1.1 Proportion of population below $1 (PPP) per day

**GOAL AND TARGET ADDRESSED**

Goal 1. Eradicate extreme poverty and hunger

Target 1.A Halve, between 1990 and 2015, the proportion of people whose income is less than one dollar a day

**DEFINITION AND METHOD OF COMPUTATION**

**Definition** This proportion of population below $1 *(PPP)*per day is defined as the proportion of the population living in households below the international *poverty line*where the average daily consumption (or income) per person is less than $1.25 a day measured at 2005 international prices adjusted for *purchasing power parity (PPP)*.

This indicator is expressed as a percentage.

**Concepts** The *poverty line* is a marker used to measure poverty based on consumption or income levels. A person is considered poor if his or her consumption or income level falls below the minimum level necessary to meet basic needs. This minimum level is referred to as the *poverty line*. The *poverty line* for the calculation of this indicator is the $1.25 a day international line, converted into national currency units using *PPP* exchange rates for consumption. The $1.25 a day poverty line measured in 2005 prices replaces the $1.08 a day poverty line measured in 1993 prices. Often described as “$1 a day”, this poverty line has been widely accepted as the international standard for extreme poverty. The new poverty line was estimated using PPP estimates from the 2005 International Comparison Programme and the most recent household surveys available for developing countries. National consumer price indices were used to calculate the international poverty line in local currency to prices prevailing at the time of the surveys. The time series going back to 1990 have been recalculated using this new poverty line.

The *purchasing power parity (PPP)*conversion factor for private consumption represents the number of units of a country's currency required to buy the same amounts of goods and services in the domestic market as one United States dollar would buy in the United States. It is based on the System of National Accounts’ concept of actual individual consumption.

The proportion of the population living below the poverty line is also known as the *headcount index* (or *incidence of poverty* or *poverty rate*).

**Method of Computation**

The percentage of the population living below the poverty line is calculated using either consumption or income data, gathered from nationally representative household surveys. Consumption is preferred to income for measuring poverty, because income is more difficult to measure accurately and can vary over time even if the standard of living does not. However, in practice the two methods yield similar results.

Consumption, including consumption from own production (or income when consumption is unavailable), is calculated for the entire household and then divided by the number of persons living in the household to derive a per capita measure. Households are then ranked by either consumption (or income) per person and compared to the poverty line to determine the numbers of people living above and below the poverty line.

The sample distributions of poor people are weighted by household size and sample expansion factors so that they are representative of the population of each country. This generates an estimate of the number of people living in households with levels of per capita consumption or income below the poverty line. The total number below the poverty line is divided by the total population to estimate the proportion of the population that is poor. This number is multiplied by 100 to derive a percentage.

The formula for calculating this indicator is as follows:



where P0 represents the headcount index, I(.) is an indicator function that takes on the value 1 if the bracketed expression is true, and 0 otherwise. If individual consumption or income (yi) is less than the poverty line (z), then I(.) is equal to 1 and the individual is counted as poor. Np is the total number of the poor and N is the total population.

**RATIONALE AND INTERPRETATION**

The $1.25 a day poverty line—the critical threshold value below which an individual is determined to be poor—corresponds to the value of the poverty lines in some of the poorest countries (the poorest countries are determined by international rank of Gross National Income per capita in PPP terms). This threshold is a measure of extreme poverty that allows comparisons to be made across countries when it is converted using PPP exchange rates for consumption. In addition, poverty measures based on an international poverty line attempt to hold the real value of the poverty line constant over time allowing for accurate assessments of progress toward meeting the goal of eradicating extreme poverty and hunger.

The indicator values range from 0 (no population in extreme poverty) to 100 (all the population in a country living below the international poverty line). To attain MDG target 1.A, the percentage of poor people in a country must be half or less than its 1990 value by 2015.

**SOURCES AND DATA COLLECTION**

The indicator is ideally produced using micro-level data on household income or consumption expenditures from nationally representative household surveys. Only nationally representative surveys that contain sufficient information to produce a comprehensive consumption or income aggregate (including consumption or income from own production) and allow for the construction of a correctly weighted distribution of per capita consumption or income should be used. Nationally representative household surveys are usually conducted by the national statistical office. In some cases surveys are conducted by the ministry of economic planning, central banks, or by private agencies under the supervision of government or international agencies.

In developing countries, household surveys on income or expenditure typically take place every three to five years, although intervals vary across countries. A common problem with household consumption data is comparability across surveys: household survey questionnaires can differ widely and similar surveys may not be strictly comparable because of differences in survey methods. These problems have become less prevalent as survey methods are improving and becoming more standardized, but achieving strict comparability is still difficult.

For other possible problems that can be encountered in data collection for this indicator, see “SOURCES AND DATA COLLECTION” for [Indicator 1.1a](http://mdgs.un.org/unsd/mi/wiki/Indicator%201.1a%3A%20Proportion%20of%20population%20below%20national%20poverty%20line).

**DISAGGREGATION**

See “DISAGGREGATION” for [Indicator 1.1a](http://mdgs.un.org/unsd/mi/wiki/Indicator%201.1a%3A%20Proportion%20of%20population%20below%20national%20poverty%20line).

