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**Australian Institute of
Health and Welfare**

*Authoritative information and statistics
to promote better health and wellbeing*

A working guide to international comparisons of health

Australian Institute of Health and Welfare
Canberra

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Abbreviations

ABS	Australian Bureau of Statistics
AIHW	Australian Institute of Health and Welfare
BMI	body mass index
OECD	Organisation for Economic Co-operation and Development
UN	United Nations
UNDP	United Nations Development Programme
WHO	World Health Organization

Summary

Why are international health comparisons so popular?

We are often interested to see how our national experiences of health and health care compare on an international scale. These comparisons create a broader perspective for researchers, policy makers and the general public. Being aware of the successes and setbacks of other countries may inform how new policies, health interventions or preventative measures are developed and implemented in one's own country.

International health comparisons can attract media attention, particularly if attempts are made to rank countries by performance.

However, making valid comparisons of health across different countries is not always easy.

International comparisons can be complex

Both the use and interpretation of international comparisons need to be considered carefully. If the data and methods that underlie these comparisons are not assessed, the results could be misinterpreted. There are methodological issues to consider in assessing data availability and quality, and in deciding which countries to compare. Decisions about the data used and the countries selected should be documented with adequate rationale to ensure the limitations and assumptions are clear and duly considered. These decisions can influence the differences observed between countries and the conclusions made.

What this guide adds

The guide is intended to encourage users of international health-related data to consider the complexities before comparing countries, and to assist them in interpreting the results of these comparisons. It presents examples to highlight the types of questions to ask when using health data in an international context. The checklist presented in the Appendix and summarised below is not exhaustive; furthermore, considering these questions may not be possible in all cases.

Checklist for international comparisons of health

Data quality	Consistency – are the data defined consistently across countries?
	Methodology – do all countries use the same method to collect the data?
	Coverage – do the data cover similar parts of the population?
	Time period – do the data refer to the same time period?
Choice of countries	Comparability – are countries sufficiently similar to support comparison?
Presentation and interpretation	Presentation – are the data presented appropriately?
	Explanation – is the variation between countries adequately explained?
	Underlying differentials – are differences within countries considered?
	Context – can the data be used outside of the international comparison?

1 Introduction

There is a general perception in Australia that we enjoy a high standard of health and that our country is one of the healthiest in the world. This perception arises from comparing health in our country with that of other countries.

It is common practice to compare health between countries. Such comparisons provide a broader perspective of health and health care. They enable researchers, policy makers and the general public to see how national experiences of health and health care compare on an international scale. These comparisons often attract much attention from the media, particularly if countries are ranked according to performance (the so-called 'league table').

Health care systems around the world are diverse. They vary in the way they are financed, how services are delivered and how health information is collected and used. Their evolution may have been influenced by the country's political, cultural and historical experiences. Despite these differences, many countries share the same health goals and face similar health challenges. This makes international comparisons of health experiences an important tool to inform priorities and policies for health services and to monitor progress in achieving health objectives.

International comparisons can highlight successful experiences and 'best practice' for a particular health issue or health system. Using data from other countries increases the amount of information available to assess the factors influencing the success or otherwise of health and health care practices. This facilitates exploration of health-related research questions that are not easily answered using Australian data alone. Some questions that use international health-related data are:

- What health issues are emerging in other countries?
- How does Australia's life expectancy compare with that of other countries?
- Are other countries experiencing similar changes in the proportion of overweight and obese people in Australia?
- Does Australia spend more on health and health care compared with other countries?

The diverse nature of health information and health care systems adds a level of complexity in making international comparisons. Consequently, using and interpreting such comparisons needs to be carefully considered, to minimise misinterpretation of the results.

The aim of this guide is to encourage users of international comparisons of health and health care data to consider some of the factors that can influence variation between countries, and to assist them in interpreting the results. Drawing on a range of examples – using health and health care data for Organisation for Economic Co-operation and Development (OECD) countries – this guide highlights the types of question to consider about data quality, the basis for country selection and the techniques used to present the results. It is a general guide, and considering each of the factors presented here may not always be possible.

How can health be compared between countries?

There is no single measure that summarises the health or health care system of a country. More often, a set of indicators reflecting certain aspects of health or a health system is used. A very broad picture of health status can be described, for example, using indicators for infant mortality, levels of disease, and life expectancy. A country's health system might be described using measures that indicate the level of access to services, the quality of health care, and health care costs.

Some countries will do better on some dimensions than on others. Therefore, the selection of indicators used to describe health or health care will influence the perceived success or otherwise of a country's health and health system.

The difficulty in assessing health using multiple dimensions has prompted some analysts to combine several indicators to form a composite index. The construction of a composite index is intricate and the quality of the outcome depends on the method used, the quality of the underlying data, and the framework of the measure (Bandura 2008). A commonly used composite index is the Human Development Index, which summarises a country's human development based on measures of life expectancy, literacy, education and income (UNDP 2010). The index provides a way of grouping countries according to similar levels of human development.

A cautionary approach is advised when developing composite indexes. For example, the *World health report 2000: health systems: improving performance* (WHO 2000) attempted to rank member countries on health system performance using a specially calculated index. This index combined measures related to various aspects of health, including life expectancy, household expenditure on health, and fairness and responsiveness of the country's health system. However, there was some concern that the concepts chosen to represent health system performance and the methods for weighting health dimensions were unsound (Appleyby & Street 2001; Coyne & Hilsenrath 2002; Richardson et al. 2003). Furthermore, explaining change in the value of any index requires evaluation of each of the underlying measures.

Sources and uses of international health-related data

Given the diverse nature of health care systems, preparing a comparable set of health data requires common definitions of specific health concepts. At the international level, agencies such as the OECD, the World Health Organization (WHO) and the United Nations (UN) encourage the collection of consistent data to track change, performance and progress; and to guide decision making. These data facilitate international comparisons to track progress towards goals such as the UN Millennium Development Goals.

A number of international agencies maintain data sources that can be used to describe health and health care across different countries. These include the Asia Development Bank, the Commonwealth Fund, the OECD, the UN, the WHO, the International Agency for Research on Cancer and the World Bank.

Role of the Australian Institute of Health and Welfare in providing and reporting on international health-related data

As a national statutory authority, the Australian Institute of Health and Welfare (AIHW) provides reliable, regular and relevant information and statistics on Australia's health and welfare. As custodian of major national data collections, it compiles and submits health-related data to the OECD and the WHO on behalf of the Australian Government.

