committee on Population Health and Health Security produced a major report, commissioned by PHAC, on reducing health disparities in Canada—Reducing Health Disparities – Roles of the Health Sector: Discussion paper. The report benefited by advice provided by participants of the Canadian Institutes of Health Research (CIHR) Health Disparities and Promoting Equity for Vulnerable Populations Initiative Think Tank, held in Ottawa in September 2003, and the Health Disparities Policy Forum consultation, also held in Ottawa in March 2004, which was hosted jointly by CIHR, the Canadian Population Health Initiative (CPHI), Health Canada, and the HDTG.

In the report, HDTG notes that, although Canadians are “among the healthiest people in the world,” health disparities are differentially distributed among specific populations throughout the country. It defines “health disparity” as:

- differences in health status that occur among population groups defined by specific characteristics. For policy purposes, the most useful characteristics are those consistently associated with the largest variations in health status.

The group also notes that health disparities are avoidable and “are inconsistent with Canadian values, threaten the cohesiveness of community and society, challenge the sustainability of the health system, and have an impact on the economy.”

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129 Ibid., accessed. p. 2.
131 Ibid., accessed. p. 25.
In addition, HDTG recommends that improving the health of disadvantaged individuals, populations, and communities is the “most appropriate and effective way to improve overall population health status,” and advises that the health sector and other sectors give priority to reducing health disparities, which includes addressing the determinants of health through intersectorial action. It also points to the experiences of other countries in reducing health disparities and notes that the approaches of these countries began with documenting the extent of disparities, developing policies, and evaluating interventions. Therefore, as key to advancing policy development, it recommends that the knowledge base in Canada be further developed and expanded.

HDTG identified the most prominent factors associated with health disparity in Canada to be:

- socioeconomic status,
- gender,
- geographic location, and
- Aboriginal identity.

It reported that a number of non-medical determinants of health underlie these health disparities, and that these determinants lead to social and economic exclusion from participation in the life of their communities. It notes that socioeconomic status (SES) or position relates to the broad categories of income, education, and occupation, and that low SES results in low self-esteem, an unhealthy physical environment, precarious employment, stress of working for low wage, and behaviour risks. When low SES concentrates in identifiable groups, the effects, such as ill-health, stigma, and hopelessness, result in social, cultural, and economic exclusion.

HDTG also points out that health disparities are expensive—it attributes at least 20% of total health care spending in Canada to avoidable health disparities. In addition, it notes that, because there is a gradient of health status across the range of SES, reducing health disparities will also improve the health of the entire nation. It recommends that improving the income and other non-medical determinants of the lowest two income quintiles would help reduce health disparities in the total population, and is key to improving the health of disadvantaged populations.

HDTG specifically identified a need for indicators of disparities. It recommended a broad and comprehensive set of indicators—with all indicators broken down by SES group—that would include measures of:

- the extent of disparities,
- the causes of disparities,
- the costs of disparities,
- the cost-effectiveness of initiatives over time,
- the impact of health disparities on the economy, community, and individual wellbeing,

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133 Ibid., accessed. p. v.
• the extent to which health sector programs widen or reduce disparities.

In connection with indicators, HDTG also recommends:

• building a disparities perspective and focus into existing health promotion and prevention indicators, such as including a SES breakdown for these indicators;
• the indicator set include a supporting information framework and a performance framework oriented to reducing disparities;
• the focus should be on both long- and short-term outcomes; and
• the capacities to link health sector data to socio-demographic data and to social and economic indicators should be extended.\textsuperscript{134}

Peter Tugwell, Canada Research Chair in Health Equity at the University of Ottawa, et al. recently recommended that the measurement of health inequalities should include population groups defined by socioeconomic, demographic, or geographic factors.\textsuperscript{135} They use the acronym PROGRESS, first presented by Evans and Brown, to summarize these factors: Place of residence (urban/ rural), Race/ ethnicity, Occupation, Gender, Religion, Education, Socioeconomic status, and Social capital/ resources.\textsuperscript{136}

In sum, Canada has made a commitment to reducing health disparities, has contributed to the international conceptual understanding of the determinants of health, and has created specific initiatives toward addressing health disparities, such as the Healthy Living Strategy. Twenty years after the first call to reduce disparities, in February 2007, the Canada Senate authorized the Standing Senate Committee on Social Affairs, Science and Technology to:

examine and report on the impact of the multiple factors and conditions that contribute to the health of Canada's population—known collectively as the social determinants of health—including the effects of these determinants on the disparities and inequities in health outcomes that continue to be experienced by identifiable groups or categories of people within the Canadian population.\textsuperscript{137}

Between February 2007 and February 2008, the Senate Committee heard directly from 67 Canadian and international expert “witnesses,” including Aboriginal leaders. To date it has produced four reports—the latest report, which is concerned with disparity issues and public options for interventions—was released in May 2008.\textsuperscript{138} It has called for written submissions to be submitted by June 30, 2008, and is holding public hearings and consultations with Canadians across the country throughout 2008. The Senate Committee expects to table the final report containing its recommendations in December 2008.\textsuperscript{139}

\textsuperscript{134} Ibid., accessed.
\textsuperscript{135} Tugwell, Robinson, and Morris. Mapping Global Health Inequalities: Challenges and Opportunities, accessed.
\textsuperscript{138} Ibid., accessed.
\textsuperscript{139} Ibid., accessed.
Meanwhile work is ongoing in other sectors such as PHAC. The theme of the Canadian Public Health Association’s Annual Conference, held in June 2008, was “Public Health in Canada: Reducing Health Inequalities Through Evidence and Action.”\textsuperscript{140} It is hoped that this report will contribute to the ongoing dialogue and will help in the establishment of a common set of indicators of health disparities for Canada.

\textsuperscript{140} Canadian Public Health Association. 2008 Annual Conference - Public Health in Canada: Reducing Health Inequalities through Evidence and Action, accessed.
2. Definitions: health disparities, inequalities, and inequities

The Canada Senate Subcommittee on Population Health notes that “thinking and communicating clearly about population health concepts is essential for policymakers, politicians and the public to improve understanding of population health and take action to reduce health disparities."\(^{141}\) It explains that terminologies used in Canada to refer to health disparities are different from those used by other countries. For example, Canadians and Americans use the term “health disparities,” and Europeans more often refer to “health inequalities."\(^{142}\) In Canada, the term “health determinants” is most often used, while in Europe they discuss “social determinants of health.”

*Throughout this report, the terms that are used by the country of interest or author are retained.*

The Canada Senate report provides the following definitions, which are described as “the Canadian terminology”:

- **Population health** refers to health outcomes and their distribution in the population. The health status of individuals and the population is influenced by the complex interaction of a wide range of determinants over the life course.

- The **determinants of health** encompass a wide range of personal, social, economic and environmental factors that include, for example, education, employment, income, social status, housing, gender, and culture, to name a few. Differences in health status result from the combination and interaction of health determinants and give rise to health disparities between individuals and among various segments of the population.

- **Health disparities** or **health inequalities** represent the variation or differences in health status, resulting from the distribution of the effects of health determinants between and among different population groups. Some disparities in health are attributable to biological variations or free choice and as such, are essentially unavoidable; others result from the external environment and other conditions that, while largely outside the control of the individuals affected, are amenable to mitigation by the implementation of well-crafted public policy.

- A **population health policy** or population health approach refers to public policy the purpose of which is to improve or enhance the health of the population and to reduce health disparities by addressing, in a coordinated fashion, the range of determinants that influence health. Such an approach requires intersectoral action, that is, coordination

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\(^{142}\) Ibid., accessed. p. 3. There was no explanation of the differences in terminology used between countries, or why Canada has chosen to use the terminology it does.
among and collaboration with a variety of stakeholders.

- **Intersectoral action** for population health has two dimensions: horizontal and vertical. The horizontal dimension links different sectors such as education, health, the environment, etc. Within a single government, this can be referred to as an interdepartmental or whole-of-government approach. The vertical dimension links sectors at different levels; for example, the federal, provincial/territorial, regional, and local or municipal governments are linked both together and with groups, institutions, and organizations in the community. Intersectoral action is most successful when it results in a “win-win” situation, whereby the participants at every level gain something.\(^{143}\)

In addition, the following definitions are important when considering health disparities:

**Health**

The World Health Organization (WHO) defines health as “a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.”\(^{144}\) As stated in the 1986 *Ottawa Charter for Health Promotion*, “Health is a resource for living that enables people of all ages to realize their hopes and needs, and to change or cope with the environments around them.”\(^{145}\) This charter was adopted by 38 countries at the 1986 International Conference on Health Promotion organized by WHO, the Canadian Department of Health and Welfare, and the Canadian Public Health Association. It also declared, “The fundamental conditions and resources for health are peace, shelter, education, food, income, a stable eco-system, sustainable resources, social justice and equity. Improvements in health require a secure foundation in these basic prerequisites.”\(^{146}\)

**Health equity**

WHO uses the term “equity” in reference to health disparities.\(^{147}\) It states that the concept of health equity is the explicit foundation of the work of the WHO Commission on the Social Determinants of Health (CSDH), and defines health equity as:

> the absence of unfair and avoidable or remediable differences in health among population groups defined socially, economically, demographically or geographically. In essence, health inequities are health differences which are:

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\(^{143}\) Ibid., accessed. pp. 3–4.


\(^{146}\) Ibid., accessed.

socially produced; systematic in their distribution across the population; and unfair. Identifying a health difference as inequitable is not an objective description, but necessarily implies an appeal to ethical norms.\footnote{Ibid., accessed. p. 7.}

The Canada Senate Subcommittee’s definition of “health disparities” given above equates health disparities with “health inequalities,” the term used most often in Europe. According to U.S. researcher David Kindig:

An important issue here is whether the most commonly used term [in the U.S.], \textit{disparity}, means just inequality or difference or whether it incorporates the ethical connotation of being unjust or unfair. While some have considered disparity as limited to inequality, others have argued that disparity includes injustice and thus is more equivalent to inequity. \ldots The dimensions of being avoidable or unnecessary have often been added to this concept.\footnote{Kindig. "Understanding Population Health Terminology."}

Throughout the literature, researchers often use the terms health disparities/ inequalities/ inequities interchangeably. For example, Nancy Krieger, of the Harvard School of Public Health, remarks:

\textit{Social inequalities (or inequities) in health refer to health disparities, within and between countries, that are judged to be unfair, unjust, avoidable, and unnecessary (meaning: are neither inevitable nor unremediable) and that systematically burden populations rendered vulnerable by underlying social structures and political, economic, and legal institutions.}\footnote{Krieger. "A Glossary for Social Epidemiology." p. 698.}

Paula Braveman, Director of the Center on Social Disparities in Health at the University of California, San Francisco, who discusses the terms in connection with the implications that different definitions have for measurement and accountability, adds that “health disparities/ inequalities include differences between the most advantaged group in a given category—e.g., the wealthiest, the most powerful racial/ethnic group—and all others, not only between the best- and worst-off groups.”\footnote{Braveman. "Health Disparities and Health Equity: Concepts and Measurements." p. 167.}

\subsection*{Social determinants of health}

Social determinants of health occur in all areas, including those related to social factors, economic factors, environmental factors, etc. The term “social” as a qualifier to health determinants refers to the fact that the determinants are socially constructed, and as such, can be changed. It does not refer specifically to determinants in the social area. Graham and Kelly remark:

A key feature of the determinants … is that they are themselves socially determined. The
labour market and education system which structure access to employment and income are powerfully influenced by the wider society. So, too, are the inequalities associated with socioeconomic position, gender, ethnicity and sexuality. National policies, regional strategies and services at local and community level also act directly on the environment to which we are exposed, the habits we develop, and the healthcare system to which we turn in times of need. This suggests that the scope for policy intervention is considerable.\textsuperscript{152}

**Social exclusion**

Social exclusion is often used as a summary category for a wide-array of disparity impacts. A Health Canada report on a conference held at York University entitled “Social Determinants of Health Across the Life-Span,” defined social exclusion as follows:

Social exclusion describes the structures and dynamic processes of inequality among groups in society. In the Canadian context, social exclusion refers to the inability of certain groups or individuals to participate fully in Canadian life due to structural inequalities in access to social, economic, political and cultural resources. These inequalities arise out of oppression related to race, class, gender, disability, sexual orientation, immigrant status and religion.\textsuperscript{153}

**Distinction between health determinant/ health status indicators and health disparities indicators**

Finally, as noted by U.K. researchers Hilary Graham and Michael Kelly, it is important to understand that there is a distinction between health determinant or health status indicators and health disparities indicators.\textsuperscript{154} Health determinant indicators indicate the overall level of the determinant in the population, e.g., proportion of the population who are smokers, or who are fully employed. However, Graham and Kelly point out that “positive trends in health determinants can go hand-in-hand with widening inequalities in their social distribution.”\textsuperscript{155}

Therefore, the distinction between health determinant/ health status indicators and health disparities indicators is that the latter must indicate the unequal distribution of the health determinant/ health status in the population.

They also note that this distinction has implications for policy objectives:

- Objectives for health determinants are likely to focus on reducing overall exposure to health-damaging factors along the causal pathway, e.g., to raise educational standards and living standards and to reduce rates of smoking.

\textsuperscript{155} Ibid., accessed.
Objectives for health inequality determinants are likely to focus on leveling up the distribution of major health determinants, e.g., if the goal is to narrow the health gap, the key policies will be those which bring standards of living and diet, housing and local services in the poorest groups closer to those enjoyed by the majority of the population. If the health inequalities goal is to reduce the wider socioeconomic gradient in health, the primary policy objective will be to lift the level of health determinants across society towards the levels in the highest socioeconomic group.\textsuperscript{156}
3. Health disparities frameworks

3.1 Conceptual framework

In order to develop indicators, it is important to have a conceptual framework that structures the indicators and helps clarify connections between the various elements that are important to measure. A recent publication from the World Health Commission on Social Determinants of Health (CSDH), *A Conceptual Framework for Action on the Social Determinants of Health*, contains a particularly inclusive framework diagram that is reproduced in Figure 2 below. The Figure shows the broad conceptual framework that CSDH uses to put health equities into a socioeconomic and political context, and as such, outlines the connections between contextual factors, health determinants, and the impact on health equity/inequity. The CSDH report states that the diagram is a summary of “the main elements of the social and political context that model and directly influence the pattern of social stratification and social class existing in a country.” The diagram includes:

- In the far left column, the main contextual aspects that affect inequities in health—governance, macroeconomic policies (e.g., labour market structure), social policies (e.g., labour, housing, land), other public policies (e.g., health, education, social protection), and cultural and societal values;
- The second column from the left contains the main aspects of social hierarchy, which define the social structure relationships according to class—which has an economic base, and access to resources—the distribution of power related to a political context, systems of prestige in the community, and discrimination within society;
- The third column from the left shows the main aspects of socioeconomic position—social class, gender, and ethnicity—all of which cannot be ranked—and education, occupation, and income—all of which can be ranked—and are the equivalent of socioeconomic status.

CSDH notes that these three columns—which include political and cultural structural context, social structure, and socioeconomic position—together, constitute the structural determinants of health inequities that manifest in social determinants of health inequities, or what it also terms “differences in exposure and vulnerability to intermediary determinants of health.”

- The second column from the right in the diagram includes the “intermediary determinants of health.” These determinants consist of material circumstances (living and working conditions, food availability, etc.), behaviors and biological factors, and psychosocial

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159 Ibid., accessed.
factors (e.g., stress), which lead to impacts of health disparities. Social cohesion and social capital can affect the magnitude of the intermediary determinants. In addition, the health system functions as a mediator between intermediary determinants and their impacts.

- The right column represents the impact that flows from the intermediary determinants. These determinants manifest as difference in exposure and vulnerability to health-compromising conditions, which then lead to impacts on equity in health and wellbeing.

The arrows in the diagram represent the linear and non-linear directions of flow between the various elements. The diagram shows the various processes that lead to either equity or inequity. Therefore, those who are suffering from disparities, and those who are not, are all represented within the framework. It does not illustrate the health gradient, per se, which refers to the fact that it is not only the extremely disadvantaged groups that experience the effect of disparities, but that across the socioeconomic spectrum, on average, each socioeconomic group in society has worse health than the group above it in a vertically-ranked socioeconomic scheme. In other words, the group with a middle income will have worse health than the group with the highest income, and the group with the lowest income will have worse health than the group with a middle income.
3.1.1 Health determinants

Tugwell et al. suggest that “it is the complex interaction of health determinants that leads to health inequalities.” According to U.K. researchers Ken Judge, et al., understanding the distribution of social and economic health determinants is crucial to reducing health inequalities. They note, “There is growing international recognition that health and well-being are the products of many factors and that a sophisticated understanding of the social determinants of health is essential for the development of public health policy.” The implication is that there is a need to include this broad perspective, which also is referred to in terms of social inclusion/exclusion, in reducing health inequalities.

The first Canada Senate report of the Subcommittee on Population Health of the Standing Senate

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163 Ibid., accessed. p. 11.
Committee on Social Affairs, Science and Technology notes:

Today, it is commonly recognized that health is influenced by a wide range of social, economic and environmental factors and that significant disparities in health are avoidable and as such, are unjust and unacceptable. Recent improvements in health have tended not to be equally distributed throughout the population; countries have identified increases in those disparities and worry that the gap between the most advantaged and the most deprived among their populations may widen even further as trends in the underlying socio-economic determinants of health continue.

PHAC includes elements of social hierarchy, socioeconomic position, and intermediary determinants in a list of 12 “key determinants” on its website. These determinants are explained as follows by the fourth Canada Senate report:

- **Early Child Development/ healthy child development**: Prenatal and early childhood experiences have a powerful effect on the person’s subsequent health, well-being, coping skills and competence.

- **Education and literacy**: Health status improves with educational attainment. Education can increase income and job security, and give people a sense of control over their life circumstances—key factors in good health.

- **Employment and Working Conditions**: Aside from the obvious effects of hazardous working conditions, poor health is associated being unemployed or underemployed, having stressful duties at work, and with having little control over one’s work circumstances.

- **Income and Social Status**: Health status improves at each step up the income and social hierarchy. Although prosperity itself makes a difference, narrow income disparity, i.e. an equitable distribution of wealth, is more important to the health of the population.

- **Social Environments**: The values and norms of a society can support or undermine individual and population well-being. Social stability, the welcoming and accommodation of diversity, safety, and cohesive, supportive communities all encourage good health.

- **Physical Environments**: Clean air, water and soil are vital to a healthy population, as are the human-made elements of our physical environment: adequate housing, safe workplaces and communities, well-designed cities, roadways, etc.

- **Social Support Networks**: Supportive families, friends and communities are strongly

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associated with high health status.

- **Lifestyle, Personal Health Practices and Coping Skills**: Personal practices and habits of daily living such as smoking, drug use, eating, and physical activity affect health and well-being. People who practice healthy behaviours and who feel effective in their own lives are likely to be successful in sustaining good health.

- **Biology and Genetic Endowment**: Biological influences on health include heredity, the function of body systems, and the processes of development and aging.

- **Gender**: Society ascribes different roles, personality traits and relative power to males and females, all of which can affect people’s health. Women, for example, are more vulnerable to sexual or physical violence, low income, single parenthood, and health risks (e.g.: accidents, STDs, etc.).

- **Culture**: Race, ethnicity or cultural background can influence population health by affecting its member’s vulnerability to the risks to which they are jointly exposed.

- **Health Care**: Health care services, particularly those designed to maintain and promote health, to prevent disease and injury, and to restore health and function to individuals impaired by illness, injury, or other causes, is also a significant contributor to population health. ¹⁶⁶

PHAC also includes factors such as social networks, civic vitality, volunteer rates, family violence, and crime rates under the social environments category. ¹⁶⁷ Other reports list slightly different health determinants. For example, a Health Canada report on a 2002 conference held at York University entitled “Social Determinants of Health Across the Life-Span,” which brought together 400 social and health policy experts, community representatives, and health researchers, summarizes 9 determinants: income inequality; employment and job security; working conditions; contribution of the social economy; education; early childhood care; housing; food security; and social inclusion and exclusion. ¹⁶⁸


¹⁶⁸ Health Canada. *The Social Determinants of Health: An Overview of the Implications for Policy and the Role of the Health Sector*, accessed. Re: “contribution of the social economy.” This term is rarely used outside of Quebec. According to the Health Canada report, “In Quebec, the term “social economy” is widely used and refers to a vast array of groups, mostly non-profit organizations including advocacy groups, voluntary organizations and other community-based organizations, including cooperatives. The term is not widely used in English Canada but is most close to the term “voluntary and community sector” (which includes organizations dealing with both voluntary and paid work). The mission of these organizations is to provide empowering services to members and community and not profit-oriented.” p. 11.
The Canadian Population Health Initiative (CPHI), which suggests in *Improving the Health of Canadians* that “social and economic conditions have a substantial effect on the health and well-being of Canadians,” examines the health consequences of low income, early child development, Aboriginal identity, and obesity as examples of health determinants. It also recommends that social and economic solutions are required in order to make improvements in health and reduce health inequalities.

### 3.1.2 Proximal and distal determinants

It is important to note that the literature on health determinants often refers to behavioural (risk) factors as proximal (or downstream) determinants, and to structural and the other intermediary determinants as distal (or upstream) determinants, which reflects a concept that behaviour risk factors have a more direct impact on health disparities than the more distal determinants. However, this concept is being challenged, since it obscures the fact that the “distal” determinants can also have direct impacts, which has implications for potential interventions and policies. The framework diagram above illustrates that material circumstances, behaviours, and psychosocial factors are all intermediary determinants, rather than “distal” determinants.

Using the terms distal and proximal also implies a linearity that can distort the multidimensional processes. Krieger argues:

> [T]he use of these terms is problematic and adversely affects public health research, practice, and causal accountability. At issue are distortions created by conflating measures of space, time, level, and causal strength. To make this case, I draw on an ecosocial perspective to show how public health got caught in the middle of the problematic proximal–distal divide—surprisingly embraced by both biomedical and social determinist frameworks—and propose replacing the terms proximal and distal with explicit language about levels, pathways, and power.

### 3.2 Simplified framework

CSDH has also created a simplified version of the conceptual framework illustrated above. The simplified framework is used in this report to organize the suggested health disparities indicators in Table 1, Table 12 in Section 10.5, and the Compendium of Health Disparities Indicators in the Appendices. The basic schematic framework, which is shown in Figure 3 below, is

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comprehensive, inclusive, clear and easy to understand, and potentially useful as an indicator framework. The framework has three dimensions of activities—intervention, analysis, and measurement—and five levels of analysis that move from the societal level to the individual level. Each of the five levels also represent points where interventions to reduce disparities might be beneficial, and areas that are important to measure. In the diagram, the small circles with crosses indicate the different levels of measurement and the large circle represents an overall measure (if one is desired).

The five levels start with socioeconomic context and position (society level), and continue to differential exposures in the social and physical environment (i.e., risk factors and other health determinants), to differential vulnerability of population groups (i.e, groups with low socioeconomic positions), to differential individual health outcomes, and finally to differential consequences or impacts, which lead back to the society level. It also integrates socioeconomic contexts and positions with health determinants in the social and physical environment, with the population groups that are affected, and finally connects the outcomes with health, and individual and societal impacts. Therefore, the framework includes the most important dimensions in a health disparity indicator system.

CSDH briefly describes the levels as follows:

- **Socio-economic context and position (Society).** Social position exerts a powerful influence on the type, magnitude and distribution of health in societies. The different levels of power and resources generate stratifications and are reflected in institutional, legal arrangements as well as in political and market forces. While social stratification is often seen as the responsibility of other policy sectors and not central to the health sector per se, addressing stratification is critical to decrease the impact on health and health equity. Factors defining positions include: development, economic, trade, labour market, education, and family welfare policies, which can be reviewed in the context of each public health condition. These factors constitute the global, national and sub-national contexts for health.

- **Differential exposure (Social and physical environment).** Exposure to almost all risk factors (material, psychosocial and behavioural) is inversely related to social position.
Many health programmes do not differentiate exposure or risk reduction strategies according to social position. However, if analysis was done for each socio-economic group, it would become clear which risk factors were important to which group and whether these were different from those important to the overall population. Understanding these causes behind the causes are important for developing appropriate equity-oriented strategies for health. There is increasing evidence of differential exposures of people in disadvantaged positions, e.g., with respect to natural or man-made crises, unhealthy housing, dangerous working conditions, food availability and quality, barriers to adopting healthy behaviours, etc.

- **Differential vulnerability (Population group).** The same level of exposure may have different effects on different socio-economic groups, depending on their social, cultural and economic environments and cumulative life-course factors. Clustering of risk factors such as social exclusion, low income, alcohol abuse, cramped housing and poor access to health services may be as important as the individual exposure itself. Further, co-existence of other health problems, such as, e.g., co-infections, often augment vulnerability. The evidence base on the synergetic effects of reinforcing factors is still limited. However, they are known to exist for low-income populations and marginalized groups and when attempting to reduce or eliminate them the key issue is to identify appropriate entry points for breaking the vicious circles.

- **Differential health outcome (Individual).** Equity in health implies that ideally everyone attain their full health potential regardless of their social position or other socially determined circumstances. The outcome should be the reduction of all systematic differences in health between different socioeconomic groups in a way that levels everyone up to the health of the most advantaged. The effects of the three framework levels above may be further aggravated by treatment and care responses by the health services, which are not appropriate for certain population groups or disadvantaged people.

- **Differential consequences of ill-health (Individual level leading back to societal level).** Poor health may have several social and economic consequences, including loss of earnings, loss of ability to work, social isolation or exclusion. Further, sick people often face additional financial burdens to pay for health care and drugs. While advantaged population groups are better protected, e.g., in terms of job security, health insurance—for the disadvantaged, ill-health might result in further socioeconomic degradation, accelerating a downwards spiral that further damages health. \(^{172}\)

The CSDH presents the final level in terms of the impacts on individual health, but these impacts can accumulate in societies and lead to aggregate societal conditions that have impacts on productivity, crime, urban–rural disparities, and other societal factors. In this way, a downward spiral develops that reinforces socioeconomic health disparities, and forms a feedback loop back to level 1 of the framework.

4. Review of international health disparities indicators

Most developed countries have included the reduction of health disparity among their populations as an important public health goal. Some countries, such as England and Sweden have well-developed policies, while others are in the initial stages of developing their approach. However, while there are many differences between the countries, there are also many similarities. For example, the Nordic countries, and especially Sweden, have focused on social inequalities in health for the last two decades and Sweden’s public health policy includes reducing social determinants of health inequalities as the overarching policy goal that informs all governmental departments.\(^{173}\)

A few countries are especially concerned with disadvantaged populations such as New Zealand, Australia, Norway, Ireland, and the United States. These countries have relatively large Aboriginal and ethnic populations—Maori and Pacific people in New Zealand, Aboriginal peoples in Australia, Sami in Norway, and Travellers, or Pavees, in Ireland. The United States routinely compares health disparities across people with low incomes, disabled people, and ethnic groups—African Americans, Hispanics, Asians, American Indians, European groups.

Most countries measure health disparities by comparing the health of individuals in low income with the health of individuals in the highest income groups. However, other countries, such as the Nordic and United Kingdom countries, also include disparities in health by geographic location, especially those between urban and rural areas. Also, all countries report gender disparities in health, income, and other areas.

Generally, disparities are stratified by socioeconomic position, measured by income, educational attainment, or social class/occupation, in the case of the United Kingdom, and by geographic location, gender, ethnic group, and age group. Also, countries are beginning to broaden poverty measures in their indicator systems to include determinants of health, such as housing and homelessness, crime, and food insecurity. However, these health determinant indicators are more often found in the social inclusion/exclusion literature, which is somewhat more developed than the health disparities literature. Although it was beyond the scope of this report to comprehensively review the social exclusion literature, a few initiatives from this field, such as the New Zealand Social Report, which complements its disparity indicator index, NZDep2006, are reviewed below.\(^{174}\)

The following section looks more closely at initiatives to measure health disparities taken in international organizations and specific countries. The countries are organized by those that have


the most developed health disparity indicators—which include England, Sweden, New Zealand, Australia, and the United States—and those that are working toward this goal. The former are described in detail, especially in relation to the health disparity indicators they have developed, while the latter are described more briefly.

4.1 International Organizations

4.1.1 World Health Organization (WHO) – Initiatives and recent reports

According to Ken Judge, et al., “One important context for thinking about health inequality policies … is the declaration of the World Health Assembly in 1998, which emphasised ‘the importance of reducing social and economic inequities in improving the health of the whole population.’” Subsequently, the World Health Organization (WHO) has repeatedly emphasized the need to reduce health inequalities both between countries and between social groups within countries.

WHO was one of the first organizations to put social inequalities in health on the agenda, and subsequently has helped to promote this perspective in a number of Western countries. It is active in the development of methodologies and tools for addressing the social determinants of health and health inequities, and is focused on developing an evidence base and reduction policies. In 2005, it formed the Commission on Social Determinants of Health (CSDH), which is chaired by leading inequalities researcher Sir Michael Marmot of the University College in London. CSDH is expected to complete its initial work in 2008. Its final product, an edited book that will provide a comprehensive analysis and action agenda for public health programs, as well as chapters on measurements, is planned for release in 2008.

To date, CSDH has produced several major reports that include frameworks and guidelines on monitoring health inequities. However, the reports do not provide examples of specific indicators. In 2007, Josiane Bonnefoy, et al. produced the CSDH report, Constructing the Evidence Base on the Social Determinants of Health: A guide. The 337-page report focuses

176 Ibid., accessed.
181 Bonnefoy, Josiane, Antony Morgan, Michael P. Kelly, Jennifer Butt, Vivian Bergman, with Peter Tugwell, Vivian Robinson, Mark Exworthy, Johan Mackenbach, Jennie Popay, Catherine Pope, Thelma Narayan, Landon
on policy approaches and discusses issues, principles, and measurement tools and techniques for constructing evidence on health determinants, including the use of Health Impact Assessments. Also in 2007, CSDH produced *Achieving Health Equity: From Root Causes to Fair Outcomes*. WHO has also reported discussions that took place at an international policy-makers forum—*Tenth Futures Forum–On Steering Towards Equity in Health*, which took place in Oslo, Norway in August 2006. Two useful papers from the forum—*Scoping Paper: Priority Public Health Conditions, and Social Inequities and Determinants in Health in Europe – Tools for Assessment and Information Sharing* introduced the frameworks that were discussed above in Section 3 of this report.

WHO also recently produced a report, *Closing the Health Inequalities Gap: An International Perspective*, which reviews approaches to and policies related to health inequalities in 13 developed countries, and provides a fairly extensive bibliography. The report found that all public health policies in the countries reviewed had overarching goals to reduce inequalities in health. However, the countries differ in their approaches and methods. The report’s Scottish authors, Iain Crombie, et al., note that the report is limited by the lack of English language documents in non-English speaking countries such as the Nordic countries, which mainly only provide English summaries of their reports. Nevertheless, although the review does not provide examples of health disparity indicator sets, per se, it does list some of the most common indicators. Crombie, et al. identify England, Northern Ireland, Scotland, New Zealand, and the United States as the countries that have the most developed indicator systems for tracking health disparities.

Many of the indicators focus on socioeconomic differences in the health of children with indicators in areas such as antenatal health, smoking during pregnancy, low birth weight, breastfeeding, infant mortality, dental health, accidents, and physical activity levels. Child poverty is also highlighted with indicators on the proportion of children living in low income or jobless households. Since Northern Ireland has not yet established child poverty rates, in the


Ibid., accessed.


The countries reviewed were Australia, Canada, Denmark, England, Finland, Ireland, New Zealand, Northern Ireland, Norway, Scotland, Sweden, United States, and Wales.

meantime it uses the proportion of children entitled to school meals as the poverty indicator. For youth, socioeconomic inequalities in teenage pregnancy rates, accident rates, smoking, alcohol and drug use, and attempted suicides are common.

For adults, disparities in health behaviours are routine indicators, such as indicators concerned with smoking, consumption of fruit and vegetables, levels of obesity, physical inactivity and alcohol use. Also common are indicators of disparities in self-reported health status, disability prevalence, mental health, mortality from major diseases such as cardiovascular disease and cancer, and morbidity from diabetes, hypertension, and breast and cervical cancer. Crombie, et al. note that other common indicators include:

> [U]nemployment rates among specific groups; literacy and educational opportunities; accident mortality and road traffic casualties; accessibility to buildings by people with disabilities; and participation in drug rehabilitation programmes. Among older people, while all countries use mortality rates from chronic disease, New Zealand and England also include uptake of influenza vaccination and the proportion of older people living independently. More general indicators include housing quality, fuel poverty, air quality in cities and burglary rates. Finally, there are several indicators of access to health care services for all people, particularly primary care and child health services.

Indicators are also commonly stratified by educational attainment, income levels, geographic location, and social class/occupation, and by age groups, gender, and specific ethnic groups. The authors note that socioeconomic and environmental indicators are mainly found in social inclusion initiatives, which have developed indicators that cover a range of topics, e.g., unemployment, literacy, fuel poverty, and environmental measures such as housing quality, air quality, and crime rates. They also note that England, Sweden, and Northern Ireland describe these topics in their public health policy documents.

WHO has recently released *World Health Statistics 2008*, which presents statistics for all of WHO’s 193 Member States, including the industrialized countries. Over 80 key health indicators were designed with a focus on equity between and within countries, and are disaggregated by gender, age, urban/rural setting, wealth/assets, and educational level. They are considered to be summary, core indicators, rather than aiming to capture all relevant aspects of health, and include mortality outcomes, morbidity outcomes, risk factors, coverage of selected health interventions, health systems, inequalities in health, and demographic and socioeconomic statistics. The three specific “inequities in health” indicators focus on child health and include the following indicators:

- Inequalities in under-5 mortality – Probability of dying per 1,000 live births under five years of age (under-5 mortality rate), by place of residence; by wealth quintile; by educational level of mother

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188 Ibid., accessed. p. 34.
• Inequalities in skilled birth attendance – Births attended by skilled health personnel (%), by place of residence; by wealth quintile; by educational level of mother
• Inequalities in measles immunization coverage – Measles immunization coverage among one-year-olds (%) by place of residence; by wealth quintile; by educational level of mother

The Swedish Public Health Committee objected to the WHO equity indicators because they only relate to health outcomes and do not include determinants of health inequalities (with the exception of a few related to health behaviours).\(^{190}\) The entire system is heavily weighted toward health systems and coverage, with a focus on developing countries, (e.g., “Children aged <5 sleeping under insecticide-treated bednets –%,” and therefore has limited value as a model of health disparities indicators for Canada.

### 4.1.2 Organisation for Economic Co-operation and Development (OECD)

The Organisation for Economic Co-operation and Development (OECD) collects data for a wide-range of health indicators, including those covering health status, resources and utilization, expenditures, pharmaceutical consumption, demographics, and a limited number of non-medical determinants of health—food, alcohol, and tobacco consumption, body weight, and air quality.\(^{191}\) The data are broken down by gender and, in some cases by age, but not by socioeconomic position. However, the OECD does have a Health Equity Research Group that has produced papers on specific topics such as income-related inequity in physician utilization.\(^{192}\)

OECD uses a few unusual variables in its health indicator set. For example, under the causes of mortality, and the potential years of life lost categories it includes: “Adverse effects from medicines,” and “Misadventures to patients during surgical/ medical care.”\(^{193}\) Under the social protection category, it includes public expenditures for a range of items—Old age survivors, Incapacity-related benefits, Health, Family, Active labour market programmes, Unemployment, Housing, and Other social policy areas.

The OECD annually produces social indicators that include equity indicators—for material deprivation, earnings inequality, gender wage gaps, intergenerational mobility, public social spending, poverty persistence, housing costs, and old-age pension replacement rates—which

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focus on access by households to resources. It also includes health, and social cohesion indicators for voting, prisoners, suicides, work accidents, strikes, trust in political institution, and life satisfaction. In addition, it relates indicators to social policies and tries to “describe social outcomes that policies try to influence.” Some indicators can be broken down into sub-categories such as age, family type, and gender.

Two of the health indicators relate to “health inequalities” in mortality rates. The first indicator is “the standard deviation of all deaths above the age of 10,” which provides a direct measure of health inequality among individuals. The second indicator is the “average mortality rate among people with different characteristics,” which expresses between-group inequalities—e.g., in Canada, between registered Indians and non-Indians, and in the U.S., between Afro-American and white men—in absolute differences in life expectancy between groups and in the ratio of life expectancies. Because of the emphasis on equity and the fact that this indicator set is one of the few that refer to policies, the list of indicators is included in the Compendium of health disparities indicators in the Appendices. An added benefit is that the indicators are comparable across countries.

### 4.1.3 World Bank

The World Bank’s Poverty and Health Network has developed methods for analyzing health equity that is directed toward developing nations, although the methods are based on those from developed nations and are useful for both. A recent report, *Analyzing Health Equity Using Household Survey Data: A Guide to Techniques and their Implementation*, reviews standard child survival medical indicators such as infant mortality and nutrition, anthropometric indicators of physical body measures of mainly height and weight, and basic adult medical, functional, and subjective indicators such as malaria, activity limitation, and self-rated health respectively. Inequity is indicated, in part, through measures of disparities in income, education, and disadvantaged groups, and through analytic tools such as the Concentration Index. It focuses on the medical model, with little discussion of social determinants of health beyond socioeconomic status and some living standard measures, such as those related to housing.

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195 Ibid.
196 Ibid.
198 Ibid., accessed.
4.2 European Union/ European Commission

In Europe, health inequalities are included in initiatives to indicate and reduce social exclusion, and to increase social cohesion. The 1997 European Council identified social cohesion—defined as “the ability of a society to ensure the welfare of all its members, minimizing disparities and avoiding polarization,”—as a primary need and essential to the promotion to human rights and dignity. In 2000 at the Lisbon high-level summit, the European Union (EU) leaders established the Social Inclusion Process to make a strong impact on eradicating poverty by 2010. Specifically, the challenges include eliminating child poverty, making labour markets inclusive, ensuring decent housing for everyone, overcoming discrimination and increasing the integration of people with disabilities, ethnic minorities, and immigrants, and eliminating financial exclusion.

The EU programme of Community Action in the field of public health has adopted reducing inequalities in health as a primary goal, and aims to develop strategies and measures toward reducing inequalities in the social determinants of health. In addition, an expert group on social determinants and inequalities in health has been established under the Council of Europe’s Public Health Committee.

4.2.1 Laeken indicators

Social indicators that are specifically focused on poverty and social inclusion/exclusion have been adopted at the EU level. The Social Inclusion Process in Europe led to the 2001 European Council high-level conference, held at Laeken Castle in Brussels, and the adoption of 18 social inclusion outcome indicators, which are referred to as “Laeken indicators,” or “Common indicators.” The development of Laeken indicators, according to a Luxembourg Income Study report, was strongly influenced by the work of Sir Anthony Atkinson, et al. in the U.K., who subsequently released Social Indicators: The EU and Social Inclusion. The indicators measure social inclusion gaps within four basic thematic areas—income, employment, education, and health, and have the objectives of facilitating participation in employment and access by all to resources, rights, goods and services; preventing the risk of exclusion; helping

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202 Ibid., accessed.
206 See also: Atkinson, Cantillo, Marlier, and Nolan. Taking Forward the EU Social Inclusion Process, accessed.

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the most vulnerable; and mobilizing all relevant parties.\textsuperscript{207}

The indicators are calculated and regularly updated by Eurostat, with data from EU Statistics on Income and Living Conditions (EU–SILC), and are present on the Eurostat website.\textsuperscript{208} The EU–SILC provides comparable, cross-sectional and longitudinal data on income, poverty, social exclusion and living conditions in the EU. Member States of the European Union are required to use the indicators when presenting their National Reports on Strategies for Social Protection and Social Inclusion.\textsuperscript{209} The States are also encouraged to supplement the indicators with country-specific indicators, and efforts are underway to adapt the Laeken indicators of poverty and social exclusion for use at regional (sub-national) levels.\textsuperscript{210}

In 2006, the Indicators’ Sub-Group (ISG) of the Social Protection Committee revised the original Laeken indicator list by dropping one indicator and adopting additional ones. It classified the indicators into 12 “overarching” (primary) and 9 “context” (secondary) indicators, resulting in a new list of 21 indicators.\textsuperscript{211} The new guidelines do not limit the choice of indicators to outcome indicators in order to include policy actions and impacts. The indicators are broken down for special subpopulations such as children and other groups by age, gender, and household types. Other socioeconomic indicators (e.g., income and education) are included in the list of indicators. However, out of the 21 indicators, 10 are specific poverty measures (e.g., before tax, after tax, poverty depth, persistent poverty, poverty gap, etc.) In a paper commissioned by the European Commission, Vijay Verma, et al. suggest that a more diverse portfolio of indicators should be developed that would include more extensive indicators of non-monetary deprivation and environmental problems.\textsuperscript{212}

For financial poverty indicators, the ISG has chosen to use the term “at risk of poverty,” to indicate that the subgroup is at a greater risk than the national average.\textsuperscript{213} According to Brian Nolan of the Economic and Social Research Institute in Dublin:

The Indicators Sub-Group emphasised that this was to be seen as a measure of people who are ‘at risk of being poor’, not a measure of poverty. This reflects a growing realisation that low income, on its own, may not always be a reliable indicator of poverty

\textsuperscript{207} Ottone, Sojo, Espindola, Feres, Hopenhayn, Leon, Uthoff, and Vergara. "Measuring and Evaluating Social Cohesion: A Preliminary Perspective."
\textsuperscript{208} European Commission. Eurostat - Statistical Office of the European Communities, accessed.
\textsuperscript{209} Portfolio of Overarching Indicators and Streamlined Social Inclusion, Pensions, and Health Portfolios, accessed.
\textsuperscript{211} European Commission. Indicators' Sub-Group of the Social Protection Committee, 2008; accessed April 2008; available from \url{http://ec.europa.eu/employment_social/spsi/psc_indicators_subgroup_en.htm}.
and social exclusion. Those observed as on the same income level at a point in time may have quite different living standards, because both the other resources and the needs of households vary. The availability of other resources, notably savings and other assets as well as assistance from friends and families, will be influenced in particular by how long the current low income has persisted. Differences in needs can arise due to a variety of factors other than the differences in household size and composition which are taken into account in measuring low income by the use of equivalence scales—with ill-health and disability perhaps the most obvious example. This means that low-income households are best considered as being at high risk of poverty.  