**COMMENTS AND LIMITATIONS**

The poverty rate is a useful tool for policy makers and donors to target development policies to the poor. Yet it has the drawback that it does not capture the depth of poverty; failing to account for the fact that some people may be living just below the poverty line while others live far below the poverty line (see also [Indicator 1.2](http://mdgs.un.org/unsd/mi/wiki/Indicator-1-2-Poverty-gap-ratio.ashx)). Policymakers seeking to make the largest possible impact on reducing poverty rates might be tempted to direct their poverty alleviation resources to those closest to the poverty line (and therefore least poor).

In making international comparisons of poverty estimates, there are conceptual and practical problems to address. Possible problems include the following:

* Internationally comparable lines are useful for producing global aggregates of poverty. However, such a universal line is generally not suitable for the analysis of poverty within a country. For that purpose, a country-specific poverty line needs to be constructed that reflects the country’s economic and social circumstances (see “DEFINITION AND METHOD OF COMPUTATION” for [Indicator 1.1a](http://mdgs.un.org/unsd/mi/wiki/Indicator%201.1a%3A%20Proportion%20of%20population%20below%20national%20poverty%20line)). Similarly, the poverty line may need to be adjusted for different locations (such as urban and rural areas) within the country, if prices or access to goods and services differ.
* PPPs are based on prices of goods and services that may not be representative of the consumption patterns of the poor. As a result, there is no certainty that an international poverty line measures the same degree of need or deprivation across countries.
* The reliability of poverty estimates may be affected by the quality of the PPPs. Differences in sampling procedures, measurement errors, and the comparability of goods and services priced as part of PPP data collection can affect measured price levels.
* The quality of consumer price indices around the world varies widely, which may affect the reliability of extrapolations of PPPs from the benchmark (survey year) values and comparisons across countries. Furthermore, product definitions may differ from one part of a country to another.
* Differences in the relative importance of consumption of non-market goods may affect poverty rate estimates. The local market value of all consumption in kind (including own production) should be included in total consumption expenditure. Similarly, imputed profit from the production of non-market goods should be included in income.
* This indicator measures poverty based on household per capita income/consumption, ignoring intra-household inequality in the distribution of resources, and does not take into account other dimensions of poverty such as vulnerability, people’s feeling about relative deprivation and lack of voice and power of the poor.

**GENDER EQUALITY ISSUES**

In many settings, households headed by women tend to have lower incomes and members of those households are therefore more likely to live below the poverty line. However, this relationship should be examined taking into account national circumstances and the definition of head of household, which is not always defined as the chief source of economic support. Gender relations, including whether households are headed by women or men, may also affect intra-household resource allocation and use.

**DATA FOR GLOBAL AND REGIONAL MONITORING**

Estimates of poverty for global and regional monitoring are calculated by the World Bank. International poverty estimates are usually not calculated for high-income countries, where the $1.25 a day poverty line is not relevant.

The first global poverty estimates for developing countries produced by the World Bank were published in the World Development Report 1990 using household survey data for 22 countries. Since then there has been considerable expansion in the number of countries that field household income and expenditure surveys. The World Bank’s poverty monitoring database maintained by the Development Research Group now includes more than 675 surveys representing 116 developing countries collected between 1979 and 2007. Not all of these surveys are comparable in design and sampling methods. Non-representative surveys, though useful for some purposes, are excluded from the calculation of international poverty rates. As of 2009 there were 508 surveys for 115 countries available for deriving poverty estimates. More than 1.2 million randomly sampled households were interviewed in these surveys, representing 96 percent of the population of developing countries. Data coverage is improving in all regions, but the Middle East and North Africa and Sub-Saharan Africa continue to lag. The database is updated annually as new survey data become available, and a major reassessment of progress against poverty is made about every three years.

To compare the number of poor across countries and compute regional aggregates, country estimates must first be “lined up” to a common reference year. This involves estimating figures through interpolation for countries that do not provide survey data for the reference year, but do provide data for years before or after the reference year. The process requires adjusting the mean income or expenditure observed in the survey year by a growth factor to infer the unobserved level in the reference year. Thus, two assumptions are required to implement this process: distribution-neutral growth and a conjectured real rate of growth between the survey and reference year.

Distribution-neutral growth implies that income or expenditure levels are adjusted for growth assuming that the underlying distribution of income or expenditure observed in survey years remains unchanged. Under this assumption, it is straightforward to interpolate the poverty estimate in a given reference year using a given rate of growth in income or expenditure.

The rate of change in real consumption per capita should be based on the change in real consumption measured by comparing country survey data across different years. In practice, however, survey data in most countries are not available on an annual basis. Therefore, the change in private consumption per capita as measured in the national accounts is used instead. While there can be no guarantee that the survey-based measure of income or consumption changes at exactly the same rate as private consumption in the national accounts, under certain circumstances and over short periods of time it can provide a reasonable approximation.

When the reference year falls between two survey years, an estimate of mean consumption at the reference year is constructed by extrapolating the mean consumption obtained from the surveys forward and backward to the reference year.

The second step for constructing comparable poverty rates is to compute the headcount poverty rate for the reference year after normalizing the distributions observed in the two survey years by the reference year mean consumption. This yields two estimates of the headcount poverty rates in the reference year. The final reported poverty headcount rate for the reference years is the average of the two estimates. For example, if the reference year is 1993 and two surveys are available for 1989 and 1995, two means can be computed for the reference year based on two surveys, M93(89) and M93(95) where M93(t) is the estimated mean for 1993 using the survey for year t. Based on the 1989 distribution and M93(89), the headcount index obtained using the 1993 mean and the 1989 distribution H93(89) can be estimated. Similarly, based on the 1995 distribution and M93, H93(95) is estimated. The poverty headcount for 1993 is estimated as the weighted average of H93(89) and H93(95) according to the following formula:



When data from only one survey year are available, the reference year mean is based on the survey mean by applying the growth rate in private consumption per capita from the national accounts. The reference year poverty estimate is then based on this mean and on the distribution observed in the one survey year.