Australian data are routinely presented in an international context in a wide range of AIHW reports. National reports such as the AIHW flagship publication *Australia's health* (AIHW 2010a), *Cancer in Australia: an overview, 2010* (AIHW & AACR 2010), *Diabetes: Australian facts 2008* (AIHW 2008) and *Australian hospital statistics* (AIHW 2011a and earlier versions) all compare Australia with OECD countries on selected health-related indicators.

Other sources and uses of international health-related data

International reports that use health-related data to make country comparisons include those published by the OECD and WHO, such as:

- *Health at a glance*, published biennially by the OECD, compares OECD countries (including Australia) on key indicators of health and health system performance (OECD 2011a). A similar report showing regional-level international comparisons for Australia is *Health at a glance: Asia/Pacific 2010* (OECD 2010a).
- *The world health report* and *World health statistics report*, published annually by the WHO, provide a global assessment of health through statistics and information for the 193 WHO member states (WHO 2011a; WHO 2011b).

Other countries also compare their data in an international context, for example, Canada (CIHI 2008) and the United States (Squires 2011).

The Australian Bureau of Statistics (ABS) provides health-related data to the WHO for compiling international deaths data. These data are used in the *World health statistics report* produced each year and in the *Global burden of disease and risk factors* (Lopez et al. 2006), which reports burden of disease estimates

How this guide is structured

The following chapter examines key questions to consider when making or using international comparisons of health and health care data. These questions cover data quality, choice of countries, and the presentation of the analysis, highlighting some of the complexities in making international comparisons. The guide concludes with a practical checklist to refer to when conducting or interpreting international comparisons of health and health care.

2 Making comparisons: considerations and complexities

The complexities involved in international comparisons are not always obvious. There are many issues to consider when assessing the data quality, deciding which countries to include, and how to present the data. How these aspects of international comparisons can influence the results also needs to be considered when interpreting the data.

Drawing on a range of examples, this chapter examines some of the issues that should be considered for international comparisons of health and health care data. Invariably when making international comparisons, it is unlikely that all of the considerations presented here will be satisfied.

Data quality

Having good quality data based on consistent definitions is important for an accurate comparison of health between countries. The accuracy of a comparison can be compromised if the indicator is defined inconsistently, different data collection methods are used, or the data are unreliable or unavailable. This section covers key questions to be considered when addressing the quality of the data used in an international comparison.

Are the data defined consistently across countries?

Different countries and cultures may have different interpretations of what it means to be healthy or ill, and different expectations of health care and how health systems should operate.

An important factor to consider is whether the information has been derived using consistent definitions. If the definitions underlying the information are not consistent, some countries may appear favourable (or unfavourable) for reasons related to the data rather than to the health system. International comparisons should try to source data that are comparable, or to highlight where they depart from agreed definitions.

Variation between countries can arise due to different interpretations of the underlying concept. For example, the indicator for infant mortality relies on measuring the number of live births in a population (see Example 1 below). There are different interpretations of what constitutes a live birth and these differences can have a material effect on the comparison (OECD 2009).

The examples that follow show how using data based on different definitions might influence the results.

Example 1: Infant mortality rates

Infant mortality is a common summary measure used in international comparisons. It is considered to be indicative not only of the effect of the country's economic and social conditions on the health of mothers and babies but also of the effectiveness of the health system (OECD 2009).

The infant mortality rate is defined as the number of deaths under 1 year of age per 1,000 live births. Enumeration of live births varies according to the registration practices in individual countries; some countries count very premature babies that have little chance of survival as live births. This practice can increase the infant mortality rate.

OECD countries that record very premature babies as live births include the United States, Canada, Japan and Norway. In Norway, the minimum gestational age for a baby born alive is 12 weeks, while in the Czech Republic, France, the Netherlands and Poland, a minimum gestational age of 22 weeks and/or 500 grams birthweight is applied. (OECD 2011b). In Australia, there is no restriction in terms of gestational age or birthweight for enumerating live births (ABS 2011a; Laws, Li & Sullivan 2010).

Example 2: Self-assessed health status

In population health surveys and health interviews, respondents are often asked how they rate their health, with fixed response options along a 5-point scale. Surveys that follow the recommendations of the WHO Regional Office for Europe use a scale for self-assessed health status that allows health to be rated as 'very good', 'good', 'fair', 'bad' or 'very bad'. Other surveys, such as those in Australia, New Zealand, Canada and the United States, use a different scale: the response options are 'excellent', 'very good', 'good', 'fair' and 'poor'. These different response sets can introduce a bias that influences the comparability of the results (OECD 2009).