According to the EC, the health domain is incomplete, and other areas, such as living conditions and housing, have not yet been included. The ISG has proposed that additional health indicators should be added that are relevant from “a social protection point of view.” It considers this dimension to be fundamental to costs containment and, therefore, proposed that indicators of public expenditure on health care and long-term care be included. The proposed list includes 11 primary indicators, 1 secondary indicator, and 9 context indicators. They are heavily weighted toward access to medical care, health system needs, and health care expenditures.

In addition, the EC notes that, in the future, the ISG also intends to include indicators related to the following areas:

- Rational use of resources/ incentives (Inpatient discharges, hospital day cases, acute care bed occupancy, average length of stay, generics sales);
- Promotion and prevention (regular smokers, total alcohol consumption, obesity, malnutrition, physical activity);
- Human resources (number of pharmacists, dentists); and
- Mortality and life expectancy by socio-economic status.

The 21 Laeken, or common indicators are included in the Compendium list in the Appendices.

### 4.2.2 EUROTHINE – “Tackling Health Inequalities in Europe”

EUROTHINE is an acronym for the international, collaborative project, “Tackling Health Inequalities in Europe,” which was financed by the European Commission and coordinated by the Working Party on Health Indicators at Erasmus University Medical Centre in Rotterdam, Netherlands. The project began in September 2004 and formally ended in August 2007, with the release of a 650-page final report that is available on the EUROTHINE website, along with extensive data in Excel files and other materials. More than 50 researchers from more than 20 countries contributed to the project. The EUROTHINE website is located at: http://survey.erasmusmc.nl/eurothine/index.php?id=128,0,0,1,0,0

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216 Ibid., accessed. p. 40.
217 Ibid., accessed.
219 Ibid. The EUROTHINE website is located at: http://survey.erasmusmc.nl/eurothine/index.php?id=128,0,0,1,0,0
European countries participated in the project.

The general objectives of the project were to increase understanding of health inequalities in the European Union (EU) and the possibilities to reduce these inequalities. Specific objectives of EUROTHINE were to:

- develop and collect health inequalities indicators, and to provide benchmarking data on inequalities in health and health determinants to participating countries,
- assess evidence on the effectiveness of policies and interventions to tackle the determinants of health inequalities, and to make recommendations on strategies for reducing health inequalities in participating countries, and
- disseminate the results, and to develop a proposal for a permanent European clearing house on tackling health inequalities.\(^\text{220}\)

The project examined health-related socioeconomic inequalities, by income,\(^\text{221}\) education,\(^\text{222}\) and occupational class,\(^\text{223}\)—where data were available—for men and women, in self-reported morbidity, mortality by cause of death,\(^\text{224}\) and health determinants that were organized into the common health-related behaviours (important ‘downstream determinants’), labour market conditions (e.g., mainly socioeconomic indicators, which are important ‘upstream’ determinants), and health care utilization (important as one of the more accessible entry-points for health inequality reductions). The focus of health-related behaviours was on alcohol consumption, smoking, and overweight/obesity, and on related health problems such as alcohol- and smoking-related causes of death.\(^\text{225}\) Additional analyses were made for other behaviours, such as fruit and vegetable intake and physical exercise. According to the EUROTHINE report, health-related behaviours and health care utilization are not necessarily the most important mediating factors, but they were used because of data availability, and the fact that they do provide clear entry-points for policies and interventions.\(^\text{226}\)

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\(^{221}\) Income levels were divided into quintiles of equivalent net household income (net of taxes and including benefits). Available income data were limited.

\(^{222}\) Education levels were primary or no education, lower secondary education, higher secondary education, and tertiary education.

\(^{223}\) Occupational class data, which were only available for middle-aged men, were divided into 6 manual/non-manual categories—upper non-manual, lower non-manual, skilled manual worker, unskilled manual worker, self-employed, and farmers. The occupational class category was not recommended for general use as a socioeconomic variable.

\(^{224}\) Cause-specific mortalities included in the study were all cancer mortality, breast cancer, lung cancer, all cardiovascular diseases, ischemic heart disease, cerebrovascular disease, injuries, all other diseases, causes related to alcohol, smoking, and avoidable mortality.

\(^{225}\) Alcohol related causes of death are alcoholic psychosis, dependence, and abuse; alcoholic cardiomyopathy; alcoholic cirrhosis of liver and pancreas; and accidental poisoning by alcohol. Causes of death related to smoking are cancer of buccal cavity, pharynx, and oesophagus; cancer of larynx; cancer to trachea, bronchus, and lung; and chronic obstructive pulmonary disease.

Aspects of health care utilization included accessibility of care, visits to medical specialists, and use of preventive services such as influenza vaccination and breast cancer screening. Also this domain examined inequalities in avoidable mortality.\textsuperscript{227} The labour markets and social welfare conditions domain examined inequalities in self-assessed health in nine European countries grouped according to political systems, and in 23 countries grouped according to ‘welfare regimes.’ Among other issues, it also examined gender differences in health inequalities, inequalities between lone and couple mothers, and the impact of local policies on socioeconomic inequalities in health.

Statistical methods—most based on logistic or regression analysis—were used in the analysis phase, and included age standardization, the calculation of odds ratios, mortality rate ratios or prevalence rate ratios, and the calculation of the Relative Index of Inequality and the Slope Index of Inequality. Also measures of both relative and absolute inequalities were calculated, and all data was adjusted for age in five-year age-groups. All of these methods are discussed in Section 6 below.

Recommendations arising from the project include:

- All European countries should be able to monitor socioeconomic inequalities in mortality, morbidity, and health determinants on a routine basis.
- The European Union should promote this by including the socioeconomic dimension in its health data collection guidelines.
- A databank should be created at the European level that would allow comparisons of health inequalities between countries and over time.
- Research is needed to increase knowledge about possible entry-points for policies and interventions to reduce health inequalities, and to evaluate on-going and newly developed policies and interventions.
- A clearing-house should be established to pro-actively identify and assess evidence on the effectiveness of policies and interventions to reduce health inequalities throughout Europe.\textsuperscript{228}

This project is an interesting example of a comprehensive analysis of health disparities, an extensive stratification of the data,\textsuperscript{229} and the use of statistical methods to produce the indicators. However, the indicator selection itself is highly weighted toward health service and health outcome indicators, and includes very few health determinant variables other than those for behavioural risk factors. It includes 101 indicators, of which 81 are concerned with mortality, 

\textsuperscript{227} Avoidable mortality are deaths from causes that are amenable to medical and other interventions, and include diseases of infectious origin (tuberculosis, pneumonia/ influenza, and other infection and parasitic diseases), malignant diseases (colorectal cancer, breast cancer, cancer of cervix uteri, testis cancer, and Hodgkin’s disease and leukemia), acute conditions (appendicitis, hernia, and peptic ulcer, and cholecystitis, -lithiasis), and cardio-respiratory conditions (chronic rheumatic heart disease, and asthma), and maternal deaths.

\textsuperscript{228} Demarest, and Oyen, eds. Tackling Health Inequalities in Europe: An Integrated Approach. EUROTHINE Final Report. Section written by Anton Kunst, p. 23.

\textsuperscript{229} Demographic and socioeconomic status variables included: sex, age, marital status, urban-rural place of residence, educational level, employment status (active/ inactive), occupational class, and household equivalent income (in local currency and by highest and lowest deciles).
morbidity, and the healthcare system, 15 are concerned with behavioural risk factors, and 5 indicate socioeconomic status (education, income, employment status, poverty rate, and housing tenure). Therefore, the indicators used in the EUROTHINE report are not shown in the Compendium of Health Disparities Indicators in the Appendices.

4.2.3 Closing the Gap: Strategies for action to tackle health inequalities in Europe

A second international, collaborative initiative dealing with the social determinants of health inequalities took place between 2004 and 2007 with funding from the European Commission. The purpose of the project, Closing the Gap: Strategies for action to tackle health inequalities in Europe, was to develop a European knowledge base and infrastructure through identifying evidence, policies, interventions, best practices, and evaluations in order to implement and strengthen action to reduce health inequalities. Although the initiative did not develop indicators, per se, it collected a wide range of information, including background documents and information for European countries, which can be found on the website it created—European Portal for Action on Health Equity (http://www.health-inequalities.org/).

A new initiative, DETERMINE, was started in 2007 and is scheduled to continue through 2010. It continues the work of Closing the Gap and information on this project can be found on the same website. It has established a EU Consortium for Action on the Socio-economic Determinants of Health (SDH), which plans to take the work of the CSDH forward in a EU context.

4.2.4 European Community Health Indicators (ECHI)

In 2002, the European Parliament and the Council of Europe adopted a new community action program for public health—Programme of Community Action in the Field of Public Health (2003–2008). The program has recently been extended to at least 2013. According to the European Commission (EC), one of the overall aims and objectives of the public health action programme is to promote action to reduce health inequalities by identifying health inequalities and supporting the development of measures and strategies on socioeconomic health determinants.


234 European Commission. Public Health Website: Socio-Economic Determinants of Health - Health Inequalities,
In coordination with Eurostat—the European Union statistical agency—the program has recently developed common indicators for health—European Community Health Indicators (ECHI), which will form the basis for the European health information system. Indicator development was coordinated by the Working Party on Health Indicators assisted by Scientific Secretariat European Community Health Indicators Monitoring (ECHIM), which is coordinated by the National Public Health Institute (KTL) in Finland. ECHIM is currently continuing the work of ECHI, Phases I and II. In addition to members from all of the EU Member States, the Working Party also includes representatives from WHO and OECD. Among other projects, the Working Party also coordinates Tackling Health Inequalities In Europe: an integrated approach (EUROTHINE), which was described above, and the Urban Health Indicators Project (EURO-URHIS), which is in development.

The ECHI developed by the public health program presently consists of a comprehensive ‘long list’ of approximately 400 public health indicators and a ‘short list’ of 82 indicators that were chosen for implementation priority and will be implemented in all EU Member states. Additions to the short list are being proposed, and a new release of the ECHI short list is expected by the end of 2008. One of the criteria for selection of the indicators in general, and specifically for the ‘short list’ was that indicators should be oriented to health inequalities, especially through health and social policies. The main categories for the ECHI indicator set are:

- Demographic and socioeconomic situation, which includes population and socioeconomic factors;
- Health status, which includes all-cause and disease-specific mortality, disease-specific morbidity, generic health status, and composite health status measures;
- Determinants of health, which includes personal and biological factors, health behaviours, and living and working conditions;
- Health systems, which includes health prevention, protection, and health promotion; health care resources and utilization; health expenditure and financing; and health care quality/performance, including indicators such as subjective satisfaction indicators, process indicators such as waiting times, inappropriate treatments, and health outcomes such as avoidable death, readmission rates, and antibiotic resistance; and
- Health promotion interventions, which includes health policies and programmes.

235 Ibid.
The Working Party on Health Indicators recommends that the final indicators should be presented by age group, gender, socioeconomic status—income, education and occupation, and national and subnational regions. In the meantime, work is ongoing on the implementation phase in all EU countries, and a new European Health Interview Survey is being planned as a data source for the ECHI. Future plans include the addition of “user-windows” on the indicator website that will bring up subsets of indicators related to areas of health policy interest, thematic entries such as age groups, and disease groups with their determinants and cost, etcetera. In this way, the indicators will be especially useful for policy development. The proposal is to have “cockpit information,” to show major trends in public health, and a priority list to follow developments for specific policy area or targets, programs or projects.

The indicators are available on the International Compendium of Health Indicators (ICHI) website, which is the collection of health indicators used by WHO-Europe, OECD and Eurostat, and is designed to allow comparison of indicator definitions used by the different indicator systems. As are all Eurostat data, all data will be publicly available through the Internet for no charge. Although the choice of ECHI indicators was informed by health inequalities, since the indicator lists are general and not related to health inequalities, per se, they are not included in the Compendium of indicators found in the Appendices.

4.3 Countries with comprehensive systems of health disparities indicators

U.K. researchers, Ken Judge, et al., recently reviewed the policies of EU countries that have developed, or are in the process of developing, national strategies to reduce health inequalities. Noting that “the fight against poverty and social exclusion is crucial for tackling health inequalities,” they reported that most of the countries in Europe are developing strategies through a social inclusion/ exclusion focus, which also includes a focus on social and economic determinants of health. According to Iain Crombie, et al, whom they cite, “As social justice/social inclusion policies deal with the underlying causes of poor health (low income and unemployment, housing and homelessness, and social exclusion), they are directly relevant to inequalities in health.” Because of this emphasis, indicators of health disparities are often

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240 Ibid., accessed.
241 European Community Health Indicators Monitoring (ECHIM). "News from ECHIM and Working Party Indicators."
243 The ICHI website address is: http://www.healthindicators.org/ICHI/general/startmenu.aspx
244 Judge, Platt, Costongs, and Jureczak. Health Inequalities: A Challenge for Europe, accessed.
245 Ibid., accessed. p. 10.
246 Ibid., accessed. p. 10.
247 Crombie, Irvine, Elliott, and Wallace. Closing the Health Inequalities Gap: An International Perspective,
included in baskets of indicators that were designed to measure social exclusion/inclusion and the determinants of health.

Judge, et al. found that the countries are attempting to narrow the gap between the poorest and the wealthiest groups, but none has made an effort to reduce the health gradient at every level of society. Most countries focus on individual groups, with some exceptions such as England, Scotland, and Sweden, targeting communities or other geographic areas. The authors report that levels of monitoring health inequalities in European countries fall into three categories—countries with comprehensive systems for monitoring that include systematic frameworks and targets, countries with limited or not fully comprehensive systems, and countries with no specific tools to monitor progress. However, they also note that, with few exceptions, European governments have not developed systematic and comprehensive evaluations of programs or policies designed to reduce health inequalities.

The countries that Judge, et al. list with comprehensive systems include all of the nations in the United Kingdom of Great Britain—Northern Ireland, England, Wales, and Scotland. Those with less comprehensive systems include Finland, Denmark, Germany, Latvia, Netherlands, Poland, and Spain. Judge, et al. did not include Sweden in their lists because they note that, although Sweden has made a definite commitment to reducing health inequalities, it has chosen to do so through broader public health strategies and has decided not to use explicit reduction targets. Other publications have noted that Sweden, as well as England, are among the few countries which have policies focused on reducing health disparities in geographical locations, gender, employment status, and ethnicity.

However, this review of the literature pertaining to public health systems in 15 countries has found that, among the United Kingdom countries, only England has a comprehensive system. Also, Sweden has developed specific indicators based on inequalities in socioeconomic and lifestyle determinants that compare outcomes for municipalities, counties, and the nation as a whole.

4.3.1 England

The United Kingdom of Britain (UK) is composed of four, semi-autonomous countries—England, Scotland, Wales, and Northern Ireland—each of which is responsible for policies and actions for health promotion within its jurisdictions. However, the four countries have a common approach, and all have recognized reducing health inequalities to be an overarching, long-term goal. Their approach focuses on health care and health behaviour factors,
as well as on the wider, social determinants of health, which one working group described as being “crucial to a long-term, sustainable reduction in health inequalities.” Targets are framed slightly differently in each country to reflect that country’s context and needs. A recent update from the European Commission Working Group on the Social Determinants of Health Inequalities suggested that the UK experience could provide a useful model for other states, especially in:

- being clear about what’s happening on health inequalities; quantifying inequalities and measuring change; identifying barriers, opportunities and possibilities for action, and learning lessons from elsewhere; and
- developing a dual approach—which highlights the compatibility of a social determinants and health targets approach—that focuses on both short- and long-term issues, and developing successful interventions.

The 2008 Canada Senate review of international population health policy—produced by the Subcommittee on Population Health of the Standing Senate Committee on Social Affairs, Science and Technology (hereafter referred to as the “Canada Senate report”)—notes that England “is the first, if not only, country with a whole-of-government policy to reducing health disparities and improving overall population health.” All government departments are required to take health impacts and health inequalities into account when formulating new policy proposals, and are given extra resources if they meet agreed goals or targets. As Sir Michael Marmot, a leading UK health inequalities researcher who is also chair of CSDH, notes:

The level of information to monitor health, inequalities in health, and their determinants is high in this country… Having high-quality information is essential to monitoring progress in this area. This country has been at the forefront in documenting health inequalities, in analyzing the causes of the problem, determining what can be done, putting policies in place and now monitoring progress.

Judge, et al. note that the 2002 report by Sir Donald Acheson, *Independent Inquiry into Health Inequalities*, which reviewed scientific evidence on health inequalities based on a holistic, social model of health and made 39 recommendations for reducing these inequalities, “paved the way for action on a broad front on health inequalities,” and led to national targets and strategies. In

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252 Ibid., accessed. p. 6.
2003, England developed a strategy for reducing health inequalities by 2010, set out in *Tackling Health Inequalities: A Programme for Action*. The aim is to reduce the health inequalities gap by improving the health of disadvantaged groups and areas faster than that of the rest of the population. The Scientific Reference Group on Health Inequalities was created to monitor health inequalities, with Sir Michael Marmot appointed to chair the group. There are plans to “refresh the strategy” later in 2008.

As a focus for action, England has identified 70 local areas with the worst health and deprivation indicators, which it has termed the “spearhead group,” and the Department of Health has provided the areas with Health Trainers to help improve health. These areas together represent approximately 28% of the total population of England. The areas were identified on the basis of being in the bottom fifth nationally for three or more of the following five factors:

- Male life expectancy at birth
- Female life expectancy at birth
- Cancer mortality rate in those aged <75
- Cardiovascular disease mortality rate in those aged <75
- Index of Multiple Deprivation (Local Authority Summary) average score

A special Health Inequalities Unit has been created in the Department of Health to coordinate work by the federal government, local authorities, and nongovernmental organizations. England has systems for monitoring health inequalities at the national and local levels. This includes indicators of the two overarching Public Serve Agreement (PSA) targets, 12 national headline indicators, and a local basket of 70 indicators, from which communities can choose to indicate their particular needs.

### 4.3.1.1 Public Serve Agreement (PSA) health inequalities indicators

The 2010 health inequalities goal set an overarching target—by 2010, to reduce inequalities in health outcomes by 10% as measured by infant mortality and life expectancy at birth. Specifically, the two PSA targets to be monitored are:

- For infant mortality: “starting with children under one year, by 2010 to reduce by at least 10 percent the gap in mortality between the routine and manual group and the population as a whole”; and

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• For life expectancy at birth: “starting with local authorities, by 2010 to reduce by at least 10 per cent the gap between the fifth of areas with the worst health and deprivation indicators (the spearhead group) and the population as a whole.”

4.3.1.2 National health inequalities headline indicators

The 12 national health inequalities indicators cover mortality from specific diseases, access to health care, health behaviour, and wider social determinants of health. They provide a broad summary of areas to be monitored where interventions are expected to make a significant impact, and are partially based on available data. The 2005 Status Report notes that “although formulated in specific terms—socio-economic groups and geographical areas—they are intended to encompass a much more general strategy to address all of the major health inequalities including gender, ethnicity and age, as well as health in specific disadvantaged groups such as lone parents and homeless people.”

The Status Reports include limited ethnicity measures, and both absolute and relative measures. The absolute measure is the difference between indicator values for the disadvantaged group and the reference group (either the least disadvantaged group or the population as a whole), while the relative measure is presented as the ratio of the indicator value in the disadvantaged group to the reference group, rather as the percentage difference between the two groups. Depending on data availability, socioeconomic measures include area deprivation, occupation-based socioeconomic status, and income or a proxy measure such as vulnerable households, or eligibility for free school meals. The indicators for child poverty and for homelessness are not analyzed by the gap between comparison groups, by rather by the extent of the problem by proportion or number.

According to Bonnefoy, et al., “[T]here has been significant criticism of these indicators as a means to measure complex and dynamic phenomena. They have been accused of reflecting a reductionist and mechanistic approach to understanding health inequalities.” For example, the authors cite Exworthy et al. as criticizing the indicator set for having too few indicators oriented specifically around inequality and for having too many that relate to healthcare interventions rather than other health determinants. Marmot also notes that there are limitations to the indicators and there are plans underway for revisions. According to Marmot, what is

especially needed are indicators of mental health and a broader focus on the experience of ethnic
groups and disabled people.

Each of the 12 headline indicators is related to a target. For example, the target to reduce
premature mortality from heart disease and cancer (called the “big killers”) includes reducing
mortality rates:

- from heart disease, stroke, and related diseases by 40% in people under age 75, with a
  40% reduction in the inequalities gap between the quintile area with the worst health and
deprivation and the population as a whole.
- from cancer by 20% in people under age 75, with a 6% reduction in the inequalities gap
  between the quintile area with the worst health and deprivation and the population as a
  whole.270

The 2 PSA and 12 national headline indicators are shown in Table 2 below.

270 Tackling Health Inequalities: A Programme for Action, accessed.
Table 2. Public Serve Agreement (PSA) and National headline health inequalities indicators, England

<table>
<thead>
<tr>
<th>Indicator topic</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Public Serve Agreement (PSA) Indicators</strong></td>
<td></td>
</tr>
<tr>
<td>1. Infant mortality</td>
<td>Relative gap (i.e., percentage difference) in infant mortality rates between the ‘routine and manual’ socio-economic group and England as a whole, by father’s occupation and mother’s country of birth</td>
</tr>
<tr>
<td>2. Life expectancy</td>
<td>Relative gap in life expectancy between England and the fifth of local authority districts (LADs) with the worst health and deprivation indicators (the spearhead group) and the population as a whole, by gender</td>
</tr>
<tr>
<td><strong>National Headline Indicators</strong></td>
<td></td>
</tr>
<tr>
<td>1. The big killers</td>
<td>Age-standardised death rates per 100,000 population for the major killer diseases (cancer, circulatory diseases), ages under 75</td>
</tr>
<tr>
<td>2. Teenage pregnancy</td>
<td>Rate of under-18 conceptions per 1,000 female population aged 15–17</td>
</tr>
<tr>
<td>3. Road accident casualties</td>
<td>Road accident casualties per 100,000 resident population, children (ages 0–15), and all ages</td>
</tr>
<tr>
<td>4. Primary care services</td>
<td>Number of full-time equivalent GPs [general practitioners] per 100,000 weighted population</td>
</tr>
<tr>
<td>5. Flu vaccinations</td>
<td>Percentage uptake of flu vaccinations among older people (aged 65+)</td>
</tr>
</tbody>
</table>
b. Prevalence of smoking among pregnant women                                                                                                     |
| 7. Educational attainment*          | Percentage of pupils aged 16 achieving five or more A–C grades (or equivalent) on the GCSEs*, by FSM–free school meal eligibility vs. all students and vs. students not eligible for FSM, and by selected ethnic identity* |
| 8. Fruit and vegetable consumption  | Proportion of people consuming five or more portions of fruit and vegetables per day, in the lowest quintile of household income distribution, by gender                                                                 |
| 9. Housing                          | Percentage of households living in non-decent housing by sector/ vulnerable household status (social tenants, vulnerable private households, and non-vulnerable private households), by ethnic identity                               |
| 10. Physical education (PE) and school sport | Percentage of schoolchildren who spend a minimum of two hours each week on high-quality PE and school sport within and beyond the curriculum, by FSM eligibility                                                   |
| 11. Poor children                   | Proportion of children living in low-income households, for both relative and absolute low-income measures and across all low-income thresholds, and on both before and after housing cost measures, * trends shown by rates in each of 7 years |
### Indicator topic Description

<table>
<thead>
<tr>
<th>Indicator topic</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>12. Homeless families</td>
<td>Number of homeless families with children in temporary accommodation arranged by local authorities (LAs) by type of accommodation</td>
</tr>
</tbody>
</table>

**Notes:**

For most of the indicators, the inequality measures presented are the absolute and relative gaps between the most disadvantaged group and a reference group (the least disadvantaged group and/or the whole population). That is, the position of the most disadvantaged group is compared with the least disadvantaged group and/or the national average.

The most and least disadvantaged groups are identified using socio-economic measures (area deprivation, social class, income) or suitable proxy measures (vulnerable households, eligibility for free school meals (FSM)). Limitations of data availability mean it is not possible to identify the comparison groups in the same way for all the indicators.

*Ethnic groups include: White, Chinese, Indian, Mixed, Black Caribbean, Black African, Pakistani, and Bangladeshi.

* Education system in England: In the last year of compulsory education in England (aged 15–16) nearly all children take examinations for the General Certificate of Secondary Education (GCSE). After age 16 a majority of children continue in education for at least another two years. At around age 18 most of these take examinations for the General Certificate of Education (Advanced) (the A-level), usually in 2 to 4 subjects. A-levels or equivalent qualifications are normally required for entry to universities.

*Low-income households: The low-income threshold is 60% of the median household income. For relative low income, the threshold moves each year. For absolute low income, the threshold is fixed at 1996/97 levels in real terms. Persistent low income is defined as low income, before housing costs, in three out of the four years in each period.


### 4.3.1.3 Health inequalities “basket of indicators”

In addition to the 12 national health inequality headline indicators, England also publishes a wider health inequalities “basket of indicators” that reflect health status or outcomes, behaviour risk factors, and social determinants of health, including those related to health care. The Department of Health commissioned the London Health Observatory (LHO) to develop the basket of indicators to be used at the local level in order to monitor progress toward reducing health inequalities. According to LHO, it is currently in the process of reviewing the indicators included in the local basket.

The original basket contained 70 indicators, but there have been a number of additions since the list was first released in 2003. Also, 26 indicators are currently in development. Tracking all of them is not mandatory. Local areas are free to choose which ones to monitor and may

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supplement indicators from the basket with additional locally available and relevant indicators. The indicators are separated into 13 sections:

- Employment, poverty, and deprivation
- Housing and homelessness
- Education
- Crime
- Pollution and physical environment
- Community development
- Lifestyle, including diet, smoking, and physical activity
- Access to local health and other services
- Accidents and injury
- Mental health
- Maternal, infant and child health
- Older people
- Tackling the major killers

The entire “basket of indicators” list, including the additions and recommended indicators in development, are included in the Compendium of health disparities indicators in the Appendices.

**4.3.1.4 Health Poverty Index**

With funding from the Department of Health, the Health Poverty Index (HPI) has been created by two teams of developers—from the South East Public Health Observatory (SEPHO), and the Department of Geography and Geosciences at the University of St. Andrews, with visualization implemented by Oxford Consultants for Social Inclusion, Oxford University—to provide individuals with a useable, online, visual tool to compare progress locally (at the level of Local Authorities—LAs) against national data across a range of 26 health, social, and economic health determinant indicators.273 According to the HPI website, “The HPI tool allows groups, differentiated by geography and cultural identity, to be contrasted in terms of their 'health poverty’. A group's 'health poverty' is a combination of both its present state of health and its future health potential or lack of it.”274 The data can be presented by bar charts, tables, or by a spider diagram to allow comparisons between the chosen local area and the chosen reference group.

David Manley of the University St. Andrews and one of the developers of the HPI points out that the index represents experimental statistics, and offers the following caveat:

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273 Watson, Jo, and Chris Dibben (development team leaders). *The Health Poverty Index (Website)*, South East Public Health Observatory (SEPHO), and the Department of Geography and Geosciences at the University of St. Andrews, with visualisation implemented by Oxford Consultants for Social Inclusion, Oxford University, 2008; accessed March 2008; available from http://www.hpi.org.uk.
274 Ibid., accessed.
It is, however, important to realise that the indicators in the HPI represent experimental statistics. The driving force behind the HPI was to allow access to a wide range of data to provide as full a picture as possible rather than concentrating on maximum precision. If this had not been the case the range of indicators would have been far fewer. Therefore, the indicators should be treated with caution. Moreover, care should always be exercised when inferring conclusions on the likely situation of individuals when using aggregated data.\(^{275}\)

The 26 indicators are divided into root causes—subdivided by regional prospects, local conditions, and household conditions; intervening factors—subdivided by resources to support health, healthy areas, and behaviours and environments; and situation of health—subdivided by health and social care, appropriate care, and health status. They are listed in the Compendium of health disparities indicators in the Appendices.

An example of the spider diagram—called the HPI Chart—is reproduced in Figure 4 below. The higher the value achieved by the indicator, and the further the indication on the chart is from the centre of the circle, the worse the health situation is. On the website, moving the mouse over the indicator name brings up a short description of the indicator, clicking on the indicator name brings up a bar-chart showing the sub-indicators that are used to calculate the full indicator, and by using the navigation links the data may be viewed as a bar chart, a table, or in Excel data.

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4.3.1.5 Indices of Deprivation across the UK

England, Scotland, Wales, and Ireland all have summary measures of disparities, called Indices of Deprivation, that identify the level of multiple deprivation experienced by individuals at small area levels with populations between 750 and 1900 people.\textsuperscript{276} U.K. National Statistics recently produced a brief report explaining the similarities and differences between the indices, which are not totally comparable.\textsuperscript{277} In each case, the index is calculated according to statistics for a number of indicators across the following domains: income, employment, health, education,


\textsuperscript{277} Ibid., accessed.
accessibility of services – housing component, accessibility of other services, living environment – indoors, living environment – outdoors, and crime. Each domain contains between two and six indicators. According to National Statistics:

Where possible and most notably in the income and employment domains, indicators are summed and divided by the ‘at risk population’ (for example, the number of income support claimants as a proportion of the total population) to give an overall area rate of deprivation.\(^\text{278}\)

The indicators are combined to provide a domain level of deprivation, which is ranked and aggregated with the other domain scores to form the index. Technical reports are available for all of the indices.\(^\text{279, 280, 281, 282}\)

The indices vary in a number of ways, such as the description of the indicators (e.g., education is described differently in each country), measurements of access to services (e.g., England and Northern Ireland focus on road distance to key services, Scotland measures drive time and public transport time, and Wales measures the proportion of the population within 15–30 minutes of key services by walking or bus), and domains (e.g., Wales has no crime domain). The population sizes of the small areas are also different, and each country’s index contains a different number of indicators (England–37, N. Ireland–43, Scotland–37, and Wales–32).

The Indices of Deprivation are often used as the socioeconomic variable in research studies, and are used for targeting policy and funding areas. The indicators that are contained in each index are interesting as examples of socioeconomic determinant of health and health indicators.

Therefore, they are listed in Table 1 in the Appendices, which also compares similar indices used in New Zealand, Australia, and Quebec. In the cases where the indicators are specific to the country (especially in the education domains), generic topics more relevant to Canada are used.

\(^\text{278}\) Ibid., accessed. p. 1.  
4.3.2 Sweden

The Canada Senate report refers to the Swedish health system as a “comprehensive, ‘whole-of-government’ approach to population health. Its population health policy is enshrined in legislation.” Adopted in 2003, the Public Health Objectives Act establishes a national comprehensive population health policy, and commits Sweden to health equality among its population, irrespective of gender, class, sexual orientation, ethnic background or disability. The Canada Senate report notes that the Act is “Sweden’s first formal population health policy statement and one of the world’s first explicit strategies employing a determinants of health approach.” The Act includes improving public health as a policy goal of all government departments, and emphasizes that a gender and class perspective should be incorporated into all public health work.

Vicente Navarro, health policy professor at Johns Hopkins University in the U.S. and Pompeu Fabra University in Spain, describes the Swedish government’s health plan as representing “a gigantic step in the correct direction.” Furthermore, he notes: “As it now stands, Sweden’s national health plan is the most progressive such plan in existence. It is developing a strategy that far surpasses the narrow, reductionist view that tends to limit health policy to medical care interventions.”

Sweden has formulated objectives or aims concerning social, or non-medical, determinants of health, rather than targets or aims for individual illnesses. Therefore, all of the aims are expressed as socioeconomic determinants of health, rather than as health measurements such as mortality rates or disease outcomes. The Swedish National Institute of Public Health (SNIPH) notes, “The advantage of taking health determinants and not diseases and health problems as a starting-point is that they constitute appropriate focal points for political initiatives and decisions and can hence be influenced via different types of societal measures.”

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288 Ibid. p. 23.
4.3.2.1 Health determinant domains, principle indicators, and sub-indicators

The public health policy objectives are organized into 11 domains that represent structural determinants and lifestyle determinants. Sweden has prioritized 42 “proposals for action” that are based on these determinant domains. Developments within these domains are measured using 36 principle indicators and 47 sub-indicators, which form the Basic Public Health Statistics for Local Authorities (BPHS) system. The 36 principle indicators and their descriptions, as well as the 47 sub-indicators, are listed in the Compendium of health disparities indicators found in the Appendices of this report. The 47 sub-indicators were obtained via personal email correspondence with Bernt Lundgren, Public Health Policy Expert, Director-General’s Office and Department of Policy Analysis and Monitoring, Swedish National Institute of Public Health.\(^\text{291}\)

Statistics and data for the indicators can be accessed on an interactive Internet portal in three forms—fact sheets, databases, and interactive maps, which are all in Swedish (with a few examples in English). Statistics are presented for Sweden’s 290 municipalities and three largest cities, Sweden’s counties, and the nation as a whole. The statistics are intended to help municipalities and others monitor public health in their areas, and are updated once a year.\(^\text{292}\) In addition, SNIPH is required to publish an extensive report on trends for these indicators every four years. The first report, The 2005 Public Health Policy Report, was released in 2005, but only a summary is available in English.\(^\text{293}\) It provides an overview of the indicators and lists the 42 proposals in connection with the domains.

The SNIPH website (http://www.fhi.se/) provides more detailed information on the 36 principle indicators and a selection of the sub-indicators. The following information is taken from that source.\(^\text{294}\) The 11 domains and a brief description of the indicators used include:

1. **Participation and influence in society.** Indicators include data on election turn-out and gender equality.

2. **Economic and social security.** Indicators include data on work, unemployment, income, education, and reported crime.

3. **Secure and favourable conditions during childhood and adolescence.** Indicators include statistics on eligibility to study at upper secondary school and municipal resources for children. Since there is some evidence pointing to a relationship between low birth weight and poorer conditions during childhood and adolescence, statistics on

\(^{291}\) Lundgren, Bernt, Public Health Policy Expert, Director-General’s Office and Department of Policy Analysis and Monitoring, Swedish National Institute of Public Health, personal communication with Karen Hayward, GPIAtlantic, May 9, 2008.


\(^{293}\) The 2005 Public Health Policy Report (English Summary), accessed.

low birth weight have also been included.

4. **Healthier working life.** Indicators include data on work injuries, disability pension, and sick leave. Examples of indicators in development include self-estimated (ill) health linked to work-related problems, accumulated strain, and low work influence (which was not described).

5. **Healthy and safe environments and products.** Indicators include data on injuries and poisonings, suicides, and a municipality being designated a *Safe and secure community* and *An allergy-friendly municipality*, which shows that it is implementing environmental initiatives. Other indicators which are planned, but do not yet have available data on the municipal level, are: adapted housing for the elderly or physically disabled persons, accessible green areas, access to smoke-free environments, air pollution, social noise, and quality of indoor environments.

6. **Health and medical care that more actively promotes good health.** Indicators include numbers of health-promoting hospitals in the county and youth clinics in the municipality, which are indicators of health care that more actively promotes good health.

7. **Effective protection against communicable diseases.** Indicators include data on three-types of child vaccinations. Other indicators will be added later.

8. **Safe sexuality and good reproductive health.** There is presently one indicator in this area, which is the number of abortions performed. There are plans to include the prevalence of chlamydia and other sexually transmitted diseases.

9. **Increased physical activity.** Indicators are in development, since there is a lack of data on the municipality level. Indicators that have been proposed include physical activity levels of youth and adults, and percentage of the population walking or cycling in relation to total personal transport.

10. **Good eating habits and safe food.** Indicators include breastfeeding frequency, and deaths from cardiovascular disease, which are also linked to eating habits as well as to other domains and factors such as physical activity and tobacco use.

11. **Reduced use of tobacco and alcohol, a society free from illicit drugs and doping, and reduction in the harmful effects of excessive gambling.** Indicators linked to smoking include data on pregnant women who smoke, parents who have small children and who smoke, and deaths from lung cancer and COLD (chronic obstructive lung disease). Indicators linked to alcohol include alcohol-related mortality, and data on serving licenses and alcohol sales. Indicators concerning doping and gambling at the municipality level have no data availability and are in development.\(^{295}\)

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Generally, the statistics are:

- stratified by age group and gender, type of family, socioeconomic group, geographical level, and ethnicity where possible,
- presented in different ways—most often as a percentage, but sometimes as a number per 1,000, 10,000, or 100,000,
- not age-standardized in order not to bias the statistics (therefore caution is recommended if the area has a high/low population of a particular age group, e.g., seniors); age-standardized data for causes of death will be incorporated into the database, and
- able to compare municipalities with Sweden’s counties and Sweden as a whole.

In addition to indicators related to the 11 domains, the following background indicators are provided for municipalities, counties, and Sweden:

- **Population**, % by gender and age group—broken down into 10-year age groupings
- **Average life expectancy at birth**, by gender, mean value for specific period (e.g., for 1999–2003)
- **Number of inhabitants**, subdivided by gender, and country of birth group (e.g., OECD countries (not including Sweden, Finland, or Southern Europe), Sweden, Finland, Southern Europe, Eastern Europe, Outside Europe)
- **Number of families with children under aged 18**, divided into 1, 2, 3, and 4+ children, by % in each area
- **Migrations** (both in and out–across municipal or county borders), age groups are 18–24, 25–54, and 55+
- **Public health work**—for municipalities: by yes or no – existence of:
  - written overall action plans/policies for public health work in the municipality;
  - intersectoral body such as public health council or equivalent;
  - public health coordinators (if yes, extent of job by %—e.g., whether full or part-time);
  - Local Welfare Management System (e.g., whether the municipality systematically monitors its public health work by implementing a local welfare management system;
  - Municipality is member of Public Health Forum (which enables experience and knowledge exchange);
- **Tax rate**, % share of earned income that a wage-earner must pay in municipal income tax, national average, and income equalization by Swedish krona (SEK) per inhabitant (also includes cost equalization, general government subsidies, introductory regulations and level adjustment during the subsidy year).

Data for the Swedish indicators come from a wide-variety of sources, such as the population census, public finance statistics, SNIPH health surveys, election statistics, labour market statistics, the crime prevention councils, etc. As noted above, not all of the indicators have data available, but when data development is complete, the data are entered into the Internet.
databases. Revisions are ongoing and, as noted, there are plans to develop indicators in other areas, such as more equity-sensitive indicators on health determinants for different subgroups, indicators of discrimination, more comprehensive injury indicators, and more local environment and infrastructure indicators that “promote playing, walking, and cycling.” In addition, there are plans to incorporate “freedom from gender-related violence” as a new sub-goal that would be incorporated into all 11 domains.

In addition, the Swedish Social Indicator Program, in connection with Statistics Sweden, collects data on 125 social indicators within 13 domains—education, employment, working conditions, income, material living standards, housing, transport, leisure, social networks, participation, victimization, health, and social mobility. All of the indicators are objective indicators, and are available for 120 population subgroups, e.g., gender, age, household type, employment status, trade-union affiliation, education, etc. Andrew Sharpe, of the Centre for the Study of Living Standards (CSLS) in Canada, describes the two main formats used to present this number of indicators:

The first is a standardized tabulation of the indicators in a given dimension for the 120 groups. The table for a given dimension shows, for every variable in that dimension, both current values based on the latest four years of data collection and trends since 1975.

The second presentational method is a statistical technique that measures inequality between two given groups in a number of individual material living conditions indicators and the average of all of these indicators (absence of overcrowded housing, high standard of housing space, dishwasher, car, second home, caravan, boat, video, freezer, and access to a daily newspaper). This summary inequality measure can be presented graphically for any group pairing, and indicates whether inequality between these two groups for a particular variable has fallen or increased since 1975. This method has proven especially useful in analyzing generational gaps in Sweden. Statistics Sweden sees much value in the reduction of information provided by this graphical presentation.

