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**DIRECTORATE FOR EMPLOYMENT, LABOUR AND SOCIAL AFFAIRS
HEALTH COMMITTEE**

OECD Health Data National Correspondents

**MEASURING DISPARITIES IN HEALTH STATUS AND IN ACCESS AND USE OF HEALTH CARE:
PROGRESS AND NEXT STEPS**

9-10 October 2008

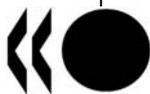
Starting at 14:30 on the first day and ending at 17:30 on the second day

At the OECD Conference Centre, 2 rue André Pascal, Paris 16ème arrondissement

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NOTE BY THE SECRETARIAT

1. The 2008 Programme of Work of the Health Committee includes the following item under the broad output result of ‘Monitoring Performance of Health Systems’ [DELSA/HEA(2006)2/REV1]:

2.4.1.1.2: Disparities in health status and access: A particular emphasis in 2008 will be on assessing possibilities of extending the data base by including available indicators of equity and disparities in health status and health care access. This work will draw on studies carried out for the European Union during the 2005 UK Presidency and a review of national reports from non-European countries. A report on the availability and comparability of indicators of disparities in health status and health care access is scheduled for delivery in the fourth quarter of 2008.

2. An earlier version of this paper was presented to the May 2008 meeting of the OECD Health Committee [DELSA/HEA(2008)2]. At this meeting, the Health Committee endorsed the view that socioeconomic inequalities in health be the focal point for work on measuring health disparities, and that education, income or occupation be used to gauge socioeconomic status, depending on the indicator selected and available data. The Health Committee suggested that indicators be developed to measure inequalities in health status, and in health care access and use.

3. This paper presents work-in-progress which aims to assess the availability and comparability of selected measures of inequality in health status and in health care access and use across OECD countries. It outlines some approaches to measuring socioeconomic inequalities in health, and provides options for future OECD work through suggesting a set of indicators for further development and future inclusion in *OECD Health Data*.

4. Of these indicators, a few appear to be more advanced for international data collection, since comparable data are already being collected in a routine fashion in most OECD countries. These include the indicators of socioeconomic inequalities in self-rated health, self-rated disability and unmet care needs. The Secretariat will focus on these in the remainder of 2008 and in 2009, and will further consult with countries regarding data availability.

5. National Correspondents for *OECD Health Data* are invited to:

- COMMENT on the proposed approach to fill data gaps on the measurement of inequalities in health status and health care access and use in *OECD Health Data*.
- SHARE information with the Secretariat on whether the selected measures of inequality are available (or might soon be available) from national sources on a regular or ad hoc basis.

INTRODUCTION

6. There have been substantial improvements in average levels of health outcomes in developed countries over the past 50 years as demonstrated by mortality and morbidity indicators in *OECD Health Data*, and as summarised in *Health at a Glance 2007*. Life expectancy at birth increased on average in OECD countries from 68.5 years in 1960 to 78.6 years in 2005, infant mortality declined from 29 deaths per 1,000 live births in 1970 to 5 in 2005, and ischaemic heart disease mortality rates fell from 178 per 100,000 population in 1980 to 96 in 2004. Premature mortality—years of life lost before age 70—has been cut by more than half on average since 1970 (OECD, 2007a).

7. Despite this, health gains have not been equally shared among all populations groups. Health differences exist along many social dimensions including age, gender, race or ethnic group, geographic area and socioeconomic status. These differences, also known as variations or differentials in health, are here referred to as *health inequalities* or *disparities*. In addition, health inequalities that are considered to be “unfair” according to some social norm which may vary across countries, are termed *health inequities* (Kawachi *et al.*, 2002).

8. Health inequality is a global issue, involving rich and poor countries alike. The importance of health inequality has recently been underlined by the release of the Final Report of the World Health Organization’s Commission on Social Determinants of Health (CSDH, 2008). Central to the Commission’s work was examining how health is distributed across the social spectrum and how the social conditions in which people grow, live, work and age determine health. The Commission has emphasised that social determinants of health produce widespread inequalities in health within and between societies. These inequalities can be measured and described, and the evidence from this process can be used in producing policies and programmes for change.

9. Recent work on developing an evidence base on health inequalities has followed two broad strands. The first examines social and economic determinants of health and health inequalities among different groups in society, often defined by income, education, occupation or some other measure of socioeconomic status. The second strand deals with low or differential use of health services among different economic or other groups (Gwatkin, 2007).

10. The objective of this paper is twofold; firstly, to review some leading indicators of socioeconomic inequalities in health status, and in health care access and use, with a view to developing these indicators for future analysis and reporting, and secondly, to assess their suitability for inclusion in *OECD Health Data*.¹

¹ No indicators of socioeconomic disparities in health care quality are proposed in this paper, since the development of a reliable and comparable set of health care quality indicators is still at an early stage under the HCQI project. Regarding inequalities in non-medical determinants of health, the OECD Economics of Prevention project has begun to collect data on a number of determinants of health (overweight and obesity, physical activity and nutrition) by level of education and other aspects of socio-economic status [DELSA/HEA(2008)3], which could pave the way for an eventual extension of the regular OECD data collection for those determinants that will be

11. Table 1 summarises the different approaches and leading indicators that might be used to measure socioeconomic inequalities in health within the two domains of health status and health care access and use. The paper expands on this summary by giving examples of how these indicators have been used in research. Data availability and constraints are discussed, and conclusions are drawn on the suitability of the indicators for international reporting, and for inclusion in *OECD Health Data*.

assessed as being most available and comparable across countries. Regarding inequalities in health care financing, one relevant indicator is included in this paper—out-of-pocket expenditure by income group. Determining progressivity in other types of financing mechanisms (general taxation, social security contributions, and private health insurance) falls outside the scope of this paper.

Table 1: Possible approaches and data requirements to measure leading indicators of socioeconomic inequalities in health^(a)

Indicator	Main data sources	Feasibility and frequency of international data collection ^(b)	Areas to improve/measurement issues
1. Inequalities in health status			
1.1 Mortality-based indicators			
Life expectancy by SES	Death registries	Feasible, Periodic	Linkage with information sources on socioeconomic status (e.g., census)
Total mortality rate by SES	Death registries	Feasible, Periodic	<i>Idem</i>
Infant mortality rate by SES	Death registries	Feasible, Periodic	<i>Idem</i>
1.2 Morbidity-based indicators			
Self-rated health by SES	Survey of health	Feasible, Routine	Standard survey question(s) Common perceptions of health among SES groups within the country
Self-rated disability by SES	Survey of health	Feasible, Routine	Standard survey question(s) Common perceptions of health among SES groups within the country
1.3 Summary measures of population health			
Disability Free Life Expectancy (DFLE) by SES	Death registries Survey of health	Less feasible, Periodic	Combining issues related to measuring life expectancy by SES and self-rated disability by SES
Health Adjusted Life Expectancy (HALE) by SES	Death registries Survey of health Survey or other method to value health conditions	Less feasible, Periodic	Combining issues related to measuring life expectancy by SES and self-rated health/disability by SES Common valuing of health conditions
Disability Adjusted Life Years (DALY) by SES	Death registries Survey of health or disease registries or hospital/medical records Survey or other method to value health conditions	Less feasible, Periodic	Mortality rate by SES (data linkages) Refinement of disease incidence measurement Standard disease weightings Common valuing of health conditions

Indicator	Main data sources	Feasibility and frequency of international data collection ^(b)	Areas to improve/measurement issues
2. Inequalities in health care access and use			
2.1 Population without health insurance coverage by income group	Survey or Administrative data	Feasible, Periodic	Disaggregation by income group Boundary between public and private coverage
2.2 Health service use by SES (doctor visits, screening rates, hospital utilisation, dental care, etc.)	Survey or Administrative data	Feasible, Periodic	Standard survey questions, or standard collection of relevant demographic information in administrative sources (e.g., area of residence) Adjustment for health 'needs'
2.3 Unmet medical/dental care need by income group	Survey	Feasible, Routine	Standard survey questions
2.4 Out-of-pocket expenditure as a share of household income by income group	Survey or Administrative financial data	Feasible, Periodic	Disaggregation by income group

(a) Each of these indicators requires classification by SES, the most commonly used of which are income, education and occupation. Measures of SES are generally sourced from health surveys or censuses. These measures also require common classifications and standard survey questions to enable meaningful cross-country comparisons.

(b) Feasible / Less feasible—Feasibility of international data collection. Based on whether, in most OECD countries, data are currently being collected or will become available soon, whether data collection instruments are harmonised across countries, and whether data linkage between different collections is required.

Routine / Periodic —Frequency of international data collection. Whether indicator best suited for routine data collection (annual or biennial), or for periodic collection (every 3–5 years).

A FOCUS ON SOCIOECONOMIC INEQUALITIES IN HEALTH

12. Health inequalities exist along many demographic or social dimensions, including sex, age, racial and ethnic group, geographic area and socioeconomic status. The usual starting point in measuring health inequalities is to examine variations by sex and age, and *OECD Health Data* already reports these for several health status measures. It indicates, for instance, that while a substantial gap in life expectancy remains between men and women, the gap has narrowed in most OECD countries over the past twenty-five years (OECD, 2007a). Mortality data also indicate that the distribution of ages at death among both men and women varies widely across OECD countries (OECD, 2007b). As a next step, the focus of work will be on the measurement of health disparities by socioeconomic status, including their interactions with sex and age.

13. In virtually all countries and under different health systems, a socioeconomic gradient in health status exists: as socioeconomic disadvantage increases, there is often an increase in the behaviours which worsen risks and so worsen health outcomes, and an increase in mortality and morbidity. The health burden attributable to socioeconomic disadvantage is large. Populations may be divided into groups characterised by social stratification, with individuals occupying higher or lower levels on a hierarchy—their position on this hierarchy being their *socioeconomic status* (SES). Persons of lower SES—typically those with a lower level of education, in a lower occupational class, or with a lower income—tend to have a higher prevalence of illness and disease, can expect to live less years in good health, have higher mortality rates and die at younger ages.

14. Socioeconomic inequalities are evident not only in population health status, but also in the access to, and use of health care services. Poorer and less educated persons, despite having higher rates of illness, disease and death, often have difficulties in locating appropriate specialist and preventive health services, they use these services less, and for certain goods and services may be required to pay a proportionately higher share of their income to do so.

15. Socioeconomic inequalities in health have been observed among different socioeconomic groups both within and between countries, regardless of affluence or political or social systems. These inequalities have not diminished in recent decades and in some cases have widened. This finding implies that inequalities are deeply entrenched within the social structures of modern societies, and it provides a warning that reductions in health disparities might be difficult to achieve in the short-term (Mackenbach, 2006; Mackenbach *et al.*, 2007).

16. Most national administrations have developed public policies and strategies to reduce socioeconomic inequalities in health status (*e.g.* Acheson, 1998; Department of Health, 2003; AHRQ, 2008; Judge *et al.*, 2006; Mackenbach & EUROTHINE, 2007). Attempts to quantify the economic impact of health inequalities have pointed to substantial gains that might be made through their reduction (Walker, 2005; Mackenbach *et al.*, 2007). Many OECD countries have also endorsed as a major policy objective the principle that access and use of health care should be based on need, and not the ability to pay (OECD, 2004a). Each of these policy objectives requires evidence-based approaches to measure progress.