The better the data coverage is in terms of number and frequency of available surveys, the more accurate this lining-up process is and the more reliable the regional estimates will be.

**SUPPLEMENTARY INFORMATION**

No information available yet.

**EXAMPLES**

No information available yet.

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1.1a Proportion of population below national poverty line

**GOAL AND TARGET ADDRESSED**

Goal 1. Eradicate extreme poverty and hunger Target 1.A Halve, between 1990 and 2015, the proportion of people whose income is less than one dollar a day

**DEFINITION AND METHOD OF COMPUTATION**

**Definition** The proportion of population below national poverty line is defined as the proportion of the total population living below the *national poverty line*.

This indicator is expressed as a percentage.

**Concepts** *National poverty lines* are thresholds defined at the country level below which a person is deemed to be poor. *National poverty lines* are commonly set as the consumption expenditure or income level at which food energy intake is just sufficient to meet basic requirements, or they are set by stipulating a consumption bundle (incorporating both food and non-food items) deemed to be adequate for basic consumption needs, and then estimating the cost of the consumption bundle for each of the subgroups being compared in the poverty profile.

**Method of Computation** The proportion of the population that lives below the poverty line is calculated using either consumption or income data, gathered from nationally representative household surveys. Whenever available, consumption data are preferred to income data for measuring poverty, because income is more difficult to measure accurately and can vary over time even if the standard of living does not.

Consumption, including consumption from own production (or income when consumption is unavailable), is calculated for the entire household and then divided by the number of persons living in the household to derive a per capita measure.

The sample distributions of poor people are weighted by household size and sample expansion factors so that they are representative of the population of each country. This generates an estimate of the number of people living in households with levels of per capita consumption or income below the poverty line. The total number below the poverty line is divided by the total population to estimate the proportion of the population that is poor. This number is multiplied by 100 to derive a percentage.

The formula for calculating the proportion of the population living below the national poverty line, also known as the *headcount index*, is as follows:

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where P0 is the headcount index, I(.) is an indicator function that takes on the value 1 if the bracketed expression is true, and 0 otherwise. If individual consumption or income (yi) is less than the poverty line (z), then I(.) is equal to 1 and the individual is counted as poor. Np is the number of poor and N is the total population.

Poverty lines can be determined based on different methods. Some of these methods are based on objective information and define poverty lines in terms of absolute standards of minimum material capabilities (such as food-energy intake or cost of basic needs). Other methods consider subjective information on perceptions of welfare. In practice, the use of subjective methods to determine poverty lines has been more evident in developed countries. In some cases, national poverty lines may be set at a specific quintile level or as a proportion of average income or consumption.

**RATIONALE AND INTERPRETATION**

National poverty lines reflect local perceptions of the level of consumption or income needed to avoid poverty. The perceived boundary between poor and not poor rises as the average income of a country rises, so national poverty lines do not provide a uniform measure for comparing poverty rates across countries. Nevertheless, national poverty estimates are clearly the appropriate measure for setting national policies for poverty reduction and for monitoring their results. International poverty measurements, on the other hand, provide a uniform standard for comparing poverty rates and the number of people living in poverty across countries.

National poverty rates may range from 0 (no population living below the national poverty line) to 100 (the entire population of a country living below the national poverty line).

**SOURCES AND DATA COLLECTION**

Data on household income, consumption and expenditure, including income in kind, are generally collected through household budget surveys or other surveys covering income and expenditure. Household budget or income surveys are undertaken at different intervals in different countries. In developing countries they typically take place every three to five years.

To be useful for poverty estimates, surveys must be nationally representative. They must also include enough information to compute a comprehensive estimate of total household consumption or income (including consumption or income from own production) and to construct a correctly weighted distribution of consumption or income per person. Despite these quality standards, there are numerous potential problems associated with household survey data.

First, consumption is measured by using household surveys questions on food and nonfood expenditures as well as food consumed from the household’s own production, which is particularly important in the poorest developing countries. This information is collected either through recall questions using lists of consumption items or through diaries in which respondents record all expenditures on a daily basis. However, difficulties emerge because these methods do not always provide equivalent information, and depending on the approach used, consumption can be underestimated or overestimated. Different surveys use different recall or reference periods. Depending on the flow of expenditures, the rate of spending reported is sensitive to the length of the reporting period. The longer the reference period, the more likely respondents are to fail to recall certain expenses—especially food items—thus resulting in an underestimation of true expenditure.

Secondly, best-practice surveys administer detailed lists of specific consumption items. These individual items collected through the questionnaires are then aggregated afterwards. But many surveys use questionnaires in which respondents are asked to report expenditures for broad categories of goods. In other words, specific consumption items are implicitly aggregated by virtue of the questionnaire design. This shortens the interview, reducing the cost of the survey. A shorter questionnaire is also thought to reduce the likelihood of fatigue for both respondents and interviewers, which can lead to reporting errors. However, there is also evidence that less detailed coverage of specific items in the questionnaire can lead to underestimation of actual household consumption. The reuse of questionnaires may result in the omission of new consumption goods, leading to further underreporting.