4.3.2.2 Gender Equality Index

One indicator that is presently used is called the “Gender Equality Index,” or EqualX. This indicator is a summary measure that is a weighted sum based on 13 variables, for which individual data can be seen on the SNIPH website. This index compares regions, which are ranked by the size of the difference of rates between men and women for each variable. The index score is the average of these ranks. The variables on which EqualX is based include:

298 Ibid., accessed. p. 36.
4.3.3 New Zealand

4.3.3.1 Indicator systems and reports

Adopted in 2000, the New Zealand Health Strategy explicitly addresses reducing health disparities between population groups with special attention given to the Māori and Pacific peoples, and other low-income people. The strategy has 10 goals: a healthy social environment; reducing inequalities in health status; Māori development in health; a healthy physical environment; healthy communities, families, and individuals; healthy lifestyles; better mental health; better physical health; injury prevention; and accessible and appropriate health care. Of 61 specific objectives, 13 were chosen to focus on over the short to medium term. These involve smoking; nutrition; obesity; physical activity; alcohol and illicit drugs; suicide and suicide attempts; cancer; cardiovascular disease; diabetes; oral health; violence in interpersonal relationships, families, schools, and communities; severe mental illness; and child health care services.

As noted by the Canada Senate report, New Zealand has a well-documented system of health indicators, which includes indicators of health inequalities. More detailed technical information is available from this source. The Director-General of Health and Minister of Health, the Minister of Disability Issues, and the Minister of Social Development all present annual reports to Parliament on the New Zealand Health Strategy, the New Zealand Disability Strategy, and the Social Report, respectively. In 2006-2007, 41 government departments and agencies participated in these reports. This is a whole-of-government system, in

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300 Ibid., accessed. More detailed technical information is available from this source.
302 Ibid., accessed.
303 Ibid., accessed.
which all health indicators are stratified by socioeconomic position, ethnic identity, geographic place of residence, and gender. In part, these reports use indicators proposed by the New Zealand Ministry of Health, which produced two major reports—*Indicators of Inequality: Classification and Selection of Ethnic Health Disparity Indicators*, and *Monitoring Inequalities in Health*—to assist in the development of health inequality indicators. These reports are described in some detail below.

Through the 2007 *Public Health Bill*, use of Health Impact Assessments is formally encouraged across government departments and agencies.

In addition to the reports noted above, New Zealand has a number of other indicator sets included in its social indicator system that have some health disparity measures. These are mainly combinations of key Social Report indicators or other indicator efforts. Examples of these indicator sets are: Sustainability Indicators, Regional Indicators, Big Cities Quality of Life, Housing Indicators (measures of housing standards), and Cultural Indicators. It also produces poverty indicators that measure the uptake of poverty services, ethnic-specific indicators, gender-specific indicators, and life-stage indicators for children, youth, and seniors.

### 4.3.3.2 Ministry of Health indicators

The Ministry of Health annual health monitoring report—the latest being *An Indication of New Zealanders Health 2007*—presents 71 indicators that include indicators of demographic and socioeconomic factors (i.e., low income, education, unemployment, household crowding, not living in own home, no access to telephone and internet, and no access to motor vehicle), health outcomes, and risk factors that are broken down by ethnic groups (Maori, Pacific, Asian, and European/ Other), gender, and age group. Rate ratios for the indicators are given for small geographic areas (District Health Board regions) compared with New Zealand as a whole.

Although New Zealand has proposed an extensive list of health inequalities indicators (described below), data are not available to populate them all. For example, the Ministry of Health has produced a series of reports that focus only on mortality—the fourth being from 2007—that use many of the proposed health inequalities indicators to report ethnic and socioeconomic mortality trends. Because of data availability, all-cause and specific-cause mortality indicators, rather than morbidity indicators, are used in these reports. Data are from the New Zealand Census—Mortality Study—funded by the Ministry of Health—which has linked mortality records

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Tobias, Indicators of Inequality: Classification and Selection of Ethnic Health Disparity Indicators accessed.


for three years following each census since 1981. New Zealand Census–Mortality Study links mortality and census data to analyze inequalities in mortality rates on both absolute and relative scales (i.e., absolute rate differences and rate ratios) for ethnic inequalities in mortality, and regression-based measures (i.e., Slope Index of Inequality and Relative Index of Inequality) for socioeconomic inequalities in mortality. Socioeconomic status is these reports is indicated by equivalized household income. Socioeconomic inequalities are also calculated based on education, automobile access, housing tenure, neighbourhood deprivation, labour force status, and occupational class. Mortality rates in these reports are calculated by age group (ages 1 – 74) and gender for four ethnic groups (Maori, Pacific, Asian, and European/ Other), and by either three (terciles) or five income groups (quintiles).

The Ministry of Health has also produced other reports specifically related to health inequalities. For example, many of the proposed indicators discussed below were used in the 2002 Reducing Inequalities in Health report of headline indicators, which also included social determinants of health indicators. The indicators in the report are presented by absolute differences and relative ratios between Mäori and Pacific peoples compared to the general, non- Mäori or Pacific population. These indicators are shown in the Compendium of health disparities indicators in the Appendices.

### 4.3.3.3 Ministry of Social Development indicators

As previously noted, the Ministry of Social Development produces an annual Social Report that presents a series of indicators of social and economic wellbeing. Since both this report and the annual health report include indicators of health inequalities, they are complementary. The Canada Senate report notes that the indicators used are relevant for population health.

The Social Report includes indicators of health, knowledge and skills, paid work, economic standard of living, civil and political rights, cultural identity, leisure and recreation, physical environment, and social connectedness. Many of the indicators are stratified by ethnic group (Mäori, Pacific peoples and European/ Päkehä), as well as by standard household unit family types (single-parents, two-parent families, unattached individuals, etc.). Income inequality is measured by the Gini coefficient, for international comparability, and a New Zealand measure—P80/P20, which is the ratio of households with income at the 80th percentile (i.e., 20% down from the top) to households with incomes at the 20th percentile (i.e., 20% up from the bottom).

The indicators used in the social report are listed in the Compendium of health disparities indicators in the Appendices.

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disparities indicators found in the Appendices of this report.

4.3.3.4 National government health inequalities framework and proposed indicators

Framework

In 2002, the New Zealand government established a framework to be used by all levels of government, which is elaborated in the previously mentioned Ministry of Health report, Reducing Inequalities in Health. The framework takes four approaches:

1. **Structural** – root causes of health inequalities including social, economic, cultural, and historical factors that are fundamental to the determination of health. Housing, education, labour markets, and other social services are included.

2. **Intermediate Pathways** – material, psychosocial, and behavioural factors that mediate the impact of structural factors on health. Interventions include providing access to material resources, promoting healthy lifestyles, and enhancing the physical and social environments. Included in this category are public housing, healthy cities, workplace interventions, community development programs, transportation policies and health protection.

3. **Health and disability services** – especially equitable access.

4. **Impact** – minimizing the impact of illness and disability through initiatives such as income support, disability allowances, accident compensation and antidiscrimination legislation.

This framework was based on two major reports—Indicators of Inequality: Classification and Selection of Ethnic Health Disparity Indicators, and Monitoring Inequalities in Health, which the Ministry of Health produced to assist in the development of health inequality indicators. The reports provide a classification of disparity indicators, a menu of proposed indicators, and criteria for their selection. The indicators were developed on the basis of a Ministry of Health analysis of health expectancy, burden of disease, attributable risk, and avoidable mortality and morbidity, which was largely restricted to a comparison of Māori with non-Māori (non-indigenous or Pākehā people).

Classification of indicators

To classify the indicators, Martin Tobias, of the Ministry of Health and author of the reports, uses a four-axis taxonomy that identifies the two extremes of each axis:

1. **Integrated indicators/ domain-specific indicators**

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316 Tobias. Indicators of Inequality: Classification and Selection of Ethnic Health Disparity Indicators accessed.


318 The disparities found in the Māori population were subsequently found in other disadvantaged groups such as the Pacific peoples.
Integrated indicators represent the disparity outcome as one number, or summary measure such as disability adjusted life year (DALY). Domain-specific indicators represent either the mortality or morbidity—subdivided into physical and mental health—domains.

2. **Generic indicators/cause-specific indicators**
Generic indicators “sum up all causes of the outcome of interest.” Cause-specific indicators represent the outcome attributable to a specific cause such as a particular risk factor or disease, or cause group such as avoidable mortality.

3. **Whole-of-population indicators/life-cycle, stage-specific indicators**
A whole-of-population indicator is an indicator of the size of the inequality in health status between groups (i.e., using a reference group for comparison), and is distinguished from within-group comparisons. It can cover all dimensions of health or only a single domain, such as mental health. This is distinguished from disparity-share indicators, which Tobias defines as indicators “of the contribution to the total inequality in health (along one or all domains) between groups attributable to a specific cause; the cause may be a disease (or injury), risk factor or determinant.”\(^{319}\) For the purpose of comparisons, whole-of-population indicators need to be age standardized. Life-cycle, stage-specific indicators are disparity-share indicators of specific phases of the life cycle, such as infant, child, youth, working age, or senior health. In these indicators, age, gender, and socioeconomic position should be taken into account. Whole-of-population indicators provide an overall assessment of whether total disparity is improving or not, and disparity-share indicators can link to specific policies and interventions strategies and with performance measures.

4. **Proximal/distal level of causation indicators**
Proximal indicators are those closely related to health states (diseases and behavioural risk factors), whereas distal indicators are the non-medical, socioeconomic determinants of health, which can be directly or indirectly related to health outcomes.\(^{320}\)

Each indicator can represent one level in each of the four axes. For example, an indicator could be described as a domain-specific, cause-specific, whole-of-population, proximal indicator. Tobias notes, “Use of this framework may assist in ensuring that an appropriate mix of indicators is selected to represent all life-cycle stages, gender and social class cleavages, and causes.”\(^{321}\) He also suggests that a variety of health frameworks can be derived from this classification, depending on the purpose. For example, the New Zealand Social Indicators, which capture the determinant of health levels, are classified as:

- Summary measures of population health (integrated), # 1;
- Physical health measures: a. fatal outcomes; b. non-fatal outcomes (cause specific), # 2;
- Mental health measures: (generic), #2;
- Social health measures: a. sexual health; b. violence; c. drug-related harm (either whole-of-population or life-cycle, stage-specific depending on the population measured, and

\(^{319}\) Tobias. *Indicators of Inequality: Classification and Selection of Ethnic Health Disparity Indicators* accessed. p. 23.

\(^{320}\) Ibid., accessed. p. 6.

\(^{321}\) Ibid., accessed. p. 6.
distal levels), #3 and #4; and
• Measures of health risk exposure: a. biological; b. behavioural, (distal), #4.

The approach taken in the report is to view health as a two-dimensional construct, comprising ‘quantity of life’ (mortality) and ‘quality of life’ (morbidity) outcomes, and suggests that, ideally, health should be measured by both of these dimensions, and/or an integration of the two. Tobias notes that the New Zealand Burden of Disease Study found that both dimensions contribute “about equally” to the health loss in New Zealand.

In terms of mortality, the age of death, or premature mortality, is a key issue, and, for morbidity, health status is typically described in terms of functional limitation (disability) rather than positive wellbeing, in order to focus on disparities. In addition, he notes that it is assumed that physical and mental functioning can be measured independently of each other, although they are interconnected.

Tobias also points out that Māori and Pacific cultures traditionally favour a more holistic concept of health that does not separate physical and mental functioning, “or even of ‘health’ from ‘non-health’ wellbeing,” but that, since he is recommending more universal and internationally comparable measures, culturally specific indicators are beyond the scope of the report.322

Tobias suggests that it is also important to distinguish between causes and fatal and non-fatal health outcomes, which will help to design intervention strategies or evaluate intervention results. He states that “[d]iseases and injuries are the proximal causes (pathophysiological processes) of health outcomes – not the outcomes themselves,” that behavioural and biological risk factors are further upstream in the causal chain, and that social conditions or contexts are the distal causes of health outcomes, which act both directly and indirectly on the outcomes. He notes that all of these factors are important to measure, and that an indicator set should represent the health disparity itself as well as the cause of, or contributor to the health disparity.

**Indicators not included**

Since health determinants are captured in the social development indicator set, Tobias has not included them in his list of recommended indicators. Also, health service indicators are not included. In addition, indicators that can be tied to targets and strategies and that can be evaluated against specific health system or performance measures are distinguished from health disparity indicators (HDIs), and are not included. Examples of performance measures are input measures such as Māori provider development, measures of access such as disparities in immunization coverage, or measures of quality of care such as disparities in limb amputation rates among diabetics. Tobias notes that while performance measures are important indicators of disparities, they are not included in the proposed indicator set because their selection needs be determined by the kind of strategy or intervention involved. Therefore, only health status (health outcome and health risk exposure) indicators are included. However, Tobias does suggest that monitoring health outcome and behaviour risk indicators will provide a more useful input to

322 Ibid., accessed. p. 2.
policy if linked to monitoring of health service indicators and socioeconomic contexts.

Measurement

In terms of measurement, Tobias recommends the ‘external standard,’ or range, approach, using both absolute difference and relative ratio measures. This method provides a direct measure of inequality by comparing the health of one group with the health of a reference group that has better health outcomes. Tobias also suggests that good disparity-share indicators need to reflect substantial disparities—i.e., disparities that make a major contribution to the health of at least one of the groups being compared, and are substantively unequally distributed between them. As an example, he notes:

[B]lood total cholesterol makes a major contribution to the health of both Māori and European New Zealanders, but is not (at present) significantly unequally distributed between these groups, and so is not a good disparity share indicator. On the other hand, tuberculosis is highly unequally distributed (age-adjusted notification rate ratio of > 6 in 1999) but makes only a small absolute contribution to the health of the Māori population (and even less to that of the European population), and so may not be a particularly useful disparity share indicator, at least for most policy purposes.\(^ \text{323} \)

Criteria for indicators

Tobias uses the standard criteria for selecting a manageable number of indicators for both individual indicators and the collective set of indicators—validity, reliability, responsiveness, modifiability, accountability, monitorability, predictiveness, and acceptability and sustainability—with reliability and validity (in that order) being the most important. The definitions of these criteria can be found in Section 7 of this report. Basically, it is important that indicators be able to measure a health condition or risk that is both important and unequal; accurate and precise; capable of changing measurability within 1–5 years; responsive to potential policy strategies; able to monitor accountability in the case of performance measures; dependant on data that is regularly collected; able to anticipate future needs; and understandable to policy makers and other key constituencies.\(^ \text{324} \)

Proposed indicators

Tobias suggests that 25 indicators would be a manageable number of indicators for the HDI set. He also recommends that the following should all be represented: age, gender, and socioeconomic groups; all classification axes, with a reasonable balance across them; and consistency with indicators already being monitored both nationally and internationally should be considered for comparison purposes.

Tobias then provides a menu of 40 health disparities indicators, which is reproduced in the

\(^{323} \text{Ibid., accessed. p. 5.} \)
\(^{324} \text{Ibid., accessed. p. 7.} \)
Compendium of health disparities indicators in the Appendices. He also recommended a minimum set of 27 health inequalities indicators that are mainly cause and/or lifecycle, stage-specific indicators that can be monitored within less than three years. These indicators are also included in the Appendices Compendium and are shown in Table 3 below. As noted, the lists include only health outcome and risk factor measures, and do not include health service indicators or health determinant indicators, as Tobias recommends. Also as previously noted, the health determinant indicators are included in the Ministry of Social Development’s *Social Report*, and are also listed in the Appendices Compendium.
Table 3. Proposed minimum set of 27 health inequalities indicators, New Zealand

<table>
<thead>
<tr>
<th>Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>DALE – Disability Adjusted Life Expectancy at birth</td>
</tr>
<tr>
<td>LE – Life Expectancy at birth</td>
</tr>
<tr>
<td>All-cause YLL rate – Years of Life Lost</td>
</tr>
<tr>
<td>Self-rated health</td>
</tr>
<tr>
<td>Disability prevalence (adjusted for severity)</td>
</tr>
<tr>
<td>Avoidable mortality and YLL rate</td>
</tr>
<tr>
<td>Avoidable hospitalization rate</td>
</tr>
<tr>
<td>IMR – Infant Mortality Rate (or postneonatal mortality rate, or SIDS–Sudden Infant Death Syndrome rate, depending on the purpose)</td>
</tr>
<tr>
<td>LBW – Low Birth Weight (preferably distinguishing premature delivery from growth retardation)</td>
</tr>
<tr>
<td>Breastfeeding rate (full at three months; full and partial at six months)</td>
</tr>
<tr>
<td>DMF – Number of decayed, missing or filled permanent teeth at age 12</td>
</tr>
<tr>
<td>Hearing failure at school entry or earlier if possible</td>
</tr>
<tr>
<td>Youth fertility rate (or under age 18 pregnancy rate)</td>
</tr>
<tr>
<td>Youth suicide and attempted suicide rates</td>
</tr>
<tr>
<td>Youth road traffic injury hospitalization and mortality rates</td>
</tr>
<tr>
<td>IHD mortality rate – Ischaemic Heart Disease</td>
</tr>
<tr>
<td>Rheumatic fever notification rate (and/ or RHD hospitalization rate)</td>
</tr>
<tr>
<td>Breast cancer registration rate (linking to the performance measure: screening rate)</td>
</tr>
<tr>
<td>Invasive cervical cancer registration rate (linking to screening rate)</td>
</tr>
<tr>
<td>Hepatitis B notification rate (and/ or liver cancer notification rate)</td>
</tr>
<tr>
<td>Combined VPD – Vaccine Preventable Disease notification rate (including TB) (linking to immunization coverage rate)</td>
</tr>
<tr>
<td>Meningococcal disease notification rate</td>
</tr>
<tr>
<td>Smoking rate (possibly including a smoking intensity measure)</td>
</tr>
<tr>
<td>Physical inactivity rate</td>
</tr>
<tr>
<td>Obesity rate (e.g., self-reported Body Mass Index – BMI)</td>
</tr>
<tr>
<td>Diabetes rate</td>
</tr>
<tr>
<td>Hypertension rate</td>
</tr>
</tbody>
</table>


Tobias comments that there are major limitations to the above list:

- The range of risk factors included is restricted.
- The ability to monitor trends in disability within a three-year time frame only allowed the use of DALE, which is the key integrated whole-of-population measure recommended by WHO.
- The measurement of mental illness and disability is inadequate.
- It is deficient in integrated and generic measures of health.
- It does not include important social indicators such as income inequality, and other social
capital indicators such as housing, and unemployment.  

4.3.3.5 New Zealand Index of Deprivation

In addition to analyzing the indicators by age, gender, and socioeconomic position (income, education, and occupation/social class), and linking them to social indicators, Tobias recommends that each indicator should be stratified by the New Zealand Index of Deprivation (NZDep96), which has been updated to 2006—NZDep2006.  

The NZDep2006 is a small-area measure of deprivation that New Zealand developed to be used for resource allocation, research, and advocacy by community groups. It measures relative socioeconomic deprivation over 23,786 small geographical units or ‘mesh-blocks’ that each contains a median of approximately 87 people. The NZDep2006 scale ranges from 1 to 10, where areas that are the least deprived are scored as 1, and areas that are the most deprived are scored as 10. NZDep2006 combines 9 variables from the 2006 Census that are age and sex standardized, which reflect 8 dimensions of deprivation. Because of small numbers per ethnic group in each area, the variables could not be standardized by ethnicity. The dimensions and variables are shown in Table 4 below and are compared with deprivation measures from other countries in Table 1 in the Appendices.

Table 4. NZDep2006 – New Zealand Index of Deprivation, dimensions and variables

<table>
<thead>
<tr>
<th>Dimensions of deprivation</th>
<th>Variable description (in order of decreasing weight)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income</td>
<td>People aged 18–64 receiving a means tested benefit*</td>
</tr>
<tr>
<td></td>
<td>People living in equivalized households with income below an income threshold*</td>
</tr>
<tr>
<td>Owned home</td>
<td>People not living in own home</td>
</tr>
<tr>
<td>Support</td>
<td>People aged &lt;65 living in a single parent family</td>
</tr>
<tr>
<td>Employment</td>
<td>People aged 18–64 unemployed</td>
</tr>
<tr>
<td>Qualifications</td>
<td>People aged 18–64 without any [training] qualifications*</td>
</tr>
<tr>
<td>Living space</td>
<td>People living in equivalized households below a bedroom occupancy threshold*</td>
</tr>
<tr>
<td>Communication</td>
<td>People with no access to a telephone*</td>
</tr>
<tr>
<td>Transport</td>
<td>People with no access to a car</td>
</tr>
</tbody>
</table>

Notes: *
The ‘means tested benefits’ included in the NZDep2006 variable are: Sickness Benefit; Domestic Purposes Benefit; and Invalid’s Benefit.
‘Equivalized households’ are households where the incomes of individuals living in the household have been adjusted for household composition.
‘Qualifications’ refers to: no qualification has been obtained from a completed course of at least three months of full time study.

325 Ibid., accessed.
‘Living space’ is often called ‘household crowding,’ and is based on the Canadian National Occupancy Standard formula, which relates number of bedrooms to number needed for size and composition of household. ‘Telephone’ refers to both land-line and mobile phones.


### 4.3.3.6 NZiDep: A New Zealand Index of Socioeconomic Deprivation for Individuals

Recently Clare Salmond, et al. developed the New Zealand Index of Socioeconomic Deprivation for Individuals (NZiDep), which is a survey-based, ‘non-occupational’ index of socioeconomic deprivation for individuals that is designed to be used as a tool in research into social and economic determinants of health.\(^327\) According to the authors, “it is concerned with the symptoms or consequences of social stratification, rather than with stratification itself,” and is intended to reflect the limitations that people experience, rather than conspicuous consumption.\(^328\) Through factor analysis, the initial 28 deprivation characteristics were reduced to eight deprivations questions that were internally consistent, as well as “theoretically sound, valid, and highly practical.”\(^329\) The index is scored by the sum of the number of ‘yes’ answers to these questions. The variables based on the questions concern:

1. Using food banks
2. Buying cheap food to make ends meet
3. Feeling cold to save heating costs
4. Out of work for more than one month
5. Having to wear shoes with holes
6. Living on a means tested benefit
7. Going without fresh fruit and vegetables
8. Getting help from a community organization

The authors note that they designed the NZiDep to be used with ethnic groups especially, so it is not culturally specific. It is also applicable to all adults, not just the ‘economically active.’

### 4.3.4 Australia

#### 4.3.4.1 General approach

According to the Canada Senate report, Australia does not have a national population health policy concerning health disparities.\(^330\) However, mainly through the work of the Australian

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\(^{328}\) Ibid. p. 1477.

\(^{329}\) Ibid. p. 1483.

\(^{330}\) Canada Senate. Subcommittee on Population Health of the Standing Senate Committee on Social Affairs.
Research Program on Health Inequalities, it is concentrating on developing a strong evidence base of collaborative research on health inequalities and building comprehensive social health databases. For example, Gavin Turrell, et al. recently produced an extensive report describing health inequalities in Australia by area-level socioeconomic disadvantage, income, education, occupation, gender, and age for a large number of morbidity, health behaviour, social determinant of health risk factor, and health service use indicators, using data from Australian Bureau of Statistics (ABS) national health surveys.

Turrell et al. use an area-based measure of socioeconomic status, which is one of several Socioeconomic Indexes for Areas (SEIFA) developed by the ABS using population census data, called the Index of Relative Socioeconomic Disadvantage (IRSD). The IRSD, which is widely used in Australia, is compiled at the ‘collector’s district’ (CD) level, comprising approximately 250 dwellings in urban areas, and fewer dwellings in rural areas. Survey respondents can be classified into quintiles of socioeconomic disadvantage according to the value of the IRSD for their CD of residence, with quintile 1 being the least disadvantaged, and quintile 5 being the most disadvantaged. Weighted variables used to construct the index are shown in Table 1 of the Appendices to this report.

Australia has also developed a series of interactive “social health atlases” that are designed to highlight the relationships between socioeconomic inequality indicators and inequality in health status. Using online, interactive maps, the public is able to view small-area, geographic distributions of the population by a range health indicators (some of which are listed in footnote 325 below) that can be displayed by socioeconomic status and quintiles of socioeconomic disadvantage of the geographic areas.

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Population Health Policy: International Perspectives. First Report, accessed. Australia has seven priority areas, which account for almost 80% of the burden of disease—cancer control, cardiovascular health, injury prevention and control, mental health, diabetes, asthma, and arthritis and musculoskeletal conditions.

Ibid., accessed.


Ibid., accessed.

See also: Walker, and Becker. "Health Inequalities across Socio-Economic Groups: Comparing Geographic-Area-Based and Individual-Based Indicators [Socio-Economic Index for Areas - SEIFA]."

Glover, Tennant, and Woollacott. "The Social Health Atlas: A Policy Tool to Describe and Monitor Social Inequality and Inequality in Australia."

Glover, Hetzel, Glover, Tennant, and Page. A Social Health Atlas of South Australia, accessed. Indicator topics include demography, socioeconomic status (including Aboriginal status, family types, housing, summary measure of disadvantage, internet use at home), income support payments, health status (life expectancy, burden of disease – HALE, YLL, YLD, DALY, self-reported health, infant mortality, prevalence of chronic conditions and risk factors, premature mortality, potentially avoidable mortality, cancer incidence –all, lung, breast, colon/ skin, perinatal risk analysis, low birthweight, smoking in pregnancy, child abuse and neglect, and immunization), and use of services (hospital admissions, wait time, emergency department use, general practitioner use, home services, community health and mental health services, terminations of pregnancy).
4.3.4.2 Government of South Australia Department of Health – health inequalities indicators

Four Australian State governments have taken action to reduce health disparities, with special attention given to disparities of Aboriginal peoples. For example, the Government of South Australia Department of Health recently produced *Inequality in South Australia – Key Determinants of Wellbeing*, written by D. Hetzel, et al. According to the authors, the purpose of the report is to deepen “understanding of the impact that social, physical and economic factors have on health and wellbeing, and to describe the distribution of some of these factors across the South Australian population.” To highlight the extent of inequalities, 20 indicators that represent areas where considerable inequalities exist were selected. The topics include 6 indicators of health and wellbeing, and 10 other topics of social determinants of health—the IRSD disadvantage summary measure, income, education, labour force, transport, housing, crime, gambling, access to services, and other (homelessness and consumption of fruit and vegetables). The indicators, which are shown in Table 5 below, are broken down by gender, age, Indigenous status, and socioeconomic status, where data were available. This is a typical indicator list for health disparities, which most countries use as a basic selection.
Table 5. Health Disparities Indicators in S. Australia

<table>
<thead>
<tr>
<th>Topic</th>
<th>Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disadvantage</td>
<td>Summary measure of socioeconomic disadvantage</td>
</tr>
<tr>
<td>Income</td>
<td>Low income families</td>
</tr>
<tr>
<td></td>
<td>Children living in low income families</td>
</tr>
<tr>
<td>Education</td>
<td>School retention and participation</td>
</tr>
<tr>
<td>Labour force</td>
<td>Participation</td>
</tr>
<tr>
<td></td>
<td>Unemployment</td>
</tr>
<tr>
<td>Transport</td>
<td>Households without a motor vehicle</td>
</tr>
<tr>
<td>Housing costs</td>
<td>Rent assistance</td>
</tr>
<tr>
<td>Crime</td>
<td>Offences involving apprehension</td>
</tr>
<tr>
<td>Gambling</td>
<td>Expenditure and losses</td>
</tr>
<tr>
<td>Health and wellbeing</td>
<td>Self-reported health status</td>
</tr>
<tr>
<td></td>
<td>Life expectancy</td>
</tr>
<tr>
<td></td>
<td>Smoking during pregnancy</td>
</tr>
<tr>
<td></td>
<td>Low birthweight babies</td>
</tr>
<tr>
<td></td>
<td>Child abuse and neglect</td>
</tr>
<tr>
<td></td>
<td>Overweight and obesity in childhood</td>
</tr>
<tr>
<td>Access to services</td>
<td>Outside school hours care</td>
</tr>
<tr>
<td></td>
<td>Booking lists for non-urgent surgery</td>
</tr>
<tr>
<td>Other</td>
<td>Homelessness</td>
</tr>
<tr>
<td></td>
<td>Consumption of fruit and vegetables</td>
</tr>
</tbody>
</table>

In addition, the Hetzel, et al. report recommends potential indicators for which data were not available for small areas. These indicators are shown in Table 6 below.

### Table 6. Examples of potential indicators recommended in South Australia

<table>
<thead>
<tr>
<th>Topic</th>
<th>Potential indicators and their relevance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical environment</td>
<td>Air quality; levels of noise, dust (including from industry)</td>
</tr>
<tr>
<td>Refugees</td>
<td>Language competency; emotional and health issues</td>
</tr>
<tr>
<td>Social support, social networks</td>
<td>Ability to borrow money in a crisis; levels of trust among individuals or within specific neighbourhoods</td>
</tr>
<tr>
<td>Interpersonal violence</td>
<td>Levels of domestic and other forms of violence; impact on quality of life</td>
</tr>
<tr>
<td>Levels of adult literacy</td>
<td>Levels of personal and household debt</td>
</tr>
<tr>
<td>Disability</td>
<td>Levels of different forms of disability; impact on quality of life</td>
</tr>
<tr>
<td>Financial stress</td>
<td>Levels of personal and household debt</td>
</tr>
<tr>
<td>Smoking, alcohol, other drugs</td>
<td>Levels of use indicating health risk; impact on personal finances</td>
</tr>
<tr>
<td>Housing quality</td>
<td>Availability of electricity, running water; insulation in houses</td>
</tr>
<tr>
<td>Work environment</td>
<td>Sickness absence from work; sense of control over work; extent of effort-reward balance or imbalance; job security</td>
</tr>
</tbody>
</table>


### 4.3.4.3 Potential indicators of disadvantage based on personal experiences of disparities

Peter Sauder, et al. of the Social Policy Research Centre in Australia, recently released an extensive report concerned with developing new indicators of disadvantage.\(^3\)\(^4\)\(^1\) The underlying premise of the report is that “*social disadvantage takes many different forms, and the identification and measurement of poverty and other forms of disadvantage must be grounded in the actual living standard and experiences of people in poverty.*” \(^3\)\(^4\)\(^2\) (Emphasis is in the original). The report grew out of a need to understand the nature of factors that create social disadvantage and the need to develop of suite of indicators of disadvantage that would go beyond those defining “poverty as having an income that is inadequate to support an acceptable standard of living.”\(^3\)\(^4\)\(^3\)

The new indicators are concerned with social determinants of health, rather than health status alone, and are designed to focus on the actual experience and living standards of those living in poverty, as a complement to indicators based on comparing people’s incomes with poverty lines.

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\(^3\)\(^4\)\(^2\) Ibid., accessed. p.2.

\(^3\)\(^4\)\(^3\) Ibid., accessed. p. 7.
across a range of indicators. The research project, *Left Out and Missing Out*, drew on the concepts of deprivation (‘missing out’) and social exclusion (‘left out’). These factors were identified through focus groups and surveys. The focus groups were conducted with low-income families and community agency staff experienced in working with poverty and exclusion. In addition, a survey was conducted of over 2,700 adult Australians drawn at random from the federal election roll, and approximately 700 clients of welfare services. This survey, titled *Community Understanding of Poverty and Social Exclusion*, formed the basis of the new indicators.

In the report, results were shown for vulnerable sub-groups in the community sample including, people under aged 30, single older people, sole parent families, unemployed people, people with a disability, private renters, public renters, and Indigenous Australians. In addition, socioeconomic characteristics were shown by employment activity, principle source of income, education, housing tenure, self-identified social class, country of birth, disability status, and Indigenous status.

The indicators focus on the outcomes associated with disadvantage, relative to the adequacy of economic resources, and relate to the incidence rates of different dimensions of deprivation and social exclusion. They are divided into 26 indicators for deprivation and 27 indicators of exclusion. The survey identified the 26 items, out of a possible 61, that the majority of respondents considered to be essential, and deprivation was measured by identifying those who do not have and cannot afford each of the 26 items. The items were divided into 7 areas—everyday items; accommodation and housing; location and transport; health and health care; social and community participation; care and support; and employment, education and skills. The final indicator—Mean incidence—is an index score derived by summing the number of conditions experienced.

Exclusion was measured by disengagement or participation in a range of activities, lack of access to key services, and low economic capacity. The indicators of deprivation and exclusion are shown in Table 7 below. However, they were not added to the Compendium of health disparity indicators in the Appendices because the authors warn that the research was experimental and more work is needed to test the robustness of the indicators.
Table 7. Potential indicators of deprivation and exclusion recommended for Australia, based on the actual experiences and living standards of people living in poverty

<table>
<thead>
<tr>
<th>Deprivation indicators</th>
<th>Exclusion indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>A decent and secure home*</td>
<td>Disengagement indicators</td>
</tr>
<tr>
<td>A substantial meal at least once a day*</td>
<td>No regular social contact with other people*</td>
</tr>
<tr>
<td>Warm clothes and bedding, if it’s cold*</td>
<td>Did not participate in any community activities in the last 12 months*</td>
</tr>
<tr>
<td>Heating in at least one room of the house</td>
<td>Does not have a social life</td>
</tr>
<tr>
<td>Furniture in reasonable condition</td>
<td>No annual week’s holiday away from home</td>
</tr>
<tr>
<td>Comprehensive MV insurance</td>
<td>Children do not participate in school activities or outings (school-aged children only)</td>
</tr>
<tr>
<td>A telephone</td>
<td>No hobby or leisure activity for children</td>
</tr>
<tr>
<td>A washing machine</td>
<td>Could not get to an important event because of lack of transport in the last 12 months</td>
</tr>
<tr>
<td>A television</td>
<td>Could not pay one’s way when out with friends in the last 12 months*</td>
</tr>
<tr>
<td>Up to $500 in savings for emergency</td>
<td>Unable to attend wedding or funeral in the last 12 months</td>
</tr>
<tr>
<td>Secure locks on doors and windows</td>
<td>Service Exclusion indicators</td>
</tr>
<tr>
<td>Home contents insurance</td>
<td>No medical treatment if needed</td>
</tr>
<tr>
<td>A roof and gutters that do not leak*</td>
<td>No access to a local doctor or hospital*</td>
</tr>
<tr>
<td>Separate bed for each child</td>
<td>No access to dental treatment if needed</td>
</tr>
<tr>
<td>Separate bedroom for children over 10</td>
<td>No access to a bulk-billing doctor</td>
</tr>
<tr>
<td>Medical treatment if needed*</td>
<td>No access to mental health services</td>
</tr>
<tr>
<td>Able to buy prescribed medicines*</td>
<td>No child care for working parents*</td>
</tr>
<tr>
<td>Dental treatment if needed*</td>
<td>No aged care for frail older people</td>
</tr>
<tr>
<td>Dental check-up for children*</td>
<td>No disability support services, when needed</td>
</tr>
<tr>
<td>Regular social contact</td>
<td>No access to a bank or building society*</td>
</tr>
<tr>
<td>A week’s holiday away from home each year</td>
<td>Could not make water, electricity, gas or telephone payments in the last 12 months*</td>
</tr>
<tr>
<td>Presents for family/ friends once a year</td>
<td>Economic Exclusion indicators</td>
</tr>
<tr>
<td>A hobby or leisure activity for children*</td>
<td>Does not have $500 in savings for use in an emergency*</td>
</tr>
<tr>
<td>Computer skills</td>
<td>Had to pawn or sell something, or borrow money in the last 12 months</td>
</tr>
<tr>
<td>Schoolbooks/ new clothes for children</td>
<td>Could not raise $2000 in a week</td>
</tr>
<tr>
<td>School activities/ outing for children*</td>
<td>Does not have more than $50,000 worth of assets</td>
</tr>
<tr>
<td>Mean incidence</td>
<td>Has not spent $100 on a ‘special treat’ for myself in the last 12 months*</td>
</tr>
<tr>
<td>–</td>
<td>Does not have enough to get by on</td>
</tr>
<tr>
<td>–</td>
<td>Currently unemployed or looking for work</td>
</tr>
<tr>
<td>–</td>
<td>Lives in a jobless household*</td>
</tr>
</tbody>
</table>

Notes: * The top ten essential deprivation items among vulnerable sub-groups are indicated with an asterisk (*). An asterisk (*) in the list of exclusion indicators show the indicators that the authors chose to represent the severest forms of exclusion, cover services other than those provided by government, and items that are at the forefront of
current debates over service accessibility and welfare reform.


### 4.3.5 United States

#### 4.3.5.1 General approach

According to the Canadian Health Disparities Task Group (HDTG), the United States dialogue focuses mainly on access to health care, the consequences of inadequate health insurance, and the responsiveness to health care needs of racial and ethnic groups. The U.S. produces a number of regular reports on health disparities. For example, the Agency for Healthcare Research and Quality (AHRQ) is required by federal law to annually publish a *National Healthcare Disparities Report*, which summarizes access to health care and health care quality among “priority populations”—racial and ethnic minorities, low-income groups, women, children, elderly, residents of rural areas, and the disabled. However, the report does not consider the broader determinants of health.

A number of “chartbooks,” that report health status, health care utilization, and a limited number of risk factors (e.g., smoking) by socioeconomic status, and some by racial and ethnic status, have also been produced. The U.S. National Institutes of Health (NIH) have produced a recent book, *Examining the Health Disparities Research Plan of the National Institutes of Health: Unfinished Business*, which provides extensive information on conceptual and methodological issues involved in defining and measuring health disparities and is available online.

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345 See also: Nilsen. *Poverty in America: Consequences for Individuals and the Economy*, accessed.
347 See also: Swift, ed. *Guidance for the National Healthcare Disparities Report*.
350 Thomson, Mitchell, Williams, and Committee on the Review and Assessment of the NIH's Strategic Research Plan and Budget to Reduce and Ultimately Eliminate Health Disparities, eds. *Examining the Health Disparities Research Plan of the National Institutes of Health: Unfinished Business*. 

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4.3.5.2 Healthy People 2010

The U.S. initiative launched in 2000, Healthy People 2010, defines “eliminating health disparities” as one of two goals—the other being “to increase the quality and years of healthy life.” In 1998, a working group formed within the U.S. Department of Health and Human Services reported on possibilities for choosing health indicators to reflect progress toward the goals. In 2002, John Aberle-Grasse of the National Center for Health Statistics reported that no method for measuring health disparity had been specified, but that a working group had been established to recommend methodologies. According to Nancy Adler of the University of California, writing in 2006:

One important role for NIH-funded research in this domain is to develop the best measures and approaches for assessing and monitoring disparities for public health monitoring activities, as well as ongoing surveys. This requires research on: what needs to be monitored (e.g., socioeconomic factors, gender, race/ethnicity, and area of residence), how these can best be measured (e.g., meaningful measures of SES for specific populations, diseases, and questions), and which factors are most critical to monitor (e.g., the importance of measuring race/ethnicity and SES together). Such data will, in turn, be an important source for research on disparities.

In 2007, Kenneth Keppel of the U.S. National Center for Health Statistics reported that progress toward the goal of eliminating health disparities among subgroups of the U.S. population is now being evaluated for 498 population-based objectives, each of which is monitored by a specific health indicator. He notes that “the Healthy People 2010 database (http://wonder.cdc.gov/DATA2010) represents a unique compilation of information about racial and ethnic disparities for an extensive array of indicators,” which provide “race- and ethnicity-specific data for indicators representing a very broad array of outcomes, behaviors, risk factors, and health services.”

Keppel also notes that race- and ethnicity-specific data are routinely published for most of the indicators, which are based on the characteristics of persons in the population. The population groups include: American Indian or Alaska Native; Asian or Pacific Islander (broken down by native Hawaiian and other Pacific Islander); Hispanic or Latino; Black or African American non-Hispanic; and White non-Hispanic. The National Health Interview Survey collects data for these groups—along with data on gender, age, education level, family income level, geographic

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351 Liburd, Giles, and Mensah. "Looking through a Glass, Darkly: Eliminating Health Disparities."
353 Aberle-Grasse. "Measuring Disparity in Health Indicators - Healthy People 2010's 2nd Goal."
355 Keppel. "Ten Largest Racial and Ethnic Health Disparities in the United States Based on Healthy People 2010 Objectives ".
356 Ibid. p. 97.
357 There are plans to separate this category so that data for Asians will be reported separately.
location (urban/ rural), disability status, health insurance status, and sexual orientation. The Healthy People 2010 data are not available for all of the racial/ ethnic groups for all indicators. In particular, data for native Hawaiian and other Pacific Islander groups, and for those who identify with two or more groups, are limited and not reported.