17. Identifying and measuring the burden of ill-health in socially disadvantaged sections of the population provides great potential for improving the average health status of the whole population. Cross-country comparisons of socioeconomic inequalities in health status, and in access and use of health

services, can suggest areas for improvement for health administrations, and can provide possible policy directions that aim at their reduction. The information gained from the measurement of inequalities gives an impetus and focus for policy makers, as well as a yardstick by which to assess interventions and gauge progress.

18. For these reasons, the focus in this paper is on examining inequalities in health by socioeconomic status. The universal prevalence of socioeconomic inequalities in health, and the importance of education, income and occupation as determinants of health makes a strong case for selection. This does not negate the importance of other dimensions that are used to examine inequalities in health, such as geographic area or race and ethnicity. In a number of OECD countries, racial and ethnic disparities in health remain a great challenge (Kawachi *et al.*, 2005; Mead *et al.*, 2008). Health differences by geographic area, especially with respect to access to care in remote areas, is also an important policy concern in many countries. A project which aims to describe and assess the impact of a range of policies to promote a more equal geographical distribution of doctors is proposed for the Work Programme in 2009-10 (DELSA/HEA(2008)10).

Classifying social groups

19. Socioeconomic status or SES, the hierarchy used here to classify social groups, can be ordered in several ways, the most common of which are educational level, occupational class and income level or wealth. Indices comprised of more than one measure of SES, may also be used². A number of international classifications of these ‘stratifiers’ of SES can be used to facilitate cross-national comparison.

- Educational level is typically measured by a hierarchical classification of the population by completed education. Under the International Standard Classification of Education (ISCED) at least four categories are identified, corresponding to elementary, lower secondary, upper secondary and tertiary. Part-time and vocational training are also included, but are difficult to fit into the hierarchy.
- Occupation information is used to divide the population into a number of classes, with distinctions often made between farmers, unskilled and skilled manual classes, self-employed, and lower and upper non-manual classes. The International Standard Classification of Occupations (ISCO) can be used to identify more specific categories of occupation. Occupational class may vary throughout an individual’s working life, but is usually determined by the individual’s current or last occupation.
- Income level can be classified according to the household equivalent income—household income adjusted for household size and composition. The population may then be classified into a number of equal groups for analysis (*e.g.* quintiles or deciles). Income level may also be analysed by using national poverty lines to determine SES.

Health indicators

20. Table 1 presented a set of leading indicators that might be used to measure different aspects of socioeconomic inequalities in health. The selection of these indicators has been based mainly on the

² Area-based indices, for example, are constructed from weighted variables collected through a census or other survey, and allow for comparisons of social and economic conditions across a country. Persons living in areas with lower scores are then associated with this lower average SES. The variables used differ across countries, such that indices cannot be used for cross-country comparison. Examples include the Socioeconomic Indexes for Areas (SEIFA), used in Australia, and the Socioeconomic Risk Index (SERI), used in Canada.

criteria of relevancy, interpretability and feasibility (assessed in terms of data availability and comparability). Indicators for measuring inequalities in health status have been grouped into three categories: (i) indicators related to life expectancy and mortality, (ii) indicators related to morbidity and disability, and (iii) composite indicators which include both mortality and morbidity information.

21. Indicators for measuring inequalities in health care access and use here include: (i) health insurance coverage, (ii) health care utilisation in relation to different services, (iii) measures of unmet care needs, and (iv) out-of-pocket expenditure as a share of household income by income group. A further indicator of ‘effective coverage of interventions’, which was suggested recently as part of the refinement of the WHO framework for health system performance assessment and which has been tested at the state level in Mexico, is discussed in Annex 1.

Data sources and challenges

22. Data sources to measure health inequalities include vital statistics, censuses, population-based surveys and health or social security records (see Table 1). National mortality registries provide information on deaths by sex and age, but in most countries such registries include little or no information on socioeconomic status. This requires that data linkages be made between mortality registries and other comprehensive information sources on the population (such as censuses) so as to be able to classify indicators of mortality or life expectancy by some measure of socioeconomic status. In practice this only occurs in some countries, and not for routine data monitoring purposes. Similarly, health sector information rarely includes information on income, occupation or other socioeconomic measures (except perhaps place of residence, which can be used to assign an area-based SES measure), thus requiring that the information derived from these sources also be linked to another providing information on SES.

23. Information from health surveys is particularly well-suited to national-level analyses of inequalities in health status (especially morbidity/disability) and in health care access and use. However, gathering comparable data at an international level is limited by variations in the questions used to measure either health status, or health care access and use, or socioeconomic status, as well as by other differences in survey methodologies such as the reference population used and the mode of survey administration. In Europe, some cross-national health interview surveys (or health modules in broader surveys) provide information on self-assessed health and disability, as well as on health care use and unmet care needs based on a common set of questions. These include the EU Survey on Income and Living Conditions (EU-SILC) which covers the entire adult population in countries surveyed (except the population in institutions), and the Survey of Health, Ageing and Retirement in Europe (SHARE) which covers the population aged 50 and over, and which is comparable in many ways to the US Health and Retirement Survey (HRS). In addition, Eurostat has developed a number of modules to measure health status, health care use and socioeconomic status in a harmonised way under the European Health Interview Survey (EHIS). European Union countries are encouraged to periodically implement these modules in their national surveys.

24. Beyond Europe, the 2002–03 Joint Canada/United States Survey of Health has been used as a data source to measure and compare socioeconomic disparities in health status, health care use and unmet care needs between these two countries. The international health policy surveys conducted periodically by the Commonwealth Fund have also been used to carry out similar analyses among the non-European and European OECD countries covered—seven in 2007 (Schoen *et al.*, 2007).

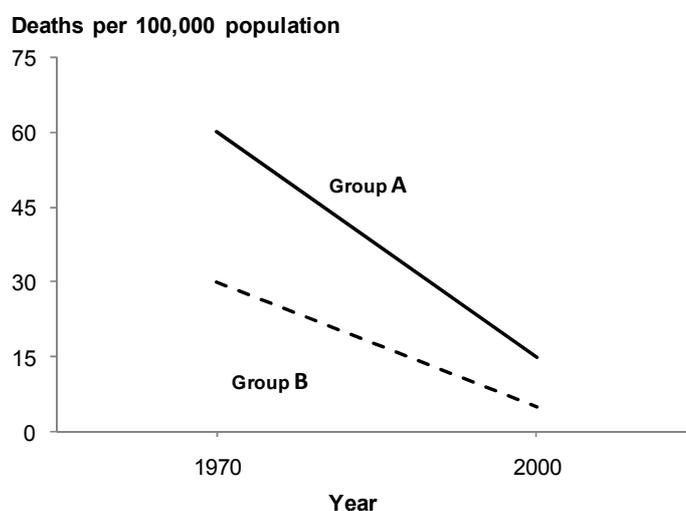
25. Further efforts to harmonise survey questions on health status, health care access and use, and socioeconomic variables are required in order to improve the comparability of the data used to measure socioeconomic inequalities in health.

Classifying measures of socioeconomic inequalities in health

26. Many methods exist for measuring socioeconomic inequalities in health, and they vary in complexity. These methods differ in at least three ways, as to: (i) whether they measure relative or absolute differences in health, (ii) whether they measure a limited effect, or the total impact of inequalities on health, and (iii) whether the measurement technique is simple or sophisticated (Mackenbach & Kunst, 1997). The choice of which is most appropriate depends largely on the objectives of the particular study being undertaken.

27. *Relative or absolute differences*—Measurement can be expressed as a relative difference (for example, a rate ratio) or an absolute difference (for example, a rate difference). Both are important, as the theoretical example in Figure 1 illustrates. Assume two population groups A and B that have seen large falls in mortality rates between two reference years 1970 and 2000, with the gap between the two also narrowing. In 1970, the gap was 30 deaths per 100,000 population, coming down to only 10 in 2000. The ratio of deaths per 100,000 population between groups A and B has increased from 2 in 1970 (60/30) to 3 in 2000 (15/5). The mortality rate of both groups has improved and the absolute gap between them has narrowed, however Group A's relative position has not improved; indeed, in 2000, it was worse. This illustration highlights that to gain better understanding of the health status of the two groups, both measurements should be considered. Absolute measures are important for decision-makers, especially when goals in absolute terms have been set, because they allow a better appraisal of the magnitude of a public health problem (Schneider *et al.*, 2004).

Figure 1: Relative and absolute differences in socioeconomic health inequalities



28. Measures of an 'effect' of lower SES on morbidity and mortality, or of 'total impact' on health status of a population—Measures of 'total impact' include not only the effect of SES on health, but also give an indication of the extent of inequalities within the population. The larger the extent of inequalities in SES, the higher the measure of total impact will be. A large group of persons with low SES, for example, will result in a greater total health impact, although this is often outside the sphere of influence of public health policymakers. Including data on both the effect and the total impact will provide more information for decision-makers (Mackenbach & Kunst, 1997).

29. *Simple or sophisticated measures*—Simple measures of inequality such as rate differences and rate ratios between lower and higher socioeconomic groups allow for ease of calculation and interpretation. These measures are often used for routine data collection and monitoring over longer time periods. However, they may ignore information about sizeable segments of a population if, for example, morbidity or mortality rates of only the lowest and highest quintiles are presented. A second group of more sophisticated measures is also used to summarise the magnitude of inequalities. These include summary indices such as the relative index of inequality, and the concentration index, calculated in a similar fashion to the Lorenz curve and Gini coefficient (Wagstaff *et al.*, 1991; Mackenbach & Kunst, 1997; Schneider *et al.*, 2004). These regression-based measures include information on both the magnitude and the total population distribution of inequality, but at the expense of ease of interpretation and with greater restrictions on the type of data that can be used in their calculation. They often require that SES be measured on a quantifiable scale, and this might prove problematic for occupation-, income- and education-based indicators.

30. An important consideration in assessing the relative advantages and disadvantages of different measures is their ease in allowing for routine data updating and ongoing monitoring. After taking into consideration the type of data available through health surveys, the requirement for regular or periodic reporting in order to construct time series, the ease of interpretability and the resources required, it seems more feasible to use relatively simple measures, such as rate differences and rate ratios. In using these, due care should be taken to present as much contextual information as possible, such as providing both relative and absolute differences.

1. INDICATORS OF INEQUALITIES IN HEALTH STATUS

31. Kunst and Mackenbach (1995) have defined socioeconomic inequalities in health status as

“Differences in the prevalence or incidence of health problems between individual people of higher or lower socioeconomic status”

32. In using this definition it should be emphasised that although individual people are referred to, analyses of socioeconomic inequalities in health usually consider groups of individuals, linked by a common SES. Within such a group, the individuals comprising it will differ in their health status; however taken as a whole, people with lower SES tend to have higher morbidity and mortality rates.