Thirdly, some sampled households do not participate in surveys because they refuse to do so or because nobody is at home. This is often referred to as “unit non-response” and is distinct from “item non-response,” which occurs when some of the sampled respondents participate but refuse to answer certain questions, such as those pertaining to consumption or income. To the extent that survey non-response is random, there is no concern regarding biases in survey-based inferences; the sample will still be representative of the population. However, households with different incomes are not equally likely to respond. Relatively rich households may be less likely to participate because of the high opportunity cost of their time or because of concerns about intrusion in their affairs. It is conceivable that the poorest can likewise be underrepresented; some are homeless and hard to reach in standard household survey designs, and some may be physically or socially isolated and thus less easily interviewed. If non-response systematically increases with income, surveys will tend to overestimate poverty. But if compliance tends to be lower for both the very poor and the very rich, there will be potentially offsetting effects on the measured incidence of poverty.

**DISAGGREGATION**

It is sometimes possible to disaggregate this indicator by urban-rural location. In some cases, the national poverty line may be adjusted for different areas (such as urban and rural) within the country to account for distinct economic and social circumstances and differences in prices or the availability of goods and services. Typically the urban poverty line is set higher than the rural poverty line, reflecting the relatively higher costs of living in urban areas. In such cases, a clear definition of urban and rural areas needs to be established and included in the metadata.

Gender disaggregation of the indicator would also be very useful. Unfortunately, when computation is based on household income or consumption, this is not possible. To measure sex-disaggregated poverty rates, consumption or income of individuals, rather than that of households, needs to be recorded and analyzed. Alternatives to determine sex disaggregated measures include calculating poverty rates of household members according to the household head’s gender, measuring the age and gender composition of households at or below the poverty line, or measuring outcomes of welfare indicators other than consumption or income.

**COMMENTS AND LIMITATIONS**

National poverty lines are used to make poverty estimates consistent with a country’s specific economic and social circumstances, and are not intended for international comparisons of poverty levels. National poverty lines tend to increase as the average level of income in a country increases.

Issues arise when comparing poverty measures within countries where urban and rural poverty lines represent different purchasing powers. For example, the cost of living is typically higher in urban than in rural areas. One reason is that food staples tend to be more expensive in urban areas, so the urban monetary poverty line should be higher than the rural poverty line. However, the difference between urban and rural poverty lines sometimes reflects more than the difference in the cost of living. In some countries the urban poverty line has a higher real value—meaning that it allows people to purchase more commodities for consumption—than does the rural poverty line. Sometimes the difference has been so large as to imply that the incidence of poverty is greater in urban than in rural areas, even though the reverse is found when adjustments are made only for differences in the cost of living. As with international comparisons, when the real value of the poverty line varies it is not clear how meaningful such urban-rural comparisons are.

Consumption is the preferred welfare indicator for measuring poverty for a number of reasons. For one thing, income is generally more difficult to measure accurately and can vary over time even if the standard of living does not. For example, the poor who work in the informal sector may not receive or report monetary wages; self-employed workers often experience irregular income flows; and many people in rural areas depend on idiosyncratic, agricultural incomes. Moreover, consumption accords better with the idea of the standard of living than income, which can vary over time even if the actual standard of living does not. Thus, whenever possible, consumption-based welfare indicators are used to estimate the poverty measures reported here. But consumption data are not always available; for instance, in Latin America and the Caribbean the vast majority of countries primarily collect income data. In such cases there is little choice but to use income data.

Even if survey data were entirely accurate and comprehensive, the measure of poverty obtained could still fail to capture important aspects of individual welfare. For example, using household consumption measures ignores potential inequalities within households. Thus, consumption- or income-based poverty measures are informative but should not be interpreted as a sufficient statistic for assessing the quality of people’s lives. The national poverty rate, a “headcount” measure, is one of the most commonly calculated measures of poverty. Yet it does not capture income inequality among the poor or the depth of poverty. For instance, it fails to account for the fact that some people may be living just below the poverty line, while others experience far greater shortfalls (see also [Indicator 1.2](http://mdgs.un.org/unsd/mi/wiki/Indicator-1-2-Poverty-gap-ratio.ashx)).

Policymakers seeking to make the largest possible impact on the headcount measure might be tempted to direct their poverty alleviation resources to those closest to the poverty line (and therefore least poor).

Lastly, this income/consumption based poverty indicator does not fully reflect the other dimensions of poverty such as inequality, vulnerability, and the lack of voice and power of the poor.

**GENDER EQUALITY ISSUES**

In many settings, households headed by women tend to have lower incomes and members of those households are therefore more likely to live below the poverty line. However, this relationship should be examined taking into account national circumstances and the definition of head of household adopted in data collection, which is not always defined as the chief source of economic support. Gender relations, including whether households are headed by women or men, may also affect intra-household resource allocation and use.

**DATA FOR GLOBAL AND REGIONAL MONITORING**

In principle, poverty indicators derived using national poverty lines are intended to reflect a specific country’s economic and social circumstances and the data are not adjusted for international comparability. Therefore regional or global data based on national poverty figures are not produced. The World Bank publishes data on the proportion of the population living below the national poverty line for developing countries in its World Development Indicators (WDI) Online database.