Relative disparities are measured as ratios/ percent of deviation between the group with the best rate and the rate among the groups associated with the characteristic that is being measured. Keppel notes, however, that using only a relative perspective—and not including an absolute perspective as well—masks the size of the absolute difference between groups and the size of the public health impact. Among the indicators that showed the highest disparity rates in the U.S. were those relating to:

- Specific sexually transmitted diseases (new cases of gonorrhea, congenital syphilis, AIDS, and deaths due to HIV infection),
- Chronic disease (new cases of tuberculosis, deaths from melanoma, chronic lower respiratory disease–COPD, and prostate cancer),
- Drug and alcohol-related disease, death, and accidents (drug-induced deaths, fetal alcohol syndrome, motor vehicle deaths, deaths from poisoning, cirrhosis deaths, smoking by pregnant women, binge drinking among high school seniors, steroid use among 10th graders),
- Violence (nonfatal fire-arm injuries, fatal fire-arm related deaths, homicides, physical assault),
- Health care and prevention (no source of ongoing care, no Papanicolaou test, no HIV testing among tuberculosis patients, no knowledge of stroke symptoms, lack of self-monitoring of blood glucose concentration among diabetic persons),
- Environment (exposure to particulate matter, carbon monoxide exposure, ozone exposure), and
- Education (lack of high school completion).

The data are updated quarterly and are divided into 28 focus areas. Most of the areas are related to health status, access to health services, or behavioural risk factors (tobacco use, substance abuse, physical activity, and nutrition and overweight). Focus areas that relate to health determinants include food safety, environmental health, family planning, injury and violence prevention, health communication, and educational and community-based programs.

Because of the large number of indicators (498) and the fact that they are all measured by socioeconomic/ ethnic disparity status, they are not listed in the Compendium of health disparities indicators in the Appendices. However, the Centers for Disease Control and Prevention (CDC) has identified the 10 leading indicators as: the four behavioural risk factor

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358 Aberle-Grasse. "Measuring Disparity in Health Indicators - Healthy People 2010's 2nd Goal."
359 Keppel. "Ten Largest Racial and Ethnic Health Disparities in the United States Based on Healthy People 2010 Objectives ".
360 Ibid.
indicators, responsible sexual behaviour, mental health, immunization, access to health services, injury and violence, and environmental quality. Environmental quality indicators include those related to outdoor air quality, water quality, toxics and waste, healthy homes and healthy communities, infrastructure and surveillance, and global environmental health.\textsuperscript{362}

\subsection*{4.3.5.3 State-level health disparities indicator initiatives}

Individual States in the U.S., such as Florida and Minnesota, are also working toward reducing health disparities.\textsuperscript{363,364} Texas is developing a Health Disparities Index (HDI), which its HDI Indicator Working Group recommended should be composed of a core set of 60 indicators in four key areas—health disparities, healthcare disparities, physical environmental issues that can lead to health disparities; and social concerns.\textsuperscript{365} The proposed HDI includes 32 health disparities indicators (e.g., years of potential life lost due to chronic conditions such as cancer, diabetes, and HIV; prevalence of specific chronic diseases; mortality due to homicide, suicide, and motor vehicle incident; and infant and child mortality rates); 12 healthcare disparities indicators (e.g., access to care; cancer screening; insurance status; number of physicians available, and number of mental health providers); 6 physical environmental indicators (e.g., air quality, number of acres of parks, and presence of landfill); and 10 social concerns indicators (e.g., health behaviors such as smoking, alcohol, other substance abuse, or diet; obesity/overweight; high school graduates—measured after aged 25; population below the poverty level; children below the poverty level; language indicator—percentage of persons who do not speak English or language predominantly spoken at home; and health literacy).\textsuperscript{366} Three indicators that have not been seen in other systems include: the presence of landfills, waste dumps, superfunds, and hazardous spills; acres of parks; and prevalence of children born with birth defects.

The working group also recommended that each HDI indicator should be stratified by: income, race/ethnicity, gender, age, geographic, and rural and urban environments. According to the National Association of State Offices of Minority Health, the indicator selection is going through a process of revision and other recommendations have been made.\textsuperscript{367} Recommendations from

\textsuperscript{362} Ibid., accessed.


\textsuperscript{365} Health Disparities Education, Awareness, Research and Training (HDEART) Consortium. \textit{Executive Summary of Events-to-Date in the Creation of a Health Disparities Index/ Community Electronic Health Record}, Austin, Texas: Texas Department of State Health Services, Office for the Elimination of Health Disparities, 2006; accessed March 2008; available from http://www.hhs.state.tx.us/oehd/reports/docs/execsummo922006.pdf.

\textsuperscript{366} \textit{Final Report of Recommendations for Health Disparities Index Scope and Indicators}, Austin, Texas: Texas Department of State Health Services, Office for the Elimination of Health Disparities, 2006; accessed March 2008; available from http://www.hhs.state.tx.us/oehd/reports/docs/hdeartwgrpt.pdf.

\textsuperscript{367} National Association of State Offices of Minority Health (NASOMH). \textit{Texas - Office for the Elimination of Health Disparities}, National Partnership for Action to End Health Disparities, U.S. Department of Health and Human Services - Website last modified 2/28/08, 2008 accessed April 2008; available from
numerous state-wide parties were that the HDI should include:

- More indicators concerned with the social determinants of health, rather than have mainly indicators with a disease orientation,
- Also stratify the indicators by education level,
- Reduce the number of indicators that need expertise in specific calculations as Years Potential Life Lost in order to make the indicators more accessible for community use,
- Add more children and youth indicators such as preconception care, infant health, child and teen health data,
- Include more access to care indicators such as distance to health care/mental health care facility, availability of home health care and nursing homes, and access to medications,
- Include more environmental indicators such as economic indicators of wealth distribution or employment status, and crime indicators, and
- Include more indicators to address rural issues

4.4 Countries working toward developing health disparities indicators

4.4.1 Scotland

In 2003, the Scottish Executive created the Measuring Inequalities in Health Working Group “to determine the most appropriate indicators to use to monitor progress in tackling health inequalities.” The final report of the working group recommended 23 indicators, which included 6 indicators concerning children (i.e., smoking during pregnancy, breastfeeding, dental health, low birth weight, accidents, and infant mortality); 4 concerning youth (accidents, teenage pregnancy–females aged 13–15 and 13–19, and suicides); and 13 concerning adults (e.g., consumption of fresh fruit and green vegetables, smoking, self-reported general health and long-standing illness, obesity, mental health, life expectancy and premature mortality from all causes, cancer, coronary heart disease, and over-aged 75 mortality rates for all causes, cancer, and coronary heart disease).

However, according to the Scottish Public Health Observatory, the Scottish Executive chose only 6 of the indicators out of the 23 recommended—For adults – coronary heart disease, cancer, smoking, and smoking during pregnancy, and for youth – teenage pregnancy and suicides.


368 Health Disparities Education. Executive Summary of Events-to-Date in the Creation of a Health Disparities Index/Community Electronic Health Record, accessed.


370 Ibid., accessed.

The targets and indicators were released in 2004, in the publication, *Building a Better Scotland*. The report situates health inequalities within the current social inclusion policy. In addition to health status and healthy lifestyles, the social inclusion targets are also concerned with inequalities in life circumstances, such as unemployment, poverty and poor housing.

In *Building a Better Scotland*, one of the four objectives is concerned with health inequality—“Objective 1: Working across Scottish Executive Departments and with other delivery partners to improve the health of everyone in Scotland and reduce the health gap between people living in the most affluent and most deprived communities.” However, the target that the 6 indicators are designed to monitor, is “Reduce health inequalities by increasing the rate of improvement across a range of indicators for the most deprived communities by 15% by 2008.” Therefore, the approach Scotland takes is to narrow the health inequality gap by improving the health and determinants for the most disadvantaged groups in the most deprived quintile of communities across a range of indicators, without comparing these groups with other groups.

In 2006, the Scottish Executive produced *High Level Summary of Equality Statistics – Key trends for Scotland*, which presents a wider-range of data than the earlier report. Indicators are presented for the following domains: health and community care, life expectancy, mortality, diet, obesity, physical activity, smoking, alcohol, sexual health, dental health, and mental health. In addition, the indicators are stratified by age, disability status, ethnicity, gender, and, in some cases, religion.

### 4.4.2 Wales

In 2000, an Expert Group on Indicators of Health Inequality (EG), comprised of external professionals and representatives of the National Assembly for Wales, was established in Wales. The EG was to advise the Chief Medical Officer on the development of a system to monitor inequalities in health and health determinants, which would include recommendations for indicators. The EG recommended one headline indicator—“all deaths”—and 15 health

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375 Ibid., accessed.


378 Ibid., accessed.

inequality indicators that were primarily based on data availability. These indicators included the areas of premature mortality for coronary heart disease and lung cancer, cervical cancer registrations, heart surgery, mental health status, back pain, low birth weight, infant mortality, smoking, consumption of fruit and vegetables, and aged <18 teenage conception.

The EG also recommended that the monitoring methodology should be based on area measures, rather than measures based on individual characteristics, and compare the health of the people in the most socioeconomically deprived fifth of electoral wards with those in the least deprived fifth of wards. It also noted plans to add social determinant of health indicators to the recommended indicators.

Wales has since chosen five health-priority topics for the period 2004–2012—coronary heart disease, cancer, mental health, older people, and children. The Welsh Assembly Government has announced five targets for improving health, which have two dimensions: improving health and reducing inequalities in health between areas at the electoral ward level within Wales. The inequalities dimension specifically aims to reduce the difference between the health status—measured as rates of heart disease and cancer—of the most deprived 20% of wards and the least deprived 20% of wards. The target for children aims to decrease the difference in injuries and death from pedestrian accidents between the areas. Targets for mental health and older people, which are to increase “carers’ mental health scores” and the exercise levels of people aged 50–65, do not have an explicit equality component.

In addition, released in March 2008, a series of brief reports on the five target areas discuss the possibility of developing indicators of the social determinants of health.

### 4.4.3 Northern Ireland

According to Judge, et al., Northern Ireland has recently shifted its health policy from a concentration on the treatment of ill health to its prevention by emphasizing the reduction of health inequalities between geographic areas, and among low socioeconomic and minority groups. Specific targets for 2000–2010 include to reduce the gap in life expectancy between those living in the most and least deprived areas by 50%, and to reduce the gap in the proportion of people with a long-term chronic illness between those in the lowest and highest
Northern Ireland has an Inequalities Monitoring System (IMS) that includes a basket of 43 indicators used to assess geographical area differences in mortality, morbidity, the utilization of health care services, and access to health and social care services. The latter include aspects of income, employment, education, proximity to services, living environment, and crime and disorder. Inequalities between the 20% most deprived areas and Northern Ireland as a whole, and between the most rural areas and Northern Ireland as a whole are measured. The system also collects inequality data by religion (Catholic/Protestant), and Nationalists.

Indicators are based on the Northern Ireland Multiple Deprivation Measure, which was introduced in 2005 and provides a relative ranking of small areas—called Super Output Areas (SOAs)—that contain an average of 1,800 people in each of 890 areas.

4.4.4 Republic of Ireland

Health inequalities in the Republic of Ireland are addressed within the government’s policy on social inclusion. Ireland publications, Quality and Fairness: A health system for you and National Action Plan against Poverty and Social Exclusion, describe the national health strategy and the central policy framework for reducing health inequalities. The Irish Office for Social Inclusion produces an annual report in which it details findings on the health inequality targets. Key themes of the action plan revolve around health inequalities, income inadequacy, unemployment, education, housing, healthy lifestyles, rural poverty, and disadvantaged urban areas. Targets for these areas are described in the 2001 Institute of Public Health in Ireland report, titled Report of the Working Group on the National Anti-Poverty Strategy (NAPS) and

Health, and in the 2002 publication, *Building an Inclusive Society*. The health and social inclusion frameworks were updated in 2006 in the publication, *Towards 2016*, which adopts an individual life cycle approach.

Ireland has three key health status targets: to reduce the gap in premature mortality between the lowest and highest socioeconomic groups for circulatory diseases, cancers, injuries, and poisoning; to reduce the gap in low birth weights between the lowest and highest socioeconomic groups; and to reduce the gap in life expectancy between the “Traveller community”—Irish people who are an indigenous minority, and also known as Gypsies or Pavees, as they call themselves—and the whole population. Strategies also have been developed for homeless people, drug misusers, people with disabilities, and ethnic minorities.

According to Anna Harkin of the Irish Social Inclusion Unit, monitoring health inequalities has been hindered by a lack of health status and health care data disaggregated by socioeconomic group, and by the fact that lifestyle indicators are not routinely collected by health information systems, although health surveys conducted every three or four years do provide limited data. She notes that work is in progress that will improve the range of available health inequalities data in the near future.

Ireland and Northern Ireland's Population Health Observatory (INIsPHO), housed within the Institute of Public Health in Ireland, was created in 2006 to support those working to improve health and reduce health inequalities. The INIsPHO website reports that plans are underway to create an Irish Health Poverty Index (iHPI), based on the English Health Poverty Index, and that a selection of indicators will be available in 2008.

According to INIsPHO, Ireland currently uses the EU set of common indicators, also known as the Laeken indicators, to monitor poverty and social inclusion. The indicators were described above and are included in the Compendium of health disparity indicators located in the Appendices.

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396 Harkin. *Tackling Health Inequalities - a Case Study from Ireland*, accessed.

397 Ibid., accessed.

398 Ibid., accessed.

4.4.5 Netherlands

According to Dutch researchers Johan Mackenback and Karien Stronks, the strength of the Netherlands system is its focus on research and interventions.\(^{400}\) This focus has resulted in the Netherlands being home to some of the most prominent researchers in the field of health inequalities, such as Mackenbach, Anton Kunst, and Vivien Bos.\(^{401}\) Following the recommendations of WHO’s *Health 21* health policy, by 2020 the Dutch aim to reduce the gap in healthy life expectancy between the lower and higher income groups by 25% of the current difference, which is about three years. They have also developed less ambitious intermediate interventions.

Judge et al. note that the Netherlands National Institute for Public Health and the Environment (RIVM) has provided an overview of health inequalities data approximately every four years since 1993, and under the authority of the Ministry of Health, has developed a health inequalities monitoring system.\(^{402}\) Kelly et al. report that this monitoring system disaggregates data by education, income, geographical area based on postal codes, gender, age, and ethnicity.\(^{403}\) It also includes indicators of health behaviours, health care utilization (including paramedical consultations), health outcomes, “health-related selection” (i.e., income while working as disabled, and labour market position of chronically ill), and environmental factors. The latter include indicators of working conditions, material and financial situation, recreational facilities and access to green spaces, social support and social networks, and safety. However, Kelly et al. did not provide a specific indicator list.

4.4.6 Germany

The German Federal Ministry of Health and Social Security regards “equity in health” as one of five central topics for national health targets.\(^{404}\) In 2000, the German health care law required that health promotion and prevention services contribute to the reduction of health care inequalities. Since 1995, Germany has held an annual “Poverty and Health” conference in Berlin to discuss reducing health inequalities, which is generally attended by about 1,000 national health representatives.\(^{405}\)

German data for health inequalities indicators come from the National Health and Morbidity Surveys (conducted in 1998 for the population aged 19–79 and in 2006 for those aged 0–18).\(^{406}\)

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\(^{401}\) Ibid.


\(^{405}\) Ibid., accessed.

The indicators are stratified by age, gender, socioeconomic status, and family type (e.g., lone mothers and children in poverty). Indicators generally compare those with low and high socioeconomic status. As well as the general health and behaviour risk factor indicators—including the consumption of convenience and fast food, and nutritional supplements—German indicators also focus on health awareness, poverty, unemployment, education, and environmental indicators such as noise, air pollution, and indoor passive smoke.

4.4.7 Spain

The Spanish Ministry of Health publishes data on a basket of health indicators, drawn from the WHO European Programme, that include health inequalities-related indicators. The indicators stratify health status by social class, education, and geographical area. However, Judge et al. report that the information on health inequalities is confined to comparing Spain’s progress with other countries, rather than comparing differences between social groups within Spain.

4.4.8 Finland

According to Judge et al., Finland has had commitments to reducing health inequality since 1986. It has targets to reduce mortality differences between genders, educational attainment, and occupation by 20% by 2015. The Canada Senate report notes that Finland has a separate policy on poverty and social exclusion, but “there is little information on how its implementation is coordinated with the population health policy.”

The Ministry of Social Affairs and Health in Finland is in the process of developing an action plan and monitoring system for reducing socioeconomic inequalities in health between population groups. It is expected that the plan, which will be coordinated by the Public Health Committee, will be completed in 2008, and outcomes will be reported every four years. The action plan will be build around seven strands:

1. Reinforcing population health policies and integrating the health inequalities into them;


Ibid., accessed.


Ibid., accessed.


2. Strengthening work to reduce health inequalities in municipalities;
3. Focusing on alcohol and tobacco policies;
4. Enhancing equity in public services;
5. Reducing health inequalities in children and young people and preventing social exclusion;
6. Reducing health inequalities in people of working age;
7. Developing monitoring systems for health inequalities between population groups.\textsuperscript{414}

These strands cover: levels at which actions will be implemented (strands 1 and 2); major determinants of health (strands 3 and 4); the most important target populations (strands 5 and 6); and the information system necessary for policy implementation (strand 7).

The Ministry of Social Affairs and Health also notes that the following perspectives should be taken into account in all of the strands:

- the impact of social and economic structures;
- prevention of social exclusion;
- the needs of the most vulnerable and the gradient in health across the societal hierarchy;
- the problems of particular groups such as the long-term unemployed people and immigrants;
- the problems of children in particular, and of people of working age and old people; and
- differences between the genders.

A recent Finland government strategy report also noted that the intersectoral action plan will focus on reducing school dropouts, and preventing contagious diseases and illness originating in the environment.\textsuperscript{415}

4.4.9 Denmark

In Denmark, the public health policy described in the 2002 policy document, \textit{Healthy Throughout Life in Denmark}, states that reducing social inequality in health is one of the key objectives of public health policy.\textsuperscript{416} Since all policies have a strong equity dimension, there are no separate national documents concerned solely with the reduction of inequalities.\textsuperscript{417} In 2007, Denmark introduced a new structure for health care and promotion. Health care is now a regional responsibility and health promotion, outside of hospitals, is the responsibility of 98 municipalities. The national focus is on increasing health outcomes in the most disadvantaged

\textsuperscript{414} Ibid., accessed.
groups, and on factors that affect lifestyle choices. Prior to 2007, the focus was on the inequalities gradient and on narrowing the gap in social inequalities.\textsuperscript{418}

Monitoring health inequalities is included in the national indicator program, which contains 14 key indicators. Indicators relate to risk factors, target groups, and health promotion settings.\textsuperscript{419} Specific indicators include social inequalities in key areas—mortality, self-rated health, smoking and other behavioural risk factors, severe chronic illness, education, limited social networks, housing, traffic accidents, mental health, and workplace stress.\textsuperscript{420} Two of the indicators are explicit measures of the distribution of health—social differences in mortality, and social differences in the quality of life.\textsuperscript{421}

In 2008, a special health survey of disadvantaged groups, especially non-Western immigrants and people with low socioeconomic status, is being conducted. The survey will be distributed through shelters, counselling centres, “nurses on wheels,” and various organizations that will help reach people who are homeless, drug abusers, prostitutes, mentally ill or alcoholics.\textsuperscript{422}

4.4.10 Norway

Norway, which is not a member of the European Union, has a long-term commitment to social equity.\textsuperscript{423} Originally, the Norwegian focus was on reducing poverty in disadvantaged groups, and on individual responsibility for health.\textsuperscript{424} This focus changed in 2003 when the Ministry of Health explicitly addressed health disparities by announcing that reduction in health disparities between social classes, ethnic groups, and genders was one of the primary public health objectives.

In 2005, the Directorate for Health and Social Affairs released \textit{The Challenge of the Gradient}, which developed recommendations to reduce inequalities in health, mainly among social classes, ethnic groups, and genders.\textsuperscript{425} The report focused on prevention and the causal chain of inequalities, with emphasis on health determinants. In order to ensure that all aspects of the social determinants of health are properly addressed, it recommended that work occurring in

\begin{itemize}
\item \textsuperscript{418} Ibid., accessed.
\item \textsuperscript{421} Norwegian Ministry of Health and Care Services. \textit{National Strategy to Reduce Social Inequalities in Health}, accessed.
\item \textsuperscript{422} Curtis. \textit{Social Determinants and Health Inequalities - Country Report Denmark}, accessed.
\item \textsuperscript{423} Judge, Platt, Costongs, and Jurczak. \textit{Health Inequalities: A Challenge for Europe}, accessed.
\end{itemize}
sectors other than health should to be in line with work done within the health sector. Specifically, it recommended: “Firstly, emphasis on health monitoring will be increased in order to track trends in social inequalities in health; secondly, research in this field will be strengthened; thirdly, expertise on social health inequalities will be built up in public administration.”

In 2007, a report outlining a broad strategy to promote equity in health, titled *National Strategy to Reduce Social Inequalities in Health*, was released. The 100-page report presents a 10-year plan to develop a national and cross-sectoral, holistic approach to population health. The strategy paper presents a wide-range of topics that deal with inequalities linked to income, education, and occupation, and health problems in disadvantaged groups that can be linked to those areas. In addition, detailed plans focus on income/ income inequalities, childhood conditions, education, work and healthy working environments, healthy behaviours, and health services, as well as targeted initiatives, and the development of knowledge and tools such as health impact assessments and municipal planning tools.

The strategy has four priority areas:

1. **Fundamental social factors that contribute to social inequalities in health**: Reducing social inequalities that contribute to inequalities in health, which includes income inequality, early childhood development, and opportunities for education and work;
2. **Factors that have a more immediate impact on health**: Reducing social inequalities in health behaviour, including diet, physical activity, smoking, and other health behaviours such as gambling addiction, and use of health services, by focusing on the underlying and structural causes of these behaviours, as well as healthy choices;
3. **Targeted actions that promote social inclusion**: Promoting social inclusion, including eliminating homelessness, barriers to work, and school drop outs; and
4. **Policy instruments to advance knowledge and raise awareness about social inequalities in all social sectors**: Developing knowledge by strengthening research, and creating cross-sectoral assessment tools.

In addition, the plan outlines strategies for action that “level up” disadvantaged groups, such as:

- Reducing inequalities in income,
- Securing equal opportunities for development for all children, regardless of their socioeconomic situation,
- Developing an inclusive work life, and
- Improving living conditions for vulnerable groups.

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429 Ibid., accessed.
The government also has complementary plans to reduce poverty, described in the report *Norway’s Action Plan 2015 for Combating Poverty in the South.*

The new strategy will build on the present system, and involve a new monitoring system that will systematically and regularly update developments in the four priority areas. The Directorate for Health and Social Affairs is responsible for coordinating the design and development of the indicators, and for reporting annually on the indicators. In addition, the Norwegian Institute of Public Health is responsible for developing indicators and publishing regular reports on trends in social inequalities in health morbidity and mortality outcomes. Also, in connection with Statistics Norway, an Internet portal that contains, in part, key figures and indicators for determinants of public health has been set up to help municipalities with planning and policy design.

Because the indicators are still being developed, the national strategy report did not present a list of indicators. However, the indicators will be comprehensive and will build on the present extensive set of health and other indicators available in Norway. Various highlights of the potential monitoring system were discussed:

- The monitoring system will follow the guidelines for monitoring social inequalities in health suggested by the EU Working Group on Socio-economic Inequalities in Health in a 2001 report written by Anton Kunst, et al.

- Indicators from areas such as labour, the environment, social exclusion, etc. need to be disaggregated by socioeconomic status and combined with health indicators to produce a more comprehensive indicator set of social determinants of health.

- A new tool for comparing social and economic indicators with environmental indicators is being developed to indicate social inequalities in the distribution of environmental factors. These factors include indicators for noise, air pollution, access to green areas, traffic safety, and recreation grounds.

- Education, occupation, and income will be the main indicators of socioeconomic status.

- Indicators need to be broken down by age group, gender, and geographical area, where possible.

- Both absolute and relative expressions of inequalities should be used.

- Inequalities of health status throughout the life course, represented by children, youth, working aged, and senior groups, should be included.

- The main disadvantaged groups measured should include children, young people, and women in high-risk situations; people living alone; people with disabilities; immigrants; and ethnic groups including people living in multicultural communities such as “areas with Sami and Norwegian settlement,” and other deprived geographical areas.

- Data need to be broken down to the county and municipal level.

- Trends in income inequality are currently measured by summary indicators like the Gini

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coefficient, but indicators are needed that show where changes are occurring in the income distribution.

• Low income is measured as “under 60% of the median income.”
• Workplace indicators need to measure disparities in work-related death, illness, and injuries, including pressures that lead to stress; sickness absence; an inclusive working life, such as work-life balance; and healthy working environments.\(^{433}\)

5. Canadian evidence of health disparities

The Canadian research evidence connecting socioeconomic status with health disparities is strong. For example, low income is negatively related to almost every health indicator, including self-reported physical and mental health, mortality and morbidity rates associated with major chronic diseases, avoidable injury, behaviour risk factors (e.g., tobacco, alcohol and drug misuse, diet, and physical activity) and health care access and use.\(^\text{434}\)

In addition, health determinants such as education, employment and working conditions, crime, food and housing security, and the physical environment, to name a few, are also associated with health disparities. According to Paula Braveman, determinants of health that would be appropriate to measure include “conditions that produce different serious consequences of illness for different groups of people.”\(^\text{435}\) However, she also remarks that “it is a relatively rare occurrence that the most privileged stratum does not have the highest level of health (and an even more rare occurrence that the most privileged social stratum actually does poorly on a given health indicator.)”\(^\text{436}\)

In a comprehensive health disparities monitoring system, indicators of all of the factors could be included. However, in order to highlight these disparities, a smaller number of indicators needs to be chosen as key or headline indicators. This presents a major challenge, which makes it crucial to examine the available evidence.

As noted above, the New Zealand Ministry of Health suggests criteria for choosing health inequalities indicators.\(^\text{437}\) It recommends that health disparities indicators should reflect substantial disparities—those that make a major contribution to the health of the disadvantaged group being compared with the health of the more advantaged group—and disparities that are substantially unequally distributed between the groups.\(^\text{438}\) For example, it notes that high cholesterol levels make a major contribution to the health of both Maori and New Zealanders, but are not significantly distributed unequally between the groups. Also, although tuberculosis is highly unequally distributed, it makes only a small contribution to the health of either Maori people or New Zealanders. Therefore, using cholesterol or tuberculosis rates, in these cases, would not be useful as health disparity indicators.

Katherine Frolich, et al. have summarized some of the main health disparities in Canada, especially in relation to Aboriginal status, income, and geographical place.\(^\text{439}\) In terms of health status indicators, they note that the main disparities can be seen in rates of life expectancy at birth, infant mortality, diabetes, lung cancer, and infectious diseases. Also obesity, years of life

\(^{434}\) Raphael. Poverty and Policy in Canada. Implications for Health and Quality of Life.  
\(^{436}\) Ibid. p. 187.  
\(^{438}\) ________. Indicators of Inequality: Classification and Selection of Ethnic Health Disparity Indicators accessed.  
lost due to unintentional injuries, and suicide rates, as well as tobacco use were highlighted as showing the most disparities between groups.

Many of the studies in Canada that link health with disparities are based generally on the connections between low-income and risk factors or health outcomes, and specifically with the proportion of morbidity and mortality that can be attributed to low income. A survey of some of this evidence is provided below.

### 5.1 Disadvantaged groups

#### 5.1.1 Child poverty

Evidence shows that children living low-income households are more likely than children living in higher-income households to have physical, psychological, emotional, and behavioural problems. These problems are seen in higher rates of respiratory illnesses and infections, sudden infant death syndrome, obesity, high blood lead levels, iron deficiency anaemia, chronic ear infections, mental retardation, fetal alcohol syndrome, and dental problems. Health Canada reports that low-income children are more likely to have low birth weights, poor health, less nutritious foods, higher rates of hyperactivity, and delayed vocabulary development.

Childhood problems also begin early in life and tend to accumulate over the life course. Adults who were disadvantaged as children have poorer health, educational attainment, and employment prospects than adults who have not grown up in disadvantaged circumstances.

Marvyn Novick, of Campaign 2000 and Ryerson University, reports that the Canadian child poverty rate in 2005 had not decreased in at least 16 years—based on after-tax Low Income Cut-offs (LICOs), the rates in 2005 and 1989 were both 11.7%. In 2005, when the poverty rate was based on before-tax LICOs, over a million Canadian children (16.8%) were living in poverty.

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443 Ibid.


Provincial poverty rates (based on after-tax LICOs) ranged from a high in British Columbia of 15.2% to a low of 3.3% in Prince Edward Island. The only provinces that had child poverty rates below 10% were Prince Edward Island, Alberta, and Quebec.

Child poverty rates are higher in disadvantaged populations that face persistent disparities. For example, in 2005, almost half (47% before tax) of lone mothers and their children were living in poverty.\textsuperscript{446} In 2001, 40% of children living outside of First Nations reserves and 28% of children living on First nations reserves were living in poverty. First Nations child poverty rates were more than 50% in both Saskatchewan and Manitoba.

\subsection*{5.1.2 Lone-parent mothers}

In 2001, lone-parent mothers headed 20% of all families with children.\textsuperscript{447} A recent literature review on lone-parent families found widespread evidence that mothers heading lone-parent families, as well as their children, are at a higher risk of living in poverty and suffer from more health-related problems than those living in two-parent families.\textsuperscript{448} In 2005, 33.4% of children under the age of 18 living in low-income families were living with a lone-parent mother, compared to 7.8% of low-income children who were living with two parents.\textsuperscript{449}

In 2001, 21.9% of lone mothers had not completed high school, compared with 16.6% of mothers in couple relationships who did not graduate.\textsuperscript{450} Although in the same year, 71.1% of lone mothers were employed—60.8% of these mostly full time—Statistics Canada reports that families headed by lone-parent mothers had the lowest incomes of all family types.\textsuperscript{451} In 2003, 38% of lone-mothers, including those employed, had incomes that were below the after-tax LICOs, compared with 13% of lone-parent fathers, and 7% of non-elderly two-parent families.\textsuperscript{452}

According to the Canadian Research Institute for the Advancement of Women (CRIAW), common impacts of poverty on women manifest in the following health outcomes: acute and chronic ill health, susceptibility to infectious and other disease, increased risk of heart disease, arthritis, stomach ulcers, migraines, clinical depression, stress, breakdown, vulnerability to mental illness and self-destructive coping behaviours.\textsuperscript{453}

\textsuperscript{446} Ibid., accessed.
\textsuperscript{450} Galarneau. "Education and Income of Lone Parents."
\textsuperscript{452} Curtis, and Pennock. "Social Assistance, Lone Parents and Health. What Do We Know, Where Do We Go?.
\textsuperscript{453} Morris, Marika. \textit{Women and Poverty: A Fact Sheet}, Canadian Research Institute for the Advancement of Women,
Using data from the 1996/97 NPHS, Canadian researchers have also found that lone mothers reported worse self-perceived health than partnered mothers.\textsuperscript{454} They were more likely to report role overload, increased stress, and higher rates of depression and anxiety than partnered mothers, and to request professional help for mental health problems and use mental health services more often.

### 5.1.3 Aboriginal peoples

Aboriginal peoples in Canada suffer from a wide-range of negative health determinants that manifest in health disparities. In 2000, 31% of off-reserve Aboriginal peoples living in families, and 56% of unattached Aboriginal individuals, were living below Statistic Canada Low Income Cut-Off (LICO) levels.\textsuperscript{455} This compares with the 12% of non-Aboriginal people living in families, and 38% of non-Aboriginal unattached individuals, who were living below the LICOs.

In 2001, 5.6% of all children in Canada were of Aboriginal descent, and the Aboriginal population is growing faster than the non-Aboriginal population.\textsuperscript{456} The National Council of Welfare predicts that by 2017, Aboriginal children will account for 7.4% of all children in Canada.\textsuperscript{457} In 2000, 41% of off-reserve Aboriginal children aged 0–14 years were living below the LICO levels, compared with 18% of non-Aboriginal children who were living below the LICO.\textsuperscript{458}

According to the First Nations Regional Longitudinal Health Survey (RHS)—which surveys Aboriginal peoples living both off and on reserves—by almost any measure of health status, Aboriginal peoples have worse rates than non-Aboriginal peoples.\textsuperscript{459} These health disparities are especially seen in rates of chronic diseases, injuries, and self-reported health. For example, cardiovascular disease (CVD) is more common among First Nations peoples than among Canadians of European descent across the income gradient.\textsuperscript{460}


\textsuperscript{456} Ibid., accessed.

\textsuperscript{457} Ibid., accessed.

\textsuperscript{458} Ibid., accessed.


whose household income was less than $20,000, 26.7% suffered from CVD, compared to 23.1% of people of European descent. This pattern was consistent across all income levels. At the highest level, 4.9% of First Nations peoples whose household income was greater than $60,000 had CVD, compared with the 3.23% CVD rate of those with European descent.

In 2001, 26% of off-reserve Aboriginal peoples suffered with arthritis, compared with 16% of non-Aboriginal Canadians. Aboriginal peoples were more than twice as likely as non-Aboriginal people to be obese (31% and 15%, respectively), and 9% of off-reserve Aboriginal peoples had diabetes, compared with 4% of the non-Aboriginal population. In 2002, on-reserve Aboriginal peoples with disabilities were 1.7 times more likely to be in the lower two income quintiles than were disabled non-Aboriginal people.

Aboriginal peoples living off-reserve are much more likely than non-Aboriginal Canadians to report having fair or poor health, regardless of income. In 2001, 33% of low-income off-reserve Aboriginal peoples reported fair or poor health, while 25% of low-income non-Aboriginal people reported the same. Similarly, 13% of high-income off-reserve Aboriginal peoples versus 8% of non-Aboriginal people reported fair or poor health.

5.2 Health determinants

Research studies have found negative correlations between health determinants—including food insecurity, poor housing conditions, low levels of educational attainment, crime rates, unemployment or job insecurity and stressful working conditions, the physical environment, and other conditions—and population health.

However, indicators of these health determinants rarely show the connection between the condition and health outcome. This can be seen in the 352-page Statistical Report on the Health of Canadians—produced in 1999 by Health Canada, Statistics Canada, and the Canadian Institute for Health Information—which provides a wealth of information on health determinants, generally stratified by age group and gender. However, although it points out that there is a connection between health and the determinant—occasionally mentioning self-reported health and the outcome—the statistics it provides are generally confined to the determinant itself. For example, it gives statistics on the prevalence of low income and the

vol. 358: 1147-1153.
462 Ibid., accessed.
463 Ibid., accessed.
464 Ibid., accessed.
differences between groups—e.g., elderly and children were the most likely to be classified as having low income—without discussing explicit health outcomes associated with low income. Therefore, *it is not always clear how the determinant translates to ill health.*

The possibility of including health determinant indicators in a health disparities indicator set requires choices to be made among the many areas that could be included. Participants of the recent first annual Joint Conference of the Association of Local Public Health Agencies and the Ontario Public Health Association, held by the Sudbury & District Health Unit in Ontario, suggested—based on their knowledge, expertise, and experience—that the most important areas in need of immediate action were income and income distribution, education, employment, housing, food security, and social inclusion.\(^4\) Evidence for these key areas, as well as for the environment and crime, which are also important determinants, are briefly reviewed below. Although most of the studies cited contain Canadian evidence, there are a few studies from other countries. Because of the interconnectedness of all of the areas, without statistical work that compares the magnitude of their influence on health (in the broadest sense), it is not possible to prioritize the importance of each.

### 5.2.1 Low income

According to Dennis Raphael, there are four issues that “drive the incidence of poverty in Canada.”\(^4\) These are “level of social assistance benefits, level of the minimum wage, incidence of low-wage employment, and differences in employment situations and wages of groups identified as being at risk for poverty.”\(^6\)

Evidence for the association between low income and health is given below in Section 5.3—Behavioral risk factors for chronic disease, and Section 5.4—Physical Health. A few highlights include:

- Smoking and mortality rates for tobacco-specific diseases such as lung cancer and COPD are highest among the poorest populations.\(^9\)
- The 2001 Canadian Community Health Survey (CCHS) found smoking rates in the lowest income quintile were 26% for women and 27% for men, compared to rates of 12% and 22% respectively in the highest income quintile.\(^0\)
- The 1997 First Nations and Inuit Regional Health Survey (RHS) found that Aboriginal


\(^9\) Ibid.


peoples have the highest rates of smoking in Canada—62% for the First Nations people and 72% for the Inuit.\textsuperscript{471} Data from the 2003 RHS indicate that the smoking rate of First Nations people is three times the rate for the general Canadian population.\textsuperscript{472}

- Data from the 2001 CCHS used to examine both individual and regional socioeconomic contexts and health, showed that of those who reported fair or poor health the highest proportions were in the lowest (27.6%) income categories, compared with 5.7% who reported fair or poor health in the highest income category.\textsuperscript{473}
- Cardiovascular disease is the disease that is most associated with low income among Canadians.\textsuperscript{474}
- Type 2 diabetes rates are 3 to 5 times higher in Aboriginal communities than in the general population.\textsuperscript{475}
- Mortality rates by urban neighbourhood income quintiles show the highest mortality rates in the lowest quintile compared with those in the highest quintile for all chronic diseases.\textsuperscript{476}

Also, not reported below:

- A Statistics Canada profile of hospital users, which controlled for a variety of other factors, found that men between 15 and 39 years of age with inadequate incomes were 46% more likely to be hospitalized than men with adequate incomes. Poor women in the same age group were 62% more likely to be hospitalized than non-poor women. For men and women aged 40 to 64 with inadequate incomes, the odds jumped to 57% and 92% respectively.\textsuperscript{477}
- Dennis Raphael found that Canadians were more likely to get heart disease as a result of being poor than from smoking, being obese, or having or high blood cholesterol levels. The study attributed 6,366 Canadian heart disease deaths a year.\textsuperscript{478}

### 5.2.2 Education, adult literacy/ health literacy, and early childhood learning

Education is one of the main variables used to indicate socioeconomic status, and in some

\textsuperscript{474} Raphael. Poverty and Policy in Canada. Implications for Health and Quality of Life.
\textsuperscript{476} Wilkins, Berthelot, and Ng. "Trends in Mortality by Neighbourhood Income in Urban Canada from 1971 to 1996."
\textsuperscript{478} Raphael. Poverty and Policy in Canada. Implications for Health and Quality of Life.
studies, low educational attainment is used as a proxy for poverty. Poor educational attainment generally denotes people who did not complete high school. The evidence for connections between education and health are vast and robust.479

**Low educational attainment**

- Ross and Wu, have found that people with higher education have higher levels of self-reported health, and lower levels of morbidity, mortality, and disability.480

- Woolf et al. recently estimated that 1.4 million deaths would have been averted in the United States between 1996 and 2002 if the mortality rate of those with lesser education had been the same as that of those with at least some university education.481 They also noted that this higher educational attainment would have averted eight times more deaths than the number of deaths averted by technological medical advances.

- Using evidence from the National Population Health Survey, the first Report on the Health of Canadians found low educational attainment to be associated with low self-reported health, activity limitation, high blood pressure, behavioural risk factors, and chronic disease, including diabetes, cardiovascular disease, and rheumatoid arthritis.482

- David Cutler and Adriana Lleras-Muney recently found that “an additional four years of education lowers five year mortality by 1.8 percentage points (relative to a base of 11 percent); it also reduces the risk of heart disease by 2.2 percentage points (relative to a base of 31 percent), and the risk of diabetes by 1.3 percentage points (relative to a base of 7 percent). Four more years of schooling lowers the probability of reporting in fair or poor health by 6 percentage points (the mean is 12 percent), and reduce lost days of work to sickness by 2.3 each year (relative to 5.15 on average).”483

**Adult literacy/ health literacy**

- Low adult literacy levels have been associated with poor living and working conditions, uninformed personal health practices, and low general health knowledge.484

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• An Ontario Public Health Association study exploring the connection between literacy and health found that low literacy levels have a major negative impact on health. People with limited literacy skills have a poorer health status than others with higher literacy skills.\(^{485}\)

• According to Bert Perrin, 1995 evidence from the International Adult Literacy Survey (IALS) showed 22% of adult Canadians were in the lowest level of literacy. This meant, for example, that they were unable to look at a medicine label and determine the correct amount of medicine to give to a child, and were limited in their ability to deal with much of the written material they encounter in everyday life.\(^{486}\)

• Rootman and Ronson have found that health literacy was associated with poorer self-reported health, inappropriate medication use, noncompliance with physician orders, poorer diabetes management, and less health knowledge.\(^{487}\)

**Early childhood learning**

• According to James Heckman and Dmitriy Masterov, early childhood learning programs are considered to be one of the most effective ways to help disadvantaged children not only attain higher education outcomes but also to eventually lower participation in social assistance programs, decrease participation in crime, and increase labour force productivity during their adult years.\(^{488}\)

• Margaret McCain and Fraser Mustard, the founder of the Council for Early Child Development and an internationally respected expert on early childhood education, make a similar case for early child programs based on evidence from neuroscience on early child development.\(^{489}\)

• Using data from the National Longitudinal Survey of Children and Youth, Teresa To et al. found that young children between the ages of one and five years who were living in low-income households had an increased odds factor of 1.43 for poor developmental attainment.\(^{490}\)


\(^{486}\) Ibid., accessed.