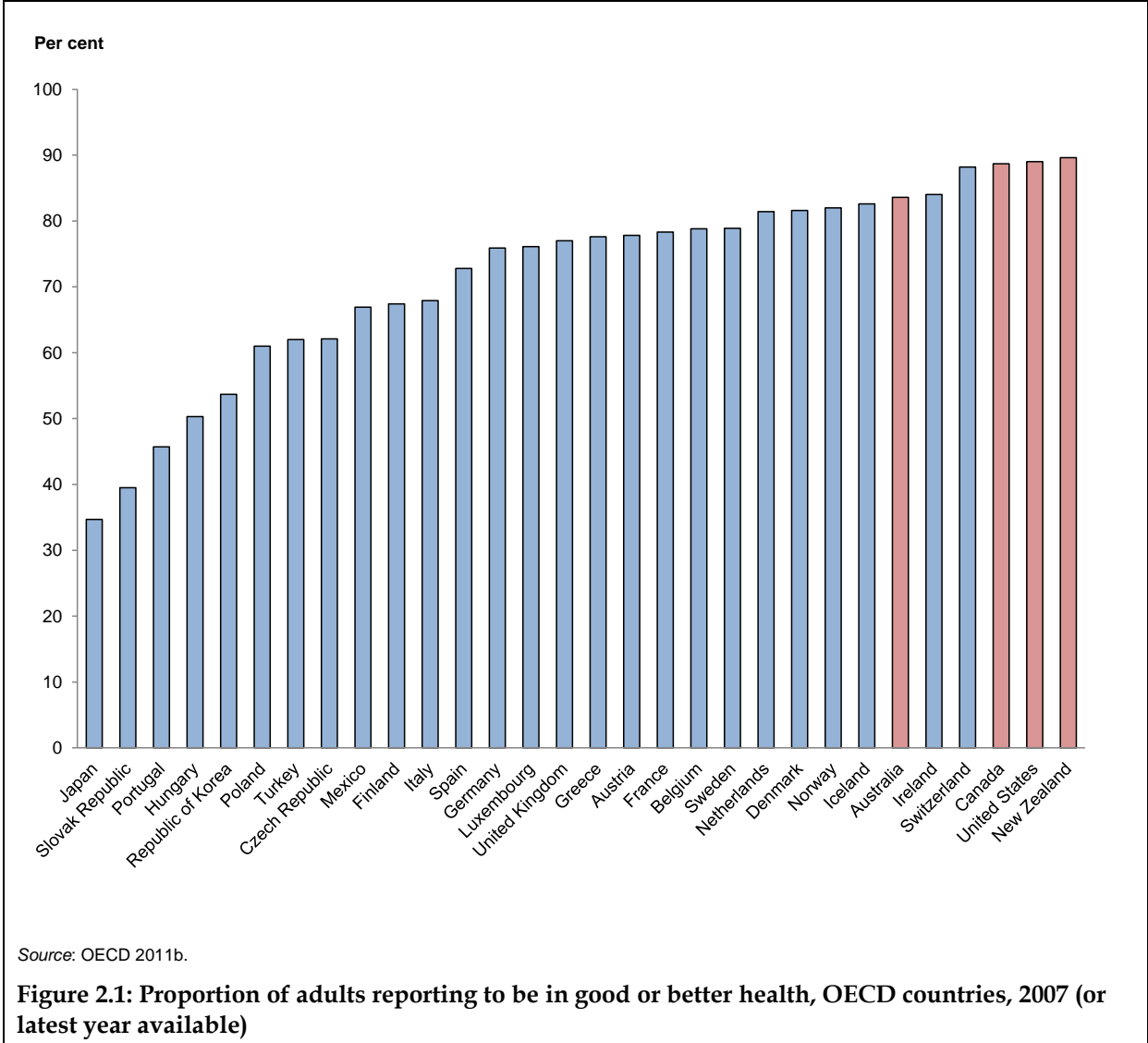
The results of ranking countries according to self-assessed health status are shown in Figure 2.1. Australia, New Zealand, Canada and the United States have a greater proportion of people reporting good or better health status. The result may be influenced by the different scales used to assess self-perceived health status in these countries.

Example 3: Fruit and vegetable consumption

Data on fruit and vegetable consumption usually come from national nutrition or health surveys (such as the ABS *National health survey* in Australia) where information is self-reported by respondents. The OECD indicator for fruit and vegetable consumption is the proportion of the population aged 15 and over eating fruit (excluding juice)/vegetables (excluding juice and potatoes) at least once per day.

Among OECD countries, there are several deviations from this definition. For example, some countries do not explicitly exclude juice and potatoes when asking about fruit and vegetables; some indicate specific vegetables; and, in some countries, potatoes are not considered a vegetable (OECD 2011b). For example, in the Australian context, juice is excluded from analysis but potatoes are not (ABS 2009).

The way that fruit and vegetable intake is counted also varies. Surveys in some countries ask questions about frequency ('How often do you eat fruit/vegetables?') while in others, such as Australia, the survey asks about quantity ('How many serves of fruit/vegetables do you usually eat each day?'). All of these differences in measuring fruit and vegetable consumption may influence reported variation between countries.



Do all countries use the same method to collect the data?

The collection methods and availability of some health-related data can depend on a country's health information infrastructure. Generally, data used for international comparisons are sourced in two main ways: from by-products of administrative systems or the provision of care, or from population surveys. Some data are obtained from specialist collections, including disease and procedural registers. Of these data collection types, some provide more accurate data than others. Some examples of health-related data and the different methods for collecting them are detailed below:

- **Mortality data:** In Australia, death registration is mandatory and information about deaths come from the administrative (registration) data. In some other countries, information about deaths comes from surveys and sample registration (Mahapatra 2010; Mathers et al. 2005).
- **Hospital utilisation data:** In Australia, these data are sourced from hospital records that document, for example, the type of care provided, how long the person stayed and what procedures they required.
- **Body weight and height statistics:** These statistics are usually determined from national level population surveys. However, the methods for obtaining the measures can differ. For some surveys, the information is self-reported by respondents; in others, physical measurements are taken. Physical measures of body weight and height are considered to be more accurate than self-reported measures.
- **Health labour force estimates:** These estimates can be derived from labour force surveys, specialist registration boards, or surveys of registration or licensing.
- **Cancer screening rates (such as mammographic screening and cervical cancer screening):** These rates are usually estimated using either survey data or program (administrative) data, and different countries use different methods. Program data are likely to be more accurate than survey data in that they capture all people who were provided with the screening service.

Comparing data based on similar methods will maximise the comparability of the data.

Do the data cover similar parts of the population?

In this context, coverage refers to whether the data represent the whole of the country's population or health system, or a subset. It is important to recognise that the data may not always cover the country's entire population or health system, and to consider this when interpreting results.

Various attributes affect the level of coverage afforded to different health-related indicators. The level of coverage might be influenced, for example, by national regulations, data collection systems or geography. An example of incomplete coverage of the health system is that in some countries, the collection of health-related data may be limited only to government-funded hospitals.

Another example of incomplete coverage relates to the use of population health surveys. While statistical methods can be used to generalise survey results to the broader population, the broader population is often not the whole population. To illustrate, in OECD countries various age groups are used in national population surveys covering people aged 15 or

more, 18 or more, 20 or more, 15–64, 18–79 or 16–84 (OECD 2011b). Although the material effect of using different age groupings in national surveys has not been assessed, it is important to recognise this as a potential contributor to variation between countries when interpreting results.

Coverage is also intricately linked to the methods used to capture the data. Consider, for example, the variety of methods used to estimate deaths worldwide. In many countries, including Australia, deaths data are captured through mandatory registration. For countries that do not have national vital registration systems, deaths data may be incomplete and mortality statistics may rely on statistical estimates (see, for example, Mahapatra 2010). Another example relating to population coverage of deaths is that some countries exclude the registration of non-citizens, such as refugees or guest workers in their data (Mathers et al. 2005).

Do the data refer to the same time period?

International comparisons should aim to compare data that refer to approximately the same time period. In other words, all countries being compared should have data from approximately the same year or range of years. Countries will thus be comparable in terms of time period, and similar results could reflect global trends (such as technological innovations).