**SUPPLEMENTARY INFORMATION**

No information available yet.

**EXAMPLES**

No information available yet.

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1.2 Poverty gap ratio

**GOAL AND TARGET ADDRESSED**

Goal 1. Eradicate extreme poverty and hunger Target 1.A: Halve, between 1990 and 2015, the proportion of people whose income is less than one dollar a day

**DEFINITION AND METHOD OF COMPUTATION**

***Definition***
The poverty gap ratio is the mean shortfall of the total population from the *poverty line* (counting the non-poor as having zero shortfall), expressed as a percentage of the *poverty line*.

**Concepts**
The *poverty line* is a common method used to measure poverty based on income or consumption levels. A person is considered poor if his or her consumption or income level falls below some minimum level necessary to meet basic needs. This minimum level is referred to as the poverty line.

The *international poverty line* used for the calculation of this indicator is the $1.25 a day international line, converted to national currency units using the latest *purchasing power parity (PPP)* exchange rates for consumption (see “CONCEPTS” for [Indicator 1.1](http://mdgs.un.org/unsd/mi/wiki/Indicator-1-1-Proportion-of-population-below-1-PPP-per-day.ashx)).

National poverty lines are defined differently across countries based on different calculation methods (see “CONCEPTS” for [Indicator 1.1a](http://mdgs.un.org/unsd/mi/wiki/Indicator%201.1a%3A%20Proportion%20of%20population%20below%20national%20poverty%20line)).

The *purchasing power parity (PPP)* conversion factor for private consumption represents the number of units of a country's currency required to buy the same amounts of goods and services in the domestic market as one United States dollar would buy in the United States. It is based on the System of National Accounts’ concept of actual individual consumption.

**Method of Computation**
The poverty gap ratio is measured as follows:



where P1 represents the poverty gap and is calculated as the sum of the relative distance between the poverty line (z) and income or consumption for those who are poor (the non-poor have a poverty gap of zero). I(.) is an indicator function that equals 1 if the bracketed expression is true, and 0 otherwise. N is the total population.

This formula is calculated based on data on individuals (yi as per capita income or consumption). If household-level data are used, the formula has to be adjusted by the weight *wi*, which is the household size times sampling expansion factor for every household *i*.

The poverty line used for this calculation can be either the international poverty line of $1.25 a day converted into respective national currency units at the latest PPP exchange rates for consumption, or the national poverty line (see [Indicator 1.1](http://mdgs.un.org/unsd/mi/wiki/Indicator-1-1-Proportion-of-population-below-1-PPP-per-day.ashx) and [Indicator 1.1a](http://mdgs.un.org/unsd/mi/wiki/Indicator%201.1a%3A%20Proportion%20of%20population%20below%20national%20poverty%20line)).

**RATIONALE AND INTERPRETATION**

The indicator measures the “poverty deficit” of the entire population, where the poverty deficit is the per capita amount of resources that would be needed to bring all poor people above the poverty line through perfectly targeted cash transfers. Hence, the indicator is often described as a tool for measuring the per capita amount of resources needed to eliminate poverty, identifying the poverty depth in population groups which makes it a very useful indicator for policy makers and donors.

The poverty gap indicator supplements the poverty headcount indicator in describing the poverty situation. The larger the poverty gap the poorer on average are people below the poverty line and the more resources are needed to lift everyone out of poverty. If two countries have about the same poverty headcounts, but the first country has a poverty gap estimate that is much higher than the second country, then the first country can be considered “poorer” than the second country.

Poverty measures based on an international poverty line attempt to hold the real value of the poverty line constant across countries, as is done when making comparisons over time. Therefore, when computed based on a common poverty line measured using purchasing power parities, poverty gaps are comparable across countries.

**SOURCES AND DATA COLLECTION**

The indicator should be produced using nationally representative household surveys that are of good quality, contain sufficient information to produce a comprehensive consumption or income aggregate, and allow for the construction of a correctly weighted distribution of per capita consumption or income.

For data sources, see [Indicator 1.1](http://mdgs.un.org/unsd/mi/wiki/Indicator-1-1-Proportion-of-population-below-1-PPP-per-day.ashx).

**DISAGGREGATION**

It is sometimes possible to disaggregate this indicator by urban-rural location. In such cases, a clear definition of urban and rural areas needs to be established and included in the metadata.

**COMMENTS AND LIMITATIONS**

See “COMMENTS AND LIMITATIONS” for [Indicator 1.1](http://mdgs.un.org/unsd/mi/wiki/Indicator-1-1-Proportion-of-population-below-1-PPP-per-day.ashx).

**GENDER EQUALITY ISSUES**

See “GENDER EQUALITY ISSUES” for [Indicator 1.1](http://mdgs.un.org/unsd/mi/wiki/Indicator-1-1-Proportion-of-population-below-1-PPP-per-day.ashx).

**DATA FOR GLOBAL AND REGIONAL MONITORING**

The responsible agency for monitoring this indicator at the global level is the World Bank. In order to produce the estimates, international poverty indicators are produced for each country based on an internationally comparable poverty line, which allows for comparisons across countries.

See “DATA FOR GLOBAL AND REGIONAL MONITORING” for [Indicator 1.1](http://mdgs.un.org/unsd/mi/wiki/Indicator-1-1-Proportion-of-population-below-1-PPP-per-day.ashx) on the procedure for lining up country estimates to a common reference year, replacing ‘poverty headcount (H)’ with ‘poverty gap (PG)’.