5.2.3 Unemployment and work stress

- A U.S. study showed that a 10% increase in the unemployment rate would have the direct effect of increasing the mortality rate by 1.2%, mortality attributable to cardio-vascular diseases by 1.7%, mortality attributable to cirrhoses by 1.3%, and the suicide rate by 0.7%.\(^{491}\)
- The Canadian Public Health Association found that the psychological consequences of unemployment could lead to severe anxiety, depression, disturbed sleep, self-harming behaviour, feelings of apathy, isolation, hopelessness, low self-esteem, and reduced decision-making ability.\(^{492}\)
- Using data from the NPHS, C. D'Arcy and C.M. Siddique found evidence that the unemployed are 20% to 25% more at risk for heart disease, chest pain, high blood pressure, and joint pain than the general employed population. The unemployed also tend to be less satisfied with their mental and physical wellbeing, have more long and short-term disabilities, are sick almost twice as often, and visit their physician more frequently than those with jobs.\(^{493}\)

Work stress

- A recent study at Dalhousie University examined stress levels among working men and women based on data collected in 1998 as part of Statistics Canada's General Social Survey. The study found that 51.2% of women aged 25-54 with full-time paid employment in 1998 felt constantly under stress in comparison with 41.6% of men. This was up from 45.9% and 37.4% (respectively) in 1992.\(^{494}\)
- Katherine Wilkins and Marie Beaudet of Statistics Canada cite a large number of studies that have shown a relationship between work stress and illness. Their study concluded that "workers who experienced job strain, job insecurity, physical demands or low support from their co-workers or supervisors reported physical and emotional health problems."\(^{495}\) The workers were especially susceptible to respiratory infections, depression, diabetes mellitus, asthma, heart disease, arthritis, and higher rates of smoking.
- In a GPI Atlantic report, Linda Pannozzo and Ronald Colman note that work stress,

which may derive from time pressures, work overload, high levels of responsibility, lack of control, and non-supportive superiors, has been particularly identified in many studies as an important predictor of hypertension and coronary heart disease.\textsuperscript{496}

5.2.4 Housing and homelessness

- According to Ernie Hood, writing in *Environmental Health Perspectives*, negative aspects of the built environment magnify health disparities: “Substantial scientific evidence gained in the past decade has shown that various aspects of the built environment can have profound, directly measurable effects on both physical and mental health outcomes, particularly adding to the burden of illness among ethnic minority populations and low-income communities."\textsuperscript{497}

- Gordon Laird reports that one-third of the homeless population in Canada consists of youth between the ages of 16 and 24, and nearly one-in-seven emergency shelter users are children.\textsuperscript{498}

- Frankish, Hwang, and Quantz reviewed the research on homelessness published between 1990 and 2005 and found a strong connection between homelessness and health in the Canadian context.\textsuperscript{499}

- Canadian Institute for Health Information (CIHI) reports that one of the risks for becoming homeless, is living in a household that spends more than 50\% of its total income on housing costs.\textsuperscript{500}

- According to CIHI, among the homeless, 52\% of acute care hospitalizations, and 35\% of emergency department visits were for mental disorders. Of the latter group, 54\% was for psychoactive substance use.\textsuperscript{501}

- CIHI has also found chronic homelessness to be associated with high mortality and morbidity rates for many diseases including diabetes, respiratory and cardiovascular disease, and communicable diseases such as pneumonia, tuberculosis, HIV/AIDS, and Hepatitis C. Homeless people have higher rates of mental illness (such as depression and anxiety), suicide, injury, and assaults than the general population.\textsuperscript{502}


\textsuperscript{501} Canadian Institute for Health Information (CIHI). *Improving the Health of Canadians: Mental Health and Homelessness*, accessed.

\textsuperscript{502} Ibid., accessed.
5.2.5 Food security

Health Canada takes its definition of “food security” from the Food and Agricultural Organization (FAO), and notes that food security is strongly related to household income and “the financial ability of households to access adequate food.”\textsuperscript{503, 504} FAO states: “[F]ood security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life.”\textsuperscript{505}

- Aileen Robertson of the World Health Organization (WHO) reports that rich nations, as well as poor nations, face food poverty and health inequalities that result from food insecurity. These inequalities increase the prevalence of diet-related poor health and place an enormous burden on societies and the most vulnerable. The most vulnerable groups are those with low income and are likely to be children, lone mothers, and older people. Hunger-related conditions in Western States include psychosocial dysfunction, migraines, respiratory disease, iron deficiency, depression, anxiety, suicide, and upper gastrointestinal tract disorders.\textsuperscript{506}

- For the first time in Canada, the 2004 Canadian Community Health Survey (CCHS), Cycle 2.2, Nutrition, specifically measured the financial ability of households to access adequate food. More than 1.1 million households (9.2\%) were food insecure at some point in the previous year as a result of financial challenges they faced in accessing adequate food. Overall, 2.7 million Canadians, or 8.8\% of the population, lived in food insecure households.\textsuperscript{507, 508}

- The CCHS also revealed that 48.3\% of respondents in the lowest, and 29.1\% in the lower-middle household-income quintiles were food insecure, compared with 13.6\% in the middle, 5.2\% in the upper-middle, and 1.3\% in the highest household income quintiles.\textsuperscript{509, 510}

\begin{itemize}
  \item \textit{Income-Related Household Food Security in Canada}, accessed.
\end{itemize}
4.2.6 Environment

Environmental conditions are thought to be important factors in producing and maintaining health disparities.\(^{511}\)

- Gee and Payne-Sturges suggest that the main explanation for environmentally-related health disparities is that disadvantaged communities are often located in environmentally degraded areas that have greater exposure to environmental toxins such as air pollution, pesticides, and lead.\(^{512}\)

- Nita Chaudhuri noted in the *Canadian Journal of Public Health* that children are especially vulnerable to the effects of environmental contaminants. Children living in poverty are more likely to grow up in neighbourhoods located near polluting industries or near heavily used transportation corridors. They are also more likely to grow up in improperly maintained buildings that have high levels of contaminants and toxic residuals.\(^{513}\)

- According to Yohannes Miriam of Environment Canada, diseases and hazards related to environmental factors include:
  
  - infections arising from pathogens in polluted water, food, milk, etc.;
  - respiratory infections due to crowding and poverty;
  - vector-borne diseases associated with diverse ecological factors and conditions;
  - parasitic infections flourishing under ecological conditions which favor intermediate hosts;
  - chronic obstructive lung disease through exposure to dust;
  - cancer and birth defects induced by radiation and organic chemicals, including pesticides and petrochemicals; and
  - mental and psychological disorders arising from social stress, such as the breakdown of traditional lifestyles, unemployment and mass migration.\(^{514}\)

- David Boyd and Stephen Genuis recently estimated the environmental burden of disease in Canada for respiratory disease, cardiovascular disease, cancer and congenital affliction.\(^{515}\) Their study used environmentally attributable fractions (EAFs) that were

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\(^{512}\) Ibid.


\(^{515}\) Boyd, and Genuis. "The Environmental Burden of Disease in Canada: Respiratory Disease, Cardiovascular Disease, Cancer, and Congenital Affliction."
estimated by WHO, which calculated EAFs for mortality and morbidity for 85 categories of disease.  

Boyd and Genuis found that in Canada:

- 10,000–25,000 deaths; 78,000–194,000 hospitalizations; 600,000–1.5 million days spent in hospital; 1.1 million–1.8 million restricted activity days for asthma sufferers; 8,000–24,000 new cases of cancer; [and] 500–2,500 low birth weight babies … occur in Canada each year due to respiratory disease, cardiovascular illness, cancer, and congenital affliction associated with adverse environmental exposures.

Boyd and Genuis conclude that more work on the environmental burden of disease in Canada is needed to assess how the burden affects vulnerable populations, especially children, Aboriginal people, and low-income Canadians, as well as to assess the wide variations among regions and provinces in the distribution of environmental hazards.

5.2.7 Crime

- Canadian Centre for Justice Statistics reports that crime rates in Canada have been declining since 1991, and in 2006 reached the lowest point in over 25 years. This was particularly true for non-violent crimes such as break-ins (down 50% from 1991 and down 5% in 2006 from 2005 levels), auto theft, and thefts under $5,000.

- However, in 2006, increases were seen in the rates of many serious violent crimes, such as assaults with a weapon, but homicide rates dropped 10% from 2005 rates. In general, between 2005 and 2006, violent crimes committed by youth increased by 3%.

- Writing for the World Health Organization, Hugh Waters et al. investigated the costs of interpersonal violence, which includes child abuse, violence between intimate partners, sexual assault, workplace violence, and youth and gang violence. They found evidence to indicate that the society- and community-level risk factors for interpersonal violence include economic inequality, poverty, weak economic safety nets and unemployment.
• Dodds and Colman note that high rates of crime have been associated with gender, age, substance abuse, unemployment, and low education. In Canada, 80% of offenders in Canada have used psychoactive substances, 30%–50% of prison inmates have a drug-dependency problem, and 50%–75% had drugs in their urine at the time of arrest.  

• Health Canada reported that the direct medical costs for all types of violence against women cost $1.1 billion in 2002.  

5.2.8 Social inclusion

According to a report from PHAC, social exclusion is a cross-cutting concept that:

refers to the inability of certain groups or individuals to participate fully in Canadian life due to structural inequalities in access to social, economic, political and cultural resources. These inequalities arise out of oppression related to race, class, gender, disability, sexual orientation, immigrant status and religion. ... Social exclusion is experienced by both individuals and communities in multiple and often reinforcing dimensions. For example, groups of people living in low-income areas are also likely to experience inequities in access to employment, adequate housing and social services, as well as to experience stigmatization, isolation from civil society, higher health risks and lower health status.  

As the Laidlaw Foundation’s Working Paper Series on Social Inclusion illustrates, social inclusion is the result of many factors, and is often indicated through other measures of health determinants, such as poverty, lack of educational attainment, lack of employment opportunities, and poor housing conditions.
5.3 Behavioural risk factors for chronic disease

Behavioural risk factors are included under the category of “intermediary determinants of health” in the framework described in Section 3 above. Risk factors in developed countries that contribute most often to chronic disease are tobacco use, obesity (high body mass index–BMI), alcohol consumption, low consumption of fruits and vegetables, and physical inactivity.\textsuperscript{526} According to Ronald Colman, these factors account for 40\% of chronic disease, 50\% of chronic disease mortality, 25\% of medical care costs, and 38\% of the total direct and indirect costs of illness in Canada.\textsuperscript{527} The most prevalent chronic diseases in Canada are cardiovascular diseases, cancer, chronic obstructive pulmonary disease (COPD), and diabetes.

- **Tobacco use** is the leading cause of preventable mortality in Canada.\textsuperscript{528} The most important causes of premature death and morbidity associated with smoking are coronary heart disease, cancer (especially lung cancer), and respiratory disease, such as chronic obstructive pulmonary disease (COPD);\textsuperscript{529}
- **Obesity**—which is also referred to as a health condition or disease, rather than as a behavioural risk factor—is associated with hypertension, type 2 diabetes, heart disease, stroke, and some cancers;\textsuperscript{530}
- **Alcohol** is associated with liver cirrhosis (long term), vehicle collisions (acute), fetal alcohol syndrome, and alcohol-attributed suicides. Alcohol and illegal drug abuse account for more deaths at younger ages and for relatively more preventable years of life lost before the age of 65, but they affect fewer people than the other risk factors.\textsuperscript{531}
- **Illegal drug** use, including cocaine and crack, and opioids such as heroin and other injection drugs, are associated with premature mortality due to overdose, especially among younger people, drug-attributable suicide, drug-attributable hepatitis C infection, and HIV infection.\textsuperscript{532}
- **Physical inactivity** is associated with heart disease, hypertension, some cancers (especially colon cancer), type 2 diabetes, and osteoporosis.\textsuperscript{533}

Although these risk factors affect the entire population, they are especially associated with low income, gender, Aboriginal status, and geographical area.

\textsuperscript{527} Colman. *The Cost of Chronic Disease in Nova Scotia*, accessed.
\textsuperscript{528} Heart and Stroke Foundation of Canada. *The Growing Burden of Heart Disease and Stroke in Canada*, accessed.
\textsuperscript{530} Ibid., accessed.
\textsuperscript{532} Ibid.
5.3.1 Tobacco use

- Smoking and mortality rates for tobacco-specific diseases such as lung cancer and COPD are highest among the poorest populations.\footnote{Colman, and Rhymes. *The Cost of Tobacco Use in Nova Scotia*, accessed.}
- The 2001 Canadian Community Health Survey (CCHS) found smoking rates in the lowest income quintile were 26% for women and 27% for men, compared to rates of 12% and 22% respectively in the highest income quintile.\footnote{Heart and Stroke Foundation of Canada. *The Growing Burden of Heart Disease and Stroke in Canada*, accessed.}
- Men in the lowest socioeconomic groups are approximately twice as likely to die prematurely as men in the highest socioeconomic groups, and smoking accounts for at least half their excess risk.\footnote{Ghadirian, Parviz. *Sleeping with a Killer: The Effects of Smoking on Human Health*, Health Canada, 2002; accessed Nov 2007; available from http://www.hc-sc.gc.ca/hl-vs/alt_formats/hecs-sesc/pdf/pubs/tobac-tabac/swk-dat/swk-dat_e.pdf.}
- Men tend to smoke more and are more often overweight than women, but women tend to be more physically inactive.\footnote{Heart and Stroke Foundation of Canada. *The Growing Burden of Heart Disease and Stroke in Canada*, accessed.}
- The 1997 First Nations and Inuit Regional Health Survey (RHS) found that Aboriginal peoples have the highest rates of smoking in Canada—62% for the First Nations people and 72% for the Inuit.\footnote{1997 First Nations and Inuit Regional Health Survey, cited in Health Canada. *Tobacco. A National Strategy*, accessed.} Data from the 2003 survey indicates that the smoking rate of First Nations people is three times the rate for the general Canadian population.\footnote{First Nations and Inuit Health Committee. "Use and Misuse of Tobacco among Aboriginal Peoples. An Update."}
- Rural residents have higher rates of smoking and obesity, report an income in the lowest or lower-middle income categories more frequently, and have a higher risk of dying prematurely from circulatory disease than urban residents.\footnote{Shields, Margot, and Michael Tjepkema. "Regional Differences in Obesity " *Health Reports*, Statistics Canada, Catalogue no. 82-003-XIE, 2006, vol. 17, no. 3: 61-70. accessed Dec 2007; available from http://www.statcan.ca/english/freepub/82-003-XIE/82-003-XIE2005003.pdf.}

5.3.2 Obesity

- National Population Health Survey (NPHS) data show that overweight individuals in low-income households are 60% more likely to become obese than individuals in middle/
high-income households. Matheson, et al., who combined data from the 2001 and 2004 CCHS, Cycles 1.1 and 2.1, with 2001 census tract-level neighbourhood data, found that women living in a neighbourhood with high material deprivation had a Body Mass Index 1.8 points higher than women living in the most affluent neighbourhoods. However, for men the reverse was true—men living in the most affluent neighbourhoods had higher BMI relative to men living in deprived neighbourhoods.

5.3.3 Alcohol

- Adolescent substance abuse has been clearly associated with low household income, but the association has not been found for adults.
- Data from the 2003/04 Canadian Addiction Survey (CAS) did not find heavy drinking to be significantly correlated with income adequacy.
- Heavy drinking and drinking in excess is more common among 18 to 24 year olds than it is among older persons, and is higher among males than females.
- A clear association has been found between males who have cirrhosis of the liver—which is clearly associated with alcohol abuse—and income, but there was no association between women who have cirrhosis and income. In 1996, 16.7% of males in the lowest income category had cirrhosis of the liver compared with 6.7% of males in the highest income category.

547 Wilkins, Berthelot, and Ng. "Trends in Mortality by Neighbourhood Income in Urban Canada from 1971 to 1996."
548 Ibid.
549 Wilkins et al. use the standard quintile definition, i.e., each quintile represents a fifth of the population ranked by neighbourhood income. The lowest quintile has the highest percentage of people living below the LICO, and the highest quintile has the lowest percentage below the LICO. The report does not give the exact incomes used in each quintile.
5.3.4 Illicit drugs

- Frisher, et al. report that lifetime rates of drug dependence do not vary significantly by socioeconomic group.  
- Illicit drug use is relatively low. However, information on illicit drug use commonly gathered by population surveys is not always reliable because people are often not willing to admit to illegal activity. Also, surveys do not usually include groups such as street youth, the homeless, the incarcerated population, and Aboriginal populations living on reserves, who tend to be the most prevalent users or those most likely to be engaged in injecting illicit drugs.
- Data from the 2001/02 CCHS: Mental Health and Well-being, Cycle 1.2, show cannabis was the most frequently reported drug used, with 10% of the population stating they had used it in the past year.
- The 2003/04 CAS found that cannabis use was actually highest in the highest income category—lifetime experiences with cannabis increased with income adequacy from 42.9% of those with a low income to 54.8% of those with high incomes.
- CAS data show that the lowest income group has significantly more harm associated with drug use than the highest income group. In the lowest income group 18.9% of past-year users and 36.3% of lifetime users reported one or more harms, compared with 13.1% of past-year users and 17.8% of lifetime users in the highest income category.

5.3.5 Physical inactivity

- Lower-income persons commonly report more barriers and less participation in physical activity than higher-income persons.

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553 Tjepkema. "Alcohol and Illicit Drug Dependence."  
554 Adlaf, Begin, and Sawka, eds. Canadian Addiction Survey (CAS): A National Survey of Canadians' Use of Alcohol and Other Drugs: Prevalence of Use and Related Harms: Detailed Report. The CAS is conducted by the Canadian Centre on Substance Abuse (CCSA) in collaboration with Health Canada and the Canadian Executive Council on Addictions.
555 Ibid. The CAS asked respondents whether or not drug use had a harmful effect in areas of: friendships and social life; physical health; home life or marriage; work, studies or employment opportunities; financial position; legal problems; housing; and learning.
• In the 1996/97 NPHS, 57% of Canadians in the lowest income group were reported as being physically inactive, compared with 48% of Canadians in the highest income group.557
• The 2001 CCHS data show that 63% of adults in the lowest income quintile were inactive, compared with 47% in the highest income quintile.558 In addition, across all age groups, women were more physically inactive than men.

5.4 Physical and mental health outcomes

5.4.1 Self-rated health

• There is a significant income gradient for self-rated health—those with lower incomes are more likely to report poor health than those with higher incomes across all age groups and for both men and women.559
• Data from the 1997 NPHS show that 25% of the population over the age of 12 rated its health as excellent, 38% as very good, 27% as good, 7% as fair, and 2% as poor. In responses by income level, 19% in the lowest group rated their health as excellent, compared with 33% of those with the highest incomes, and 21% of low-income individuals rated their health as fair or poor compared with 5% of individuals in the highest income category.560
• Data from the 2001 CCHS used to examine both individual and regional socioeconomic contexts and health, showed that of those who reported fair or poor health the highest proportions were in the lowest (27.6%) income categories, compared with 5.7% who reported fair or poor health in the highest income category.561
• Self-rated fair or poor health was only modestly associated with regional contexts.562

5.4.2 Chronic disease: cardiovascular disease, cancer, respiratory disease, diabetes

• *Cardiovascular disease* is the disease that is most associated with low income among Canadians.563
• *Lung and colorectal cancer* are the leading causes of cancer mortality.564

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560 Ibid., accessed.
561 Tremblay, Ross, and Berthelot. "Regional Socio-Economic Context and Health."
562 Ibid.
563 Raphael. *Poverty and Policy in Canada. Implications for Health and Quality of Life*.
mortality is more prevalent in lower income groups, and its incidence in general is higher than that of prostate and breast cancer.  

- Both prostate and breast cancer mortality are higher in the more affluent income groups in urban Canada than in poorer groups.  
- Asthma is the most common chronic disease of childhood, and its prevalence rates are growing. Data from the 2000 National Longitudinal Survey of Children and Youth (NLSCY) showed that children living in chronic poverty in the Maritimes have asthma rates (20.9%) more than 30% higher than the national average (12.4%). Chronically poor children living in the Maritimes were 1.5 times more likely to have had a recent asthma attack than children not living in poverty.  
- Data from the 1995 NPHS show that men and women with low household incomes had a 1.44- and 1.33-fold increase, respectively, in the prevalence of asthma compared with those with high incomes, and were almost twice as likely to be hospitalized.  
- Diabetes prevalence is increasing in both adults and children.  
- Diabetes has consistently been associated with low-income levels.  
- The Heart and Stroke Foundation of Canada, using data from the 2001 CCHS, reported that men and women in the lower/ lower middle income categories had a higher prevalence of diabetes (7.2% and 6.9%, respectively) than those in the upper middle/ highest income categories (3.9% and 2.9%, respectively).  
- Type 2 diabetes rates are 3 to 5 times higher in Aboriginal communities than in the general population.  

5.4.3 Musculoskeletal activity limitations

- Statistics Canada reported that lower back problems—the most important cause of

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566 Ibid.  
568 Ibid.  
573 Heart and Stroke Foundation of Canada. The Growing Burden of Heart Disease and Stroke in Canada, accessed.  
underlying long-term activity limitations—were not associated with socioeconomic status.\textsuperscript{574} • Income inadequacy is related to activity limitations that are musculoskeletal in origin. However, in Manitoba, musculoskeletal disorders between those with the highest and lowest household income have been found to be slightly significant for only 50–64 year olds.\textsuperscript{575}

\subsection*{5.4.4 Unintentional traumatic injuries}

• Unintentional traumatic injuries are the leading cause of death among those under the age of 45, and are responsible for 56\% of deaths for children and adolescents between the ages of 1–19 years.\textsuperscript{576} They are also the second largest contributor to potential years of life lost (after cancer) before the age of 70.\textsuperscript{577} • Generally, injuries due to motor vehicle crashes and sports and recreation are more likely to be experienced by individuals with high socioeconomic status than with low socioeconomic status.\textsuperscript{578} • Rural residents have a disproportionate number of traumatic deaths, e.g., approximately 31\% of Canadians live in rural areas, but 70\% of traumatic deaths occur in these areas, and the mortality rate of these injuries is twice that of urban Canadians with similar injuries.\textsuperscript{579} • Those living in the lowest income quintile urban neighbourhoods have higher injury mortality rates—other than from motor vehicle crashes and suicides—for injuries such as falls, poisoning, drowning, fires, etc. than do those living in the highest income quintile neighbourhoods.\textsuperscript{580} • Income differences in mortality rates for pedestrians struck by motor vehicles in urban areas show very little income difference.\textsuperscript{581} • Data from 2001 CCHS show males who live in the highest income households are more

\begin{thebibliography}{99}
\bibitem{580} Wilkins, Berthelot, and Ng. "Trends in Mortality by Neighbourhood Income in Urban Canada from 1971 to 1996."
\bibitem{581} Ibid.
\end{thebibliography}
likely than males in general to sustain a serious non-fatal injury, and for females a significant association between injury rates and household income was not found.\(^{582}\)

### 5.4.5 Childhood injury

- In 1997, children living in the poorest urban neighbourhoods in Canada had a 39% higher mortality rate and a 25% higher hospitalization rate due to injuries than children living in the wealthiest urban neighbourhoods.\(^{583}\)
- In Manitoba, children living in the lowest income neighbourhoods in rural areas were found to have injury mortality rates that were almost 2.5 times that of the highest income rural neighbourhoods, and hospitalization rates that were 3 times higher.\(^{584}\)
- Also in Manitoba, injury mortality rates for First Nations children aged 29 days to 14 years was more than 9 times higher than that for non-First Nations children.\(^{585}\)

### 5.4.6 Mental health

- Women have been found to have more depression and anxiety than men, whereas men are more likely to have addictive and personality disorders.\(^{586}\)
- Depression, anxiety, and stress have been found to be associated more consistently with social disparities, including low income, than have more severe forms of mental illness.\(^{587}\)
- Lone mothers have been found to be particularly associated with depression, and are twice as likely to experience a major depressive episode than other women.\(^{588}\)
- Suicide is associated with many factors, including poverty, such as physical illness, substance abuse, family violence, and social isolation.\(^{589}\)
- Canadian Mental Health Association statistics show that suicide is the leading cause of death for all males between the ages of 10 and 49, the second highest cause of death for youth aged 10–24 years (after motor vehicle crashes), and the fourth leading cause for women (all ages).\(^{590}\)
- Several groups have been identified as being at risk for suicide including

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\(^{585}\) Ibid.
\(^{589}\) Stewart, Gucciardi, and Grace. *Depression*, accessed.
youth—especially children of lone mothers—the elderly, Aboriginal peoples, gay/lesbian populations, and those who are incarcerated.\(^5\)

### 5.4.7 Mortality

- Cardiovascular disease, cancers (especially lung and colon cancers), chronic obstructive pulmonary disease (COPD), and diabetes are responsible for almost three-quarters of all deaths in Canada and are the major causes of premature death.\(^5\)
- Mortality rates by urban neighbourhood income quintiles show the highest mortality rates in the lowest quintile compared with those in the highest quintile for all chronic diseases.\(^5\)
- In 1996, the avoidable causes of premature mortality together accounted for 49.6% of all income-related excess mortality among men and 42% among women.\(^5\) Income-related excess mortality was highest for ischemic heart disease.
- Income differences account for 23.7% excess in premature mortality from cardiovascular disease.\(^5\)
- Rates for mortality caused by diabetes for males in the lowest income group increased from 17.1% in 1971 to 21.2% in 1996, compared to rates for males in the highest income group, which decreased from 15.0% in 1971 to 13.5% in 1996.\(^5\)
- Between 1991–1996, female mortality rates for diabetes remained steady at 9.1% in the highest income group, but increased from 10.6% to 13.4% in the lowest-income group.\(^5\)

### 5.4.8 Infant mortality

- In 1996, data from urban neighbourhood income quintiles showed that infants born in the lowest income quintile were 60% more likely to die before the age of one than infants born into the highest income quintile.\(^5\)

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\(^5\) Ibid.
• In British Columbia and Quebec, neighbourhoods with low socioeconomic status, especially in urban areas, were associated with higher risks of neonatal death (0–27 days) and postneonatal death (28–264 days), as well as with pre-term birth, low birthweight, and stillbirth.  

5.4.9 Life-expectancy at birth

• Statistics Canada calculated the life expectancy at birth by income group and gender for Canada and the provinces for 2001. The rates clearly reveal an income disparity in life expectancy, with high-income males living 3.2 years longer than low-income males, and high-income females living 1.1 years longer than low-income females.

5.4.10 Health-adjusted life expectancy (HALE)

• Statistics Canada has also calculated health-adjusted life expectancy (HALE) at birth by income group and gender for Canada and the provinces for 2001—high-income males lived 4.7 healthy years longer than low-income males, and high-income females lived 3.2 healthy years longer than low-income females.

5.4.11 Potential years of life lost (PYLL)

• According to Raphael, 23% of potential years of life lost (PYLL) can be attributed to income differences between low- and high-income individuals, and 22% of all years lost can be attributed to income differences caused by cardiovascular disease.

5.4.12 Health service use


HALE is a standardized statistical indicator that combines mortality data with health status data to produce a summary measure that represents the number of expected years of life equivalent to years lived in full health.


Potential years of life lost (PYLL) is the difference in the number of years between the age at death and a life expectancy of 75 years.

Raphael. Poverty and Policy in Canada. Implications for Health and Quality of Life.
• Research has found the likelihood of a visit to a general practitioner at least once during the year to be independent of income. However, those with lower incomes are more likely to be more frequent users (more than six visits a year) of primary physician services than those with higher incomes. On the other hand, those with higher incomes are more frequent users of specialist services.\textsuperscript{605}

• In Nova Scotia, those in the lowest income group were 43\% more likely to use physician services than those in the two highest income groups.\textsuperscript{606}

5.4.13 Indicators that do not show evidence of health disparities

As noted above, a few indicators do not show evidence of health disparities. The rates for these indicators show either no difference between socioeconomic groups, or are actually higher in the higher socioeconomic groups. For example, disparities in family violence rates between high and low socioeconomic groups have been found to be negligible. There is inconclusive evidence for socioeconomic disparities in adult victims or perpetrators of crime, and alcohol and illicit drug use and misuse. Rates of cannabis use, motor vehicle collisions, and breast cancer are actually higher in the highest socioeconomic groups. In addition, the highest male obesity rates are found in the highest income category, while the highest female obesity rates are found in the lowest income category.


6. Guidelines and methodologies for monitoring health disparities

As noted by Ralph Menke, et al. of the German Institute of Public Health, the measurement of health disparities can be approached either by the measurement of the overall population stratified by different socioeconomic characteristics such as income, education, or occupation, and/or by the measurement of characteristics of specific disadvantaged population groups, such as those living in low income, or Aboriginal peoples.607 These two approaches are often referred to as the vertical and horizontal approaches, respectively. Vertical approaches allow a ranking of persons according to their socioeconomic status. Horizontal approaches allow a classification of persons according to factors such as age, gender, and ethnicity, but do not allow ranking.

Descriptive indicators for health disparities between groups that include calculations of relative risk factors are the most common type of health disparities indicators. To produce the statistics for these indicators, data that represent different elements of population health need to be collected, analyzed, and integrated.608 A range of methods has evolved that are used to quantify health disparities, and organize their presentation.

In 2000, the European Commission sponsored a project titled “Monitoring and reporting socio-economic differences in health indicators in the European Union.”609 This project produced a report—written by Anton Kunst, Vivian Bos, and Johan Mackenbach, of Erasmus University in the Netherlands—that developed guidelines for measuring health inequalities.610 The measurement process produces statistics for indicators that are needed to provide evidence to develop health disparities reduction strategies. The reporting approach developed suggests including both vertical and horizontal approaches, and indications of the correlation between social disadvantages—or health determinants—and poor health, as well as indications of possible causal correlations between the two concepts.

The guidelines developed for monitoring socioeconomic inequalities in health at the national level involves five steps.611

1. Identification of data sources,


611 Ibid., accessed.
2. Measurement of socioeconomic variables,
3. Tabulation of health indicators by socioeconomic status,
4. Measurement of the magnitude of health inequalities, and
5. Evaluation and interpretation of the results.

These steps are briefly reviewed below, with additional suggestions from other sources.

6.1 Identification of data sources

Specific data sources available in Canada are discussed in Section 8 below. Generally, Kunst et al. suggest that data can generally be obtained from the following sources, although this list needs to be expanded to include health determinants:

- **Mortality data** – nationally representative, individual-level data on mortality according to socioeconomic indicators, if available,
- **Morbidity data** – self-reported data from health surveys,
- **Specific disease data** – disease registers and surveillance systems,
- **Linked data** – e.g., for mortality, where socioeconomic data on the deceased and on the living population are derived from two different sources, such as the death registry and census,
- **Unlinked cross-sectional data** – can be used to obtain approximate estimates of inequalities for one point in time, or to determine trends over time if they are used with caution since the data may be subject to biases that result in over- or under-estimation.612

6.2 Measurement of socioeconomic variables

Kunst et al. recommend that data for each health disparity indicator should be broken down by at least two or three core and complementary variables of socioeconomic position (SEP), e.g., health status data by income, education, and occupation. They note that these variables are useful especially for their descriptive value. One is not better than the other, but one may be preferred over another, depending on its intended use. Income is useful when the purpose is to monitor disparities through the income – health connection. According to Kunst et al., educational attainment level is the indicator of SEP used most often in Europe because it is more stable than income. Occupation is most useful if nearly all of the persons are employed, but it does not capture unpaid or discouraged workers.

Kunst et al. suggest that income has an advantage over occupation as an indicator because it can be measured for a broader range of age groups. They also suggest that, although income and education are complementary in many respects, income:

612 Ibid., accessed.
• emphasizes material resources,
• is measured at the household level rather than the individual level, and
• is able to reflect changes in socioeconomic position over the life course, whereas a person’s educational level is highly stable during the entire adult life.

The authors note, “Given their complementary nature, the use of both educational level and income level would give a comprehensive picture of socio-economic inequalities in mortality or morbidity.”¹⁶¹³

According to Kunst et al., when income is used, standard of living can best be expressed by classifying the population according to household equivalent income, adjusted for household size, and preferably divided into income quintile groups. This broadens the individual income level into a larger socioeconomic context, and more accurately depicts material circumstance. However, it also assumes that income is evenly distributed among the household, which may not be the case. Household income can be adjusted for household size by dividing the total family income by the square root of the household size. Income is most often measured as net income, i.e. after deductions of taxes and social security premiums, but using before-tax and transfer income as well would complement the measure.

Kuntz et al. also recommend that indicators should be stratified by sociodemographic variables like ethnicity status and urban/ rural residency. Although these sociodemographic measures are not socioeconomic measures, they are relevant to the extent that they are related to socioeconomic disparity. In other words, they can be used to identify specific disadvantaged groups and used in combination with the main socioeconomic indicators.

The authors also recommend that a more extensive stratification would produce higher quality evidence. In order to have the data needed to fully measure health disparities, they provide the following list of possibilities, but also recognize that resources may limit its use:

• Socioeconomic stratifiers
  o income (e.g., terciles, quintiles, or deciles; wealth/ assets; based on before and after taxes and transfers; individual and equivalent household income),
  o education (e.g., primary or no education, lower secondary; upper secondary–high school graduate; tertiary)—based on UNESCO’s International Standard Classification of Educations);
  o occupation or social class (e.g., manual/ non-manual)
• Age group
• Gender
  o sexual orientation
• Place of residence
  o urban/ rural
  o municipality/ province

¹⁶¹³ Ibid., accessed. p. 37.
Disadvantaged groups
- ethnic, racial, tribal, religious or national origin
- low-income groups (e.g. low-income lone mothers)
- disabled people
- immigrants

6.3 Tabulation of health indicators by socioeconomic status

Kunst et al. recommend that the socioeconomic indicators should be used to divide individuals into groups or levels. Data are needed for the population size of the groups, and the occurrence of health problems by absolute occurrence rates and by probabilities or relative ratios comparing rates among the groups, as described in the next step. Also, the relative and absolute magnitudes of the health differences should preferably be calculated for at least three periods of time.

Other recommendations include:

- The health disparity indicator should generally be expressed as the relative rate and absolute number of the occurrence of “negative” health problems. Although the current trend is to indicate positive wellbeing, rather than negative disease states, health disparities are negative conditions.

- Health indicators should be routinely standardized for age groups and gender, since both categories are associated with SEP and health.

- Mortality levels should be expressed as incidence mortality rates by gender, age group, and, ideally, by main cause of death. Mortality incidence rates can be calculated in terms of years of life lost. This is done by “dividing the observed number of deaths by the corresponding number of person-years (the number of people times the average number of years per person) of being exposed to the risk of dying. In longitudinal studies, the number of person-years at risk can be calculated accurately from the available data. In unlinked cross-sectional studies, it is customary to estimate this number as the number of people in the middle of the study period times the number of years covered by the study period.”\(^{614}\) Mortality rates can also be summarized in terms of disability-free life expectancy and health expectancy, which combine mortality and morbidity data.

- Morbidity data usually come from subjective, self-reported sources such as surveys. Self-reported morbidity can be measured by indicators of general health, chronic disease prevalence, disability and functional limitations, and the prevalence of long-standing

\(^{614}\) Ibid., accessed. p. 49.
health problems. It is preferable to use the prevalence of fair/poor general health rather than excellent/good health in morbidity indicators.

### 6.4 Measurement of the magnitude of health inequalities

In order to choose relevant and meaningful indicators, it is important to have a basic understanding of measurement methods that can produce the indicator. For an indicator to be feasible, data must be available that is stratified as recommended above. It would then be possible to measure the magnitude of health inequalities between various groups, and associate health determinants and health outcomes.

Determining these disparities and associations requires a number of measurement issues. Paula Braveman notes that measuring a health disparity requires three basic components:

- An indicator of health or a modifiable determinant of health, such as health care, living conditions, or the policies that shape them;
- An indicator of social position, i.e., a way of categorizing people into different groups (social strata) based on social advantage/disadvantage, such as income, education, ethnic group, or gender; and
- A method for comparing the health (or health determinant) indicator across the different social strata, such as a ratio of the rates of the health indicator in the least and most advantaged strata.  

Kunst et al. suggest that estimates should be easy to calculate, interpret, and communicate. *Rate ratios*, which compare two contrasting groups, and *rate differences*, which measure absolute difference, as well as *impact measures* such as population attributable fractions are basic summary measures that are recommended.

The authors suggest that a comparison of extreme groups such as the lowest 20% (e.g., 1st income quintile) versus the highest 20% (e.g., 5th income quintile) is preferred “because this usually gives a good impression of the real magnitude of socio-economic inequalities in mortality and morbidity.” Again, both absolute and relative measures should be used, if possible. They also note that comparing health disparities across the entire social gradient—which would involve, for example, comparing the second, third, and fourth income quintiles with the fifth quintile—is a long-term goal of many countries, but that this has not yet been attempted and countries are generally starting with ‘the basics.’

More sophisticated measures such as regression-based, statistical measures may be used to

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complement the rate ratio and rate differences, and may be used to check the validity of the basic measures, but these measures are more difficult to understand. These measurement techniques are elaborated below.

6.4.1 Range measures

Writing for WHO, New Zealand researchers Tony Blakely, et al. elaborate on this measurement process. They present steps for assessing the impact of socioeconomic status (SES) on risk factors and health status, and describe methods to measure these associations. The steps for estimating the prevalence of risk factors or health status by SES (e.g., by income level) use methods based on burden of disease studies and are as follows:

1. Determine the population distribution of the socioeconomic factor.
2. Determine the relative risks for the association between socioeconomic position and risk factors and/or health status.
3. Determine the current distribution of risk factor/health status levels within the population by SES levels.
4. Calculate the population attributable risks.
5. Estimate uncertainties.

As noted, the simplest measurement of disparities usually involves range measures, which use relative risk and excess risk (absolute) comparisons. Range measures are often used in epidemiological literature to estimate the disease burdens at the extremes of socioeconomic groups, e.g., groups with the highest and lowest income levels. These measures are the measures that are most easily calculated and interpreted. Range measures are useful for estimating disparity differences in health because disparity is an extreme condition and can be compared with the other extreme—groups that are not experiencing disparities, which are usually the groups with the best health. If necessary, group size and middle range data can be included in the data interpretations.

Specifically, range measures typically compare a health indicator or health-related factor in one (or more) disadvantaged group with the same indicator in the most advantaged group, e.g., the wealthiest/ highest-income group for income disparities, or the dominant racial/ethnic group for

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racial/ ethnic disparities. This approach assumes that the ‘best’ rate is theoretically achievable by all other groups. Absolute difference between the two groups can also be determined by simple subtraction of the absolute numbers.

According to Braveman, comparing the most disadvantaged group with the average level in the population is not recommended because it might not reflect social inequalities, such as in the case where a large portion of the population is disadvantaged relative to the most advantaged group. In that case, comparing the most disadvantaged with the average would show small disparities, which would be erroneous.

WHO recommends using both relative and absolute measures of health inequities (i.e., both rate ratios and rate differences) when comparing two contrasting groups to ensure that inequities are identified, and suggests:

The choice of whether to use absolute or relative measures can affect the assessment of whether a health inequity exists and its magnitude. Sometimes a disparity on the relative scale (i.e. the rate ratio of a health outcome between a low and a high socioeconomic status group) may not appear to be a disparity on the absolute scale (i.e. the rate difference between the two groups). It is critical that researchers and policy-makers are clear about which type of measure they are using. The choice of measure is also relevant for the discussion about the distinction between health gaps and health gradients.

6.4.2 Relative risk ratios and population attributable risks

Most health disparities measurements usually stop with range measures. However, in order to have a more precise understanding and evidence of the disparities, as well as to be able to measure the social and economic costs of the disparities, more sophisticated methods of measurement are needed. The range measures can be used to find “relative risk” ratios, and population attributable risks. These measures determine the risk in the population that can be associated with a particular factor, and determine the distribution of the risk throughout the population. For example, the relative risk ratios can determine the actual proportion of ill health that can be attributable to low income, or another indicator, and the level of risk for that health outcome that exists in the population (e.g., the proportion of cardiovascular disease that can be attributed to living with low-income disparities, or to smoking).

Basically, the relative risk ratio is a relative measure of effect that is determined through regression-based statistical analyses. It compares the number of cases with the outcome to the number of total cases (with and without the outcome), and is defined as “the increase in the probability of an outcome given one situation, relative to the probability of an outcome given some other situation.” The ratio consists of that between one group that is experiencing the

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620 Kelly, Morgan, Bonnefoy, Butt, and Bergman. The Social Determinants of Health: Developing an Evidence Base for Political Action, accessed. p. 76.
621 Tu, Shihfen. "Developmental Epidemiology: A Review of Three Key Measures of Effect" Journal of Clinical
risk factor, and has the probability of developing a particular outcome, compared with a reference group (i.e., the group which has the best health outcome). In other words, relative risk ratios refer to the proportion of risk that can be attributed to causal effects of a risk factor or condition.

Relative risk ratios indicate the degree of risk at the individual level. In order to indicate the effect of a risk factor upon the community as a whole—which is important for public health policy decisions—population attributable risks (PAR) need to be estimated. Calculating PAR is a fairly simple statistical method for attributing the proportion of a risk factor or exposure level (e.g., cardiovascular disease) to another factor such as a health determinant (e.g., poverty). However, in order to calculate PAR, it is necessary to know the relative risk ratio. This approach is also referred to as the Population Attributable Fraction (PAF) measure.