Collecting data from the same time period is not always possible, however. National data are often sourced from periodic population health surveys which are usually conducted some years apart. Therefore data may not be collected in the same year in all countries. Likewise, some countries will take longer to process annual data collections (such as deaths and hospital admissions) and data may not be as up to date as that for other countries.

However, excluding countries that do not have data from a specific year may limit the usefulness of the comparison. As a result, international comparisons often use different years of data. In these situations, the years used for each country should be evident. A common method is to label the figure with the focal year, noting which years are being covered. Some comparisons include the latest available data for each country which is indicated, for example, as *Life expectancy at birth, OECD countries, 2009 or latest year available*. Alternatively, the range of years can be restricted to the last 5 years, for example, by excluding countries where the most recent data is outside of this range. The example in Box 2.1 considers the issue of population coverage and time periods, and the effect on the size of the comparison set.

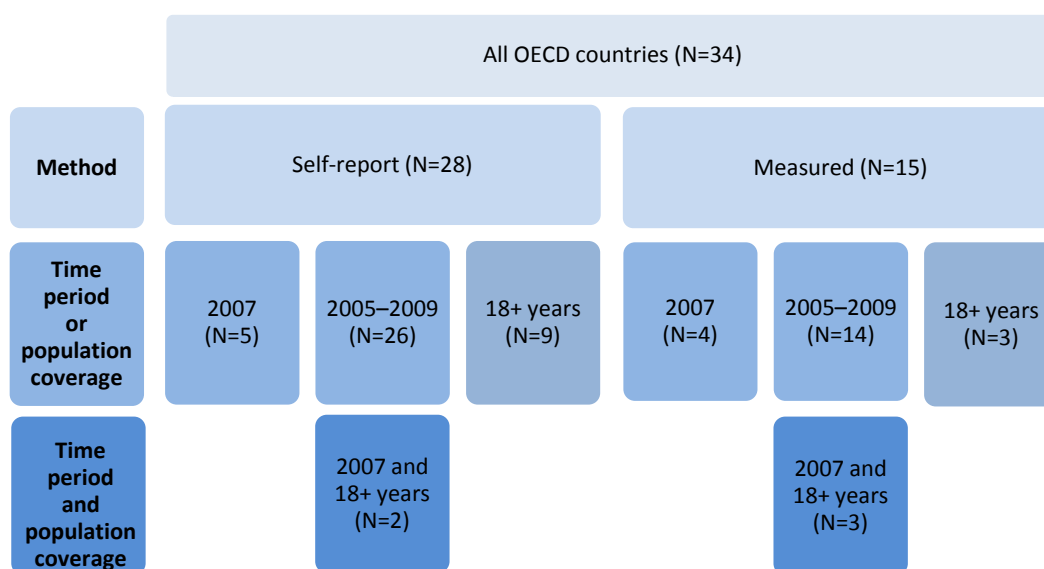
Box 2.1: Making decisions about comparisons

There are many factors to consider when using international health-related data, such as data quality, choice of countries and similar time period. However, it is not always possible to satisfy each of these criteria and, for some comparisons, meeting them may compromise the utility of the analysis.

The chart in Figure 2.2 describes data availability for the OECD indicator ‘proportion of the population that is overweight or obese’ as measured by body mass index (BMI). It focuses on assessing the data availability against the criteria of coverage (by age group) and time period to identify which countries could most accurately be compared with Australia.

In OECD countries, the data are collected using two different methods: self-reported height and weight, and measured height and weight. Measured data are considered more accurate and are therefore the preferred measure for deriving population statistics on overweight or obesity.

For Australia, the latest national data are for the period 2007–08. They cover the population of people aged 18 and over and include BMIs based on both self-reported and measured data. By eliminating countries with different years of data collection and different age ranges in their sample, only two or three have data that are most comparable to the Australian data. Neither of these small samples is useful. Consequently, to balance strict data comparability and usefulness, a wider time period can be used; for example, by using the latest value reported by each country within, say, the last 5 years. Based on these broader limits, a comparison based on self-reported data could be made across 26 OECD countries and a comparison of measured data could be made using 14 countries.



Note: Differences other than year of data collection and age range have not been accounted for in this example.

Source: AIHW analysis of OECD health data (OECD 2011b).

Figure 2.2: Data selection for an international comparison of overweight and obesity by measurement type

Choice of countries

How Australia's health and health system compare at an international level will naturally depend upon the choice of countries with which Australia is being compared. Comparing Australia to a range of less developed countries can show large differences in many areas of health and suggest that Australia is a relatively healthy country. Limiting the comparison set to highly developed countries may show a different picture, potentially highlighting areas where Australia can improve. This section covers key considerations when choosing countries for international comparisons of health.

Are countries sufficiently similar to support comparison?