**SUPPLEMENTARY INFORMATION**

No information available yet.

**EXAMPLES**

No information available yet.

**REFERENCES**

See “REFERENCES” for [Indicator 1.1](http://mdgs.un.org/unsd/mi/wiki/Indicator-1-1-Proportion-of-population-below-1-PPP-per-day.ashx).

1.3 Share of poorest quintile in national consumption

**GOAL AND TARGET ADDRESSED**

Goal 1. Eradicate extreme poverty and hunger Target 1.A: Halve, between 1990 and 2015, the proportion of people whose income is less than one dollar a day

**DEFINITION AND METHOD OF COMPUTATION**

**Definition**
The share of poorest quintile in national consumption is defined as the share of a country’s national consumption or income that accrues to the *poorest quintile* (fifth) of the population.This indicator is expressed as a percentage.

**Concepts**
*Poorest quintile* is the bottom 20 percent of the population, ranked by income or consumption levels.

**Method of Computation**
Consumption, including consumption from own production, or income is calculated from household data for the entire household, adjusted for household size, and then divided by the number of persons living in the household to derive a per capita measure. The population is then ranked by consumption or income, and the bottom fifth of the population’s consumption or income is expressed as a percentage of aggregate household income. The calculations are made in local currency, without adjustment for price changes, exchange rates or spatial differences in the cost of living within countries because the data needed for such calculations are generally unavailable.
The share of poorest quintile in national consumption or income is calculated as follows:



where yi is the per capita consumption of income with , and the first n observations represent 20 per cent of the total population.

**RATIONALE AND INTERPRETATION**

This indicator is a measure of inequality in the distribution of income, reflected in the percentage shares of income or consumption accruing to portions of the population ranked by income or consumption levels. Inequality is a broader concept than poverty because it is defined over the entire population, and not just the population below a certain poverty line.

Because the consumption of the poorest fifth is expressed as a percentage of total household consumption (or income), this indicator is a measure of “relative inequality”. This means that while the absolute consumption of the poorest fifth may increase, its share of total consumption may remain the same (if the total goes up by the same proportion), decline (if the total goes up by a larger proportion) or increase (if the total goes up by a smaller proportion).

Values can range from 0 to 20. Smaller values indicate higher inequality, especially when compared to the share of income accruing to the wealthiest quintile. A value of 20 for each quintile would indicate perfect equality between quintiles.

The indicator does not reveal the distribution of income within the poorest quintile. Therefore, further disaggregation by deciles or percentiles is needed to assess inequality among the poorest quintile.

**SOURCES AND DATA COLLECTION**

Data on the distribution of income or consumption come from nationally representative household surveys. Where the original data from household surveys are available, they are used to directly calculate income or consumption shares by quintile. Otherwise, shares are estimated from the best available grouped data.

Distribution data are adjusted for household size, providing a more consistent measure of per capita income or consumption. No adjustments are made for spatial differences in the cost of living within countries because the data that are needed for such calculations are generally unavailable.

For more details on sources and data collection, see [Indicator 1.1](http://mdgs.un.org/unsd/mi/wiki/Indicator-1-1-Proportion-of-population-below-1-PPP-per-day.ashx).

**DISAGGREGATION**

This indicator can be generated at the sub-national level (for example, by urban and rural location). However, because it cannot be decomposed at the sub-national level, estimates at the sub-national level are not widely produced.

**COMMENTS AND LIMITATIONS**

One of the main limitations of this indicator is that, because household surveys differ in method and type of data collected, distribution data are not strictly comparable across countries. The surveys can differ in the following respects:

* Some surveys use income as the living standard indicator while others use consumption. The distribution of income is typically more unequal than the distribution of consumption. Also, definitions of income differ more often among surveys. Consumption is usually a much better welfare indicator, particularly in developing countries.
* Households differ in size (number of members) and in the extent to which income is shared among household members since individuals differ in age and consumption needs. Differences among countries in this respect may bias comparisons of distribution.

Another major limitation of this indicator is the fact that it reflects only the income share of the bottom fifth (quintile) of the population. The proportionate share of national household income of this group may go up while the proportionate share of some other percentile, such as the bottom tenth (decile), or even of a broader group such as the bottom quarter (quartile), may go down, and vice versa.

**GENDER EQUALITY ISSUES**

See “GENDER EQUALITY ISSUES” for [Indicator 1.1](http://mdgs.un.org/unsd/mi/wiki/Indicator-1-1-Proportion-of-population-below-1-PPP-per-day.ashx).

**DATA FOR GLOBAL AND REGIONAL MONITORING**

The World Bank Development Research Group produces this indicator using nationally representative household surveys that are conducted by national statistical offices or by private agencies under the supervision of government or international agencies. Data are obtained from government statistical offices and World Bank Group country departments.

For most countries the income distribution indicators are based on the same data used to derive the $1.25 a day poverty estimates. In the case of high-income countries, income distributions are calculated directly from the Luxembourg Income Study database, using an estimation method consistent with that applied for developing countries.

To allow for comparability across countries, measures are interpolated from primary data sources (tabulations or household level data). Parameterized Lorenz curves with flexible functional forms are mainly used to make the estimates.

**SUPPLEMENTARY INFORMATION**

No information available yet.

**EXAMPLES**

No information available yet.