Kunst, et al. recommend using the PAR measure to indicate the strength of associations between the risk factor, such as a health determinant, with a health outcome. Basically, the PAR compares the current situation of ill health—especially in the population with the lowest SES—with a hypothetical reference situation in which everyone in the specific group has the same health status as those with the highest SES, for example. The difference between the current and hypothetical situation represents the potential health disparity of a population with low SES.

According to U.S. researchers Keith Scott et al., epidemiological measures, such as PAR, have direct relevance to public policy and action since these measures focus on differences in proportions in the population—rather than the on means and variance that the measures of effect, such as relative risk ratios, supply—and have the ability to separate risk to the population from risk to the individual. They also note that uncommon risk factors that have a large effect on individuals may have a small impact on rates of a disorder in the community, and a common risk factor that has a small effect on individuals may have a large impact on disorder rates in the community.

Health indicators can be used that show the results of relative risks and the proportion of the total burden of ill health that can be attributed to various factors. For example, PAR can be used as an...
indicator of the percentage of premature mortality rates that can be associated with low-income or specific risk factors such as smoking or obesity.

6.4.3 Summary indices of the magnitude of health inequalities

The WHO Commission on the Social Determinants of Health (CSDH) recently released a new report from its Measurement and Evidence Knowledge Network, titled The Social Determinants of Health: Developing an Evidence Base for Political Action, written by Michael Kelly, et al. The report notes, “When the purpose of the analysis is to determine whether the magnitude of health inequities has changed over time, or differs between countries, the tabulated data needs to be summarized in one or more indices.” It provides a table that outlines the most commonly used summary indices of the magnitude of health inequalities, which is reproduced in Table 8 below.

Kelly, et al. note that the “more sophisticated measures that can be used to gain more insight into the pattern of health inequalities” include the Slope Index of Inequity, the Relative Index of Inequity (RII), and the Index of Disparity, which are listed in Table 8 below. According to Braveman, these measures have been specifically designed for measuring health inequalities, and are thus better suited for this type of measurement than other measures such as the Gini coefficient, which is a measure of income inequality.

The EUROTHINE project—described above in the review of indicators used in the EU countries—uses both the Relative Index of Inequality (RII) and the Slope Index of Inequality (SII) as indicators of health inequality. In a report on EUROTHINE, Mackenbach, et al. describe both the RII and the SII—which is derived from the RII—and the age-adjusted over-all rate.

The RII regresses the rate of mortality, morbidity or risk factor prevalence on a rank measure of education, occupation or income, where the rank is calculated as the mean proportion of the population having a higher level of education, occupation or income. The RII can be interpreted as the ratio between the rate of mortality, morbidity or risk factor prevalence at the lower end of the social hierarchy, and the rate at the higher end…. The SII measures absolute rate differences (e.g., in deaths per 100,000 person-years) between the lower and the higher end of the educational, occupational, or income hierarchy.

627 Kelly, Morgan, Bonnefoy, Butt, and Bergman. The Social Determinants of Health: Developing an Evidence Base for Political Action, accessed.
628 Ibid., accessed.
630 The formula for SII is: SII = 2*(MR)*(RR-1)/(RR+1), where MR is the age-adjusted overall rate, RII is the Relative Index of Inequality rate, and * is a multiplication sign.
Table 8. Overview of summary indices of the magnitude of health inequities

<table>
<thead>
<tr>
<th>Purpose of Index</th>
<th>Summary Index (with example of interpretation)</th>
<th>On the absolute occurrence of health problems</th>
<th>On the relative occurrence of health problems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indices that compare two contrasting groups</td>
<td>Rate Difference</td>
<td>e.g., the absolute difference in mortality between professional and unskilled manual workers</td>
<td>Rate Ratio</td>
</tr>
<tr>
<td></td>
<td>Idem, but the proportional mortality difference</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compare broad groups</td>
<td>Rate Difference</td>
<td>e.g., the absolute difference in mortality between non-manual and manual classes</td>
<td>Rate Ratio</td>
</tr>
<tr>
<td></td>
<td>Idem, but the proportional mortality difference</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regression-based indices that take into account all groups separately</td>
<td>Absolute effect index</td>
<td>e.g., the absolute increase in health associated with an income increase of 100 US dollars</td>
<td>Relative effect index</td>
</tr>
<tr>
<td>Based on absolute SES</td>
<td>Slope Index of Inequity (SII)</td>
<td>e.g., the health difference between the top and bottom of the income hierarchy</td>
<td>Relative Index of Inequity (RII)</td>
</tr>
<tr>
<td></td>
<td>Idem, but the proportional health difference</td>
<td></td>
<td>Idem, but the proportional health difference</td>
</tr>
<tr>
<td>Total impact indices that explicitly take into account population distribution</td>
<td>The PAR perspective (equality by leveling up)</td>
<td>Population Attributable Risk (PAR), e.g., the total number of cases that would be avoided if everyone had tertiary education</td>
<td>PAR (%)</td>
</tr>
<tr>
<td></td>
<td>Idem, but as a proportion of all cases (of death, disease, etc.) in the total population</td>
<td></td>
<td>Idem, but as a proportion of all cases (of death, disease, etc.) in the total population</td>
</tr>
<tr>
<td>The ID perspective (equality by redistribution)</td>
<td>Index of Dissimilarity (ID)</td>
<td>e.g., the total number of cases to be redistributed between groups in order to obtain the same average rate for all groups</td>
<td>ID (%)</td>
</tr>
<tr>
<td></td>
<td>Idem, but as a proportion of all cases (of death, disease, etc.) in the total population</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes: SES = Socioeconomic status; PAR = Population Attributable Risk; ID = Index of dissimilarity.

6.5 Evaluation and interpretation of the results

The last step that Kuntz, et al. suggest involves evaluating the data and indicating the evidence that has resulted from the measurement process. This step includes describing the health inequalities, evaluating possible data problems, and searching for substantial explanations of the inequalities. They make a distinction between the description of health disparities according to socioeconomic variables, and the explanation of the disparities with reference to intermediate variables:

Both of these two activities face difficult but distinct tasks. These tasks should therefore be clearly specified, and not be mixed up in any analysis. The task of description is to obtain a detailed, accurate and valid overview of (trends in) health inequalities, whereas the ultimate task of explanation is to estimate the extent to which specific intermediate variables contributed to the (trends in) health inequalities that are observed.

They continue that explaining health inequalities is not always a central purpose of a health monitoring system, but the system can provide valuable insights, particularly by providing evidence of the role health determinants make to the observed health differences. They note that this evidence cannot simply be derived from socioeconomic indicators, which are primarily descriptive. For example, a strong relationship between health and income suggests the effects of adverse living conditions, but other mechanisms may also be involved, such as psychological stress and behavioural responses to that stress. Therefore, they recommend:

Empirical evidence should preferably be obtained by adding new variables that measure specific intermediate mechanisms. These variables should not only be studied for their relation to health, but also for the contribution they make to health differences according to the socio-economic indicator. This study can be assessed empirically by means of multivariate analyses.

Potential explanations could include an estimation of the extent to which intermediate health determinant variables—which also need to be measured through the four steps described above—contributed to these inequalities. Intermediate variables can include behavioural risk factors such as smoking, material factors such as housing conditions, and psychosocial factors such as coping with stress. They add that this more complex type of analyses has previously been outside the scope of routine health monitoring systems. However, the contribution of health determinants to health inequalities is important to an understanding of factors such as whether an increase in income inequalities is accompanied by an increase in income-related health inequalities. This type of information is invaluable when deciding policies, strategies, and action to eliminate health disparities.

634 Ibid., accessed. p. 22.
7. Criteria for health disparities indicator selection

The indicators suggested for use as health disparities indicators by this report, are based, in part, on their use in other countries, as well as on the standard international model for indicator criteria. This model recommends that indicators should have:

- validity (reflect what is important),
- reliability (be accurate and precise),
- responsiveness (have the possibility of change within a prescribed time),
- modifiability (by policy-sensitive strategies),
- accountability (be linked to performance measures for which a specific organization is accountable),
- monitorability (measures can be taken at appropriate intervals),
- predictiveness (able to predict future needs), and
- acceptability (understandable to policy makers and others).

In practice, many indicators are also chosen on the basis of data availability. In addition, we could add that, ideally, indicators should be able to be disaggregated by provincial and regional levels.

The European Commission summarizes this list by recommending that the selection of individual indicators be guided by a minimum set of criteria. It notes that an indicator should:

- capture the essence of the problem and have a clear and accepted normative interpretation,
- be robust and statistically validated,
- provide a sufficient level of cross-countries comparability, as far as practicable, with the use of internationally applied definitions and data collection standards,
- be built on available underlying data, and be timely and susceptible to revision, and
- be responsive to policy interventions but not subject to manipulation.

Ian McDowell, et al. of the University of Ottawa describe four applications of population health indicators that include measures of health disparities. They suggest that indicators should be able to:

- describe the current health status,

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635 Tobias. *Indicators of Inequality: Classification and Selection of Ethnic Health Disparity Indicators* accessed.
predict health status or consider sustainability through estimations of risk or demographic projections of disease burden,
• contribute to explanations of health status or determinants (e.g., associations between income inequality and health), and
• evaluate intervention or policies outcomes.\(^{638}\)

According to Kuntz, et al., authors of *Monitoring Socio-Economic Inequalities in Health in the European Union: Guidelines and Illustrations*, the feasibility of estimating socioeconomic health inequalities depends on a number of practical considerations.\(^{639}\) They give five considerations to use as guidelines, but note that, in practice, if all recommendations cannot be met, the first and fifth recommendations shown below are the most important.

1. **Data** – Data should cover a significant part of the population, and be available for all age groups and both men and women.
2. **Representativeness** – Estimates of health inequalities should be representative of the target population. For example, estimates of inequalities in disability among the employed population are generally smaller than the estimates that would be observed with data on the total population at working age.
3. **Reliability and precision** – Estimates of health inequalities should be reliable and precise. Socio-economic or health indicators may suffer from measurement problems (low reliability) or the statistical power of the data source may be insufficient (low precision). It is important that it is often possible to cope with these problems to some extent.
4. **Comparability** – Estimates should be comparable over time, e.g., when monitoring trends over time, care should be taken that inequality estimates in one period are comparable to the other period.
5. **Measures** – Estimates should be easy to calculate, interpret and present. Simple measures have important advantages. First, these measures are easy to add to existing routine monitoring systems. Second, unlike sophisticated calculations, simple measures do not distract the attention from basic measurement issues. Third, measures with a concrete interpretation are more easily communicated to the general public and policy makers.\(^{640}\)

Based on the above list, Kunst, et al. suggest minimum indicators that are necessary in order to monitor socioeconomic health inequalities for morbidity and mortality. However, the indicators for the minimum set are based on the medical model, and do not incorporate indicators of health determinants. The authors note that the usefulness of the monitoring system to policy makers “would be greatly enhanced by adding information on socio-economic inequalities in *determinants* of mortality and morbidity, such as health behaviours and health care utilisation.”\(^{641}\) They also note that including determinants of health would increase the comprehensiveness of the indicator set and would help explain trends in health inequalities. They

\(^{638}\) Ibid.
\(^{640}\) Ibid., accessed. pp. 22-23.
\(^{641}\) Ibid., accessed. p. 2.
also recommend that measures that identify specific disadvantaged groups, such as ethnic minorities would be beneficial.

The minimum indicators for mortality and morbidity they recommend include indicators of socio-economic inequalities in health for both mortality (by cause of death) and self-reported morbidity (for different health indicators, including perceived general health and disability). In addition, estimates should be presented:

- according to at least 2 of the 3 core socio-economic indicators (education, income and/or occupational class),
- for men and women, and for all relevant age groups, and
- data should be nationally representative, and able to show changes over time.  

Kuntz et al. provide a useful checklist for the evaluation of data sources, which is shown in Table 9 below. Basically, as noted, the recommendations given in the check list are that data need to be stratified by at least two core indicators such as household equivalent income and educational attainment, include both genders and all age groups, be based on sufficient survey sample size, and have an ability to indicate trends. This check list is also useful for evaluating health determinant data sources.

\[642\] Ibid., accessed. p. 31.
### Table 9. Checklist for the evaluation of data sources

| Relevance and timeliness | a. Do the data cover at least two or three of the core socio-economic indicators (occupation, education, income)?  
| | b. In mortality studies, can a distinction be made by cause of death?  
| | c. In health interview or similar surveys, are different health status indicators included?  
| | d. Do the data refer to a recent period (less than 5 years ago)?  
| Population coverage and representativeness | a. Are both men and women included?  
| | b. Do the data cover all age groups or at least a substantial part of the entire age range (e.g. 15-74 years)?  
| | c. Are you sure that the data are not restricted to a specific city/area or to another sub-population (e.g. employees of a company)?  
| | d. Do the data include the institutionalised population and other specific groups such as foreigners?  
| | e. Are you reasonably sure that, if data come from a survey, problems with non-response do not strongly bias the results?  
| Reliability | a. Are socio-economic indicators linked to health indicators at the individual or household level (instead of the area level)?  
| | b. If education is used as the socio-economic indicator, can a distinction be made between lower educational levels (e.g. elementary and lower secondary, or <7 and 7-8 years)?  
| | c. If occupational class is used, can this indicator be determined for (nearly) all people, including those who are economically inactive (e.g. housewives and retired)?  
| | d. If income is used, are data available to estimate household equivalent income? Are there no serious problems such as income unknown for many people (say, more than 20%)?  
| Precision, power | a. In interview or examination surveys, is the sample size fairly large (more than 5,000 respondents)?  
| | b. In mortality studies, is the number of deaths fairly large (more than 1,000 deaths)?  
| Usefulness for monitoring trends | a. Can three or more periods be compared?  
| | b. Do these periods together cover a sufficiently long span of time (about ten years of more)?  
| | c. In interview or examination surveys, are exactly the same health indicators used in the subsequent surveys?  
| | d. Is the measurement of socio-economic indicators comparable over time? Can the same classification be applied to each period?  

Mark Exworthy, et al. provide a guide of disparities-focused criteria to consider when designing health disparity indicators that is focused on informing policy decisions.\textsuperscript{643} They acknowledge that it may not be possible to follow them all. For example, unless evidence is available on the impact of interventions (assuming interventions have been implemented), it might not be possible to attribute changes in health disparities to specific policy interventions. Table 10 below shows the principle criteria, which are categorized into dimensions of sustainability, accountability, attribution, availability, coverage, reliability, equity, social determinants, and timing.\textsuperscript{644}

### Table 10. Criteria to consider for health disparities indicators

<table>
<thead>
<tr>
<th>Principle / criteria</th>
<th>Interpretation and application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acceptability / sustainability</td>
<td>A small number of indicators should be manageable and understood by policymakers and practitioners.</td>
</tr>
<tr>
<td>Accountability</td>
<td>Individuals or organizations should be held responsible for implementing relevant policies.</td>
</tr>
<tr>
<td>Attribution</td>
<td>Indicator changes should be attributed to policy interventions.</td>
</tr>
<tr>
<td>Availability</td>
<td>Data should be locally and/or nationally available.</td>
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<tr>
<td>Coverage</td>
<td>All stages of the life course and health care system should be measured.</td>
</tr>
<tr>
<td>Detection / reliability</td>
<td>Indicators should be able to detect change in disparities and inequalities (over specified time periods).</td>
</tr>
<tr>
<td>Equity dimension</td>
<td>Data should report a distribution across social groups rather than in the aggregate.</td>
</tr>
<tr>
<td>Wider determinants</td>
<td>Measures should address health and/or health care, but neither set of measures should be medically dominated.</td>
</tr>
<tr>
<td>Timing</td>
<td>Data should be collected at regular intervals to inform policy.</td>
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</tbody>
</table>


\textsuperscript{643} Exworthy, Bindman, Davies, and Washington. "Evidence into Policy and Practice? Measuring the Progress of Policies to Tackle Health Disparities and Inequalities in the US and UK."

\textsuperscript{644} Ibid.
8. Canadian data sources and needs

8.1 Data limitations

As discussed above, Kunst, et al. suggest that the first step involved in monitoring health disparities is the identification of data sources that can be used to develop statistics to populate the indicators. In Canada, Statistics Canada and the Canadian Institute for Health Information (CIHI) collect data that are reliable, valid, collected at somewhat frequent intervals, and useful for health disparities indicators.

Statistics Canada’s data collection is extensive and houses data from a large number of surveys, such as the Census, the Canadian Community Health Survey (CCHS), the National Population Health Survey (NPHS), the National Longitudinal Survey of Children and Youth (NLSCY), the General Social Survey (GSS), Participation and Activity Limitations Survey (PALS), the Labour Force Survey (LFS), the Survey of Labour and Income Dynamics (SLID), the Canadian Tobacco Use Monitoring Survey, Survey of Household Spending, Uniform Crime Reporting Survey, and many others. There are also historical data for some surveys that have been discontinued such as the Ethnic Diversity Survey, and the Violence Against Women Survey.

However, special tabulations of raw data are required in order to access even a minimal level of data that are stratified by income and educational levels. The Statistics Canada/CIHI data collections include a wealth of health-related data and data needed to indicate SES, such as income adequacy, educational attainment levels, occupational status and other stratification variables. The Canadian Community Health Survey (CCHS) collects all of this information in each survey. However, with very few exceptions, age group and gender are the only breakdowns generally provided.

Individual-level data on mortality stratified by SES indicators are not available in Canada, since SES information is not collected at the time of death. Therefore, mortality rates by SES can only be produced through ecological measures linking mortality rates to the income quintiles of neighbourhoods of the last place of residence at the time of mortality. Statistics Canada is in the process of developing a new database that will link mortality rates with postal codes, which will facilitate this work.

CCHS is the only health survey that provides data at the health region level, but health region data are only available for a selection of indicators included in the required component. Many variables in CCHS are included only in an optional component. This component is used every two years as a complement to the required component, and has a range of topics that provinces can elect to include in their survey. Therefore, since all provinces did not choose the same topics, for some key indicators such as the Health Utility Index, it is not possible to provide comprehensive provincial- or regional-level data. This limits the possibilities for comparing health disparities at the local level.
The Canadian Census is the only reliable, non-health-related source of detailed data for small groups (such as lone-parent families, ethnic groups, industrial and occupational categories, and immigrants) and for areas as small as a city neighbourhood or as large as the country itself.

As discussed above, range, relative risk ratios, and PAR measures are needed that would routinely compare health disparities between groups, and also across the entire health gradient. Raw data are available, as will be seen below, to do much of this work, with some gaps—particularly in regard to Aboriginal peoples.

However, more extensive data analysis is needed to produce quality health disparities indicators that go beyond the description level. Data analysis that would allow comparisons of health determinant or SES data with health outcome data has not been done on a routine basis. For example, relative risk ratios and population attributable fractions are needed in order to understand the proportion of a health outcome that can be attributable to a health determinant, e.g., education, low-income, ethnic status, food insecurity, etc. These measures are generally not widely available, although this analysis has been done fairly recently for some health determinants such as smoking and substance abuse, and environment and health. In 2002, Russell Wilkins, et al, of Statistics Canada, did this work—using 1997 data—to associate urban-area income quintiles with many causes of mortality.

CSDH notes that many studies that collect data by sub-group use these data for controlling variables, rather than for exploring sub-group disparities, and that “frequently quantitative studies are statistically underpowered to collect data on differences in outcomes in different social groups.”

Data availability would also benefit from more developed possibilities to link databases, as has been done to some extent in provinces such as Manitoba and Newfoundland and Labrador. For example, data that relate to health determinants come from a variety of areas including labour, environment, criminal justice, and agriculture, to name a few. Linking these databases with health databases could potentially provide more comprehensive data sources for research and monitoring health disparities.

Possibilities that have recently become feasible through advances in computer technology are presently being explored in some areas such as the work of the Federal-Provincial-Territorial Committee on Health and the Environment on health and environment

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646 Boyd, and Genuis. "The Environmental Burden of Disease in Canada: Respiratory Disease, Cardiovascular Disease, Cancer, and Congenital Affliction." This study was based on WHO calculations of Environmental Attributable Fractions.

647 Wilkins, Berthelot, and Ng. "Trends in Mortality by Neighbourhood Income in Urban Canada from 1971 to 1996."

tracking and surveillance in Canada.\(^649\) Also, Statistics Canada is in the process of developing a database that links mortality data with census postal codes area, which will facilitate ecological studies of health disparities.\(^650\)

### 8.1.1 Aboriginal peoples data limitations

Data on Aboriginal peoples is extremely limited, although there is ongoing work in Canada designed to remedy this situation. For example, health surveys, such as CCHS, do not include Aboriginal peoples living in the territories or on reserves. This means that more than half of the Aboriginal population is not represented by the data. Given these large data gaps, the ability to ascertain the health disparities associated with socioeconomic status to the extent that it affects the entire Aboriginal population in Canada is currently limited.

The most inclusive health data on Aboriginal peoples are available from the First Nations Regional Longitudinal Health Survey (RHS), which surveys First Nations and Inuit peoples living both on and off-reserve.\(^651\) However, the data cannot be compared with data on non-Aboriginal peoples, which limits their use for health disparities indicators. Health Canada notes that “direct comparisons cannot be made with the general public … because there may be important differences between population groups or data sources.”\(^652\) It also notes, “Due to a high number of refusals by First Nations communities in Québec to participate in the survey, no provincial level data for the Québec reserve population are available. Overall, data for on-reserve and non-reserve populations were published separately, with no aggregate data to reflect the whole Aboriginal population in Canada.”\(^653\)

According to the RHS National Team website:

The First Nations Regional Longitudinal Health Survey (commonly abbreviated to RHS) is the only First Nations governed, national health survey in Canada. It is longitudinal in nature and collects information based on both Western and traditional understandings of health and wellbeing. The first RHS took place in 1997 and involved First Nations and Inuit from across Canada. At the time, reliable information on the health and wellbeing of First Nations and Inuit was severely lacking due to the exclusion of First Nations and Inuit from major national health surveys. RHS 1997 was implemented to address these deficiencies while acknowledging the need for First Nations and Inuit to control their own health information.

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\(^{650}\) Personal communication between Karen Hayward and Michael Wolfson of Statistics Canada, June 2008.

\(^{651}\) Assembly of First Nations / First Nations Information Governance Committee. *First Nations Regional Longitudinal Health Survey (RHS) 2002/03: Results for Adults, Youth and Children Living in First Nations Communities,* accessed.

\(^{652}\) Ibid., accessed.

\(^{653}\) Ibid., accessed.
Data collection for the second iteration of the RHS, RHS Phase 1 (2002/03), began in the Fall of 2002 and was completed in mid-2003. RHS Phase 1 was designed as the baseline study of a longitudinal design. In total, 22,602 surveys were collected from 238 First Nations communities (Inuit communities did not participate in this round).

The RHS National Team along with our Regional Partners are in the planning process for RHS Phase 2 (2007/08); this is the second phase of the longitudinal design. It is anticipated that the RHS survey will be repeated every 4 years, with Phase 3 and Phase 4 occurring in 2011 and 2015 respectively.\textsuperscript{654}

First Nations Inuit Health Branch (FNIBH) of Health Canada is the primary funder of the RHS. Health Canada used RHS data for the section on Aboriginal health in its report titled \textit{Healthy Canadians—A Federal Report on Comparable Health Indicators 2006}.\textsuperscript{655} In that report, an overview of some of the challenges of data collection in Aboriginal populations, in particular in First Nations populations living on-reserves, is available in Chapter 5: Health information, challenges and next steps, and in Annex 3: Data source exclusions and limitations.

Major data sources useful for tracking health disparities, and access to the data, are briefly reviewed in Section 8.3 below. The limitations discussed above apply to most of the sources, and are not generally repeated in the following scan.

\section*{8.2 Data access}

Data that can be used for health disparities indicators are mainly housed at Statistics Canada and the Canadian Institute for Health Information (CIHI). Survey data from Statistics Canada’s “Master files” can be shared—through “Share files”—with the Public Health Agency of Canada, Health Canada, and provincial ministries of health, with the permission of survey respondents (which is about 95\% of respondents).\textsuperscript{656,657} The Share files are weighted so that they produce comparable results to the Master files.

As noted, age group and gender are the only variables generally reported by Statistics Canada. However, individuals or groups—other than Statistics Canada employees and Share file users—do have access to data stratified by socioeconomic, ethnic status, or other variables either through the Public Use Microdata Files, or through custom tabulations from Statistics Canada.

\textsuperscript{654} RHS National Team. \textit{First Nations Regional Longitudinal Health Survey} (RHS), 2008; accessed May 2008; available from \url{http://rhs-ers.ca/english/background-governance.asp}.


\textsuperscript{656} Statistics Canada. \textit{National Population Health Survey (NPHS) - Household Component - Longitudinal} accessed.

Public Use Microdata Files (PUMFs) are available through universities participating in the Data Liberation Initiative, or at regional Statistics Canada Research Data Centres, located throughout Canada. PUMPs allow research and analysis using non-aggregated data, and include 100% of respondents but not all of the variables. However, the files are quite extensive and could provide much of the data needed to produce health disparities indicators, if PHAC does not have the capacity to do this work by accessing the Share files.

To access information not included in PUMPs, custom-tabulations are available from Statistics Canada for various fees that range from about $350 for minimal information to millions of dollars for large-scale tabulations.

Also Statistics Canada provides CANSIM tables—some free of charge, but these tables contain limited data. Data that are free of charge can only be stratified by age group and gender. CANSIM has files on topics other than health, such as labour, income, trade, and education, among others.

Custom tabulations using Census data that are not included in the standard releases can be requested from Statistics Canada. However, the minimum price per table is $1,115. According to Statistics Canada, custom tabulations are prepared on a full cost-recovery basis. The price includes all consultation, computer processing and other costs incurred in their development and production.

Statistics Canada also provides semi-custom tabulations that allow users to replicate the data content of standard topic-based tabulations for custom geographies, a fixed profile for custom geographies, or custom target groups. These semi-custom tabulations contain three types of tables, semi-custom profiles, target group profiles and semi-custom cross tabulations. The base price of a semi-custom tabulation is $305 plus area cost. Additional costs apply for creation of the target group and for creation of any custom geographies.

The fixed profile, which cannot be modified, contains a wide range of census characteristics. The data content is similar to, but not the same as, the standard profile published on the website. Target group profiles replicate the fixed profile for a custom target group (such as a specific ethnic group or linguistic group). In addition to the target group, the geography desired can also be customized. The content pertains to individuals only, and no family, household, or dwelling data are available.

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Custom tabulations can also be requested from CIHI, which also charges on a cost-recovery basis. Costs vary depending on the data requested and include a basic administration fee plus production time.

For more detailed information, a 148-page review of the availability of population health and health services data and data access—which has a focus on researcher needs—can be found in the Canadian Policy Research Networks (CPRN) and Centre for Health Services and Policy Research (CHSPR) publication, titled *Data, Data, Everywhere... : Improving Access to Population Health and Health Services Research Data in Canada*.661 The publication is available on the CPRN website: ([http://www.cprn.org/documents/36948_en.pdf](http://www.cprn.org/documents/36948_en.pdf)).

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8.3 Core data sources

CSDH notes that three types of data can form the core of a national health disparities monitoring system:

1. Nationally representative, individual-level data on mortality according to socioeconomic indicators, to monitor socioeconomic inequalities in mortality.
2. Nationally representative data from health interview, multi-purpose and similar surveys, to monitor socioeconomic inequalities in self-reported morbidity and access to and utilization of health care.
3. Nationally representative data from routine health records.\(^\text{662}\)

Also, provincial/territorial and regional data are necessary in order to measure health disparities in multiple jurisdictions.

The following is a summary of core data sources in Canada for health disparities indicators. For the most part, information concerning Statistic Canada is reproduced from the Statistic Canada website (www.statcan.ca).

### 8.3.1 Statistics Canada data

#### 8.3.1.1 Mortality/ birth data

In Canada, it is not possible to collect nationally representative, individual-level data on mortality according to socioeconomic indicators, as CSDH recommends. Mortality income-related rates must be calculated for areas of residence at death.

For example, Statistics Canada used work by Russell Wilkins, et al.—who estimated area-level mortality rates by income terciles for enumeration areas (EA)—in order to construct life tables for 2000/01.\(^\text{663}\) Wilkins, et al. linked individual mortality data with postal codes for place of residence at the time of death. They then sorted these data by EA in urban areas in Canada. Average income for each EA was calculated, and the EAs were assigned to lowest, middle, and highest terciles based on these incomes. The life tables were constructed by using the number of deaths assigned to each income tercile. The 1996 percentage of deaths in each income tercile were applied to the 2000/01 life tables.

According to Raphael, this method produces conservative estimates of the relationship between


\(^{663}\) This work is described in: Wilkins, Berthelot, and Ng. "Trends in Mortality by Neighbourhood Income in Urban Canada from 1971 to 1996."
low income and mortality rates. Also, the method is not always accurate because it does not capture mortality rates for those low-income individuals who live in more affluent neighbourhoods, and conversely, may include high-income individuals who live in low-income neighbourhoods.

**Statistics Canada Vital Statistics, Birth and Death Databases**

Vital Statistics collects mandatory information annually from all provincial and territorial vital statistics registries on all live births, stillbirths, marriages and deaths in Canada.

**Death database**

The death database is an administrative survey that collects demographic and medical (cause of death) information annually from all provincial and territorial vital statistics registries on all deaths in Canada. The data are used to calculate basic indicators (such as counts and rates) on deaths of residents of Canada. Information from this database is also used in the calculation of statistics, such as cause-specific death rates and life expectancy.

The central Vital Statistics Registry in each province and territory provides data from death registrations to Statistics Canada. The following statistical data items are reported for each death by all provinces and territories for inclusion in the Canadian Vital Statistics system:

- Age, sex, marital status, place of residence and birthplace of the deceased
- Date of death
- Underlying cause of death classified to the World Health Organization International Statistical Classification of Disease and Related Health Problems (ICD). (ICD-9 was used from 1979 to 1999; ICD-10 use began in 2000 and is currently used.)
- Province or territory of occurrence of death
- Place of accident (for most non-transport accidental deaths)
- Autopsy (whether one was held, and if so, whether the results of it were taken into account in establishing the cause of death)

The system does not collect socioeconomic status or other sociodemographic information.

**Birth database**

The birth database is an administrative survey that collects demographic information annually from all provincial and territorial vital statistics registries on all live and still births in Canada. The data are used to calculate basic indicators (such as counts and rates) on births of residents of

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Canada. Information from this database is also used in the calculation of statistics, such as age-specific fertility rates. Since 1944, births, stillbirths, and deaths have been classified by area of reported residence, with births and stillbirths according to the residence of the mother.

The central Vital Statistics Registry in each province and territory provides data from birth registrations to Statistics Canada. The following statistical data items are reported for each birth by all provinces and territories for inclusion in the Canadian Vital Statistics system:

- Date and place of birth
- Child's sex, birth weight and gestational age
- Parents' age, marital status and birthplace
- Mother's place of residence
- Type of birth (single or multiple)
- Parity (number of children mother has given birth to)

Again, no socioeconomic status or other sociodemographic information is collected.

Related databases

The Vital Statistics – Death Database, the Vital Statistics – Birth Database, the Vital Statistics – Stillbirth Database and the Canadian Cancer Registry (which evolved from the National Cancer Incidence Reporting System (NCIRS), which are the input data sources for national vital statistics and cancer data, are processed further to create four databases used for historic and current record linkages. The resulting databases are called the: 1) Canadian Mortality Data Base (CMDB); 2) Canadian Birth Data Base (CBDB); 3) Canadian Stillbirth Data Base (CSDB); and 4) Canadian Cancer Data Base (CCDB) (described below).

The Canadian Mortality Data Base contains all deaths dating back to 1950 occurring in Canada, along with the underlying cause of death. The Canadian Birth Data Base and the Canadian Stillbirth Data Base were developed for data from 1985 onward. These files have been used in a number of studies particularly relating to maternal, perinatal and infant health.

8.3.1.2 Surveys

Canadian Census

According to Statistics Canada and as previously noted above, the Census is the only reliable source of detailed data for small groups (such as lone-parent families, ethnic groups, industrial and occupational categories, and immigrants) and for areas as small as a city neighbourhood or as large as the country itself. The 2006 Census provides data at the levels of: Canada, province and territory, federal electoral district (FED) (2003 Representation Order), census metropolitan area/census agglomeration (CMA/CA) and their zones of influence, census division/census

667 Refer to Canadian Census, accessed.

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subdivision (CD/CSD), urban area (UA), designated place (DPL), and statistical area classification (SAC).

The Canadian Census is conducted every five years, the latest being 2001 and 2006. The Census includes every man, woman and child living in Canada on Census Day, as well as Canadians who are abroad, either on a military base, attached to a diplomatic mission, at sea or in port aboard Canadian-registered merchant vessels. Persons in Canada including those holding a temporary resident permit, study permit, or work permit, and their dependents, are also part of the Census. Residents at institutions such as detention facilities, hospitals, senior citizen residences, orphanages or prisons are enumerated using the institution's administrative records.

Statistics Canada has also developed lists of homeless shelters, distinct from other types of collective dwellings, to identify homeless persons. In shelters and similar facilities, eight short-form questions are completed using administrative records, where possible. These are the same questions that are answered by every Canadian. In all cases, age and gender are noted.

The Census provides all levels of government, business, industry, media, academia and independent organizations with social, economic and demographic information. In 2007, Statistics Canada released statistics from the 2006 Census that included: Population and dwelling counts; Age and sex; Families and households; Marital status (including common-law status); Housing and shelter costs; Language; Immigration and citizenship; and Mobility and migration. The 2008 data releases to date include: Aboriginal peoples; Labour (including labour market activity, industry and occupation); Place of work and commuting to work (including mode of transportation); Education (including educational attainment); Language (including language of work); Ethnic origin and visible minorities; Income and earnings; Housing and shelter costs.

The Statistics Canada Preview of Products and Services publication offers a complete overview of the products and services that have been or will be released based on the 2006 Census of Population and 2006 Census of Agriculture results.

Statistics Canada provides occasional public data tables using Census data on off-reserve Aboriginal peoples, by gender, for Canada, the provinces, and territories for a variety of indicators (listed in the footnote below). Separate tables are provided for the same indicators for non-Aboriginal peoples.

Statistics Canada's Community Profiles present community level information from the 2006 Census of Population. Users can search for an area of interest among 5,418 communities, 288 counties (or their equivalents), and 33 large and 111 smaller metropolitan areas.

[669] These indicators include: self-rated health, self-rated mental health, arthritis or rheumatism, asthma, diabetes, high blood pressure, injuries, disabilities, activity limitation, smoking, exposure to second-hand smoke, alcohol, life stress, obesity, overweight, sense of belonging to local community, having a regular doctor, contact with medical, dental, and alternative health providers.
National Population Health Survey (NPHS) \(^{670}\)

The NPHS began in 1994/95 with both a cross-sectional and longitudinal component. The cross-sectional component has been replaced by the Canadian Community Health Survey (CCHS) (see below), but the longitudinal component is scheduled to continue until 2014. About 17,000 persons of all ages from all provinces have been surveyed every two years since the survey began. NPHS has a household component and an institutional component that surveys residents of health institutions such as nursing homes. Excluded are respondents from the Territories, Indian reserves, Crown Lands, health institutions (from the household component), members of the Canadian Forces bases, and some remote areas in Ontario and Quebec.

The information includes self-perception of health, the Health Utility Index,\(^ {671}\) chronic conditions, injuries, repetitive strains, depression, smoking, alcohol consumption, physical activity, consultations with medical professionals, use of medications, and use of alternative medicine. Demographic and economic information include age, gender, education, ethnicity, household income and labour force status.

Canadian Community Health Survey (CCHS) \(^{672}\)

The Canadian Community Health Survey (CCHS) has the potential for providing much of the data needed for health disparities indicators, although the data on health determinants is limited. CCHS began in 2000/01 and replaced the cross-sectional component of NSPH. It samples approximately 130,000 randomly selected persons, aged 12 and over, representing approximately 98% of the population, with the same exclusions that apply to NPHS. It provides information for national, provincial, territorial, and sub-provincial levels for 126 health regions (or combinations of health regions).

CCHS is conducted in two-year cycles with two distinct surveys. A general health survey takes place the first year of the cycle at the health-region level, and the second year of the survey focuses on a particular topic, and surveys a sub-sample of approximately 35,000 people at a provincial-level. The topics to date have included extended information on mental health and wellbeing (in 2002), and nutrition (in 2004), which included food security. Health Canada reports that use of the food security module represents the first time that household food security has been measured in Canada with a multiple-indicator measure on the national and provincial level.

Statistics Canada notes that the depression module used in CCHS is based on a scale that was developed in the late 1980s/ early 1990s, but which was never fully validated. Therefore, it

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\(^{671}\) The Health Utility Index includes a combination of eight variables: vision trouble, hearing problems, speech trouble, mobility trouble, dexterity trouble, emotional problems, cognition, and activities prevented by pain.

recommends that analysis of data from this module be restricted, and use of the data as an indicator for the probability of depression or to calculate simple population prevalence is discouraged.

The wide-range of demographic and economic variables collected, and available on PUMPs, include age, gender, education, ethnicity, Aboriginal status, immigration status, language, household composition, labour force status, multiple-job status, dwelling and household variables, geography variables—postal codes, census divisions (CD), census metropolitan area (CMA), urban/ rural classification, health regions, and income—total household, personal, distribution of household income, household income ratio, and adjusted household income ratio.\textsuperscript{673}

The survey has a common component, which all provinces use, and an optional component with a list of topics that provinces may or may not choose to use—which limits the comparability for these topics. This is actually a problem since some of the key indicators are included in optional modules.

The CCHS content, in part, includes the following variables (optional contents are marked with an asterisk* following the content):

- \textit{Social and physical environment issues}—income levels, income adequacy (household income relative to household size), food insecurity, and exposure to second-hand smoke, social support,* sense of belonging to community,*
- \textit{Healthy child development}—mother’s lifestyle behaviours: nutrition, prenatal health (consumption of folic acid vitamin supplements),* breastfeeding, smoking/ drinking during pregnancy;
- \textit{Personal health practices}—smoking, alcohol consumption, probability of alcohol abuse,* fruit and vegetable consumption,* adult and youth physical activity;
- \textit{Mental health}—self-perceived mental health, depression, suicidal thoughts or attempts,* work stress,* sources of stress, stress
- \textit{Physical health status}—self-perceived health, heart disease, cancers, diabetes, respiratory diseases (asthma, chronic bronchitis, emphysema, or Chronic Obstructive Pulmonary Disease (COPD), fibromyalgia, chronic fatigue syndrome, chemical sensitivities, Body Mass Index (BMI), overweight, and injuries, Health Utility Index (HUI),*
- \textit{Health service use}—unmet healthcare needs, PAP smear, PSA (Prostate Specific Antigen) blood test, mental health consultations,* and home care services.

An interesting example of data needed to produce health disparities indicators can be seen in a Health Canada publication, \textit{Income-Related Household Food Security in Canada}.\textsuperscript{674} The report is based on data obtained from CCHS, Cycle 2.2, Nutrition. The Household Food Security Survey Module (HFSSM) included in the CCHS 2.2 was based on a similar U.S. module that

\textsuperscript{673} \textit{Canadian Community Health Survey (CCHS), Cycle 3.1 (2005), Public Use Micro Data File (PUMP), Integrated Derived Variable (DV) and Grouped Variable Specifications, accessed.}

\textsuperscript{674} Health Canada. \textit{Income-Related Household Food Security in Canada, accessed.}
uses 18 questions about food security in the household within the past 12 months—10 questions refer to adults, and 8 to children. It focuses on self-reports of uncertain, insufficient or inadequate food access, availability and utilization due to limited financial resources, and the compromised eating patterns and food consumption that may result.

Three categories are used to describe the food security situation experienced by adults, children, and households overall: food secure; food insecure, moderate; and food insecure, severe.

Health Canada reports percentages of households in each food security category for sub-populations (e.g., off-reserve Aboriginal status, lone-parent families by gender, and immigrant status—recent/ non recent), and by a number of sociodemographic variables: age groups; gender; household type; household income by quintiles; household income adequacy; main source of household income—social assistance, wages/ salary workers’ compensation/ EI, pensions/seniors’ benefits; highest level of household education; housing ownership; urban/ rural residence, and province. Thirty-eight pages of data are shown in four tables in the Appendix of the report, and a URL is given to access other data tables. Two of the tables provided relate to the Aboriginal population. Health Canada notes:

Until now, monitoring changes in income-related food insecurity in Canada has been a challenge due to differences in questions and/or methodology used in the various surveys. The food security module included in the CCHS 2.2 will be repeated in subsequent cycles of the CCHS, presenting opportunities to study the same dimensions of food security over time.

Descriptive analyses were undertaken to determine the prevalence of income-related food insecurity among households, adults and children in Canada. Additional analyses were undertaken by selected socio-demographic variables to identify sub-groups of the population in which household food insecurity is more prevalent.  