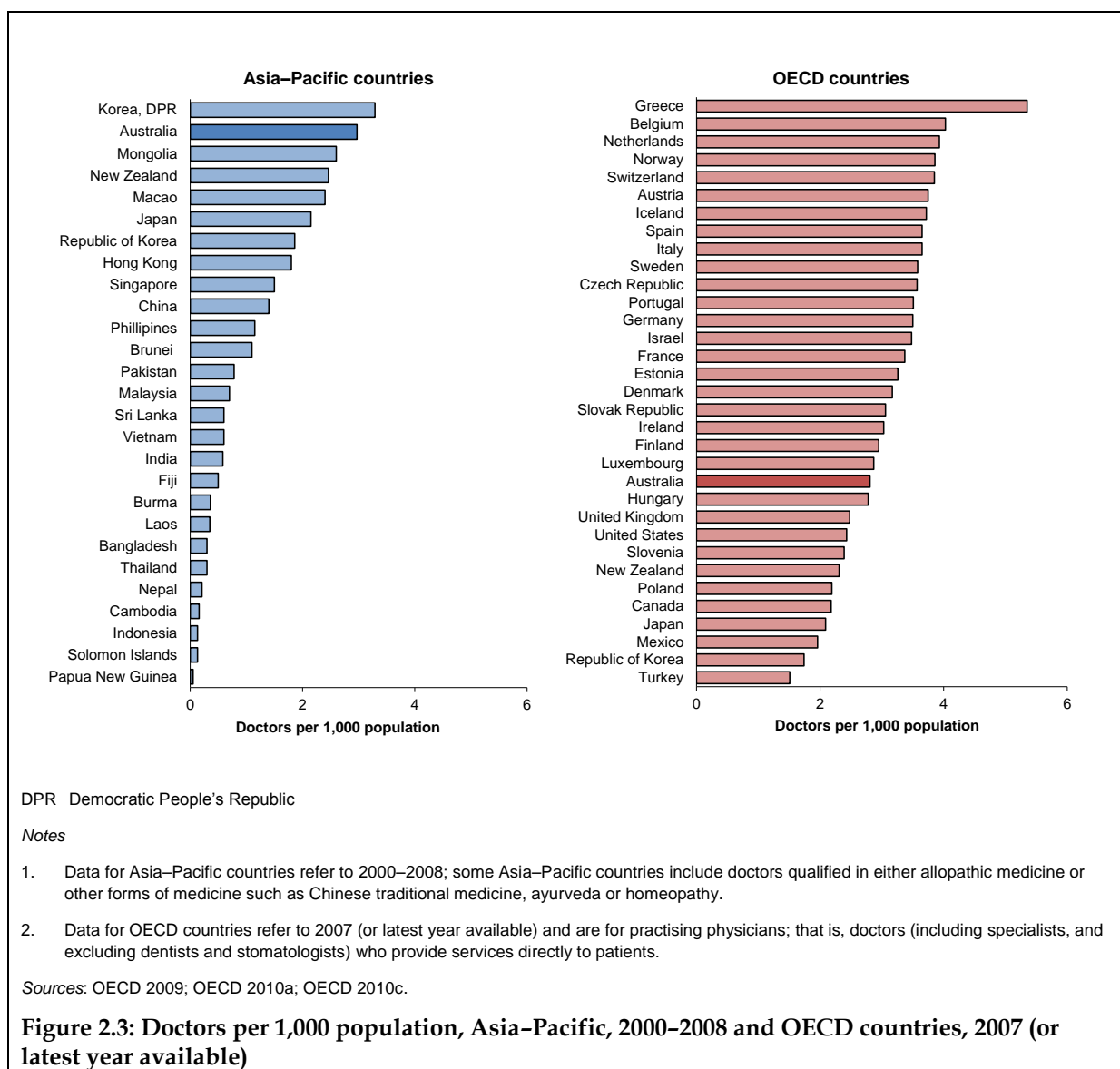
It is not always practical, nor useful, to include all possible countries in an international comparison. Invariably, the selection will need to be narrowed. Deciding on the relevance of a particular country will depend on the purpose of the comparison, as well as on data availability and comparability (as detailed above).

An example of a selection process for a manageable number of countries is the country selection rationale used by the Conference Board of Canada for developing health report cards. Here the total sample comprised all World Bank 'high income' countries (38 countries). Further exclusions were made: on the basis of population size (excluding those with less than 1 million people), geographical land mass (excluding those less than 10,000 square kilometres in area) and income per capita (excluding those whose 5-year average of real income per capita ranked below the mean). These exclusions resulted in a more manageable group of 17 countries for the international comparison of Canada's health (Conference Board of Canada 2009).

Countries have been grouped in other ways, such as by geographical proximity. This method has been used by the OECD to present pictures of health in the Asia-Pacific and the European region (OECD 2010a; OECD 2010b).

Figure 2.3 presents the results from comparing Australia on the number of doctors per 1,000 population using two different bases for country selection: a regional comparison using countries in the Asia-Pacific, and a comparison using OECD countries (that is, countries that have similar levels of economic development). Australia's ratio of doctors (including specialists, but not dentists, who provide services directly to patients) per capita is second highest among countries in the Asia-Pacific region, while it is moderate when compared with that of other OECD countries.

Regardless of how countries are selected to facilitate interpretation of rankings, the method used to select the countries, and the countries used in the comparison, should be transparent.



Presentation of results

Presenting and interpreting the differences between countries are important components of an international comparison. The techniques used to present and compare the data (for example, using rankings) can influence the conclusions drawn by the reader. There are also broader issues to be considered; for example, within-country variability (such as by socioeconomic status, ethnicity or geography) and use of the data outside of the international context (for example, where data have been standardised using an international standard population). This section covers key considerations when presenting the results and understanding the limitations of international comparisons of health-related data.

Are the data presented appropriately?

There are many ways to present international comparisons of health, ranging from tables to interactive databases and graphs. The technique used to present data will depend upon factors such as the subject matter, audience and the number of countries in a comparison set. Careful consideration is needed so that differences between countries are not understated, exaggerated or misinterpreted.

It is generally agreed that long life expectancy, low levels of tobacco consumption and low rates of infectious disease are indicators of good population health. Consequently, assuming the data are comparable, it is possible to identify the best performing or 'gold standard' countries compared on those measures.

However, for some indicators there is uncertainty about which values indicate 'best' or 'healthiest'. Consequently, using these data, countries cannot be grouped according to those that are the best or worst. For example, the supply of hospital beds can indicate the resources available for treatment upon admission to a hospital: an increase in the number of beds per population suggesting greater availability of resources and a reduction suggesting that fewer such resources are available. However, in some countries, the number of hospital beds per population has declined over time. This is due, in part, to progress in medical technology that enables day surgery, thus reducing the need for hospital stays (OECD 2011a). It should also be noted that while the number of hospital beds per capita can be used to indicate the availability of this resource, it does not specify access to this resource.

Some aspects of the presentation of results when making international comparisons are summarised in Box 2.2.

Box 2.2: Ranking countries in international comparisons

Many international comparisons try to produce a 'league table' or ranking of countries based on their performance on key indicators. This usually requires a judgement about what is good or desirable in order to list countries numerically from best to worst.

Rankings can be appealing as they are intuitive and have the potential to attract media interest (CIHI 2008). Despite their broad appeal and their importance in policy debate, the ranking of countries has not escaped criticism. There are also complexities in interpreting rankings, such as whether it is better to come second out of 6 countries or twentieth out of 60 countries (Appleby 2011).