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1.4 Growth rate of GDP per person employed

**GOAL AND TARGET ADDRESSED**

Goal 1. Eradicate extreme poverty and hunger. Target 1.B Achieve full and productive employment and decent work for all, including women and young people.

**DEFINITION AND METHOD OF COMPUTATION**

Definition
The growth rate of *gross domestic product (GDP)*per person *employed*is defined as the growth rate of *output* per unit of *labour input*.

This indicator is expressed as a percentage.

Concepts
*Gross domestic product (GDP)*is the sum of gross value added by all resident producers in an economy, plus any product taxes, and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources.

*Employed*refers to persons above the nationally defined working age (different in every country, but generally close to 15 years) who worked or held a job during a specified reference period. Included are persons who worked for pay or profit (or pay in kind); persons who were temporarily absent from a job for such reasons as illness, maternity or parental leave, holiday, training or industrial dispute; and unpaid family workers who worked for at least one hour, although many countries use a higher hour limit in their definition. The measure of employment is intended to capture persons working in both the formal and informal sectors and households.

*Output,*is measured as value added, which is total production value minus the value of intermediate inputs, such as raw materials, semi-finished products, services purchased and energy inputs. Value added, referred to as gross domestic product (GDP) in the national accounts, represents the compensation for input of services from capital (including depreciation) and labour directly engaged in production.

*Labour input* is measured as the number of persons*employed*, also known as total employment.

Method of computation
The growth rate of GDP per person employed is equivalent to the growth rate of labour productivity. Labour productivity is measured as output per person employed. The following formulas are used in calculating this indicator:




GDP is measured at market prices for the aggregate economy. This reflects the market value of the output produced. Labour input is measured in units of persons employed.

**RATIONALE AND INTERPRETATION**

Labour productivity can be used to assess the likelihood of a country’s economic environment to create and sustain decent employment opportunities with fair and equitable remuneration. While increases in productivity do not guarantee progress toward full and productive employment and decent work for all, improvements in conditions of work and employment opportunities are less likely to occur without productivity improvements.

There is empirical evidence that the link between productivity growth and poverty reduction is strong when productivity growth and employment growth go hand in hand. However, labour productivity growth is not always associated with employment growth. Consequently, measuring both growth in employment (see employment-to-population ratio, Indicator 1.5) and labour productivity is required to assess whether GDP growth is likely to reduce poverty.

Labour productivity growth relies on a number of factors including: increased efficiency in the use of labour; increased use of physical or human capital or intermediate inputs; and shifts in the mix of activities in the economy. For instance, an economy might shift from sectors and activities with low levels of productivity to sectors and activities with higher levels. In this case, it is important that labour productivity growth is accompanied by improvements in education and training systems so that the workforce is prepared to work in the new sectors.

**SOURCES AND DATA COLLECTION**

GDP measures are obtained from national accounts and represent, as much as possible, GDP at market prices for the aggregate economy. Guidelines for measurement of GDP are outlined in the United Nations System of National Accounts (1993).

Employment data are obtained from population censuses, labour force or other household surveys, establishment surveys, administrative records and official estimates based on results from several of these sources. Labour force surveys can be designed to cover virtually the entire population of a country, all branches of economic activity, all sectors of the economy, and all categories of workers, including own-account workers, unpaid family workers and persons engaged in casual work or marginal economic activity. For this reason, household-based labour force surveys offer a unique advantage for obtaining information on the labour market of a country and its structure.

Other sources such as population censuses and administrative records differ in scope, coverage, units of measurement and methods of data collection. Labour force and household surveys may have limited geographical and population coverage. Each source has advantages and limitations in terms of the cost, quality and type of information gained. The ideal geographic coverage is the entire country (no geographic exclusions) and entire populations (no exclusion of population groups).

**DISAGGREGATION**

For the purpose of this indicator, no disaggregation is required. However, disaggregation of the growth rate of GDP per person employed by economic sector can be used to differentiate between high and low productivity sectors which can serve to monitor the effects of policies to increase labour productivity through sectoral shifts.

**COMMENTS AND LIMITATIONS**

Estimates of employment generally refer to the average number of persons with one or more paid jobs during the year. Statistics on the number of self-employed and family workers in agricultural and informal manufacturing activities are often less reliable than those for paid employees, particularly in low- and middle-income economies. Employment estimates are also sensitive to under-coverage of informal or underground activities, which account for a substantial part of labour input. In some cases, informal activities are not included in production and employment statistics at all. In agriculture, labour force estimates do include a substantial part of the (part time and seasonal) labour input of family workers.

**GENDER EQUALITY ISSUES**

As GDP is not measured by sex, it is not possible to disaggregate this indicator by sex. Indicators 1.5 and 1.7 provide for disaggregation by sex in order to obtain insights into the employment status of women (and young people) as called for in Target 1.B.

**DATA FOR GLOBAL AND REGIONAL MONITORING**

The International Labour Organization (ILO) produces estimates for this indicator. The necessary data are obtained largely from international data repositories compiled by various international organisations.

The GDP estimates for Organisation for Economic Cooperation and Development (OECD) countries after 1990 are mostly obtained from OECD and the Statistical Office of the European Communities (Eurostat). Angus Maddison’s publication, *The World Economy: Historical Statistics,*has been used to cover the period 1980-1990. Employment estimates are mostly taken from OECD, Eurostat and the Bureau of Labour Statistics (BLS).