**National Longitudinal Survey of Children and Youth (NLSCY) 676**

The National Longitudinal Survey of Children and Youth (NLSCY) was developed, and is jointly conducted, by Human Resources and Social Development Canada (HRSDC) and Statistics Canada. It is a comprehensive survey that follows the development and wellbeing of children, who were aged 0–11 in 1994, from birth to early adulthood. New children are included in the sample each year, and the children are assessed bi-annually until age 25. All samples are drawn from the Labour Force Survey’s (LFS) sample of respondent households in all provinces. The sample for the latest cycle (Cycle 7) was comprised of 37,655 children and youths aged from 0–9 and 12–23.

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675 Ibid., accessed. p. ix.
Much of the information in the NLSCY is collected from parents on behalf of their children by means of a household interview. Additional information is collected using questionnaires completed by the child’s teacher and principal. Children aged 10 and older complete a separate written questionnaire in the home. Finally, the NLSCY includes direct measures of achievement: interviewers administer a receptive vocabulary test for children aged 4–6; a short test of mathematics/computation skills to children in grades 2 and above, and a test of early writing and numeracy skills for children aged 4–5.

The survey covers a comprehensive range of topics including family and household composition; relationships; sociodemographic profile of parents and children; family functioning; neighbourhood; child education, communication, development, behaviour, custody, child care use; youth education, income, health, activities, support, family situation; family education; ethnic diversity and immigration; income; labour market activities; and religion. Data are available through the PUMFs, and custom tabulations can be requested.

8.3.1.3 Health records

Canadian Cancer Registry

The Canadian Cancer Registry collects information continuously from all provincial and territorial Canadian Cancer Registries on cancer incidence in Canada for persons whose usual place of residence is Canada or who are non-permanent residents. The CCR is a collaborative effort between the thirteen Canadian provincial and territorial cancer registries and the Health Statistics Division of Statistics Canada, where the data are housed. The primary objective of the CCR is to provide a large database to study cancer patterns and trends and to monitor differences in cancer risks among different populations.

Data describe both the individual with the cancer, and the characteristics of the cancer, and include pathology, radiology and cytology reports, death certificates, autopsy reports, hospital separation records, out-patient records, and cancer treatment centre files. The information is primarily used for descriptive and analytic epidemiological studies to: identify risk factors for cancer; plan, monitor and evaluate a broad range of cancer control programs (e.g., screening); and conduct research in health services and economics. Information about cancer incidence and survival in Canada is generated by the CCR.

Canadian Cancer Data Base (CCDB)

The Canadian Cancer Data Base (CCDB) originated in 1969 and was developed from two main sources: 1) the National Cancer Incidence Reporting System (NCIRS) that contains data from 1969 to 1991, and 2) the Canadian Cancer Registry (CCR) from 1992 onward. The NCIRS is a

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fixed format, tumour-based file of cancer registrations in Canada, whereas the newer CCR
system has evolved to be a dynamic, patient-oriented database with the possibility of updates to
individual histories (e.g. the addition of new primary cancers and death information). All
Canadian provincial and territorial cancer registries now report their data to the CCR. The CCDB
was created from these two sources in a form suitable for use in record linkage studies. Some of
the processing involves standardization and coding of name information and adding special
numbers and duplicate flag information used by the generalized record linkage system. The
CCDB file is linked by person and has death information added for most provinces and
territories.

8.3.2 Canadian Institute for Health Information (CIHI) data

The Canadian Institute for Health Information (CIHI) collects and analyzes information
on health and health care in Canada, publicly reports health statistics, and produces analytic
reports. The CIHI health indicators are jointly produced with Statistics Canada and were
described above.

Administrative data, such as hospital and physician use, costs of treatment, and costs of lost
productivity are produced by CIHI. These data are useful for indicating health disparities, but, in
general, the data housed at CIHI indicate inputs to the health system, rather than health
outcomes, per se. Canadian researchers Vera Etches, et al. note that, with input indicators, it is
difficult to evaluate the effectiveness of treatments that are responsible, in part, for escalating
health care costs. For example, they report that there is no evidence of an association between
“high and escalating coronary-artery by-pass and angioplasty rates …[with] evidence of an
associated marginal decrease in mortality from coronary artery disease.”

National Trauma Registry Report (NTRR)679

Data on major injury in Canada are reported annually through the National Trauma Registry
Report (NTRR).680 The data for patients hospitalized with major trauma are obtained from eight
provinces—Saskatchewan and Prince Edward Island are not included. However, CIHI estimates
that 90% of all major trauma cases are captured in the data set.

CIHI provides a range of data such as injury hospitalizations by nature of injury, cause of injury,
injury context (e.g., work-related, sports and recreation), and clinical aspects (e.g., deaths,
severity, length of hospital stay, etc.). Data are generally presented by age group and
occasionally by gender.

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679 Flaherty, David H., Margaret Keresteci, Nicole de Guia, and Joan Roch. National Trauma Registry: Minimum
Data Set, Privacy Impact Assessment, Canadian Institute for Health Information, 2005; accessed May 2008;
680 McKeag, Ali Moses, Fang Yang, and Margaret Keresteci. National Trauma Registry Report: Major Injury in
Canada, 2004 - 2005, National Trauma Registry, Canadian Institute for Health Information, 2006; accessed Dec
Hospital Morbidity Database (HMDB) 681

Stored at the CIHI, the Hospital Morbidity Database (HMDB) provides a count of patients separated from a hospital (through discharge or death), listed by the primary morbidity (disease) diagnosed. The main purposes of the HMDB are to collect, process, and analyze diagnoses and procedures for all hospital separations; facilitate hospital, regional, provincial/territorial and national comparative reporting; and support management decision making at the hospital, regional, and provincial/territorial levels. The HMDB contains clinical and demographic data regarding primary diagnosis, operations, admission date, discharge condition, total days stayed, age, and gender.

8.3.3 Other data sources

In the U.K., Patrick Saunders, et al. evaluated non-medical data sets—in the areas of the physical environment, crime, housing and homelessness, social services, employment, lifestyles, education, leisure and culture, transport, and accidents—in order to identify which held information relative to health. 682 Their findings mirror the data availability for health determinants in Canada. They found that, although there were various data sources for health determinants that were collected outside of the health sector, they generally provided little evidence to support connections between the specific factors for which there are indicators and health. They note:

Furthermore, each of the datasets identified contains a large number of different albeit related data items and it is not clear which of these is the most appropriate ‘marker’ for health. For example, within the context of ‘housing,’ is the number of properties unfit for habitation or the proportion of overcrowded houses the better indicator of poor community health? 683

They recommend that further work is needed to define the relationship between a number of proposed measures and health outcomes.

There have been many other surveys conducted in Canada by the provinces, and nongovernmental organizations. For example, The Canadian Centre on Substance Abuse (CCSA) surveyed over 13,000 individuals across Canada in the 2004 Canadian Addiction Survey (CAS), which was sponsored, in part, by Health Canada. 684 According to the CCSA website:

683 Ibid. p. 108.
684 Canadian Centre on Substance Abuse (CCSA). 2004 Canadian Addiction Survey (CAS) (Website), 2008; accessed May 2008; available from
The CAS is the first national survey dedicated to alcohol, cannabis and other drug use since 1994. It is one of the most detailed and extensive surveys of its kind ever conducted in Canada. The CAS provides a detailed picture of how Canadians aged 15 years and older use alcohol, cannabis and other drugs, and the impact that use has on their physical, mental and social well-being.685

In 2003, GPI Atlantic conducted a community health survey in two Nova Scotia communities – rural Kings County and Glace Bay in industrial Cape Breton, with funding from the Canadian Population Health Initiative (CPHI) and the Canadian Rural Partnership. The survey was designed through extensive consultations with more than 40 community groups and with Statistics Canada, and was administered to more than 2,000 respondents in each of the communities. The 2–3 hour survey, which also involved respondents keeping a time-use diary, is an extensive and detailed look at wide range of population health determinants and health outcomes. According to Ronald Colman:

The data were entered, cleaned, and processed to create a remarkable new database that now constitutes the most detailed set of community-level data on population health available in Canada. That database is now available to researchers throughout Canada and allows correlations to be drawn between health status, health outcomes and a wide range of health determinants. New research on relationships between voluntary work and health, between time use and health, and other issues is being conducted using this database. In consultation with academics and community partners, data access guidelines have been put in place that can serve as a template for community-based population health research throughout Canada. The data access guidelines are available at http://discovery.uccb.ns.ca/glacebay_gpi/dataaccess.html ... Two community-based societies have been established to sustain and continue the project.686

Both of these surveys provide a wealth of information, and can be extremely useful for local-level research studies. However, these surveys—and other provincial surveys—are not focused on the national level, and are not conducted on a regular basis, making it difficult to determine trends. Therefore, for the purpose of developing common, national-level, health disparities indicators, the best source of data is Statistics Canada, and related organizations such as CIHI.

8.3.4 Qualitative data

Qualitative data can provide important information on public perceptions of population health, and a sense of the actual experiences of disparities within the population, and, in particular, within sub-groups that are most affected by the disparities. These data usually come from focus/community groups and emphasize specific topics, but these types of data are not routinely

685 Ibid., accessed.
collected. Therefore, at the present time, these types of data are generally not available to populate a common indicator set. However, David Coburn, et al. of the University of Toronto, argue:

[By] focusing on statistical aggregates rather than people with real connections with one another, population health researchers have excised the notions of agency and local action from their models. Consequently, they do not learn how individuals and groups view their own world and their real social relationships, what they identify as problematic, and how they might be helped to create their own healthy communities and environments.\textsuperscript{687}

9. **Examples of Statistics Canada indicators**

9.1 **Health indicators**

Statistics Canada and CIHI jointly produce a wealth of statistics on over 80 health indicators that are organized into a four-category health indicator framework:

- Health status
- Non-medical determinants of health
- Health system performance
- Community and health system characteristics

Where possible, data are provided for national, provincial, territorial, and health regions with a population over 75,000—which encompass approximately 95% of the population. Data sources mainly come from the Census, the surveys described above, as well as Vital Statistics, the National Trauma Registry, and Cancer Registry. The data source for crime statistics is the Canadian Centre for Justice Statistics (CJS) via the Uniform Crime Reporting (UCR) Survey. Labour force data come from the Canadian Labour Force Survey (LFS), and other labour surveys. Health system indicators are from CIHI.

Table 11 below shows the indicator categories within the Statistics Canada/CIHI health indicator framework. The health status indicators contain indicators in the categories of wellbeing, health conditions, human function, and deaths. Deaths are reported for many causes of deaths, including suicide, unintentional injury deaths, as well as by causes of disease. In addition, potential years of life lost—which is the number of years of life “lost” when a person dies prematurely from any cause before age 75—are provided for most of the causes of death.

The non-medical determinants of health indicators include those for health behaviours, living and working conditions, personal resources, and environmental factors. Health behaviours indicators are related to smoking, alcohol use, physical activity, and fruit and vegetable consumption. Also breastfeeding practices are included. The other determinants in this section include indicators related to the topic (e.g., numbers of high school graduates), but they are not connected to health, per se (except by assumption). For example, under “Living and Working Conditions,” the indicator for high school graduates is “Population aged 25 to 29 who have a high school graduation certificate,” and the indicator for crime is “The number and rate (per 100,000 population) of total Criminal Code offences, violent crimes, property crimes, and other crimes.” The indicator for “Low income rate” is “Population in economic families and unattached individuals with incomes below the Statistics Canada low-income cut-off (LICO).” These are indicators of health determinants, but they are not indicators of health determinant

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disparities, and they do not indicate the association of the indicator with health outcomes.

The health system performance category contains performance indicators such as mammography screening, influenza immunization, and wait time for hip fracture surgery. The community and health system characteristics category contains population estimates (e.g. “The number of people living in a geographic area by age and sex,” and includes numbers of various sub-groups such as lone-parent families, Aboriginal peoples, and visible minority population. It also includes a teen pregnancy indicator—“Number and rate of pregnancies per 1,000 women aged 15 to 19.” The other indicators in this category refer to contact with medical professionals, including with alternative health care providers, and different surgeries preformed (e.g., hip and knee replacements, coronary artery bypass, and hysterectomies).

Both Statistics Canada and CIHI produce health indicator reports that reproduce the health indicator framework shown in Table 11 below. In the CIHI version, an equity lens is depicted on the right side of the Table as shown below. However, this lens does not appear in the Statistics Canada version of the Table, and neither report discusses how the equity lens is, or will be, used.

Table 11. Health Indicator Framework and indicators produced by Statistics Canada and Canadian Institute for Health Information (CIHI)

<table>
<thead>
<tr>
<th>Health status</th>
<th>Health behaviours</th>
<th>Living and working conditions</th>
<th>Personal resources</th>
<th>Environmental factors</th>
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<tbody>
<tr>
<td>Wellbeing</td>
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<td>Self-rated health</td>
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<td>Changes over time in self-rated health</td>
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<tr>
<td>Self esteem</td>
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<td>Self-rated mental health</td>
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<tr>
<td>Health conditions</td>
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<tr>
<td>Adult body mass index (BMI)</td>
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<td>Youth BMI</td>
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<tr>
<td>Changes over time in BMI</td>
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<tr>
<td>Arthritis/rheumatism</td>
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<td>Diabetes</td>
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<td>Asthma</td>
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<td>High blood pressure</td>
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<td>Pain or discomfort that affects activities</td>
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<tr>
<td>Pain or discomfort by severity</td>
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<tr>
<td>Depression (indicator currently not produced)</td>
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<tr>
<td>Low birth weight</td>
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<td>Cancer incidence</td>
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<td>Injury hospitalization</td>
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<tr>
<td>Injuries</td>
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<tr>
<td>Functional health</td>
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<td>Two-week disability days</td>
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<td>Infant mortality</td>
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<td>Participation and action limitation</td>
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<td>Perinatal mortality</td>
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<tr>
<td>Disability-free life expectancy (DFLE)</td>
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<td></td>
<td>Life expectancy</td>
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<td>Disability-adjusted life expectancy (DALE)</td>
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<td>Mortality by</td>
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<td>selected causes</td>
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<tr>
<td>Deaths</td>
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<td>Potential years of</td>
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<td>life lost (PYLL)</td>
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<tr>
<td>Non-medical determinants of health</td>
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<tr>
<td>Type of smoker</td>
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<tr>
<td>Smoking initiation</td>
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<tr>
<td>Changes over time in smoking behaviour</td>
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<td>Frequency of drinking</td>
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<td>Leisure-time physical activity</td>
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<td>Changes over time in physical activity level</td>
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<tr>
<td>Breastfeeding practices</td>
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<td>Fruit and vegetable consumption</td>
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<td>High school graduates</td>
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<td>Sense of community</td>
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<td>Post-secondary graduates</td>
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<td>belonging</td>
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<tr>
<td>Adult and youth unemployment rate</td>
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<td>Social support</td>
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<td>Long-term unemployment rate</td>
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<td>Life stress</td>
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<td>Low income rate</td>
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<tr>
<td>Children in low income families</td>
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<tr>
<td>Average personal income</td>
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<td>Median share of income</td>
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<td>Government transfer income</td>
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<tr>
<td>Housing affordability</td>
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<td>Decision latitude at work</td>
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<tr>
<td>Crime</td>
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<tr>
<td>Adults and youths charged</td>
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<tr>
<td>Equity</td>
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</table>
### Health system performance

<table>
<thead>
<tr>
<th>Acceptability</th>
<th>Accessibility</th>
<th>Appropriateness</th>
<th>Competence</th>
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<tbody>
<tr>
<td>Patient satisfaction</td>
<td>Influenza immunization</td>
<td>Caesarean section</td>
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<td>Screening mammography</td>
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<td></td>
<td>Pap smear</td>
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<td>Regular medical doctor</td>
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<td></td>
<td>Wait time for hip fracture surgery</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Continuity</th>
<th>Effectiveness</th>
<th>Efficiency</th>
<th>Safety</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ambulatory care sensitive conditions</td>
<td>Hip fracture hospitalization</td>
<td></td>
</tr>
<tr>
<td></td>
<td>30-day in-hospital mortality</td>
<td>In-hospital hip fracture</td>
<td></td>
</tr>
</tbody>
</table>

### Community and health system characteristics

<table>
<thead>
<tr>
<th>Community</th>
<th>Health system</th>
<th>Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population estimates</td>
<td>Inflow/outflow ratios</td>
<td>Doctors rate</td>
</tr>
<tr>
<td>Population density</td>
<td>Coronary artery bypass graft (CABG)</td>
<td></td>
</tr>
<tr>
<td>Dependency ratio</td>
<td>Percutaneous coronary intervention (PCI)</td>
<td></td>
</tr>
<tr>
<td>Urban and rural population</td>
<td>Hip replacement</td>
<td></td>
</tr>
<tr>
<td>Aboriginal population</td>
<td>Knee replacement</td>
<td></td>
</tr>
<tr>
<td>Immigrant population</td>
<td>Hysterectomy</td>
<td></td>
</tr>
<tr>
<td>Internal migrant mobility</td>
<td>Contact with medical doctors</td>
<td></td>
</tr>
<tr>
<td>Metropolitan Influenced Zones (MIZ)</td>
<td>Contact with health professionals about mental health</td>
<td></td>
</tr>
<tr>
<td>Lone-parent families</td>
<td>Contact with dental professionals</td>
<td></td>
</tr>
<tr>
<td>Visible minority population</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teen pregnancy</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: The arrow indicating “equity” on the right of the Table is present in the CIHI report, but not the Statistics Canada report, and equity is not discussed in either report.

9.1.2 Health Adjusted Life Expectancy (HALE) and Life expectancy—by income

In 2006, Statistics Canada / CIHI produced two indicators stratified by income. These were “Health adjusted life expectancy, at birth and at age 65, by sex and income group, Canada and provinces, occasional (years), 2001,”—HALE— and “Life-expectancy, by sex and income group, Canada and provinces, occasional (years), 2001”.

HALE is defined as follows:

Health Adjusted Life Expectancy (HALE) is an indicator of overall population health. It combines measures of both age- and sex-specific health status, and age- and sex-specific mortality into a single statistic. HALE represents the number of expected years of life equivalent to years lived in full health, based on the average experience in a population. In this sense, HALE is not only a measure of quantity of life but also a measure of quality of life.

Life expectancy at birth is defined as:

The number of years a person would be expected to live, starting from birth (for life expectancy at birth) or at age 65 (for life expectancy at age 65), on the basis of the mortality statistics for a given observation period, typically a calendar year. Life expectancy will be calculated by income tercile.

The indicators were only produced for 2001, but estimates were made for each province. Calculations were based on the method described in the mortality section above, based on the work of Wilkins, et al. using enumeration areas (EAs) that were organized into income terciles. If these indicators were produced regularly, they could be good indicators of health disparities at the community level. Although using income terciles by EAs is not a very precise measure, as previously noted by Raphael, this is the only method in Canada that is able to produce mortality statistics by income, because data for income and other socioeconomic variables are not collected at death.

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690 Canadian Institute for Health Information. Considerations for Data Production for Reporting Comparable Health Indicators 2006 accessed.
692 ______. Comparable Health Indicators 2006. 37-HLT Health Adjusted Life Expectancy (HALE), accessed.
693 Canadian Institute for Health Information. Considerations for Data Production for Reporting Comparable Health Indicators 2006 accessed.
9.2 Disadvantaged groups and health determinant indicators

In Canada, the majority of reports that indicate health determinants have been concerned with health behavior risk factors—smoking, alcohol consumption, physical activity, and diet, as can be seen in the official health indicators produced by Statistics Canada and CIHI and described above. Also, in that system, the indicators used to populate the “Community” category were restricted to numbers of individuals in various sub-groups.

The possibility of including health determinant indicators in a health disparities indicator system requires choices to be made among the many areas that could be included. As noted above, public health participants of the recent Sudbury & District Health Unit suggested that the key determinants were income and income distribution, education, employment, housing, food security, and social inclusion.\(^\text{695}\) Key data sources and indicator definitions from Statistics Canada’s indicator set for these areas, as well as crime and the environment, are listed below. Also listed are a few indicators that refer to disadvantaged groups. It must be noted that this list is only an example, and does not contain all of the indicators that might be needed.

As previously discussed, Statistics Canada/CIHI indicators are indicators of health determinants, for the most part, and are not indicators of health disparities. To convert the health determinant indicators into health disparities indicators, the data used for these indicators would need to be stratified by socioeconomic variables, and then compared across disadvantaged groups, or by SES. A few of the indicators below do compare groups, and were included here for that reason. It would be helpful if the indicators could also be stratified by sub-group, and this is possible for family groups, but data are not available to stratify all of them by Aboriginal or ethnic group. Also it is unlikely that they could all be stratified by urban/rural geography, but some of the indicators do have that focus. All of the indicators are available at the provincial level, and some at the territorial and health region level. The indicators are only stratified by age group and gender, unless otherwise noted. Indicator descriptions are given when more explanation is needed.

Even though the indicators are not comparable for health disparities purposes, they do show the types of statistics that are available at Statistics Canada, which could be used to create health disparities indicators. A few of the indicators are no longer being updated, but they are included as representatives of possible indicators. In these cases, the symbol X is included after the indicator.

9.2.1 Disadvantaged groups

9.2.1.1 Aboriginal peoples

- Off-reserve Aboriginal profile, by sex, Canada, provinces and territories, occasional.

\(^{695}\) Saunders, Mathers, Parry, and Stevens. "Identifying 'Non-Medical' Datasets to Monitor Community Health and Well-Being."
Table 105-0112, (CCHS 1.1 and 2.1) –

Health profile – 181 items: Total population for the variable self-rated health; Very good or excellent self-rated health; ... – X

9.2.1.2 Urban – rural disparities

• Urban-rural profile, by sex, Canada, provinces and territories, occasional, Table 105-0114, (CCHS 1.1)

Health profile (144 items: Total population for the variable self-rated health; Very good or excellent self-rated health; ...) – X

• Low income cut-offs before and after tax for rural and urban areas, by family size, annual Geography (1 item: Canada)
  Rural and urban areas (5 items: Rural areas; Urban areas, population under 30,000; Urban areas, population 30,000 to 99,999; ...)
  Low income cut-off base (2 items: Low income cut-offs after tax, 1992 base; Low income cut-offs before tax, 1992 base)
  Family size (7 items: 1 person; 2 persons; 3 persons; 4 persons; 5 persons; 6 persons; 7 persons or more)

9.2.1.3 Children in low-income families

• Children aged 17 and under living in low-income families as a proportion of children aged 17 and under living in economic families, Canada, provinces, territories and health regions, every 5 years, – X

• Population of children aged 17 and under living in economic families with incomes below Statistics Canada’s low-income cut-offs (LICO).

The cut-offs represent levels of income where people spend disproportionate amounts of money for food, shelter, and clothing. LICOs are based on family and community size; cut-offs are updated to account for changes in the consumer price index.

9.2.1.4 Youth

• Teen pregnancy – by pregnancy outcomes, females aged 15 to 19, Canada, provinces and territories, annual

  Teen pregnancy outcomes (4 items: Total, teen pregnancies; Live births; Induced abortions; Fetal loss)
  Characteristics (2 items: Number of events; Rate per 1,000 females)

• Youth unemployment rate
• Youth crime rate (charges)

The number of youths (aged 12 to 17 years) or adults (aged 18 and over) charged with Criminal Code offences expressed as a rate per 100,000 youths or adults, for violent crimes, property and other crimes, and total. Violent crimes are “person offences”, which include homicide, attempted murder, sexual and non-sexual assault, abduction, and robbery. (Source: Statistics Canada, Canadian Centre for Justice Statistics, Uniform Crime Reporting Survey)

9.2.1.5 Lone-parent mothers

• Lone-parent families as a proportion of all census families living in private households, Canada, provinces, territories and health regions, 1996, every 5 years

9.2.2 Income

Low income rate

• Population in economic families and unattached individuals with incomes below the Statistics Canada low-income cut-off (LICO).

The cut-offs represent levels of income where people spend disproportionate amounts of money for food, shelter, and clothing. LICOs are based on family and community size; cut-offs are updated to account for changes in the consumer price index.

The term economic family refers to a group of two or more persons who live in the same dwelling and are related to each other by blood, marriage, common-law or adoption.

• Persistence of low income, by selected characteristics, every 3 years

Low income cut-off base (2 items: Low income cut-offs after tax, 1992 base; Low income cut-offs before tax, 1992 base)
Years in low income (7 items: 0 years in low income; 1 year in low income; 2 years in low income; 3 years in low income; ...)
Statistics (2 items: Percentage of persons in low income; Number of persons in low income)
Selected characteristics (16 items: All age groups; Under 18 years; 18 to 24 years; 25 to 54 years; 55 to 64 years; 65 years and over; ...)

Government transfer income

• Proportion of all income that came from government transfers (e.g., Canada or Quebec Pension Plan, Unemployment Insurance, etc.) for the population 15 years of age and over.
Income by quintiles

- Market, total and after-tax economic family income, by adjusted after-tax income quintiles, annual
  Statistics (3 items: Adjusted average; Unadjusted average; Average family size)
  Income quintile (6 items: Total of quintiles; Lowest quintile; Second quintile; Third quintile; Fourth quintile; Highest quintile)

- Market, total and after-tax income, by economic family type and after-tax income quintiles, annual
  Income concept (3 items: Market income; Total income; After-tax income)
  Statistics (2 items: Share of income (Percent); Average income (Dollars))
  After-tax income quintile (6 items: Total of quintiles; Lowest quintile; Second quintile; Third quintile; Fourth quintile; Highest quintile)

Alternates:

Low Income Measures (LIM)

(2 items: Before-tax income; After-tax income, by prevalence in percent, number of families, major income earner, annual)

- Incidence of low income among the population living in private households, by province
  Age and sex of major income earner (13 items: Total families in low income; Head/major income earner, 24 years and under; Head/major income earner, 25 to 34 years; ...)

- Families in low income, by economic family type, annual
  Economic family type (36 items: All family units; Economic families, two persons or more; Elderly families; Elderly married couples; ...)

- Low income gap, by economic family type, 2006 constant dollars, annual
  (3 items: Average low income gap; Aggregate low income gap; Aggregate low income gap as a percentage of market income)

Income inequality

- Individuals and families living with low income in Canada, various provinces, or other geographical units (e.g., cities, small towns, and neighbourhoods).
  Also includes the gap between high- and low-income and/or wealth families, as well as the extent to which government transfers (such as child tax benefits, Old Age Security, and social assistance) and the tax system reduce the incidence of low-income and family-income inequality/disparity.
• *Gini coefficients* of market, total and after-tax income, by economic family type, annual (number)

Income concept (3 items: *Market income; Total income; After-tax income*)
Economic family type (36 items: *All family units; Economic families, two persons or more; Elderly families; Elderly married couples; ...*)

9.2.3 Education

Educational attainment

Statistics Canada published the average number of years (or grades) of schooling at the elementary, secondary, postsecondary, and university levels for the population aged 25 – 54 with data from the Census.

• High school graduates are indicated as the proportion of the population aged 25 to 29 who have a high school graduation certificate.

• Post-secondary graduates are indicated as the proportion of the population who have obtained a post-secondary certificate, diploma, or degree.

9.2.4 Employment

Unemployment rate / long-term unemployment rate

The unemployment rate is defined as the percentage of the labour force aged 15 and over who did not have a job during the reference period. The labour force consists of people who are currently employed and people who are unemployed but were available to work in the reference period and had looked for work in the past 4 weeks. The reference period refers to a one-week period (from Sunday to Saturday) that usually includes the 15th day of the month.

• Labour force aged 15 and over (and for youths, aged 15 to 24 years) who did not have a job during the reference period.

Long-term unemployment

• Labour force aged 15 and over who did not have a job any time during the current or previous year (for example, the years 1995 and 1996 for the 1996 Census).

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Supplementary measures of unemployment

The Labour Force Survey (LFS) has introduced a set of supplementary measures of unemployment to provide a broader understanding of labour market conditions for specific groups. These supplementary measures, which shed further light on the extent of hardship and under-utilization of labour, will be updated annually in the winter edition of Labour Force Update.

- **“Discouraged searchers”** – includes people not normally included among the unemployed, people not looking for work because they believe no jobs are available.

- **Involuntary part-time workers** – expresses the number of involuntary part-timers and the labour force as full-time equivalents to better reflect the quantity of hours lost to under-employment.

- **Total supplementary rate** – includes discouraged searchers; those waiting for recall, replies, long-term future starts; and the under-utilized portion of involuntary part-timers.

“Mastery”: Decision latitude at work

- Degree of control that currently employed workers aged 15 to 74 have over their work circumstances (who agree or disagree with the statement "I have a lot to say about what happens in my job." and "My job allows me the freedom to decide how I do my job."). (CCHS)

Includes job strain, including lack of control over one’s work circumstances, which has been linked to stress and adverse health outcomes, especially among women. CIHI’s National Consensus Conference on Population Health Indicators identified and confirmed decision latitude at work as a key non-medical determinant of health.

Work stress

- Percentage of working population aged 20–64 who reported that most days at work were “quite a bit stressful” or “extremely stressful” in the past 12 months.

Minimum wage

- Proportion of individuals working for <$10/hr

- Minimum wage as a percentage of basic needs poverty line or LICO (based on full year of work, 40 hours/week)
9.2.5 Housing

Housing affordability

- Percentage of households (renters, owners, and total) spending 30% or more of total household income on shelter expenses. Shelter expenses include payments for electricity, oil, gas, coal, wood or other fuels, water and other municipal services, monthly mortgage payments, property taxes, condominium fees and rent.

As a general rule, households are considered to have affordability problems if more than 30% of household income is spent on housing costs. At that level of spending, it is likely that inadequate funds will be available for other necessities such as food, clothing, and transportation. Housing affordability problems affect renters more than owners. Band housing on Indian reserves was not included in the calculation of housing affordability.

- Number of individuals who are homeless or at risk of homeless – X

- Percentage living in crowded conditions based on family size, or living in unsuitable housing (in need of repair, cold, damp, etc.) – X

9.2.6 Food security

- Level of household food insecurity, household population (CCHS Cycle 2.2)

- Utilization of local food banks

9.2.7 Crime

- The number of Criminal Code offences expressed as a rate per 100,000 population, for violent crimes, property and other crimes, and total.

Violent crimes are "person offences," which include homicide, attempted murder, sexual and non-sexual assault, abduction, and robbery. The crime rate is based on the number of incidents reported to or by the police.

Source: Statistics Canada, Canadian Centre for Justice Statistics, Uniform Crime Reporting Survey

- Victimization indicator

Statistics Canada – General Social Surveys, captures the incidence of unreported crime as well as reported crime. However, those data are currently available only on an infrequent basis
9.2.8 *Environmental factors*

- Non-smoking population aged 12 and over who were exposed to second-hand smoke on most days in the month preceding the survey. (CCHS)

- Asthma prevalence by area of residence and proximity to poor air quality – X

- Exposure to lead, asbestos, toxic chemicals

9.2.9 *Social inclusion/ exclusion*

- In the 1994/95 and 1996/97 National Population Health Surveys, this indicator was defined as the “level of perceived social support reported by population aged 12 and over, based on their responses to four questions about having someone to confide in, someone they can count on in a crisis, someone they can count on for advice, and someone who makes them feel loved and cared for.”

The 2000/01 Canadian Community Health Survey increased the questions to eight, and defined the indicator slightly differently as the “level of perceived social support reported by population aged 12 and over, based on their responses to eight questions about having someone to confide in, someone they can count on in a crisis, someone they can count on for advice, and someone with whom they can share worries and concerns.”

- Proportion of individuals who rate their sense of community belonging as very strong

Social support was identified and confirmed as a key non-medical determinant of health by CIHI’s National Consensus Conference on Population Health Indicators.
10. Conclusion and suggestions for health disparities indicators

The Public Health Agency of Canada (PHAC) and Health Canada have recognized that one of the largest health problems in Canada is the extent of health disparities between the most and least disadvantaged groups in the population—which is masked by the excellent health status of Canadians overall. Health Ministries on the national and provincial levels have made commitments to reducing these disparities, which as the Health Council of Canada notes, “need to be tracked in a comprehensive and systematic way so that programs and policies can be targeted to reduce the gap.” In order to further this goal, the purpose of this report was to:

- identify indicators of health disparities for which data are available in Canada, through a review of Canadian and international sources,
- identify potential indicators for which no data are available, and
- recommend a common set of indicators of health disparities that could be helpful in developing Canadian health disparities indicators.

10.1 Common indicators used internationally

In this report, the identification of health disparities indicators was approached through several steps, with the first being a review of health disparities indicators used internationally. The use of health disparities indicators was reviewed in 10 European countries, the United States, New Zealand, and Australia. Five of the countries had fairly comprehensive systems, but only England, Sweden, and New Zealand had indicator systems sufficiently developed to serve as potential models. In addition, international systems used in the European Union and the Organisation for Economic Co-operation and Development (OECD) were reviewed, as was recent work that has been produced by WHO. The OECD social indicator set was the most comprehensive of the indicator sets. OECD identifies a number of indicators as having a specific equity focus, but over 50 of the general social indicators compare groups by socioeconomic status, and, therefore, actually are health disparities indicators. The OECD indicators have the advantage of being internationally comparable, and having available data.

The indicators used by OECD, the EU, England, Sweden, and New Zealand have been collected into a “Compendium of Health Disparities Indicators” that is over 50 pages in length, and can be

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found in the Appendices attached to this report. The Compendium lists the indicators and provides a checklist so that the indicator systems can be compared. It also includes a column that shows indicators used to develop Indices of Deprivation in the U.K., New Zealand, Australia, and Quebec. Finally, the indicators for which raw data are available in Canada, data gaps, and recommendations are identified. To illustrate, a sample page from the Compendium is provided on the next page below.
### Sample page from the Compendium of Health Disparities Indicators found in the Appendices

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Description</th>
<th>OECD</th>
<th>EU Laeken</th>
<th>ENG</th>
<th>SWE</th>
<th>NZ Social</th>
<th>Dep Indices</th>
<th>CND raw data available</th>
<th>REC HDI</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Children</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Child poverty</td>
<td>Proportion of children living in low-income households, for both relative and</td>
<td>✓</td>
<td></td>
<td>M</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>P</td>
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<tr>
<td></td>
<td>absolute low-income measures and across all low-income thresholds, and on</td>
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<td></td>
<td>both before and after housing cost measures, trends (ENG-Child Poverty</td>
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<td></td>
<td>Index)</td>
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<tr>
<td>Vulnerable</td>
<td>Proportion of children in households with no one in work, lone mothers</td>
<td></td>
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<td></td>
<td></td>
<td>✓</td>
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<tr>
<td>households</td>
<td>compared with two parent families</td>
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<tr>
<td>Infant mortality</td>
<td>SES gap in infant mortality (deaths per 1,000 live births)</td>
<td>✓</td>
<td></td>
<td>TBD</td>
<td></td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>P</td>
</tr>
<tr>
<td>Low birth weight</td>
<td>Proportion of newborns weighting less than 2,500g, by high/low parental</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>P</td>
</tr>
<tr>
<td></td>
<td>income quintiles. Numbers of low birth weight infants per 1,000 live births</td>
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</table>
The indicators have been organized into a framework that was developed by the World Health Organization Commission on Social Determinants of Health (CSDH), which is discussed in Section 3 of this report. Basically, the framework has five interconnecting levels—socioeconomic context and position; differential exposure to health determinants and risk factors; differential vulnerability in population groups; differential health outcomes; and differential consequences or impacts of health disparities on the economy, community, and individual wellbeing. Each of the levels represents three dimensions of activities—analysis, intervention, and measurements.

Most OECD countries include the reduction of health disparities among their populations as important public health goals. Some countries, such as England and Sweden have well-developed policies, while others are in the initial stages of developing their approach. However, while there are many differences between the countries, there are also many similarities. For example, the Nordic countries, and especially Sweden, have focused on social inequalities in health for the last two decades, and in these countries and England, reducing social determinants of health inequalities is the overarching policy goal that informs all governmental departments.  

A few countries are especially concerned with specific disadvantaged populations such as New Zealand, Australia, Norway, Ireland, and the United States. These countries have relatively large Aboriginal and ethnic populations—Maori and Pacific people in New Zealand, Aboriginal peoples in Australia, Sami in Norway, and Travellers, or Pavees, in Ireland. The United States routinely compares health disparities across people with low incomes, disabled people, and ethnic groups—African Americans, Hispanics, Asians, American Indians, and Europeans.

Most countries measure health disparities by comparing the health of individuals in the lowest-income group with the health of individuals in the highest-income group. However, some countries, such as the Nordic and United Kingdom countries, focus on measuring health disparities between specific geographic regions. All of the countries report gender disparities in health, income, and other areas. Generally, disparities are stratified by socioeconomic position as measured by income, educational attainment, or social class/occupation in the case of the United Kingdom, and by geographic location, gender, ethnic status, and age group.

Also, countries are beginning to broaden poverty measures to include health determinants, such as housing and homelessness, the environment, and food insecurity in their indicator system. However, health determinant indicators usually measure the determinant itself, without connecting it with health, per se, and without measuring health determinant disparities. These health determinant indicators are more often found in the social inclusion/exclusion literature, which is somewhat more developed than the health disparities literature. Although it was beyond the scope of this report to comprehensively review the social exclusion literature, a few initiatives from this field, such as indicators included in the New Zealand Social Report, which

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were designed to complement the disparity indicators, were included.\textsuperscript{701}

WHO recently reviewed public health approaches and policies related to health inequalities in 13 developed countries, which is reported in \textit{Closing the Health Inequalities Gap: An International Perspective}.\textsuperscript{702} Ian Crombie, et al., the authors of the report, found that all public health policies in the countries reviewed had overarching goals to reduce inequalities in health.\textsuperscript{703} They noted that many of the countries focus on socioeconomic differences in the health of children, and use indicators in areas such as antenatal health, smoking during pregnancy, low birth weight, breastfeeding, infant mortality, dental health, accidents, and physical activity levels. Child poverty is also highlighted with indicators on the proportion of children living in low income or jobless households. For youth, socioeconomic inequalities in teenage pregnancy rates, accident rates, smoking, alcohol and drug use, and attempted suicides are common.

For adults, disparities in health behaviours are routine indicators, such as indicators concerned with smoking, consumption of fruit and vegetables, levels of obesity, physical inactivity and alcohol use. Also common are indicators of self-reported health status, disability prevalence, mental health, mortality from major diseases such as cardiovascular disease and cancer, and morbidity from diabetes, hypertension, and breast and cervical cancer. Crombie, et al. note that other common indicators include:

\begin{itemize}
\item Unemployment rates among specific groups; literacy and educational opportunities; accident mortality and road traffic casualties; accessibility to buildings by people with disabilities; and participation in drug rehabilitation programmes.
\item Among older people, while all countries use mortality rates from chronic disease, New Zealand and England also include uptake of influenza vaccination and the proportion of older people living independently. More general indicators include housing quality, fuel poverty, air quality in cities and burglary rates. Finally, there are several indicators of access to health care services for all people, particularly primary care and child health services.\textsuperscript{704}
\end{itemize}

The authors also note that socioeconomic and environmental indicators are mainly found in social inclusion initiatives, which have developed indicators that cover a range of topics such as unemployment, literacy, fuel poverty, and environmental measures such as housing quality, air quality, and crime rates. They also note that England, Sweden, and Northern Ireland describe these topics in their public health policy documents.

\begin{footnotes}
\item[703] The countries reviewed were Australia, Canada, Denmark, England, Finland, Ireland, New Zealand, Northern Ireland, Norway, Scotland, Sweden, United States, and Wales.
\end{footnotes}
10.2 Canadian evidence of health disparities

The second step in the approach to identifying potential indicators was to examine some of the evidence from Canadian research for the connections between disadvantaged groups (i.e., children, lone mothers, and Aboriginal peoples living in poverty), socioeconomic status (with a focus on income), and the consequences to health outcomes. Section 5 briefly reviews this evidence for the above-mentioned three groups, and also for connections between low socioeconomic status and selected health determinants, behavioural risk factors for chronic disease, and physical and mental health.

There is compelling evidence that disparities affect health outcomes across almost every health indicator. For example, low income is negatively related to self-reported physical and mental health, mortality and morbidity rates associated with major chronic diseases, unintentional injury, behaviour risk factors (e.g., tobacco use, poor diet, and physical inactivity) and health care access and use. In addition, health determinants such as education, employment and working conditions, food and housing security, and the physical environment, to name a few, are also associated with health disparities. According to Katherine Frolich, et al. who summarized some of the main health disparities in Canada, especially in relation to Aboriginal status, income, and place, the main disparities can be seen in rates of life expectancy at birth, infant mortality, diabetes, lung cancer, and infectious diseases. Other researchers have identified obesity, potential years of life lost due to unintentional injuries, asthma, chronic disease and mortality connected with tobacco use, and suicide rates as showing the most disparities between groups.