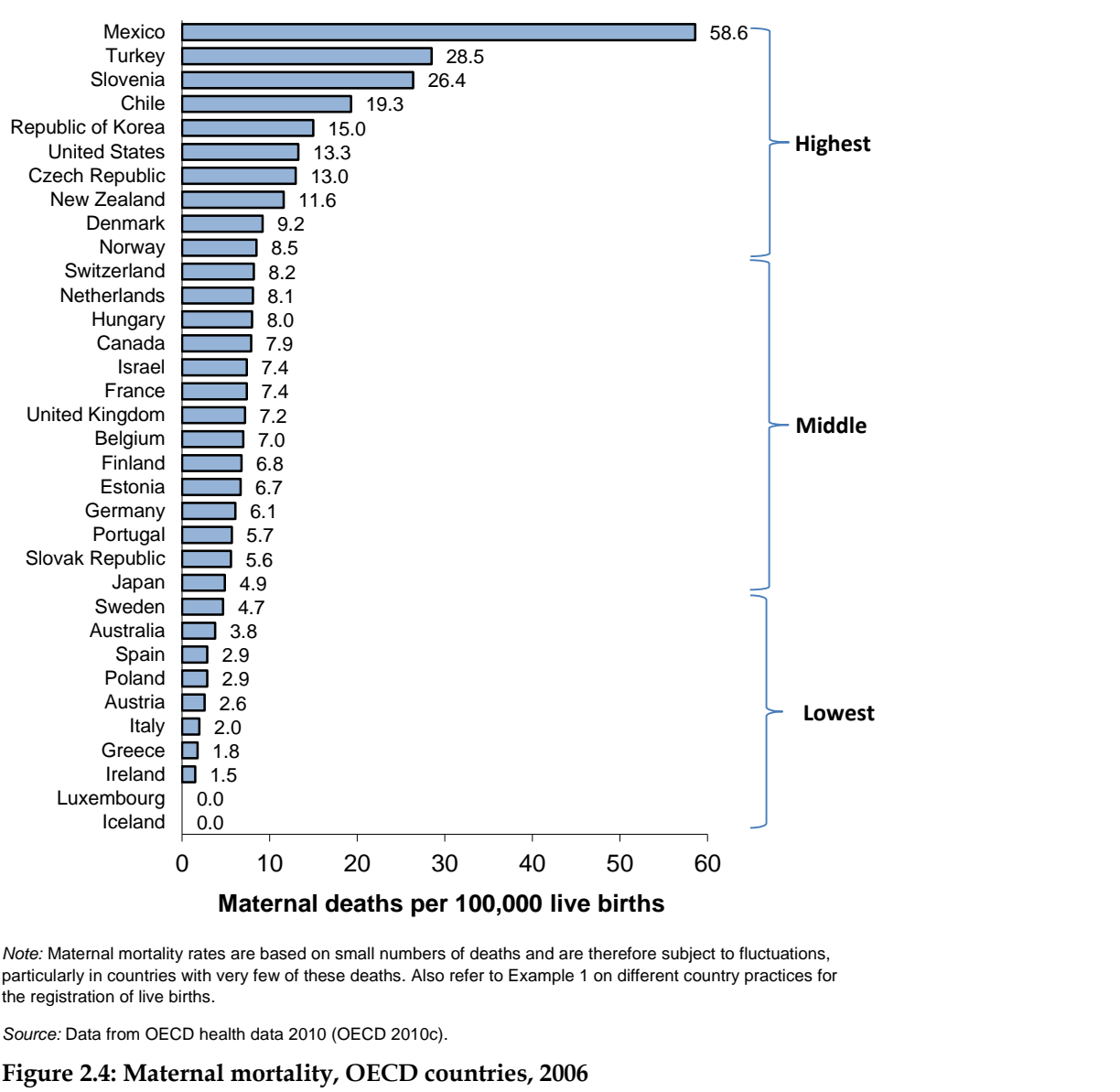
The following questions should be considered when making comparisons:

- Can (and should) the data be ranked from best to worst?
- Is there agreement on which indicator best represents the underlying concept?
- What size are the differences separating countries of different ranks?
- Has the country's performance been considered independently of the international context? Note that a country's ranking may improve (or worsen) while a country's absolute performance may have declined (or improved).

Another approach for describing a country's relative standing in the group of countries is to rate it according to the best-ranked, middle-ranked or worst-ranked countries, or whether it stands within the 'top 10' or 'top 5'. Although this method is useful and intuitive, it can

overlook the differences within and the similarities between ranking groups while potentially introducing a competitive element to country comparisons.

Figure 2.4 provides a theoretical example of how maternal mortality varies among OECD countries for 2006 – from no recorded deaths in Luxembourg and Iceland to 58.6 deaths per 100,000 live births in Mexico. However, the difference between Mexico and Turkey (the OECD country with the second highest maternal mortality in 2006) with 28.5 deaths per 100,000 live births is also substantial. The difference between Sweden (4.7) and Japan (4.9) is less material, but results in Japan’s falling outside the group of 10 countries that have the lowest (best) maternal mortality rates. Similarly, although there are only very small differences in maternal mortality rates for Norway (8.5) and Switzerland (8.2), the rating system places these two countries in separate groups – the highest and middle, respectively. Results of this kind may benefit from further description of the range of values across countries.



Is the variation between countries adequately explained?

A wide range of factors – genetic, cultural, economic, political and environmental – can be used to explain variation between countries. The differences observed in an international comparison may also be influenced by, among many other things, age distribution and population composition, and the availability of preventive and primary health care services.

Some of these factors may highlight meaningful differences between countries (for example, success of cancer detection and screening programs). Other factors may limit the usefulness of international comparisons and hide meaningful differences (for example, large variations in coding and death registration practices). Due to these limitations, analysis is restricted to *what* differences are apparent rather than *why* they are happening.

Are differences within countries considered?