1.1 Mortality-based indicators

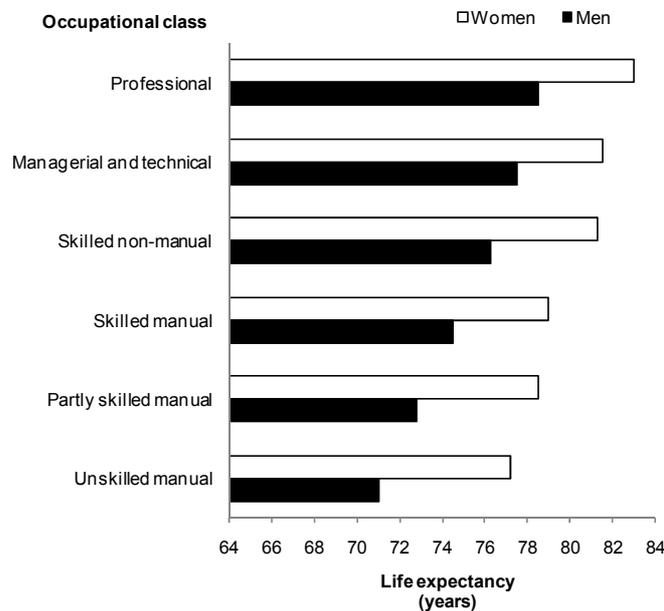
33. Indicators such as life expectancy, cause-specific and total mortality rates and infant mortality are often used to monitor population health status. Data by sex and age are widely available and relatively precise, but data linked to other measures of SES are scarcer.

Life expectancy

34. Life expectancy is a measure of how long a person might expect to live if the mortality patterns occurring in a particular year remained unchanged over a lifetime. Life expectancy measures the length of life, but not its quality. Life expectancies are derived from life tables, which may be calculated from mortality data held in registries, although surveys and censuses may also be used. To calculate life expectancies for different socioeconomic groups, mortality data is usually linked to another data set which includes information on SES, such as a census.

35. At the European level, Eurostat established a Task Force in 2006 to develop indicators of life expectancy by socio-economic status. The Task Force’s preferred approach is to link death certificates with census information, and the next census in 2011 provides an opportunity to put in place or refine the statistical system in EU countries needed for the production of harmonised mortality data by socio-economic status. The requirement for data linkage with census information means that this indicator might not be suited for regular monitoring, since censuses are infrequent. Because life expectancies tend to increase slowly in developed countries, except in certain circumstances, monitoring may only be necessary at 5-yearly intervals or longer.

36. The available evidence shows that life expectancy is shorter among persons from lower socioeconomic groups, reflecting group differences in the risk of dying. A number of studies have observed differences in life expectancy at birth between lowest and highest socio-economic groups, in the order of 4–6 years among men and 2–4 years among women, but larger differences may also be observed (Mackenbach, 2006; Singh & Siahpush, 2006).

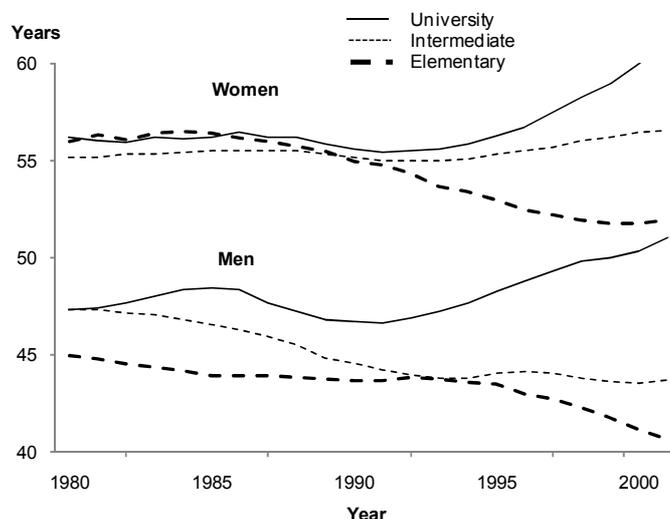
Figure 2: Occupational class differences in life expectancy, England and Wales, 1997–1999

Source: Wilkinson & Marmot, 2003

37. Figure 2 provides an illustration of the link between socioeconomic inequality and life expectancy. Men and women working in the least skilled occupations in England and Wales can expect to live 7 years less than persons working in professional occupations. The effect is observed not only between the least and most skilled; the social gradient is evident across all levels of society, so that in this example skilled workers have 2–3 years lower life expectancy than those in professional occupations.

38. Figure 3 provides a further example. It indicates that the life expectancy of better-educated men and women in the Russian Federation increased substantially between 1980 and 2001, while it declined for the least-educated. In 1980, life expectancy at age 20 for university-educated men was 3 years greater than for men with elementary education only; by 2001 this difference had increased to 11 years. Similar patterns were seen in women (Murphy *et al.*, 2006). A widening in life expectancy inequalities between those with lower and higher socioeconomic status scores has also been observed in Finland, with differences in deaths from cardiovascular diseases and alcohol-related conditions together accounting for most of the increase in health inequalities in that country (Mackenbach, 2006).

Figure 3: Trends in male and female life expectancy at age 20, by educational attainment, Russian Federation, 1980-2001



Source: Murphy et al., 2006

39. In England, the monitoring of socioeconomic inequalities in life expectancy is part of a *Programme for Action* for the national health inequalities strategy (Department of Health, 2008). A target for life expectancy has been set: by 2010 to reduce the gap between the fifth of areas with the worst health and deprivation indicators and the population as a whole, by at least 10%.

Total mortality

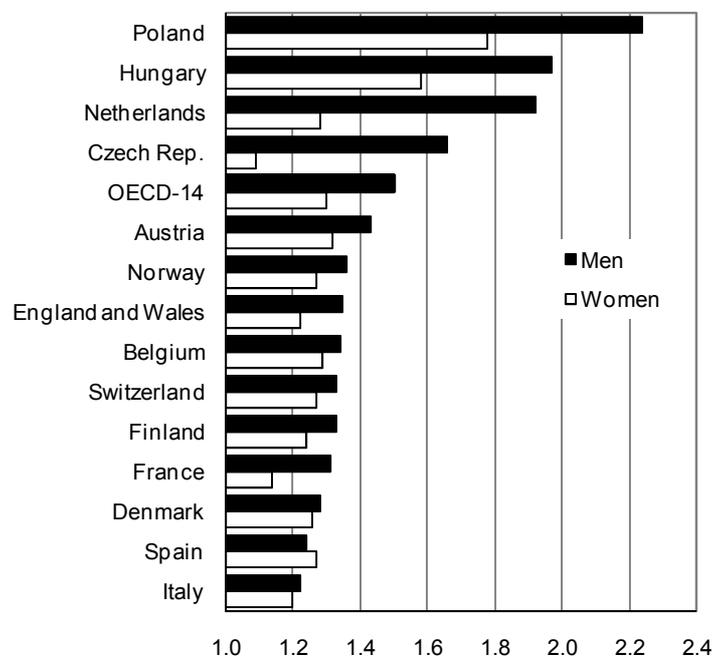
40. Important differences in mortality rates are found between different socioeconomic groups. Rates of premature mortality are higher among persons with lower levels of education and income, or in lower occupational classes, and these differential rates are found for most major causes of death. Inequalities exist among all age groups and both sexes, although they tend to be smaller among women than men.

41. Vital statistics registries are the starting point for examining socioeconomic inequalities in mortality. Information on income, education or occupation is usually obtained by data linkage to a census or other survey, but for those persons of working age, data may be available from registry information collected following death. Measuring these indicators is not straightforward, and due care needs to be taken in assigning persons appropriately, and ensuring that cross-national comparisons are valid through comparing similar categories. Data on total mortality rate ratios by education, income and occupation are available for many OECD countries (Mackenbach *et al.*, 2007; Mackenbach & EUROTHINE, 2007). Long-term mortality data with socioeconomic information covering large national samples are only available for a limited number of countries.

42. Figure 4 presents information on deaths among mostly middle-aged men and women in a number of European countries. Deaths data were linked to censuses carried out during the early-to-mid 1990s to obtain information on the highest level of completed education. Age-standardised death rates and rate ratios were calculated for educational groups, with a rate ratio of 1.0 indicating no difference between lower and higher educated persons. Mortality rates among less educated persons are markedly higher. In European countries, less educated persons have a 20–50% excess risk of dying than more educated

persons, and in some countries mortality rates are more than double. Inequalities are larger for men, except in Spain and Italy (Mackenbach, 2006).

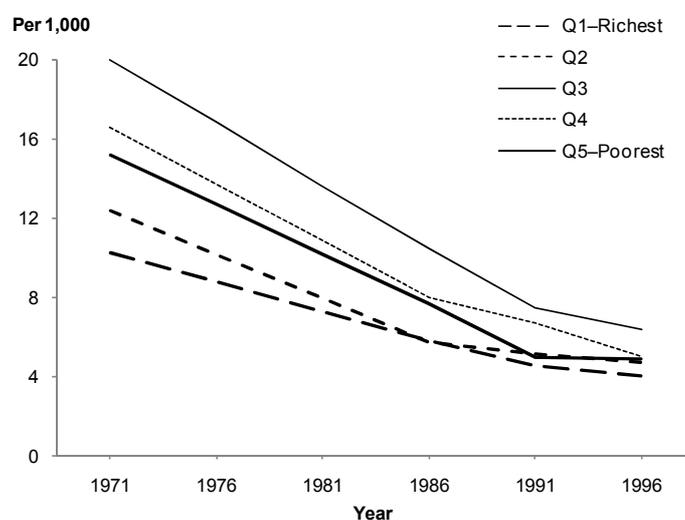
Figure 4: Ratio of total mortality rates between less and more educated people, selected European countries, different years in the 1990s



Source: Mackenbach, 2006

Infant mortality

43. Infant mortality is a frequently-used indicator of population health and social progress. All OECD countries have seen remarkable progress in reducing infant mortality in recent decades, with an average 80% reduction across the 30 countries between 1970 and 2005 (OECD, 2007a). Yet widespread socioeconomic inequalities remain. Figure 5 provides an illustration, showing infant mortality rates for urban neighbourhoods in Canada by quintiles of wealth. Rates declined rapidly for all neighbourhoods between 1971 and 1996, although they remain highest among the poorest neighbourhoods. Inequalities narrowed somewhat over the time period, in that the rate ratio of the richest and poorest neighbourhoods (Q1/Q5) declined from 2.0 in 1971 to 1.7 in 1996, although progress slowed after 1991.

Figure 5: Infant mortality rates by quintiles of wealth, Canada, 1971–1996

Sources: Wilkins & Houle, 1999; Wilkins, 2003

44. A similar study examined trends in infant mortality in the United States between 1960 and 2002, by county median family income (Krieger *et al.*, 2008). Infant mortality declined in all county income quintiles, and both absolute and relative inequalities shrank between 1966 and 1980; relative health inequalities widened thereafter, with little change in the magnitude of absolute differences.