10.2.1 Indicators that do not show evidence of health disparities

As seen in Section 5 of this report, a few indicators do not show evidence of health disparities. The rates for these indicators show either no difference between socioeconomic groups, or are actually higher in the higher socioeconomic groups. For example, disparities in family violence rates between high and low socioeconomic groups have been found to be negligible. There is inconclusive evidence for socioeconomic disparities in adult victims or perpetrators of crime, and alcohol and illicit drug use and misuse. Rates of cannabis use, motor vehicle collisions, and breast cancer are actually higher in the highest socioeconomic groups. In addition, the highest male obesity rates are found in the highest income category, while the highest female obesity rates are found in the lowest income category.

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705 Raphael. Poverty and Policy in Canada. Implications for Health and Quality of Life.
10.3 Indicator criteria, data availability, and data limitations

Among the criteria for the selection of health disparities indicators, which is discussed in Section 7, are that indicators should capture the essence of the problem, have a clear and accepted normative interpretation, be valid and reliable, and use data that are available at national, provincial, and regional levels, or which are feasible to develop. These criteria were applied when choosing the suggested indicators listed in Table 1 and Table 12 below. Also, the indicators were chosen on the frequency of their use in other systems—only a few of which are shown in the Compendium of Health Disparities Indicators located in the Appendices—as well as from Canadian evidence, and the general literature review of research reports that are discussed throughout this report.

In addition, the Pan-Canadian Healthy Living Strategy targets, and recommendations of the PHAC Health Disparities Task Group (HDTG) of the Advisory Committee on Population Health and Health Security, the Canada Senate Subcommittee on Population Health, the WHO Commission on Social Determinants of Health (CSDH), and PHAC’s Population Health Promotion Expert Group (PHPEG) were considered.

Criteria for data availability were mainly based on the raw data available through Statistics Canada/CIHI, because the majority of health and other indicators produced by Statistics Canada/CIHI are not stratified by socioeconomic status—which is a basic need in order to estimate health disparities.

Section 8 of this report reviews key Canadian sources for data needed to fulfill the above criteria. Statistic Canada/CIHI have an extensive collection of valid and reliable data that come from Vital Birth and Death records, disease surveillance and health records, and surveys such as the Canadian Census, the Canadian Community Health Survey (CCHS), the longitudinal National Population Health Survey (NPHS), and the National Longitudinal Survey of Children and Youth (NLSCY). These databases are available to PHAC, Health Canada, and provincial ministries of health, with the permission of survey respondents—which is about 95% of respondents—through Statistics Canada/CIHI’s “Share files.” The Share files are weighted so that they produce comparable results to the Master files. Qualified researchers can access many of the data through the Public Use Microdata Files (PUMFs) through universities or Statistics Canada Regional Data Centres.

The Statistics Canada/CIHI data collection includes the data needed to indicate socioeconomic status, such as income adequacy, educational attainment levels, occupational status and other stratification variables. CCHS collects all of this information in each survey. However, with very

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few exceptions, age group and gender are the only breakdowns publicly provided. Therefore, special tabulations are required in order to access even a minimal level of data that are stratified by income and educational levels.

In addition, one of the limitations of the CCHS is that many variables are included in an optional component. (Please see Section 8.3.1.2 – CCHS.) This component is used every two years as a complement to the required component, and has a range of topics that provinces can elect to include in their survey. Therefore, since all provinces did not choose the same topics, for some indicators it is not possible to provide comprehensive provincial-level data. However, the required component produces data at the provincial and health-region level.

Section 9 of this report provides examples of the more than 80 health indicators jointly produced by Statistics Canada and CIHI. The indicators are organized into categories of health status, non-medical determinants of health, health system performance, and community and health system characteristics. Although there are indicators of health determinants, these are not indicators of health determinant disparities.

In 2006, Statistics Canada produced two indicators stratified by income. These were “Health adjusted life expectancy, at birth and at age 65, by sex and income group, Canada and provinces, occasional (years), 2001,”—HALE— and “Life-expectancy, by sex and income group, Canada and provinces, occasional (years), 2001.” An ecological approach was taken in developing these indicators, which use data linking postal codes of the last residence at the time of mortality with enumeration areas in order to express small-area level mortality disparities. However, the indicators have only been produced for 2001, although Statistics Canada states that their use is “occasional.” They have been included on the suggested indicator list because of their importance as examples of indicator possibilities.

The most important gap in data availability is that data for Aboriginal peoples are extremely limited. Research has found severe Aboriginal health disparities associated with indicators of education, income, and housing, and other health determinants such as tobacco and alcohol use, and with rates of life expectancy, mortality, infant mortality, diabetes, accidental injury, infectious diseases such as HIV/AIDS and tuberculosis, and suicides. However, these data have not been collected regularly, do not account for major differences between First Nations, Inuit, and Metis peoples, and usually do not include Aboriginal peoples living on reserves—approximately half of the Indigenous population.

The First Nations Regional Longitudinal Health Survey (RHS) is the only national health survey in Canada that is governed by First Nations. While RHS provides reliable health data on the total First Nations and Inuit populations (living both off and on reserves), the data are not comparable with non-Aboriginal health data and, therefore, are limited for use in creating health disparities indicators.

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710 Canadian Institute for Health Information. Considerations for Data Production for Reporting Comparable Health Indicators 2006 accessed.
712 ________. Comparable Health Indicators 2006. 37-HLT Health Adjusted Life Expectancy (HALE), accessed.
Indian and Northern Affairs Canada and Health Canada are currently working with Aboriginal communities to remedy this problem. Janet Smylie and Marcia Anderson discuss these limitations more fully in an article recently published in the *Canadian Medical Association Journal*, titled “Understanding the Health of Indigenous peoples in Canada: Key methodological and conceptual challenges.”

The final data limitation is that more extensive data analysis is needed in order to produce quality health disparities indicators that go beyond the description levels that simple range measures provide. In Canada, data analysis that would allow comparisons of health determinant or SES data with health outcome data has not been done on a routine basis. For example, relative risk ratios and population attributable fractions are needed in order to understand the proportion of health outcomes in the populace that can be attributable to health determinant disparities (e.g., low-education levels, low-income, ethnic status, food insecurity, etc.) These measures are not widely available, although this analysis has been done fairly recently for some health determinants such as smoking, substance abuse, and the environment and health. Also, in 2002, Russell Wilkins, et al. of Statistics Canada used this methodology in an ecological study using 1997 data to associate urban-area income quintiles with many causes of mortality.

### 10.4 Recommendations for measuring and indicating health disparities

#### 10.4.1 Basic recommendations for health disparities data collections

Recently the Canada Senate Subcommittee on Population Health, as well as the PHAC-sponsored Health Disparities Task Group (HDTG) of the Advisory Committee on Population Health and Health Security produced two major reports concerning health disparities in Canada. The Canada Senate report, which was concerned with policy issues and options for reducing health disparities, noted:

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713 Smylie, and Anderson. "Understanding the Health of Indigenous Peoples in Canada: Key Methodological and Conceptual Challenges."


715 Boyd, and Genuis. "The Environmental Burden of Disease in Canada: Respiratory Disease, Cardiovascular Disease, Cancer, and Congenital Affliction." This study was based on WHO calculations of Environmental Attributable Fractions.

716 Wilkins, Berthelot, and Ng. "Trends in Mortality by Neighbourhood Income in Urban Canada from 1971 to 1996."


• More and better, more complete data and information are needed to understand better the factors that affect population health in Canada.  

The report did not give specific recommendations, but it asked a series of relevant questions such as, “[D]o we have enough and sufficiently sensitive indicators to track and assess the extent of health disparities,” and “[S]hould Canada establish a national information database system on the health of the population and on health disparities?”  

The HDTG also suggested that more comprehensive data are needed, and made specific recommendations that included:

• A disparities perspective and focus should be built into existing health promotion and prevention indicators, such as including a SES breakdown for these indicators; and

• The capacities to link health sector data to socio-demographic data and to social and economic indicators should be extended.  

In addition, HDTG made a number of specific recommendations concerning health disparities indicators:

• A broad and comprehensive set of indicators—with all indicators broken down by SES group—needs to be developed.

• The indicator set should include a supporting information framework and a performance framework oriented to reducing disparities.

• The focus should be on both long- and short-term outcomes.

HDTG also suggested that a health disparities indicator set should include the following measures:

• the extent of disparities,
• the causes of disparities,
• the costs of disparities,
• the cost-effectiveness of initiatives over time,
• the impact of health disparities on the economy, community, and individual wellbeing, and
• the extent to which health sector programs widen or reduce disparities.

720 Ibid., accessed. p. 12.
722 Ibid., accessed.
723 Ibid., accessed.
All of these recommendations were included in the suggested indicator set provided in Table 1 and Table 12 below.

10.4.2 Methodology recommendations

In order to understand the range of data needed to estimate health disparities, a second set of recommendations concerning methodology issues is important. These issues were discussed in Section 6 of this report, which reviewed guidelines and methodologies for monitoring health disparities. Here we highlight the most important aspects concerning the types of data and indicators needed. Dutch researchers Anton Kunst, Vivian Bos, and Johan Mackenbach, in association with the EU Working Group on Socio-economic Inequalities in Health, developed the guidelines, which were reported in Monitoring Socio-Economic Inequalities in Health in the European Union: Guidelines and Illustrations: A Report for the Health Monitoring Program of the European Commission.

The recommendations include that:

1. Estimates of health disparities should be easy to calculate, interpret, and communicate.

2. For health disparities indicators to be feasible, data must be available that are stratified:
   - according to at least 2 of the 3 core socioeconomic indicators (education, income and/or occupational class),
   - for men and women,
   - for all relevant age groups,
   - for different disadvantaged groups,
   - for place of residence (e.g., urban/ rural; municipality/ province; health regions/ province; province/ country; country/ international), and
   - for at least three years in order to determine trends.

3. Socioeconomic indicators should be used to divide individuals into groups or levels.
   Data are needed for the population size of the groups, and the occurrence of health problems by absolute occurrence rates and by probabilities or relative ratios comparing rates among the groups, as described in the next steps.

4. Simple range measures should be used to indicate the disparities.

At least two socioeconomic status indicators, such as income and educational attainment, should be used to identify disparities between the lowest and highest socioeconomic groups.

Range measures are fairly easy to calculate and understand. Specifically, range measures typically compare a health indicator or health-related factor in one disadvantaged group with the same indicator in the most advantaged group, e.g., the wealthiest/highest-income group for income disparities, or the dominant racial/ethnic group for racial/ethnic disparities. This approach assumes that the ‘best’ rate is theoretically achievable by all other groups.

5. Health disparities indicators should also be expressed both as relative risk ratios and as absolute risk differences—the absolute number of occurrences of “negative” health problems.

Although many health disparities measurements stop with range measures, Kunst et al. recommend that in order to have a more precise understanding and evidence of the disparities, as well as to be able to measure the social and economic costs of the disparities, more sophisticated methods of measurement are needed. Relative risk ratios compare two contrasting groups, and absolute risk differences measure the absolute difference between the groups. Relative risk ratios are measures of effect that are calculated through statistical regression analysis—often controlling for confounding variables.

6. Relative and absolute risk measures indicate risk at the individual level. In order to indicate the effect of a risk factor upon the community as a whole—which is important for public health policy decisions—population attributable risks (PAR)—also known as population attributable fraction measures (PAF)—need to be estimated. PARs are also needed in order to estimate economic costs related to health disparities.

Epidemiological measures, such as PAR, have direct relevance for public policy and action since these measures focus on differences in proportions in the population—rather than the on means and variance that the measures of effect, such as relative risk ratios, supply—and have the ability to separate risk to the population from risk to the individual.

Calculating PAR is a fairly simple statistical method for attributing the proportion of a risk factor or exposure level (e.g., low SES) to another factor such as a health outcome (e.g., cardiovascular disease). In order to calculate PAR, it is necessary to know the relative risk ratio.

Basically, the PAR compares the current situation of ill health with a hypothetical reference situation in which everyone in the disadvantaged group (e.g., lowest-income group) has the same health status as those in the most advantaged group (e.g.,
highest-income group). The difference between the current and hypothetical situation represents the potential health disparity of a population with low SES, for example. PAR is often used in epidemiology studies that estimate, for example, the proportion of a disease in the population that can be attributable to smoking or to environmental factors.

Health indicators can be used that show the results of relative risks and the proportion of the total burden of ill health that can be attributed to various factors. For example, as noted, PAR can be used as an indicator of the percentage of premature mortality rates that can be associated with low-income or specific risk factors such as smoking or obesity.

In order to accomplish this type of analysis, which is routinely done in New Zealand, Australia, and other countries, the Canadian research capacity must be strengthened.

In the meantime, Kunst, et al. suggest that simple range measures of health disparities, which compare the lowest socioeconomic group with the highest group for all of the indicators, can be a good beginning. However, the analysis of health disparities would not be able to go much beyond the descriptive level without the more sophisticated measures.

10.5 Suggested health disparities indicators

The final mandate for this report was to provide recommendations for a common set of indicators of health disparities. A list of suggested health disparity indicators that could be useful in the Canadian context is provided in Table 12 below. As noted, the indicators were chosen, in part, on the frequency of their use in other systems—only a few of which are shown in the Compendium of Health Disparities Indicators located in the Appendices, as well as from Canadian evidence, the general literature review of research reports that are discussed throughout this report, and recommendations such as those discussed above. It contains a selection of indicators that are in the Compendium, including those that are most commonly used internationally.

The suggested indicator list is representative of major health disparities in Canada, and is fairly comprehensive. A smaller number of indicators could be chosen from the list in order to create a more manageable headline indicator list, or to address specific research needs. Possible headline indicators are given the symbol “H” in the column next to the indicator description, and are placed at the top of each section.

All of the indicators could be used to estimate disparities in major subgroups, including all age groups across the life course—with the data limitations, especially for Aboriginal groups, that were noted above.

The data that are available for indicators on the list mainly come from key Statistics Canada data sources, such as the Census and CCHS. They all have the stratification limitations discussed
above, and, as noted, special tabulations would be needed to access the necessary data. If there is an identified data gap, or if it is not clear whether or not the data are available, a “G” has been placed in the data source column. More detailed descriptions for many of the indicators can be found in the Appendices, and, if this is the case, the indicator name on the list begins with an asterisk – *.

Also, it is important to note that each indicator should show the range between the highest and lowest groups—either by SES or educational attainment—although this is not always specified in the indicator description.

- The list could benefit from more economic costing indicators, as well as through the creation of Indices such as an Index of Multiple Deprivation or a Gender Equality Index (as developed in Sweden) to use as specific indicators. The indicators also do not include estimates of health disparities across the entire socioeconomic gradient, such as indicating disparities between each socioeconomic level, from the lowest to the highest, rather than comparing only the lowest and highest levels. Although this might be a long-range goal, to date, other countries have not routinely attempted this level of sophistication.

In sum, in order for the development of health disparities indicators to be feasible, the main recommendations are:

1. To select a manageable list of health disparities indicators from the indicator possibilities, based on potential use and need.

   Headline indicators, which illustrate the more important health disparities indicators, are shown in Tables 1 and 12 of this report, and provide suggestions for a manageable list, but this list may need to be reduced, changed, or expanded.

2. To stratify all of the existing health status and health determinant indicators to be used.

   It is recommended that all indicators should be stratified by SES (e.g., by income and education levels), gender, age group, and place of residence (e.g., urban/ rural, municipality/ province, health regions/ province, province/ country, and/ or country/ international), and that characteristics of disadvantaged groups (e.g., children, lone mothers, seniors, disabled people, Aboriginal peoples, ethnic groups, and immigrants, if possible) should be measured.

3. To start with the simple, descriptive range measures.

   These measures compare the health indicator or health-related factor in the most disadvantaged group (e.g., the group with the lowest income) with the same indicator in the most advantaged group (e.g., the wealthiest/ highest-income group for income disparities, or the dominant racial/ ethnic group for racial/ ethnic disparities)—before
attempting a more complex analysis.

4. To identify connections between health determinants and health outcomes through relative risk ratios, absolute differences, and PARs, and to compare these connections between disadvantaged and advantaged groups.

These more complex analyses are needed to identify causal connections, evaluate the extent to which specific variables contribute to the trends in health disparities, and estimate costs.
### Table 12. Suggested health disparities indicators (repeated from Executive Summary)

<table>
<thead>
<tr>
<th>INDICATOR</th>
<th>DESCRIPTION</th>
<th>Headline indicator</th>
<th>Data source</th>
</tr>
</thead>
</table>

**Notes:** This Table includes a common list of health disparities indicators, with the headline, or main, indicators identified by the symbol “H.” The list is comprehensive and includes most of the areas where health disparities have been found in Canada. The list can provide an all-inclusive list of health disparities indicators, or indicators can be chosen from it, depending on research and other needs. The number of headline indicators is also extensive, but they represent the most commonly used indicators, and can provide a more manageable group of indicators than the more comprehensive list. The indicators are based on their common use in other countries, recommendations given by the PHAC–Health Disparities Task Group (HDTG), the reviewed evidence for health disparities in Canada, and the standard international model for indicator criteria.

Although not always specified in the indicator description, each indicator should show the range between the highest and lowest groups by socioeconomic status (especially equivalent household income by quintiles, based on after taxes and/or before taxes, and educational attainment). In addition, all of the indicators should be broken down by gender, age group, geographic location (national, provincial, territorial, regional, urban–rural), and by ethnicity or disadvantaged group, if possible. Generally, this will require special tabulations by Statistics Canada or CIHI, since indicators are normally presented only by age and gender. Statistics Canada also presents most of the indicators with available data by province, and by health region if they are from the Canadian Community Health Survey.

In this Table, if data are available to enable creating the indicator presented, no symbol is used, and the indicator is assumed to have data available. However, *the available data represent “raw” data that have not been dissagregated as described above. Because data are not routinely available that compare the distribution of the indicator across the population or disadvantaged groups, none of the indicators listed actually have readily available data, which are needed to populate the health disparities indicators.* Therefore, special tabulations and considerable analyses are needed before the indicator can be created.

In addition, the capacity to link health sector data to sociodemographic data and to social and economic indicators is limited and should be extended by Statistics Canada, which is presently working on creating new, linked databases, and new health indicators. Portions of indicators that would benefit from this linkage are place within parentheses in the Table.

**Symbols used:**
- *—extended description of the indicator is available in the Appendices
- H – suggested headline/ main indicator
- G – Gap, there are no known data available to create the indicator, or source of data is unknown.

(See notes above for more detail).
### Acronyms:
- HLS – Healthy Living Strategy target area
- Stat Can – Statistics Canada – generally released indicator
- CIHI – Canadian Institute for Health Information – generally released indicator
- Health Canada
- CMHC – Canada Mortgage and Housing Corporation
- EC – Environment Canada
- HRSDC – Human Resources and Social Development Canada

### Major surveys:
- CCHS – Canadian Community Health Survey
- CCJS – Canadian Centre for Justice Statistics
- GSS – General Social Survey
- IALS – International Adult Literacy Survey
- NLSCY – National Longitudinal Survey of Children and Youth
- NPHS – National Population Health Survey
- PISA – Programme for International Student Assessment (OECD)
- RHS – First Nations Regional Longitudinal Health Survey

### Other surveys or data sources routinely used by Statistics Canada or CIHI to create statistics, such as the Canadian Census, Labour Force Survey, or the Cancer Registry, are not listed. These sources are described in Section 8 of this report.

### Socioeconomic context and position (Society)

<table>
<thead>
<tr>
<th>INDICATOR</th>
<th>DESCRIPTION</th>
<th>Headline indicator</th>
<th>Data source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policy effectiveness</td>
<td>Extent that policies, programs, and interventions have widened or reduced health disparities</td>
<td>H</td>
<td>G</td>
</tr>
<tr>
<td>Interventions</td>
<td>Extent of interventions to reduce health disparities and the cost-effectiveness of initiatives over time</td>
<td></td>
<td>G</td>
</tr>
<tr>
<td>Relation between healthcare spending and health outcome</td>
<td>Variation between health spending and health outcome – e.g., Health care spending per capita and potential years of life lost</td>
<td></td>
<td>G</td>
</tr>
<tr>
<td>Health Impact Assessments (HIA)</td>
<td>Percentage of established and mainstream policies that have been examined with HIA, and proportion of policies that are contributing to health disparities.</td>
<td></td>
<td>G</td>
</tr>
<tr>
<td>Commitment of governmental departments to promote public health in policies</td>
<td>Incidence of public health orientation as a strategy for more effective health and medical care</td>
<td></td>
<td>G</td>
</tr>
<tr>
<td>*Public social spending</td>
<td>Gross public social expenditure by broad policy area, in % of GDP, including income support for the working-age population, old age/survivor’s pensions, and all social services including health</td>
<td>Stat Can, CIHI</td>
<td></td>
</tr>
<tr>
<td>INDICATOR</td>
<td>DESCRIPTION</td>
<td>Headline indicator</td>
<td>Data source</td>
</tr>
<tr>
<td>-----------</td>
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<td>--------------------</td>
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</tr>
<tr>
<td>*Material (multiple) deprivation</td>
<td>Share of households declaring that they could not afford different items and activities. Based on an Index of Multiple Deprivation (full index)</td>
<td></td>
<td>G</td>
</tr>
<tr>
<td>Environment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Second-hand smoke</td>
<td>Self-reported exposure to second-hand smoke, SES</td>
<td>H</td>
<td>CCHS</td>
</tr>
<tr>
<td>Persistent organic pollutants (POP)</td>
<td>Extent of POPs in breast milk, by SES status</td>
<td></td>
<td>G</td>
</tr>
<tr>
<td>Neighbourhood quality</td>
<td>Various indicators – access to green space, grocery shopping, recreation, public transport, and active living routes (walking/ bicycle paths, etc.), neighbourhood average household income</td>
<td></td>
<td>CCHS, Stat Can</td>
</tr>
<tr>
<td>Employment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working poor</td>
<td>Proportion of full-time employed persons whose total wages/ salary do not allow the person to rise above the poverty line, (SES comparison with self-rated health)</td>
<td>H</td>
<td>Stat Can, (CCHS)</td>
</tr>
<tr>
<td>*Persistent unemployment</td>
<td>Incidence -persons unemployed for 12 months &gt;, %, aged 15 &gt; (compared by SES)</td>
<td>H</td>
<td>Stat Can</td>
</tr>
<tr>
<td>Work/life balance and stress</td>
<td>Average time spent in paid work, unpaid work, personal care, and leisure (SES, self-reported stress level)</td>
<td></td>
<td>GSS HRSDC</td>
</tr>
<tr>
<td>Income / Poverty</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Income inequality</td>
<td>Ratio based on Gini coefficient or related health inequality measure such as Slope Index of Inequality (absolute health disparities), and Relative Index of Inequality (relative health disparities)</td>
<td>H</td>
<td>Stat Can (Gini coefficient), G</td>
</tr>
<tr>
<td>*Income distribution</td>
<td>High/ low income quintile ratios, gross earnings of full-time employees (comparison with self-reported health)</td>
<td>H</td>
<td>Stat Can</td>
</tr>
<tr>
<td>Poverty or at-risk-of-poverty rate (after tax)</td>
<td>Proportion of population below the standard poverty line (Canada – Low-Income Cut-Off; EU – below 60% of national equivalized median income), based on equivalent household income, after transfers and taxes; by household type; by work intensity of household members (by self-reported health)</td>
<td>H</td>
<td>Stat Can</td>
</tr>
<tr>
<td>Depth of poverty</td>
<td>Relative median poverty risk gap – difference between the median equivalized income of persons aged 0+ living below the poverty line and the poverty line itself, expressed as % of poverty line (by self-reported health)</td>
<td></td>
<td>Stat Can</td>
</tr>
<tr>
<td>INDICATOR</td>
<td>DESCRIPTION</td>
<td>Headline indicator</td>
<td>Data source</td>
</tr>
<tr>
<td>---------------------------</td>
<td>-----------------------------------------------------------------------------</td>
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</tr>
<tr>
<td><strong>Housing / homelessness</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*Housing affordability</td>
<td>Spending on housing, based on spending more than 30% of household disposable income on housing (including utilities) (by self-reported health)</td>
<td>H</td>
<td>Stat Can</td>
</tr>
<tr>
<td>Media access</td>
<td>Access to television and internet in the home, SES (lack of access increases disparities)</td>
<td>H</td>
<td>CCHS NLS CY</td>
</tr>
<tr>
<td>Homelessness</td>
<td>Number of homeless families with children in temporary accommodation, arranged by local authorities, by type of accommodation</td>
<td></td>
<td>Stat Can (discontinued)</td>
</tr>
<tr>
<td>Living space</td>
<td>Proportion of people living in overcrowded accommodations</td>
<td></td>
<td>Stat Can (discontinued) CMHC</td>
</tr>
<tr>
<td>Housing quality</td>
<td>Proportion of population living in substandard housing, including poor air quality, mold, poor heating, general poor condition of housing – by sector/vulnerable household status/non-vulnerable status, ethnic identity</td>
<td></td>
<td>CMHC</td>
</tr>
<tr>
<td>Access to potable water</td>
<td>Proportion of population who do not have access to potable water</td>
<td></td>
<td>Environment Canada</td>
</tr>
<tr>
<td><strong>Food security</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Food insecurity</td>
<td>Proportion of the population who experience multiple food deprivation issues, such as a use of food banks, going without fresh fruit and vegetables, and buying cheap food to make ends meet.</td>
<td>H</td>
<td>CCHS</td>
</tr>
<tr>
<td><strong>Adult education, literacy, health literacy</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Educational attainment</td>
<td>Proportion of adult population (aged 25–29) in different groups who did not complete high school</td>
<td>H</td>
<td>Stat Can</td>
</tr>
<tr>
<td>Training</td>
<td>Proportion of adult population aged 18–64 who do not have any training qualifications</td>
<td></td>
<td>HRSDC</td>
</tr>
<tr>
<td>Health literacy among adults</td>
<td>Proportion of adult population who can read at basic levels, and understand medical instructions</td>
<td></td>
<td>IALS</td>
</tr>
<tr>
<td><strong>Health behaviours</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tobacco use</td>
<td>Self-reported tobacco use, age group, high/low SES groups</td>
<td>H</td>
<td>CCHS</td>
</tr>
<tr>
<td>Diet (HLS target)</td>
<td>Fruit/vegetable consumption (proportion of adult population who eat at least 500 g fruit and/or vegetables per day), high/low income quintile, gender</td>
<td>H</td>
<td>CCHS</td>
</tr>
<tr>
<td>INDICATOR</td>
<td>DESCRIPTION</td>
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</tbody>
</table>
| **Overweight and obesity, Body Mass Index (HLS target)**                 | Proportion of overweight adults in the population, aged 24–64 (BMI = 25–29.9)  
Proportion of obese adults (BMI>30) in the population  
Proportion of underweight, overweight children aged below <16, obese young people aged 16-24, and seniors aged 65> in the population | H                  | CCHS        |
| **Physical activity level (HLS target)**                                 | Proportion of adults who are physically active on at least a moderately intensive level at least 30 minutes per day  
Proportion of adults with a sedentary leisure time; SES | H                  | CCHS        |
<p>| <strong>Health care system</strong>                                                   |                                                                                                                                                                                                            |                    |             |
| Physician/hospital use                                                   | Physician/hospital use by low/ high SES                                                                                                                                                                   | H                  | CIHI        |
| Wait times                                                              | Wait times for various surgeries and self-reported wait times, by SES                                                                                                                                         |                    | CIHI        |
| Patient satisfaction                                                    | Proportion of population who are satisfied with their health care, by SES                                                                                                                                 |                    | CCHS        |
| “Out of pocket” medical expenses                                        | Percentage of income used to pay for “out of pocket” medical expenses                                                                                                                                         | G                  |             |
| <strong>Differential vulnerability</strong>                                           |                                                                                                                                                                                                            |                    |             |
| <strong>Population groups</strong>                                                   |                                                                                                                                                                                                            |                    |             |
| <strong>Children</strong>                                                            |                                                                                                                                                                                                            |                    |             |
| Child poverty                                                           | Proportion of children living in low-income households, for both relative and absolute low-income measures and across all low-income thresholds, on both before and after housing cost measures, trends (England uses a Child Poverty Index for this indicator), (by health status, e.g., asthma/ respiratory infections, Attention Deficit Hyperactivity Disorder – ADHD) | H                  | Stat Can CCHS |
| Infant mortality                                                        | SES gap in infant mortality (deaths per 1, 000 live births)                                                                                                                                                 | H                  | CIHI        |
| Early childhood learning                                                | Proportion of children participating in ECL programs (by SES, education of mother and mother’s health status)                                                                                             | H                  | Stat Can    |
| Low birth weight                                                        | SES gap in proportion of newborns weighting less than 2 500g, by high/low parental income quintiles. Numbers of low birth weight infants per 1,000 live births                                                                 |                    | CIHI        |
| Maternal smoking during pregnancy                                       | Percent of mothers who smoke throughout pregnancy, as proportion of total maternities, by SES                                                                                                               |                    | CCHS        |</p>
<table>
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<tbody>
<tr>
<td>Breastfeeding frequency</td>
<td>Proportion of infants exclusively and partially breastfed up to four and six months of age respectively; and % of mothers who initiate breastfeeding at birth, by SES</td>
<td></td>
<td>CCHS</td>
</tr>
<tr>
<td>Respiratory infections, asthma</td>
<td>Number of emergency admissions of children aged under 16 with lower respiratory infections, per 100,000 children (age, sex standardized), SES</td>
<td></td>
<td>CIHI</td>
</tr>
<tr>
<td>ADHD</td>
<td>Proportion of children who have been diagnosed with Attention Deficit Hyperactivity Disorder, SES</td>
<td></td>
<td>CIHI</td>
</tr>
<tr>
<td>Dental care</td>
<td>Proportion of children with active dental decay, SES</td>
<td></td>
<td>CIHI</td>
</tr>
</tbody>
</table>

**Youth**

<table>
<thead>
<tr>
<th>High school drop outs</th>
<th>% of persons aged 24+ who left school before completing high school (and are not in continuing education or training), by self-reported health physical and mental health status</th>
<th>H</th>
<th>Stat Can</th>
</tr>
</thead>
<tbody>
<tr>
<td>Youth smoking</td>
<td>Prevalence of smoking in those aged 12–15, and 16+</td>
<td>H</td>
<td>CCHS</td>
</tr>
<tr>
<td>Teenage pregnancy</td>
<td>Number of births and abortions/ 1,000 women 15-19 years (by SES)</td>
<td>H</td>
<td>Stat Can</td>
</tr>
<tr>
<td>Youth physical activity/ physical education (PE)</td>
<td>Percentage of youth who spend a minimum of two hours each week on high-quality PE and school sport within and beyond the curriculum (by SES)</td>
<td>CCHS, NLSCY</td>
<td></td>
</tr>
<tr>
<td>Youth physical inactivity; (HLS target)</td>
<td>Proportion of youth who are physically inactive, gender, SES</td>
<td>CCHS, NLSCY</td>
<td></td>
</tr>
<tr>
<td>Diet (HLS target)</td>
<td>Dietary intakes of fruit and vegetables, and sugar, carbohydrates, soda pop, and fast food and % of total food intake</td>
<td>CCHS</td>
<td></td>
</tr>
<tr>
<td>Diseases spread through sexual conduct</td>
<td>Incidence of chlamydia infection, and incidence of HIV/AIDS, in the 15–29 year age group (by SES)</td>
<td>CIHI</td>
<td></td>
</tr>
<tr>
<td>Youth suicide</td>
<td>Proportion of suicides (by ratio – high/ low income)</td>
<td>CIHI</td>
<td></td>
</tr>
<tr>
<td>*Intergenerational mobility – student comparisons</td>
<td>Point differences in students’ test scores in maths, relative to other students, based on parent’s education, income, and health status (OECD)</td>
<td>PISA</td>
<td></td>
</tr>
</tbody>
</table>

**Disabled**

<p>| Disability rates                  | Proportion of population with limiting long term illness, by age, SES                                                                                                                                     | H                   | CCHS        |</p>
<table>
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<th>INDICATOR</th>
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<tbody>
<tr>
<td><strong>Seniors</strong></td>
<td></td>
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</tr>
<tr>
<td>Home care</td>
<td>Share of home care recipients aged 65+, by SES and health need</td>
<td>H</td>
<td>CCHS</td>
</tr>
<tr>
<td>Age at retirement</td>
<td>Comparison by SES and disability status</td>
<td></td>
<td>Stat Can</td>
</tr>
<tr>
<td>Hypothermia / falls</td>
<td>Admissions to hospital of people aged 75 or over due to hypothermia or injury caused by a fall per 1,000 population aged 75 and over, by gender (SES)</td>
<td></td>
<td>CIHI</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Note: Disparities between women of different SES, and between men and women should be included for all indicators</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lone mothers</td>
<td>Proportion of lone mothers living below poverty line, stress levels and self-reported health, compared with lone mothers with high SES, and coupled-mothers</td>
<td>H</td>
<td>CCHS</td>
</tr>
<tr>
<td>*Childcare costs</td>
<td>Childcare cost faced by parents (% of household net income)- 2 earner family; lone parents; health status</td>
<td></td>
<td>GSS, G</td>
</tr>
<tr>
<td>Domestic and sexual violence</td>
<td>Proportion of women who have experienced personal domestic or sexual violence</td>
<td></td>
<td>GSS, CCJS</td>
</tr>
<tr>
<td>*Gender equality</td>
<td>*Gender Equality Index [Sweden]</td>
<td>H</td>
<td>G</td>
</tr>
<tr>
<td><strong>Aboriginal peoples</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Summary indicator of socioeconomic differentials in premature mortality, Aboriginal/ non-Aboriginal.</td>
<td>Aboriginal peoples should be included in all indicators. Important indicators to compare Aboriginal/ non-Aboriginal population include: self-reported mental and physical health, life expectancy, infant mortality, youth and adult premature mortality, accidental injury, suicide, infectious diseases (esp. HIV/AIDs and TB), diabetes, CVD, cancers, smoking, education, income, housing and neighbourhood quality</td>
<td>H</td>
<td>Stat Can, CCHS (off-reserve), RHS, G</td>
</tr>
<tr>
<td><strong>Differential health outcomes (individual or area levels)</strong></td>
<td>All outcomes stratified by place (urban / rural), income, education, gender, age, and Aboriginal status (if possible)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Summary measures</strong></td>
<td></td>
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</tr>
<tr>
<td>Life expectancy</td>
<td>Life expectancy at birth, in years, and at aged 65 between men and women (Relative gap between lowest/ highest income quintile)</td>
<td>H</td>
<td>Stat Can, (G)</td>
</tr>
<tr>
<td>PYLL</td>
<td>Potential Years of Life Lost, all-cause (by income disparity)</td>
<td>H</td>
<td>CIHI</td>
</tr>
<tr>
<td>Health adjusted life expectancy HALE</td>
<td>At birth and aged 65+ By income (2001 only year available)</td>
<td></td>
<td>Stat Can</td>
</tr>
<tr>
<td>INDICATOR</td>
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</tr>
<tr>
<td>Mortality</td>
<td>Note: Individual mortality rates are not available by SES, which can only be captured in small-area rates with linked data, by neighbourhood income quintiles.</td>
<td>H</td>
<td>Stat Can (database under development)</td>
</tr>
<tr>
<td>Chronic diseases</td>
<td>Premature mortality-rate comparisons between groups for AMI, stroke, cancers, and diabetes</td>
<td></td>
<td>CIHI</td>
</tr>
<tr>
<td>*Health inequalities</td>
<td>Standard deviation in the age at death above age 10, for men and women and combined (Ratio of the premature mortality rates between less and more educated people)</td>
<td>H</td>
<td>G</td>
</tr>
<tr>
<td>Unintentional injury</td>
<td>Age-standardised mortality rate (direct standardised mortality rate per 100,000 population) for unintentional injury (excluding motor vehicle collisions)</td>
<td>H</td>
<td>CIHI</td>
</tr>
</tbody>
</table>

**Mental health**

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Life stress</td>
<td>Self-reported life-stress levels by SES (based on a series of 18 questions in CCHS)</td>
<td>H</td>
<td>CCHS</td>
</tr>
<tr>
<td>Depression, anxiety</td>
<td>Proportion of adults suffering from depression, mood or anxiety disorders SES</td>
<td>H</td>
<td>CCHS</td>
</tr>
<tr>
<td>Mental Health Index</td>
<td>SF36-MCS, Short Form 36 mental component score</td>
<td></td>
<td>CCHS</td>
</tr>
</tbody>
</table>

**Morbidity**

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<thead>
<tr>
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<tbody>
<tr>
<td>Self-rated health</td>
<td>By SES, across groups</td>
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<td>CCHS</td>
</tr>
<tr>
<td>Functional health</td>
<td>Health Utility Index, Population aged 12+ reporting measures of overall functional health based on 8 dimensions of functioning (vision, hearing, speech, mobility, dexterity, feelings, cognition and pain), SES</td>
<td>H</td>
<td>CCHS – G - not all provinces</td>
</tr>
<tr>
<td>Chronic disease incidence</td>
<td>Cancer, CVD, asthma, diabetes, standardized incidence ratio, SES</td>
<td>H</td>
<td>CCHS, Stat Can</td>
</tr>
<tr>
<td>Injuries</td>
<td>Directly age-standardized hospital episode rates for serious accidental injury requiring a stay exceeding 3 days per 100,000 population, SES</td>
<td>H</td>
<td>CIHI</td>
</tr>
<tr>
<td>Notifiable infectious diseases</td>
<td>Incidence of selected notifiable infectious diseases, By SES, gender, age, Aboriginal status Newly notified HIV infections Tuberculosis Clinically notified cases of chlamydia Number of reported cases of acute hepatitis B infections Number of reported cases of legionnaire’s disease</td>
<td>H</td>
<td>CIHI</td>
</tr>
<tr>
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<tr>
<td>Work-related health outcomes</td>
<td>Self-rated, work-related ill-health (e.g., stress), by occupation, age, and gender (Strain injury index– accumulated strain – Sweden)</td>
<td></td>
<td>CCHS, NPHS, (G)</td>
</tr>
<tr>
<td><strong>Differential consequences</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Impact of health disparities on the economy, community, and individual wellbeing (social inclusion / exclusion)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*Intergenerational mobility</td>
<td>Intergenerational earnings elasticity, income inequality and returns to education (indicates impact of growing up in disadvantaged circumstances on adult disparities)</td>
<td>H</td>
<td>Stat Can</td>
</tr>
<tr>
<td>Security in the local environment and fear of crime</td>
<td>Safe and secure surroundings (a) Percentage of residents surveyed who feel ‘fairly safe’ or ‘very safe’ after dark while outside in their local area (b) Percentage of residents surveyed who feel ‘fairly safe’ or ‘very safe’ during the day while outside in their local area, SES</td>
<td>H</td>
<td>CCHS</td>
</tr>
<tr>
<td>Suicides</td>
<td>Suicide rate per 100,000 persons, by gender, age, SES, and health status</td>
<td>H</td>
<td>Stat Can</td>
</tr>
<tr>
<td>*Life satisfaction</td>
<td>Share of respondents reporting a high level of life satisfaction, by gender, age, education, marital status, income Average life satisfaction depends on a range of features – trust in people, trust in parliament, inflation rates, annual hours worked</td>
<td>H</td>
<td>CCHS</td>
</tr>
<tr>
<td>Community belonging</td>
<td>Proportion of the population who feel a strong sense of community belonging, SES, self-reported health</td>
<td></td>
<td>CCHS</td>
</tr>
<tr>
<td>Potential years of life lost</td>
<td>Potential years of life lost (PYLL) from premature mortality (also listed as health outcome summary measure)</td>
<td></td>
<td>CIHI</td>
</tr>
<tr>
<td>*Work Accidents</td>
<td>Fatal and non-fatal accidents per 100,000 workers, lost workdays per worker</td>
<td></td>
<td>CIHI, HRSDC</td>
</tr>
<tr>
<td>Labour market productivity</td>
<td>Effects of ill-health in lower socioeconomic groups on labour participation, productivity, and national income</td>
<td></td>
<td>Stat Can, CCHS</td>
</tr>
<tr>
<td>Social support</td>
<td>Receipt/ giving of emotional and practical support</td>
<td></td>
<td>CCHS, NPHS</td>
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<tr>
<td>Helping others</td>
<td>The extent of informal volunteering (a) Percentage of people surveyed who have done any of a specified list of actions, unpaid, for someone who is not a relative in the past 12 months (b) Percentage of people surveyed who have received any of a specified list of actions, unpaid, by someone who is not a relative in the past 12 months, by SES, stress level, self-rated health</td>
<td></td>
<td>GSS, CCHS</td>
</tr>
<tr>
<td>Economic costs</td>
<td>Economic costs of health disparities for government, business, the healthcare system, and individuals</td>
<td>H</td>
<td>G</td>
</tr>
<tr>
<td>Interventions</td>
<td>Extent of interventions to reduce health disparities and the cost-effectiveness of initiatives over time</td>
<td>H</td>
<td>G</td>
</tr>
</tbody>
</table>
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(Appendices, including the Compendium of Health Disparities Indicators, are located in a separate document.)

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C. Notes for the Compendium of Health Disparities Indicators

D. Categories used in the Compendium of Health Disparities Indicators

E. Compendium of Health Disparities Indicators