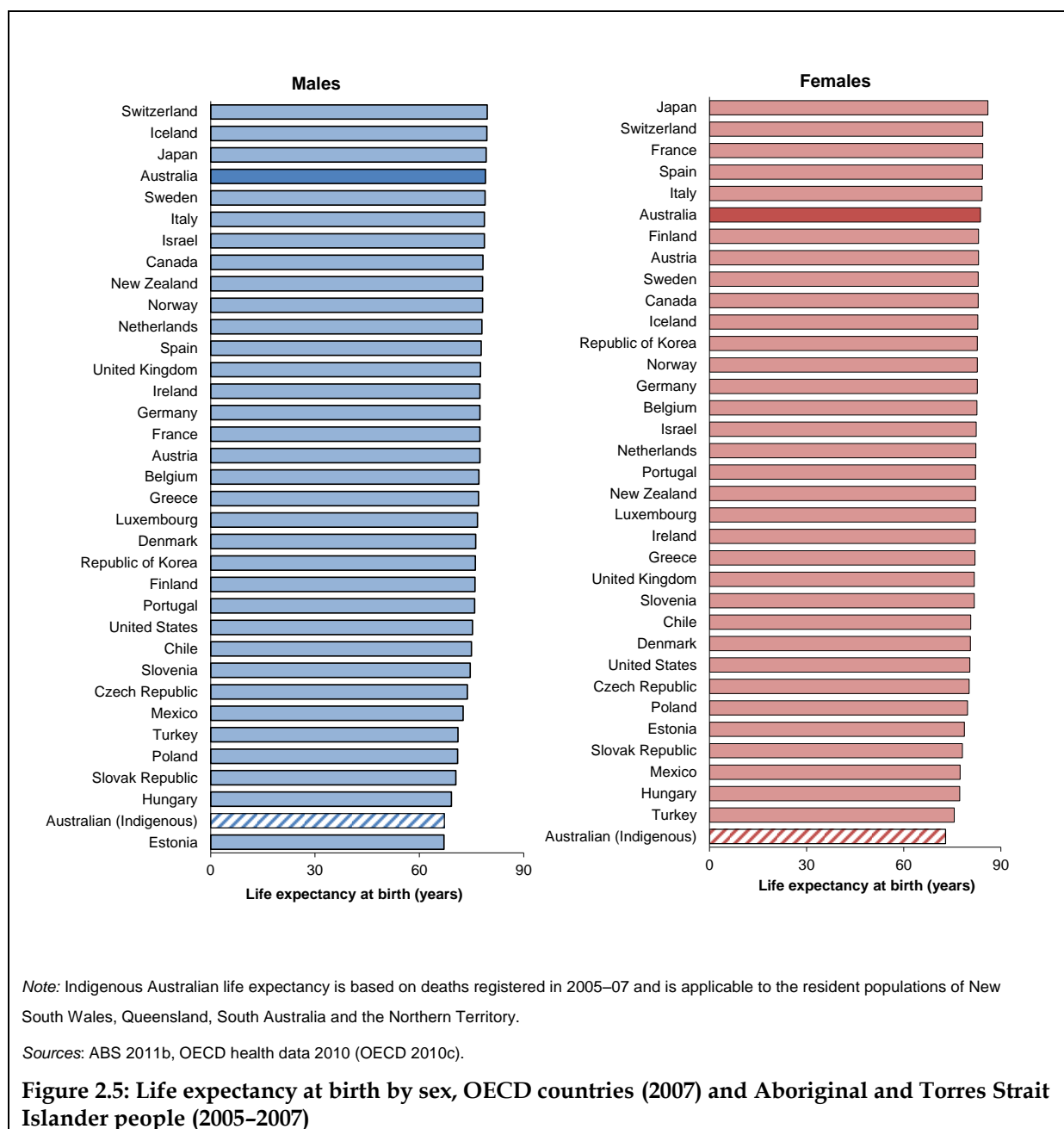
The concept of the country as a unit of analysis may not be wholly appropriate as there can be substantial differences *within* countries, for example, between cultural groups or between administrative sectors (particularly where there is a high degree of decentralisation of the health system). International comparisons relying on national-level data may mask inequalities and less favourable outcomes for some population subgroups within the country.

While it may be beyond the scope of most international comparisons of health-related data to drill down to population subgroups, understanding how poorer health outcomes influence a country's standing is important. Indeed, for many policy makers, inequalities in health and in access to health care are of particular concern.

Comparisons between population subgroups within countries can give different results compared with comparisons of total populations between countries. For example, Australia as a whole has high life expectancy at birth among developed countries while life expectancy among Aboriginal and Torres Strait Islander people (Indigenous Australians) is very poor (Figure 2.5).

While some international comparisons have focused on population subgroups, a recent report by AIHW (AIHW 2011b) explored the conceptual and methodological difficulties in country comparison of life expectancy of indigenous people in Australia, Canada, the United States and New Zealand.

Other characteristics that influence measures of health, and which may be masked at the country level, include socioeconomic status, rural-urban divides, literacy levels and income.



Can the data be used outside of an international comparison?

For some international comparisons, health data are meaningful only within the context of comparisons with other countries. This mainly arises for two reasons: firstly, from data being standardised to adjust for differences in the population structure of different countries and, secondly, because official country estimates can be derived using different definitions or methods.

Every population has a unique age distribution. In some circumstances, countries with an older age structure will have higher rates for particular diseases and causes of deaths compared with countries with a younger population. These higher rates may not necessarily mean an unhealthier country, rather, that the population is, on average, older.

To compare countries (or populations) with different age structures, a technique called age-standardisation can be used. Using the direct method, the rates for each country are adjusted so that the age structure of the countries is the same. Any standard age structure can be used, but the WHO World Standard Population and the OECD Standard Population are regularly used for international comparisons.

By using an 'artificial' population structure such as this, each country can be compared on the same basis. However, standardised rates make sense only within the context of the analysis. For example, an Australian mortality rate for coronary heart disease that has been standardised to the OECD Standard Population will be different from the rate officially reported in Australia.

Mortality statistics can also differ from official country estimates depending on whether death is recorded in the year it occurred or the year in which it was reported. Death statistics from the WHO mortality database are derived according to the year that death occurred, while some official country estimates (including for Australia) report deaths by the year that death was registered. Table 2.1 illustrates the results for selected causes of death by data source and standard population.

Table 2.1: Mortality statistics for Australia using official Australian deaths data^(a) and OECD data^(b), for selected causes of death, by sex, 2006^(c)

Cause of death	Number of deaths		Rates (deaths per 100,000 population)	
	Australia ^(a)	OECD ^(b)	Australia ^(d)	OECD ^(e)
Breast cancer (females only)	2,618	2,505	22.1	18.5
Cerebrovascular disease	11,465	10,975	50.5	35.2
Colon and rectum cancer	3,858	3,669	17.5	14.3
Coronary heart disease	22,983	21,940	101.8	73.5
Diabetes	3,662	3,490	16.4	12.5
Lung cancer	7,348	7,054	33.6	28.7
Prostate cancer	2,952	2,826	32.3	24.3
Suicide	1,799	1,673	8.6	7.5
All causes	133,739	127,632	600.3	459.3

(a) National counts of deaths are counted according to year of registration of death.

(b) International counts of deaths for Australia are sourced from the WHO mortality database where deaths are counted according to the year that death occurred.