45. The same data sources used for the analysis of total or cause-specific mortality allow for the examination of socioeconomic inequalities among particular age groups, including infants. The need for age-standardisation of data is avoided. However, the challenge of linking data sources containing information on mortality and SES remains. Determining the SES of an infant means ascertaining the status of a parent, or that of the geographic area of residence of the household.

1.2. Morbidity-based indicators

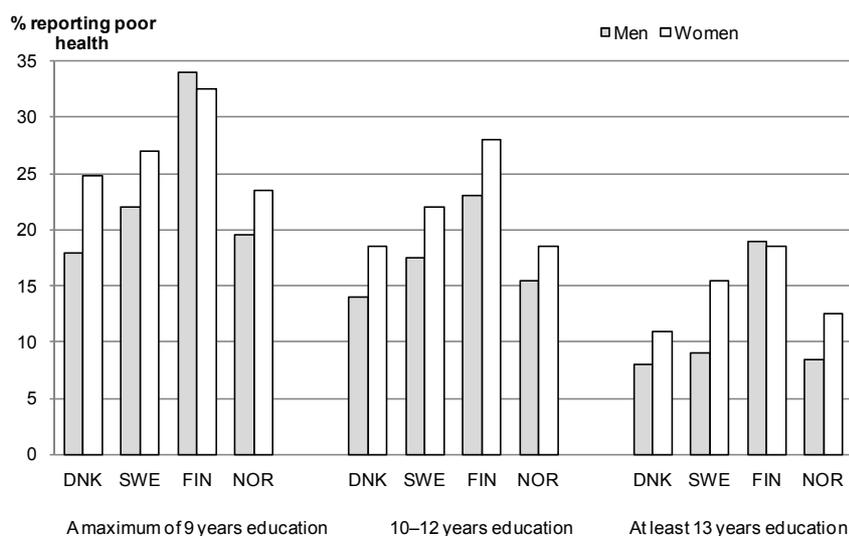
46. Other measures beyond those based on mortality are needed for monitoring inequalities in population health status. As life expectancy increases and chronic disease prevalence continues to rise, policy makers need additional information on the non-fatal consequences of disease and severity of health conditions.

Self-reported health

47. Self-reported data on morbidity are collected by many national and cross-national health surveys in order to measure changing levels in population health status. Most of these surveys include a question asking respondents about their own health, of the form: “How is your health status in general?” Although subjective in nature, within particular national cultures the measure correlates well with other measures of health status, and it has been found to be useful in predicting future health problems and health service use (Miilunpalo *et al.*, 1997). This question, or more elaborate sets of questions on self-reported health, may also be used in the calculation of healthy life expectancies and other summary health measures (see next section).

48. The main sources of information on self-reported health are national, or cross-national health interview surveys such as EU-SILC. In order to promote valid international comparisons, methods and instruments must be standardised as much as possible, including the questions asked and the response categories used. For the purpose of measuring disparities in each country, populations within countries must also share common standards and perceptions of good health. For these reasons, caution is required in making cross-country comparisons using this indicator. A number of cross-national studies of self-reported health by SES are available (Sanmartin *et al.*, 2004; NOMESCO, 2004; Mackenbach, 2006).

Figure 6: Percentage of people reporting poor health, by education and gender, Nordic countries, 2000–2002



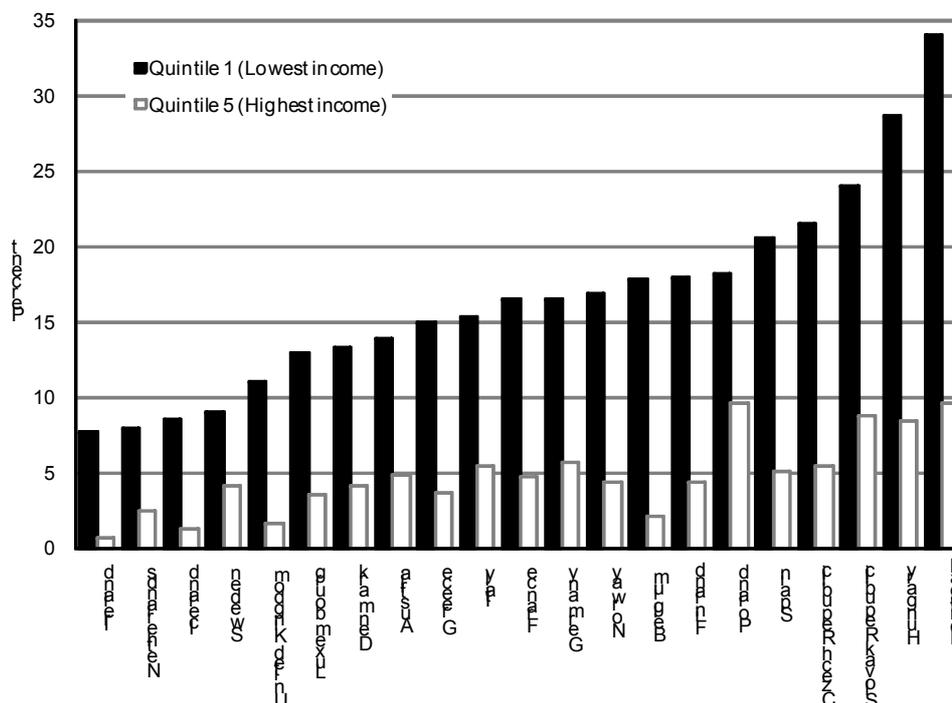
Source: NOMESCO, 2004

49. When self-reported health is analysed by SES groups, important differentials in population health status are revealed. Among Nordic countries, for example, a series of national surveys conducted in 2000–2002 found that greater proportions of persons with low education report poorer health, and more so in Finland than Sweden, Norway or Denmark (Figure 6). Women tended to report poorer health than men, except in Finland.

50. These findings are repeated in many countries—persons in lower socioeconomic groups report poorer health. But the extent of inequality varies from country to country, with differing rates of inequality between income groups reporting ‘very bad’ and ‘bad’ health, for example (Figure 7). A number of countries, such as Portugal, Hungary and the Czech and Slovak Republics report differences in prevalence rates of 15% or more between the lowest and highest income quintiles. The gap in Sweden, the Netherlands and Ireland is less substantial.

51. Inequalities in self-reported morbidity are substantial, and persons with lower socio-economic status have higher morbidity rates, not only in self-reported health, but also in chronic conditions and disability. The inequalities are persistent, although as yet it is unclear whether gaps are widening over time (Mackenbach, 2006).

Figure 7: Persons reporting ‘very bad’ and ‘bad’ health by income quintile, selected EU countries, 2006



Source: EU-SILC

Self-reported disability

52. Monitoring disability is important in the light of population ageing and increasing rates of chronic disease. Self-reported disability reflects the long-term and non-fatal consequences of disease and impairment, and provides some indication of the need for medical and social services. Information on self-reported disability may also be used to calculate different measures of healthy life expectancies (see next section).

53. Progress towards a universal concept and definition of disability was assisted by the adoption of the International Classification of Functioning, Disability and Health (ICF) by the World Health Organization in 2001 (WHO, 2001). The ICF uses the term ‘disability’ to broadly cover any or all of the following components: impairment, activity limitation and participation restriction, as influenced by environmental factors³. A number of cross-national meetings of experts (termed the Budapest Initiative on Health Status Measures, and the UN Washington City Group on Disability Statistics) have taken place in recent years in order to develop a small set of standard questions on health status and disability that could be recommended for use in national surveys or censuses.

54. Currently, measures of self-reported disability are available for most OECD countries, although the survey instruments vary across countries, thereby limiting comparability. In Europe, the EU Survey on

³ Impairments are “problems in body function or structure such as significant deviation or loss”. Activity limitations are “difficulties an individual may have in executing activities”. Participation restrictions are “problems an individual may experience in involvement in life situations”. Environmental factors “make up the physical, social and attitudinal environment in which people live and conduct their lives” (WHO, 2001).

Income and Living Conditions survey (EU-SILC) includes one general question on disability. The health status module in the European Health Interview Survey (EHIS) also recommends that EU countries use this question along with a more elaborate set of questions to measure different types of disabilities.

Table 2: Self-reported disability status by household income, persons aged 15 years and over, Australia, 2003

Equivalised gross household income quintiles	All specific limitations or restrictions (%)	All reported disabilities (%)
Lowest quintile	31.2	29.4
Second quintile	20.3	19.2
Third quintile	11.5	12.4
Fourth quintile	8.5	9.5
Highest quintile	6.8	8.3
Not applicable or not known	21.8	21.3
<i>Total</i>	<i>100.0</i>	<i>100.0</i>

Source: ABS, 2004

55. Disability rates tend to be higher among socioeconomically disadvantaged persons. Results from the Australian Bureau of Statistics (ABS) 2003 Survey of Disability, Ageing and Carers, for example, indicate that self-reported disability is three-to-four times more prevalent in the lowest income quintile, compared with the highest income quintile (Table 2). This finding is linked to people in lower socioeconomic groups having higher frequencies of physical and mental health problems (Mackenbach, 2006).

56. A large body of evidence reports that higher educational levels are associated with lower levels of disability (Mackenbach, 2006; Lafortune *et al.*, 2007). Higher educational levels are often accompanied by higher incomes and standards of living, a lower risk of work-related injury or ill-health, and healthier behaviours such as a balanced diet and a lower prevalence of smoking and risk alcohol drinking. Across 19 OECD countries, the average disability prevalence rate in the late 1990s was 19% among groups with lower educational attainment, compared to 11% among the better educated (OECD, 2003).

1.3 Summary measures of population health

57. Increasingly, health information is required in order to complement conventional measures of life expectancy, and determine whether ageing populations are living longer lives free of disability or ill health. Summary measures of population health combine information on both mortality and morbidity in order to better monitor a population's health and forecast their future health care needs. These measures provide information both on the number of remaining years a person might expect to live, and on their health status during those years.

58. Several of these measures have been developed, each seeking to calculate the average expectation of years of life in equivalent good health, adjusting for years lived with some form of illness or disability. The measures may also be calculated for different socioeconomic groups within a population. Summary measures of population health include Disability Free Life Expectancy (DFLE), Health Adjusted Life Expectancy (HALE) and Disability Adjusted Life Year (DALY).

59. The measures are relatively easy to interpret, being based on recognisable concepts of illness, disability and mortality. Their calculation is more complex, since they rely on at least two data sources—a measure of morbidity or disability, usually a health or household interview survey, and a measure of

mortality, often a census cohort linked to a mortality registry. One of these must also contain information on socioeconomic status, if summary measures by SES group are to be calculated.

60. Regular monitoring of summary measures of socioeconomic inequalities in health within countries is still uncommon. Cross-national comparisons of summary measures are further complicated by needing to ensure that the concepts and methods used for each of the data sources are standard across countries. In recent years, international organisations such as Eurostat and the World Health Organization have made efforts to improve understandings and applications of concepts and methods, and to harmonise summary measures of population health for cross-country comparisons. Achieving the necessary linkages between data sets remains a challenge.