(c) Latest year of Australian data available to the OECD.

(d) Rates are based on national counts age standardised to the Australian estimated resident population for 2001.

(e) Rates are based on international counts age standardised to the OECD Standard Population for 1980.

Sources: ABS 2008; AIHW 2010b; OECD 2011b.

3 Conclusion

International comparisons are used for many different purposes: to inform policy debate or general discussion, to rank countries or to measure progress towards goals. This guide does not provide an exhaustive discussion of the conceptual and methodological issues that arise in these types of analysis. It does, however, describe some of these issues and some common pitfalls encountered when trying to select data and countries to produce an international comparison, and when interpreting information presented in an international context. It also shows that there is no simple standard method for producing international comparisons. Decisions about the data will depend on comparability and availability, country selection will depend on the purpose of the comparison, and how the data is presented and described will be driven by the nature of the indicator.

There will be instances where not all the considerations presented here will be satisfied. This guide highlights the importance of understanding the consistency of the underlying data and other aspects of the data (methods, coverage and time period) that may explain some of the variation in results. Transparency of country selection is equally important, and facilitates interpretation of rankings.

This guide does not intend to prescribe the methods for making international comparisons. Rather, it aims to emphasise the need for caution in making and interpreting international comparisons and to provide practical guidance to those who undertake or report such comparisons.

A checklist is provided (see Appendix) for users of international data to facilitate analysing and explaining differences in health and health care between countries.

Appendix

Checklist for international comparisons of health-related data

Consider these questions when presenting or interpreting an international comparison of health-related data. Additional questions specific to the subject area may also be required.

Data quality

- Consistency – are the data defined consistently across countries?
 - Methodology – do all countries use the same method to collect the data?
 - Coverage – do the data cover similar parts of the population?
 - Time period – do the data refer to the same time period?
-

Choice of countries

- Comparability – are countries sufficiently similar to support comparison?
-

Presentation and interpretation

- Presentation – are the data presented appropriately?
 - Explanation – is the variation between countries adequately explained?
 - Underlying differentials – are differences within countries considered?
 - Context – can the data be used outside of an international comparison?
-

References

- ABS (Australian Bureau of Statistics) 2008. Causes of death, Australia, 2006. ABS cat. no. 3303.0. Canberra: ABS.
- ABS 2009. National health survey: users' guide – electronic 2007–08, Australia. ABS cat. no. 4363.0.55.001. Canberra: ABS.
- ABS 2011a. Perinatal deaths, Australia, 2009. ABS cat. no. 3304.0. Canberra: ABS.
- ABS 2011b. Deaths, Australia, 2010. ABS cat. no. 3303.0. Canberra: ABS. AIHW 2008. Diabetes: Australian facts 2008. Diabetes series no. 8. Cat. no. CVD 40. Canberra: AIHW.
- AIHW (Australian Institute of Health and Welfare) 2010a. Australia's health 2010. Cat. no. AUS 122. Canberra: AIHW.
- AIHW 2010b. GRIM (General Record of Incidence of Mortality) Books. AIHW: Canberra.
- AIHW 2011a. Australian hospital statistics 2009–2010. Health services series no. 40. Cat. no. HSE 107. Canberra: AIHW.
- AIHW 2011b. Comparing life expectancy of Indigenous people in Australia, New Zealand, Canada and the United States: conceptual, methodological and data issues. Cat. no. IHW 47. Canberra: AIHW.
- AIHW & AACR (Australasian Association of Cancer Registries) 2010. Cancer in Australia: an overview, 2010. Cancer series no. 60. Cat. no. CAN 56. Canberra: AIHW.
- Appleby J 2011. Which is the best health system in the world? *British Medical Journal*: 343:d6267.
- Appleby J & Street A 2001. Health system goals: life, death and football. *Journal of Health Services Research & Policy* 6:220–5.
- Bandura R 2008. A survey of composite indices measuring country performance: 2008 update. Office of Development Studies, New York: United Nations Development Program.
- CIHI (Canadian Institute for Health Information) 2008. Making sense of health rankings. Ottawa: CIHI.
- Conference Board of Canada 2009. Methodology. Viewed 10 February 2012, <<http://www.conferenceboard.ca/hcp/Methodology.aspx>>.
- Coyne JS & Hilsenrath P 2002. The world health report 2000: can health care systems be compared using a single measure of performance? *American Journal of Public Health*: 92: 30–3.
- Laws PJ, Li Z & Sullivan EA 2010. Australia's mothers and babies 2008. Perinatal statistics series no. 24. Cat. no. PER 50. Canberra: AIHW.
- Lopez A, Mathers C, Ezzati M et al. (eds) 2006. Global burden of disease and risk factors. Washington: Oxford University Press and World Bank.
- Mahapatra P 2010. An overview of the sample registration system in India. Prince Mahidol Award Conference & Global Health Information Forum 2010.

- Mathers C, Ma Fat D, Inoue M et al. 2005. Counting the dead and what they died from: an assessment of the global status of cause of death data. *Bulletin of the World Health Organization* 83(3):171-7.
- OECD (Organisation for Economic Co-operation and Development) 2009. *Health at a glance 2009: OECD indicators*. Paris: OECD.
- OECD 2010a. *Health at a glance: Asia/Pacific 2010*. Paris: OECD.
- OECD 2010b. *Health at a glance: Europe 2010*. Paris: OECD.
- OECD 2010c. *OECD Health data 2010: statistics and indicators*. Paris: OECD.
- OECD 2011a. *Health at a glance: OECD indicators*. Paris: OECD.
- OECD 2011b. *OECD.StatExtracts*. Viewed 10 January 2012, <<http://stats.oecd.org/index.aspx>>.
- Richardson J, Wildman J & Robertson IK 2003. A critique of the World Health Organization's evaluation of health system performance. *Health Economics* 12:355-66.
- Squires D 2011. *The US health system in perspective: a comparison of twelve industrialized nations*. New York: The Commonwealth Fund.
- UNDP (United Nations Development Programme) 2010. *Human development report 2010*. New York: UNDP.
- WHO (World Health Organization) 2000. *The world health report 2000: health systems: improving performance*. Geneva: WHO.
- WHO 2011a. *The world health report*. Viewed 12 July 2011, <<http://www.who.int/whr>>.
- WHO 2011b. *World health statistics*. Viewed 12 July 2011, <<http://www.who.int/whosis/whostat/en/index.html>>.

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