Disability Free Life Expectancy (DFLE)

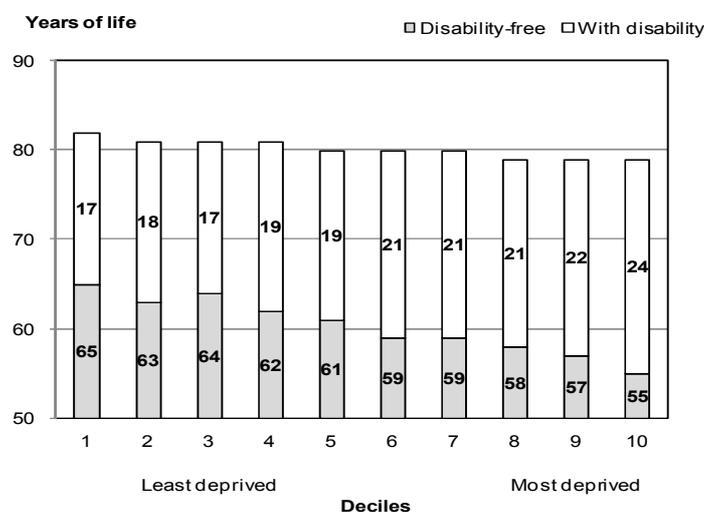
61. The Disability Free Life Expectancy (DFLE) measure aims to quantify the remaining years a person of a certain age can expect to live without disability. The calculation requires mortality data and estimates of the prevalence of disability among population age groups, usually as assessed by self-report through health surveys. The valuation of self-reported disability status is based on a simple dichotomous value of 0 (if people report being moderately or severely disabled, depending on the cut-off point) or 1 (if they report not being disabled). In Europe, DFLE has been adopted as one of the European Structural Indicators, and is calculated and reported by Eurostat on a regular basis.⁴

62. Among European countries, a number of cross-national surveys collect self-reported information on disability in a harmonised way (see above). Non-European countries regularly include self-reported disability questions in their own national health surveys, although the questions and possible responses often differ across countries and surveys. Each of these surveys also includes data to determine SES, allowing DFLE to be estimated for different socioeconomic groups.

63. The example in Figure 8 shows life expectancy with and without disability for females in England, as derived from the annual Health Survey for England. SES was measured by calculating material deprivation deciles, based on area of residence information from the 1991 Census. Females born during 1996–1999 could expect to live 60 years free of disability on average, but with wide variation, from 55 years in most deprived areas to 65 years in least deprived areas.

⁴ In March 2000, the Lisbon European Council invited the European Commission to present an annual report on progress achieved in the areas of employment, innovation, economic reform, social cohesion and the environment. ‘Structural Indicators’ allows quantitative evaluation and comparison of performances of the Member States in these areas. The DFLE Structural Indicator is also known as ‘Healthy Life Years’.

Figure 8: LE and DFLE at birth by deprivation deciles, females, England, 1996–1999



Source: Bajekal, 2005

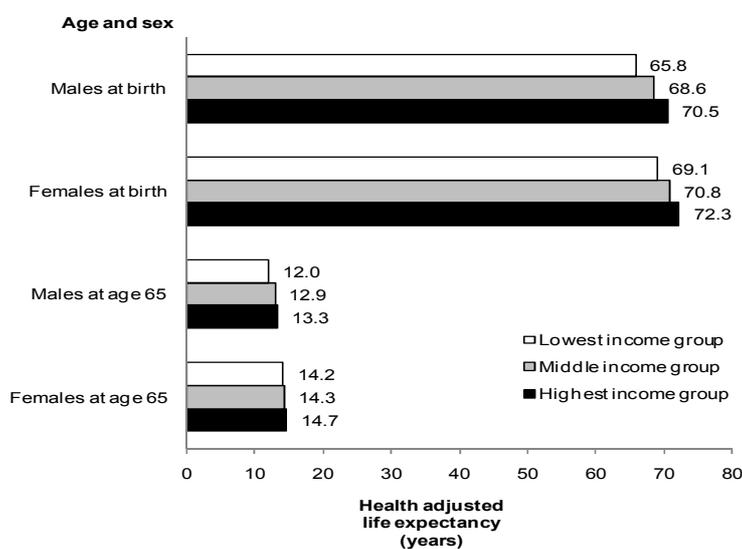
Health Adjusted Life Expectancy (HALE)

64. Health Adjusted Life Expectancy (HALE) measures the number of years that an individual can expect to live in full health if current morbidity and mortality conditions prevail. It ‘adjusts’ life expectancy by weighing years of life lived in good health higher than years lived in poor health. The weighing of years of life depends on the population’s valuation of different health conditions, with values ranging from 0 to 1, where 0 represents death and 1 represents full health.

65. Data sources required to calculate HALE include a life table to calculate life expectancies, a population health survey to describe the health status of the population, and a valuation of the different health conditions. HALE may be calculated for socioeconomic groups if both life expectancy and health status measures can be linked to the same SES measure. Valid cross-country comparisons are also subject to the same constraint.

66. HALE has been calculated for the 2001 Canadian population (Figure 9), using the Health Utility Index to describe and value health status. In this example, life expectancy at birth and at age 65 are presented for both males and females in different income groups. Both sexes in lower income groups can expect to live less years in full health. At birth, Canadian males in the lowest income group had a HALE almost 5 years lower than that for males in the highest income group; among females, HALE was 3 years lower (Health Canada, 2006).

Figure 9: Health Adjusted Life Expectancy by sex and income level, at birth and age 65, Canada, 2001



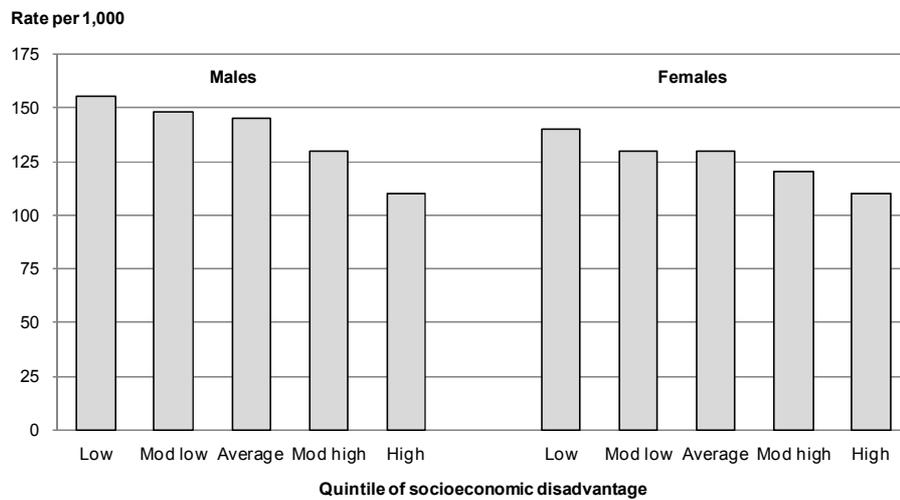
Source: Health Canada, 2006

Disability Adjusted Life Years (DALY)

67. DALYs represent the sum of years of life lost due to premature mortality (YLL) and years lost due to ill health (broadly termed disability) (YLD), related to the occurrence of different health conditions. One DALY represents the loss of one year of equivalent full health.

68. The calculation of DALYs requires a number of data sources. The YLL component is derived from information on numbers of deaths, and life expectancies at various ages, as sourced from life tables and mortality registers. The YLD component requires data on disease incidence and duration until remission or death, as well as a weight factor reflecting disease severity on a scale from 0 (perfect health) to 1 (death), and is derived from disease registers, hospital administrative data or health interview surveys.

69. DALYs have been used as summary measures of population health by the World Health Organization in their Global Burden of Disease Study and World Health Reports (Lopez *et al.*, 2006), although the data were not disaggregated by SES. Several countries have produced their own Burden of Disease reports, using DALYs to monitor health inequalities (*e.g.* Begg *et al.*, 2007 for Australia).

Figure 10: Age-standardised DALY rates by socioeconomic quintile, Australia, 2003

Source: Begg et al., 2007

70. DALYs have been calculated for the Australian population by SES, using 2003 mortality and morbidity/disability data. Not surprisingly, populations in areas with lower SES experienced proportionally higher burdens of disease in terms of disability and mortality than populations in areas with higher SES (Figure 10). The difference was in excess of 30% between the most and least disadvantaged populations (Begg *et al.*, 2007).

2. INDICATORS OF INEQUALITIES IN HEALTH CARE ACCESS AND USE

71. Inequalities in health care access and use may act to either mitigate or exacerbate inequalities in health status. Access and use of health care services are important as determinants of health status, and can act as ‘levers’ that health policymakers can use to improve population health status.

72. A major health policy goal in many OECD countries is the achievement of adequate access to essential health services by all people on the basis of need. Most OECD countries endorse equity of service use as a measure of that adequacy, adopting a standard articulated as “equal care for equal need” (OECD, 2004a). Health care access can be defined as people’s ability to obtain appropriate health care services, while health care use relates to their actual use of different types of services (Academy Health, 2004). To gauge equity in health care access and use, the following measures are often used: the extent of health insurance coverage, the receipt or use of different types of health services (ideally adjusted for need, where applicable), unmet care needs for different reasons, and the proportion of out-of-pocket expenditure.

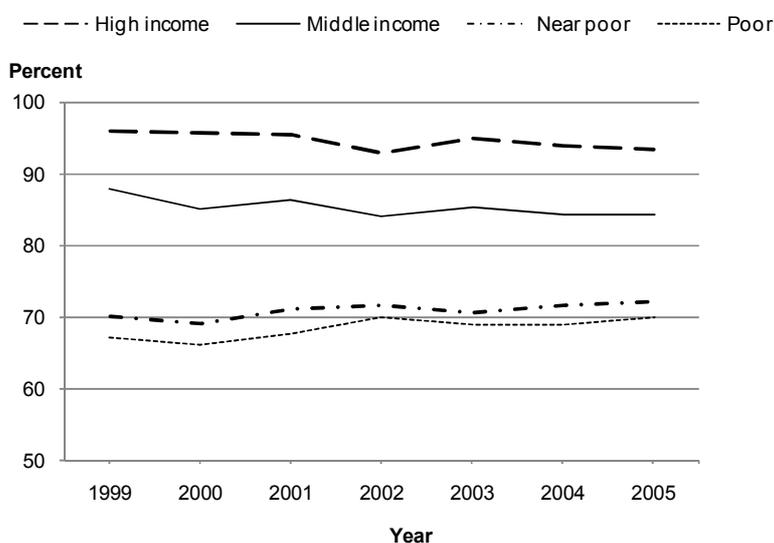
2.1 Health insurance coverage

73. One potential barrier to receiving appropriate health care is inadequate insurance coverage, which may preclude access to medical goods and services. Health insurance coverage provides financial security against the costs of unexpected illness and assists access to innovative treatments and preventative services. Most OECD countries have achieved universal coverage of health care costs for at least a core set of services, sometimes through combinations of public and private health insurance. Three countries that have not yet attained universal coverage are Mexico, Turkey and the United States.

74. Data from the US National Health Interview Survey indicate that about 30% of persons aged less than 65 years who are deemed poor or near-poor do not have health insurance (Figure 11), compared to 10–15% of middle income and 5% of high income persons. The uninsured are more likely to have poorer health status and die early. They report more problems in getting care, are diagnosed at later disease stages and receive less therapeutic care. The uninsured are sicker when hospitalised and are more likely to die during their hospital stay. In the United States, the problem of persistent uninsurance is seen as a major barrier to receiving health care, and, more broadly, to reducing health inequalities (AHRQ, 2008).

75. Total population insurance coverage is imperfect in indicating health care accessibility, since the package of health goods and services included and the cost-sharing arrangements may vary from country to country, as well as within countries (OECD, 2007a).

76. Private health insurance plays a number of roles in OECD health systems, either as a primary or supplementary source of insurance coverage. Complementary or duplicate coverage is also possible (OECD, 2004c). In a number of countries, private health insurance coverage varies by SES. In Australia for example, 23% of persons in the lowest income quintile in 2004–05 had private health insurance, compared with 76% of those in the highest income quintile (ABS, 2006). Private health insurance need not necessarily create access inequities, however, especially if voluntary schemes complement what are otherwise fairly equitable distributions of care (OECD, 2004b).

Figure 11: Persons aged less than 65 years with health insurance, by income, United States, 1999-2005

Source: AHRQ, 2008

77. *OECD Health Data* already collects data on public and private health insurance coverage, although not by income group. In countries that do not have universal health insurance coverage, data on public and/or private health insurance coverage by SES may be collected through health interview or household surveys.

2.2 Health care utilisation

78. Socioeconomic status is an important factor in determining how populations utilise health care services. Income, education and occupational status affect health care need, recognition and response to health symptoms, knowledge of disease, and access and choice of health services. Although persons in lower SES groups may experience greater degrees of disease and mortality, they do not necessarily utilise health care at greater rates. There is evidence from many countries that, while people in low income groups tend to consult general practitioners more often than people in higher income groups, they tend to use less preventive services and have fewer specialist visits and dentist visits than people with higher income (Van Doorslaer & Masseria in OECD, 2004b; Mielck *et al.* in Mackenbach & EUROTHINE, 2007).

79. Table 3 presents data from the Dutch National Survey of General Practice, carried out in 2001, which illustrates these findings. After correcting for demographics and for subjective health, less educated persons visited GPs more often than persons with higher education levels, but their utilisation rates were significantly lower for a number of services, including dental visits, psychosocial care and Pap smear use (cervical cancer screening). Further exploration of these data found lower utilisation of care among certain immigrant populations and asylum seekers, among persons in disadvantaged neighbourhoods and among marginalised groups such as illegal residents (Westert & Verkleij, 2006).

Table 3: Care utilisation by level of education, persons aged over 25, The Netherlands, 2001

	Level of education (per cent)			Odds ratio	
	Low	Middle	High	Corrected for demographics	Corrected for demographics and subjective health
General practitioner	51	42	36	1.4*	1.2
Physiotherapist	16	16	14	1.3	1.1
Home care	14	6	3	1.3	1.1
Dentist	39	76	86	0.2*	0.2*
Medical specialist	26	21	19	1.1	0.9
Admission to hospital, nursing home or rehabilitation centre	11	7	6	1.2	1.0
Psychosocial care	15	20	30	0.5*	0.5*
Alternative medicine	5	7	9	0.7	0.6
Prescribed medicines	23	16	13	1.3	1.0
Pap smear (women aged 30–59)	75	82	85	0.5*	0.6*
X-rays breast (women aged 18 and over)	46	38	29	0.8	0.8

Notes:

(1) Odds ratio >1 indicates people with low level of education use more care than people with high level of education. Similarly, <1 indicates the use of less care.

(2) * indicates statistically significant $p < 0.05$.

(3) Care utilisation in past year, except general practitioner and medical specialist (past 2 months), psychosocial care (ever), prescribed medicines (past 2 weeks), Pap smear (past 5 years) and X-rays breast (past 2 years).

Source: Westert & Verkleij, 2006

80. Health interview surveys are one of the main sources for gathering data on both health care use and socioeconomic status. By also using available information on age, sex and health status, it is possible to adjust health care use by some measure of need where applicable, as illustrated by the results from the Dutch survey. However, the reliability of survey estimates depend on the methodology used and the sample size, while the comparability of data across countries depends on the harmonisation of questions and other aspects of survey methodologies. There is also some doubt as to whether the reception of evidence-based necessary care can be accurately assessed through self-report questionnaires.

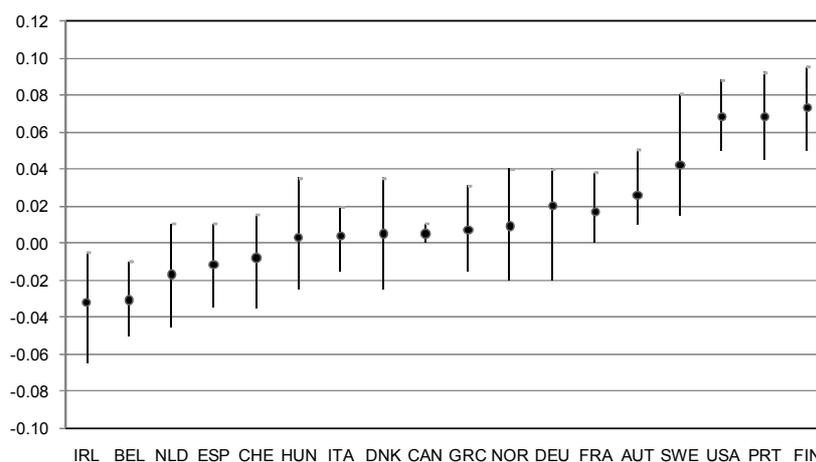
81. In reviewing different methods used to measure inequalities in health, Wagstaff *et al.* (1991) noted that there were two—the slope index of inequality and the concentration index—that were able to present a complete picture of socioeconomic inequalities in health. These two indices use all available data, and do not focus simply on those persons in the highest and lowest SES groups. Of the two, the concentration index provides a means of quantifying the degree of socioeconomic-related inequality in a specific health variable (O'Donnell *et al.*, 2008).

82. The concentration index and associated concentration curve are calculated in a similar fashion to the Gini coefficient and the Lorenz curve, two other widely used measures of the distribution of inequality. The resulting index takes a value between -1 and +1, with negative values indicating absolute pro-poor inequality, zero indicating equality, and positive values indicating absolute pro-rich inequality.

83. As noted, the data required to calculate the index can be sourced from one collection instrument, usually a health interview survey, if the instrument measures health care use (and health status, if there is to be an adjustment for need) and SES. However, the concentration index measure has been criticised by some researchers on the grounds that it is difficult to calculate and interpret, and it is open to misunderstanding (Mackenbach & Kunst, 1997). One option for policy makers and researchers is to use the concentration index as an adjunct to more simple and straightforward measures, in order to provide more detailed analysis of socioeconomic inequalities.

84. In an earlier OECD study, Van Doorslaer & Masseria (OECD, 2004b) used the concentration index to measure income-related inequality in the use of various types of medical care in OECD countries. The study aimed at comparing the actual distribution of medical and dental care by income, adjusted by need. Survey data were sourced from the European Community Household Panel conducted in 2000 by Eurostat, as well as from other national health surveys. Results for doctor visits are shown in Figure 12. Only Ireland and Belgium show significant pro-poor inequality, meaning that even after health service need was accounted for, low income persons in those countries were still more intensive users of doctor visits than higher income groups. On the other hand, there was a pro-rich inequality in doctor visits in Finland⁵, Portugal, the United States, Sweden and Austria. In the remaining countries, doctor visits appeared to be distributed according to the need for such visits (OECD, 2004b).

Figure 12: Concentration indices for number of doctor visits, adjusted for need, 18 OECD countries, 2000



Source: van Doorslaer & Masseria et al., in OECD, 2004b

2.3 Unmet care needs

85. Another measure of health care access is whether people report some type of unmet care need for some reason, whether this is a medical specialist visit, a dental consultation, a hospital admission or another type of care. In order to determine unmet care, individuals are typically asked health interview questions of the nature: “Was there a time in the previous 12 months that you felt you needed health care services but did not receive them?”, followed by a question to determine why the need for care was unmet.

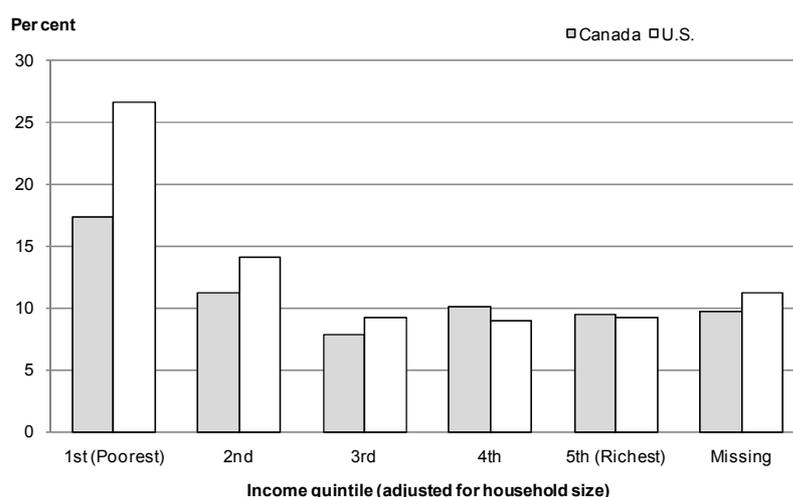
⁵ In Finland, a more meaningful disaggregation of doctor visits by sector revealed a high degree of pro-rich inequity for occupational care and private visits, a very low degree of pro-rich inequity in public outpatient care visits and a pro-poor distribution of public health centre contacts.

Such questions are a feature of a number of national and cross-national health interview surveys, including the EU Survey on Income and Living Conditions (EU-SILC), the recommended health care module in the European Health Interview Survey (EHIS), the Survey of Health, Ageing and Retirement in Europe (SHARE), the international health policy surveys conducted by the Commonwealth Fund, and the Joint Canada/United States Survey of Health.

86. Information on both unmet care need and SES are derived from the same instrument, easing data collection and reporting. A number of cross-national studies have used this indicator to examine access to care for different socioeconomic groups (Schoen *et al.*, 2007; Sanmartin *et al.*, 2004; Mackenbach & EUROTHINE, 2007; Huber *et al.*, 2008).

87. Research indicates that unmet care needs are experienced mostly by people with low SES, whether through low income, or lack of insurance coverage, or because they come from a racial or ethnic minority group. Common reasons given for care needs not being met include excessive waiting times to receive care, excessive costs of care, or having to travel too far to receive care (Sanmartin *et al.* 2004; Mielck *et al.*, in Mackenbach & EUROTHINE, 2007).

Figure 13: Persons aged 18 years and over reporting an unmet health care need by household income quintile, Canada and United States, 2002–03



Source: Sanmartin *et al.*, 2004

88. The 2002–03 Joint Canada/United States Survey of Health reported on unmet health care needs experienced in the previous year among both the Canadian (11%) and American (13%) populations. For uninsured Americans, the proportion reporting that their care needs went unmet rose to 40%. In both countries, persons with lower incomes experienced higher levels of unmet care (Figure 13). Significantly more Americans in the lowest income quintile reported an unmet health care need than low income Canadians (27% vs. 17%) (Sanmartin *et al.*, 2004).

89. The EU-SILC reports on unmet medical and dental care needs in a majority of OECD countries. In 2006, participating countries reported differing rates of unmet need for dental care among the total adult population (Table 4). In addition, all countries reported higher rates among lower SES groups.

Table 4: Proportion of adults reporting unmet needs for dental examination, by income quintile, selected EU countries, 2006

	Quintile 1 (Lowest income)	Quintile 2	Quintile 3	Quintile 4	Quintile 5 (Highest income)	Total
Austria	1.6	1.2	0.7	0.5	0.7	0.9
Belgium	3.8	1.7	0.7	0.4	0.1	1.3
Czech Republic	1.8	1.0	0.8	0.6	0.3	0.9
Denmark	6.7	2.5	1.4	0.9	0.5	2.4
Finland	7.7	5.8	4.7	3.7	3.5	5.1
France	6.6	4.3	3.4	1.7	0.9	3.4
Germany	10.9	5.8	4.2	3.9	2.0	5.3
Greece	8.7	6.8	7.2	3.7	1.8	5.6
Hungary	7.7	6.8	4.3	2.8	2.8	4.9
Iceland	10.1	9.5	7.8	4.3	1.5	6.7
Ireland	3.2	2.7	2.5	1.7	1.1	2.2
Italy	12.4	8.5	6.5	4.6	2.6	6.9
Luxembourg	2.7	0.8	0.2	0.2	0.1	0.8
Netherlands	2.4	1.6	0.9	0.3	0.4	1.1
Norway	13.1	8.2	5.3	4.4	1.8	6.5
Poland	14.7	10.9	9.0	7.5	5.6	9.5
Portugal	16.4	12.2	9.9	6.6	1.6	9.3
Slovak Republic	6.5	3.8	3.8	2.2	1.2	3.5
Spain	5.7	5.0	4.0	2.0	0.9	3.5
Sweden	15.3	10.3	6.6	5.3	1.5	7.7
United Kingdom	6.1	3.8	4.4	4.2	3.7	4.4
21 OECD countries	7.7	5.3	4.2	2.9	1.6	4.3

Source: EU-SILC

90. The magnitude of these disparities can be revealed through calculating rate ratios (*i.e.* Quintile 1/Quintile 5). These absolute rate ratios reveal larger disparities in Belgium, Denmark, Luxembourg, Portugal and Sweden. Note, however, that in Belgium and Luxembourg, the proportion of the population in each quintile (and also the number of persons affected) is relatively small. This is an example where a more sophisticated measure, such as the relative index of inequality, would give a better indication of the overall picture. Such a measure would also make use of the ‘missing’ information contained in Quintiles 2, 3 and 4 (Mackenbach & Kunst, 1997)

2.4 Out-of-pocket expenditure by income group

91. Measuring the financial burden of out-of-pocket spending on households in different income groups is important, since such financial burden can create barriers to health care access and/or use. Households having difficulties paying medical bills may delay or forgo needed health care (Hoffman *et al.*, 2005; May & Cunningham, 2004, cited in Banthin *et al.*, 2008).

92. By contrast with publicly-funded care, out-of-pocket payments are distributed based on the use of care, not the ability to pay. If the financing of health care becomes more dependent on out-of-pocket payments, its burden is, in theory, shifted towards those who use the services more (possibly from rich to poor, if health care needs are higher for the low income groups). In practice, however, many countries have

put in place exemptions and/or caps to out-of-pocket payments for lower income groups to protect health care access.

93. The burden of out-of-pocket health spending on households can be measured either by its share of total household income or its share of total household consumption. The *average* share of out-of-pocket spending in household consumption varies considerably across OECD countries, in 2005 representing less than 2% of total household consumption in countries such as the Netherlands and France, while such spending accounted for more than 6% of total household consumption in Switzerland and Greece. The United States, with almost 3% of consumption being spent on out-of-pocket health services, is close to the average.

94. The *distribution* of spending across the population can vary considerably, depending on whether such spending is affected by income, service use, type of coverage, or other factors. For instance, an analysis of data from the US Medical Expenditure Survey found that 28% of Americans living in a poor family (defined as a family income below the federal poverty level) were spending more than 10% of their after-tax family income for health services and health insurance premiums in 2004, compared with 10% of Americans living in a high income family (Banthin *et al.*, 2008).⁶

95. Information on the share of out-of-pocket expenditure in total household income or consumption disaggregated by income group is collected through regular household expenditure surveys in a number of OECD countries. Further developmental work would be needed to obtain comparable data on this type of measure across countries.

⁶ Another analysis of data from the US Consumer Expenditure Survey found that Americans under the age of 35 spent an average of 2.7% of their income on health care, as compared with 12.9% among those 65 and over, despite the fact that insurance coverage through Medicare is universal for the latter group, while about 15% of those 35 and under lack health insurance coverage. Those with incomes under \$20,000 spent 15.2% of their income on health care, compared with 2.6% of those with incomes of \$70,000 and above. This analysis is presented in a Medicare chart book available on the website of the US Centers for Medicare and Medicaid Services (www.cms.gov).

CONCLUSION

96. This paper has surveyed a number of methods for measuring socioeconomic inequalities in health status, and in health care access and use. It proposes that the indicators of health inequality measured by sex and age in *OECD Health Data* be extended, and that additional indicators be developed. These additional indicators will measure socioeconomic inequalities in health using the income, educational or occupational status of populations.

97. Based mainly on the criteria of policy relevancy, interpretability and data availability across countries, a number of potential indicators are suggested, along with an indication of how frequently these indicators might be collected. To allow broad comparisons across OECD countries, improvements in data availability and comparability would need to be made for many of the suggested indicators. Regarding mortality-based measures, the main challenge for countries is to link data from mortality registers to a measure of socioeconomic status (SES). For the purpose of international comparison, the same measure of SES (be it income, education or occupation) would be required. Regarding morbidity-based measures, the challenge is to further harmonise a key set of questions in national health survey modules on health status and health care use. This is currently being done in Europe through the development of the European Health Interview Survey. Cross-country comparisons might also be broadened by expanding the country coverage in multi-country surveys.

98. After reviewing data availability and comparability, as well as the degree of complexity and the requirements needed to calculate indicators based on SES, the indicators thought to be feasible for regular (i.e. annual or biennial) collection include: self-rated health, self-rated disability, and measures of unmet care needs. Indicators that are thought feasible to collect for a reasonable number of countries, but which are more suited to periodic collection (i.e. every 3–5 years) include: life expectancy, total mortality rate, infant mortality rate, the proportion of population not covered by health insurance (for the few countries where this may be relevant), measures of health care use, and the share of out-of-pocket expenditure. Collection of the different indicators of healthy life expectancy (disability-free life expectancy, health adjusted life expectancy, and disability adjusted life years) is less feasible, given the current state of data development.

99. The examples in this paper help underline some of the issues involved in making valid multi-country comparisons of health disparity, not the least of which are harmonisation of definitions and measurement instruments, and the need for data linkages in order to allow data disaggregation by SES. The efforts made to improve data availability and comparability will determine whether health inequalities can be regularly monitored across most or all OECD Countries, or can at best be partly explored through occasional studies.

100. A report on the availability and comparability of indicators of inequalities in health status and health care access is scheduled for delivery in the fourth quarter of 2008. In 2008–2009, the intention is to continue assessing the possibility of extending *OECD Health Data* to include selected indicators of disparities in health status and health care access and use.

GLOSSARY OF TERMS

Health care access—An individual's ability to obtain appropriate health care services. (Academy Health, 2004)

Health care financing—The different methods of paying for health care

Health care use (or utilisation)—Commonly examined in terms of patterns or rates of use of a single service or type of service (e.g. hospital care, physician visits, prescription drugs). Use is also expressed in rates per unit of population at risk for a given period (Academy Health, 2004)

Health disparities (or differences)—See *health inequalities*

Health inequalities—Variations in status, health care access and use, and other health indicators, between individuals and groups. With respect to health status, health inequalities have been defined as differences in the prevalence or incidence of health problems between individuals or groups (Kunst & Mackenbach, 1995)

Health inequities—Health inequalities that are deemed to be unfair, or which stem from some form of social injustice (Kawachi *et al.*, 2002). Equity in health care access means that people's needs should guide the distribution of opportunities for well-being

Health status—An individual's or populations' overall level of health, taking account of various aspects such as life expectancy, amount of disability, levels of disease risk factors and so forth. Conceptually, health status is the proper outcome measure for the effectiveness of a specific population's medical care system, although attempts to relate effects of available medical care to variations in health status have proved difficult (Academy Health, 2004)

Progressivity—The extent to which the burden of health finance increases as individual or household income increases

Socioeconomic status (SES)—An individual's or family's relative position in society, usually expressed in terms of income, education or occupation

Summary measures of population health—Measures that combine information on mortality and non-fatal health outcomes to represent population health in a single number (WHO, 2003)

REFERENCES

- ABS (Australian Bureau of Statistics) (2004), *Disability, ageing and carers: summary of findings, Australia, 2003*, ABS cat. no. 4430.0, ABS, Canberra.
- ABS (2006), *Private health insurance: a snapshot, 2004–05*, ABS cat. no. 4815.0.55.001, ABS, Canberra.
- Academy Health (2004), *Glossary of terms commonly used in health care, 2004 edition*, Academy Health, Washington DC.
- Acheson, D. *et al.* (1998), *Independent inquiry into inequalities in health: report*, The Stationery Office, London.
- AHRQ (Agency for Healthcare Research and Quality) (2008), *2007 National healthcare disparities report*, US Department of Health and Human Services, Rockville, MD.
- Bajekal, M. (2005), “Healthy life expectancy by area deprivation: magnitude and trends in England, 1994–1999”, *Health Statistics Quarterly* 25: 18–27.
- Banthin *et al.* (2008), “Financial burden of health care, 2001–2004”, *Health Affairs*, Vol. 27, No. 1, January/February 2008, pp. 188–195.
- Begg, S. *et al.* (2007), *The burden of disease and injury in Australia 2003*, Australian Institute of Health and Welfare, Canberra.
- Braveman, P. (2006), “Health disparities and health equity: concepts and measurement”, *Annual Review of Public Health* 27: 167–94.
- CSDH (2008), *Closing the Gap in a Generation: Health Equity Through Action on the Social Determinants of Health. Final Report of the Commission on Social Determinants of Health*, World Health Organization, Geneva.
- Department of Health (2003), *Tackling health inequalities: a programme for action*, DoH, London. Available online at www.dh.gov.uk/assetRoot/04/01/93/62/04019362.pdf.
- Department of Health (2008), *Tackling Health Inequalities: 2007 Status Report on the Programme for Action*, Health Inequalities Unit, DH, London.
- Gwatkin, D.R. (2007), “Recent trends in research on health equity”, In: *Global Forum Update on Research for Health Volume 4. Equitable access: research challenges for health in developing countries*, Pro-Book Publishing, London
- Health Canada (2006), *Healthy Canadians—A Federal report on comparable health indicators 2006*, Health Canada, Ottawa, Ontario.
- Hoffman, C. *et al.* (2005), *Medical debt and access to health care*, Kaiser Commission on Medicaid and the Uninsured, September 2005, Washington.

Huber, M., A. Stanciole, J. Bremner & K. Wahlbeck (2008), *Quality in and Equality of Access to Healthcare Services*, European Commission Directorate-General for Employment, Social Affairs and Equal Opportunities, Luxembourg.

Jee, M. & Z. Or (1999), *Health outcomes in OECD countries: a framework of health indicators for outcome-oriented policymaking*, Labour Market and Social Policy Occasional Papers No. 36, OECD, Paris.

Judge, K. *et al.* (2006), *Health inequalities: a challenge for Europe*, UK Presidency of the European Union, Central Office for Information, London.

Kawachi, I., N. Daniels & D.E. Robinson (2005), "Health disparities by race and class: why both matter", *Health Affairs* 24: 343–52.

Kawachi, I., S.V. Subramanian & N. Almeida-Filho (2002), "A glossary for health inequalities", *Journal of Epidemiology and Community Health* 56: 647–52.

Kelly, M.P. *et al.* (2007), *The social determinants of health: developing an evidence base for political action. Final report to World Health Organization Commission on the Social Determinants of Health from Measurement and Evidence Knowledge Network*, WHO, Geneva.

Krieger, N. *et al.* (2008), "The fall and rise of US inequities in premature mortality: 1960–2002", *PloS Medicine* 5(2), e46. Doi: 10.1371/journal.pmed.0050046.

Kunst, A.E., V. Bos & J.P. Mackenbach (2001), *Monitoring socio-economic inequalities in health in the European Union: guidelines and illustrations. A report for the Health Monitoring Program of the European Commission*, Department of Public Health, Erasmus University, Rotterdam.

Kunst, A.E. & J.P. Mackenbach (1995), *Measuring socioeconomic inequalities in health*, World Health Organization Regional Office for Europe, Copenhagen.

Lafortune, G., G. Ballestat, and the Disability Study Expert Group Members (2007), *Trends in severe disability among elderly people: assessing the evidence in 12 OECD countries and the future implications*, OECD Health Working Paper No. 26, OECD, Paris.

Last, J.M. (ed.) (1995), *A dictionary of epidemiology*, 3rd edition, Oxford University Press, New York.

Lopez, A.D. *et al.* (eds.) (2006), *Global burden of disease and risk factors*, The World Bank/Oxford University Press, New York.

Lozano, R. *et al.* (2006), "Benchmarking of performance of Mexican states with effective coverage", *The Lancet* 368:1729–41.

Mackenbach, J. (2006), *Health inequalities: Europe in profile*, UK Presidency of the EU 2005, London.

Mackenbach, J.P. & EUROTHINE Project Members (2007), *Tackling health inequalities in Europe: an integrated approach*, EUROTHINE, Department of Public Health, University Medical Centre, Rotterdam.

Mackenbach, J. & A.E. Kunst (1997), "Measuring the magnitude of socio-economic inequalities in health: an overview of available measures illustrated with two examples from Europe", *Social Science & Medicine* 44: 757–71.

Mackenbach, J.P., W.J. Meerdink & A.E. Kunst (2007), *Economic implications of socio-economic inequalities in health in the European Union*, EC Health & Consumer Protection Directorate-General, Luxembourg.

Mead, H. *et al.* (2008). *Racial and ethnic disparities in U.S. health care: a chartbook*. The Commonwealth Fund. Available online at www.commonwealthfund.org.

Miilunpalo, S. *et al.* (1997), “Self-rated health status as a health measure: the predictive value of self-reported health status on the use of physician services and on mortality in the working-age population”, *Journal of Clinical Epidemiology* 50: 517–28.

Murphy, M. *et al.* (2006), “The widening gap in mortality by educational level in the Russian federation, 1980–2001”, *American Journal of Public Health* 96: 1293–99.

NOMESCO (Nordic Medico-Statistical Committee) (2004), *Health statistics in the Nordic countries 2002*, NOMESCO, Copenhagen.

O’Donnell, O. *et al.* (2008), *Analyzing health equity using household survey data: A guide to techniques and their implication*, The World Bank, Washington DC.

OECD (2003), *Transforming disability into ability: policies to promote work and income security for disabled people*, OECD, Paris.

OECD (2004a), *Towards high-performing health systems*, OECD, Paris.

OECD (2004b), *Towards high-performing health systems: policy studies*, OECD, Paris.

OECD (2004c), *Private health insurance in OECD Countries*, OECD, Paris.

OECD (2007a), *Health at a glance 2007: OECD indicators*, OECD, Paris.

OECD (2007b), *Society at a glance: OECD social indicators, 2006 edition*, OECD, Paris.

Sanmartin, C., E. Ng *et al.* (2004), *Joint Canada/United States Survey of Health, 2002–03*, Statistics Canada, Ottawa.

Schneider, M.C. *et al.* (2004), “Methods for measuring health inequalities”. *Epidemiological Bulletin / PAHO* 25(4): 12–14; 26(1): 5–10; 26(2): 12–15.

Schoen C., R. Osborn *et al.* (2007). “Toward higher-performance health systems: adults’ health care experiences in seven countries, 2007”. *Health Affairs* 26: w717–w734.

Singh, G.K. & M. Siahpush (2006), “Widening socioeconomic inequalities in US life expectancy, 1980–2000”, *International Journal of Epidemiology* 35:969–79.

Wagstaff, A., P. Paci & E. van Doorslaer (1991), “On the measurement of inequalities in health”. *Social Science and Medicine* 33: 545–57.

Walker, A. (2005), “Economic and health impacts of narrower health inequalities in Australia”, in J. Yfantopoulos (ed.), *The Economics of Health Reforms*, Atiner, Athens, pp.263–82.

Westert, G.P. & H. Verkleij (eds.) (2006), *Dutch health care performance report 2006*, NIPHE, Bilthoven, The Netherlands.

Whitehead, M. (1990), *The concepts and principles of equity and health*, World Health Organization Regional Office for Europe, Copenhagen.

WHO (World Health Organization) (2001), *International classification of functioning, disability and health*, WHO, Geneva.

WHO (2003), *Health systems performance assessment*, WHO, Geneva.

Wilkins, R. (2003), *Socioeconomic inequality in health outcomes*, Health Statistics Data Users Conference 2003, Health Canada.

Wilkins, R. & C. Houle (1999), "Health status of children", *Health Reports* 11(3): 25–34.

Wilkinson, R. & M. Marmot (2003), *Social determinants of health: the solid facts, 2nd edition*, WHO Regional Office for Europe, Copenhagen.

ANNEX 1: A SUMMARY OF THE “EFFECTIVE COVERAGE” MEASURE

101. The notion of “effective coverage” was introduced several years ago as a way of refining the WHO framework for health system performance assessment (WHO, 2003). It has been defined as “the proportion of potential health gain that can be delivered through an intervention by the health system that is actually delivered” (Lozano *et al.*, 2006). If, for example, a health system could increase life expectancy for women by 2 years through early detection and treatment for cervical cancer, but delivers only 1 year, then effective coverage for this health problem is 50%. Effective coverage attempts to bring together measures of the use of interventions, conditional on need, with the quality of the intervention delivered.

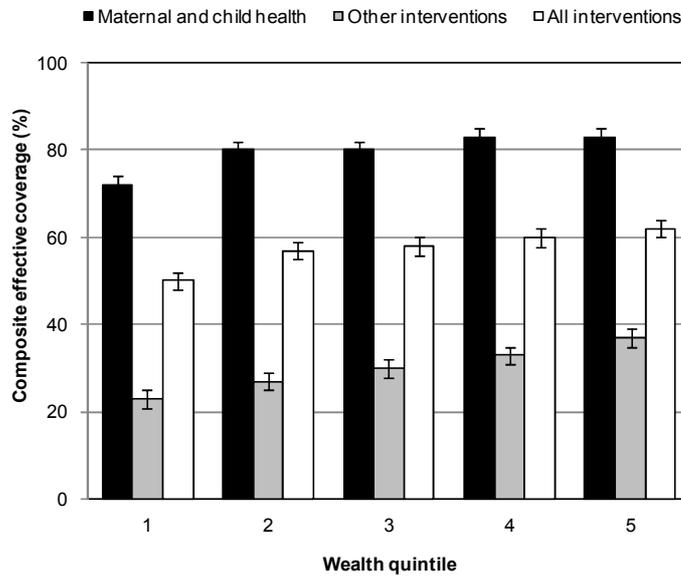
102. One of the first countries which tried to implement a measure of effective coverage was Mexico, and some initial results are presented in Figure 14. Using data collection systems including health examination surveys, vital registrations and hospital discharge information, 14 different health interventions were monitored in 2005–06⁷. Effective coverage for these 14 interventions taken together was found to vary across different areas of Mexico, from 54% in Chiapas, a poor state, to 65% in the more affluent Federal District. Effective coverage for maternal and child health interventions varied by household wealth, from 52% for the lowest wealth quintile to 61% for the highest quintile. Inequalities existed between income quintiles for the combination of all 14 interventions measured, for maternal and child health coverage (8 interventions) and for other adult interventions (6 interventions). The absolute gap in effective maternal and child health coverage was 9% between lowest and higher income quintiles, and 14% for other adult interventions (Lozano *et al.*, 2006).

103. The selection of interventions to monitor is dependent on available data, and several sources may be needed. These include biomedical data (*e.g.* to test for HIV infection, blood pressure, blood sugar or cholesterol). A number of important questions need to be answered in order to determine effective coverage, namely, who needs an intervention, who receives the intervention and what was the quality of the intervention? Answering each of these requires measurement. To enable cross-country comparison, a core set of coverage indicators and a standard survey module are needed, with measurement of the distribution of coverage carried out across all socioeconomic groups. Effective coverage may have broad applicability in both developing and developed countries, although substantial data developmental work would be needed to implement this approach at the national and international level.

⁷

The interventions are: measles immunisation, DTP3 immunisation, antenatal care, skilled birth attendance, services delivered to premature babies, treatment of acute respiratory infections in children, treatment of diarrhoea in children, breast cancer screening, cervical cancer screening, treatment of vision disorders, treatment of hypertension, treatment of hypercholesterolaemia, influenza vaccine.

Figure 14: Effective coverage for health interventions, by household wealth quintile, Mexico, 2005-06



Source: Lozano et al., 2006