For countries outside of the OECD, the national accounts and labour statistics assembled from national sources by the World Bank, the Asian Development Bank, the Food and Agriculture Organization of the United Nations (FAO), the ILO and the United Nations Statistics Division are mostly taken as the point of departure.

Data collected from international repositories should be internationally comparable. GDP measures are obtained from national accounts and represent, as much as possible, GDP at market prices for the aggregate economy and value added at basic prices for the individual sectors. However, there are significant problems in international consistency of national accounts estimates. Such problems include different treatment of output in services sectors, and different procedures in correcting output measures for price. All estimates are therefore made according to the national accounts conventions to ensure that labour productivity for individual sectors can be compared. For international comparisons of labour productivity, estimates of gross value added are always expressed in PPP for the aggregate economy in terms of 1990 United States dollars.

ILO produces aggregate estimates for regions and groups of countries. Not all countries report data for every year, so it is not possible to derive aggregate estimates of labour market indicators by merely summing across countries. To address this problem, the ILO maintains econometric models which are used to produce estimates of labour market indicators in the countries and years for which no real data exist. These models use multivariate regression techniques to impute missing values at the country level.

There are some potential disparities between international and national data. Primarily, the use of different data sources can create comparability issues. National labour force surveys tend to be similar in essential features. Nevertheless, survey data may contain non-comparable elements in terms of scope and coverage or variations in national definitions of the employment concept.

**SUPPLEMENTARY INFORMATION**

No information available yet.

**EXAMPLES**

No information available yet.

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1.5 Employment-to-population ratio

**GOAL AND TARGET ADDRESSED**

Goal 1. Eradicate extreme poverty and hunger. Target 1.B Achieve full and productive employment and decent work for all, including women and young people.

**DEFINITION AND METHOD OF COMPUTATION**

Definition
The employment-to-population ratio is defined as the proportion of a country’s working-age population that is employed. This indicator is expressed as a percentage.

Concepts
Working-age population is determined on the basis of national circumstances, but in most countries the working-age population is defined as persons aged 15 years and older. The International Labour Organization (ILO) standard for the lower limit of the working-age population is 15.

Employed refers to persons above the nationally defined working-age who performed any work at all, in the reference period, for pay or profit (or pay in kind), or were temporarily absent from a job for such reasons as illness, maternity or parental leave, holiday, training or industrial dispute. Unpaid family workers who work for at least one hour should be included in the count of employment, although many countries use a higher hour limit in their definition. The measure of employment is intended to capture persons working in both the formal and informal sectors.

Method of computation
The employment-to-population ratio is equal to the number of persons employed divided by the working-age population and multiplied by 100.



**RATIONALE AND INTERPRETATION**

The employment-to-population ratio provides information on the ability of an economy to provide employment for those who want to work. The ratio typically falls between 50 and 75 per cent with a high ratio indicating that a large proportion of the working-age population is employed. A low ratio indicates that a large share of the population is not involved directly in market-related activities.

Trends in the employment-to-population ratio can be monitored to inform policies aimed at increasing opportunities for decent work. A reduction of employment-to-population ratios for young people can be seen as positive if this is caused by an increase in youth participation in education. Efforts to increase employment-to-population ratios are needed when unemployment is very high in a country (indicating that people are looking for work but not finding it), or when the ratio is low because people have given up hope of finding a job. On the other hand, employment-to-population ratios should not be too high. Ratios above 80 per cent, for instance, often occur in very poor countries and usually indicate an abundance of low quality jobs. During the development process, employment-to-population ratios and poverty rates can both be high because people simply have to work to survive.

The annual employment-to-population ratio and the ratio’s rate of change over time can be viewed in connection with economic growth rates to determine the extent to which economic growth is pro-employment and pro-poor. Reviewing the indicator by sex (male versus female) and age (youth versus total) also provides a picture of the equality of employment opportunities across different population groups.

**SOURCES AND DATA COLLECTION**

Data are obtained from population censuses, labour force or other household surveys, establishment surveys, administrative records and official estimates based on results from several of these sources. Both components (employment and population) should come from the same source.

Sources differ in scope, coverage, units of measurement and methods of data collection. Each source has advantages and limitations in terms of the cost, quality and type of information gained. The ideal geographic coverage is the entire country (no geographic exclusions) and entire populations (no exclusion of population groups), so the source that can best provide this coverage should be used.

Contrary to censuses, surveys may have limited geographical and population coverage. However, household-based labour force surveys offer a unique advantage for obtaining information on the labour market of a country and its structure. Labour force surveys can be designed to cover virtually the entire population of a country, all branches of economic activity, and all sectors of the economy. In addition, labour force surveys can include all categories of workers, including own-account workers, unpaid family workers and persons engaged in casual work or marginal economic activity.

The ILO standard for the lower age limit of employment is 15 years. For many countries, this age corresponds directly to societal standards for education and work eligibility. Some countries impose an upper limit for eligibility, such as 65 or 70 years. However, if possible age groups beyond this upper limit should be included in the employable population.

**DISAGGREGATION**

Ideally, the data should be disaggregated by sex and age group. When broken down by sex, the ratios for women and men can provide information on gender differences in labour market activity. Disaggregation of the ratio for persons of working age (aged 15 years and over), prime working-age (25 to 54 years), older workers (55 to 64 years or 65 years and over) and youth (15 to 24 years) are useful for revealing relationships between labour force participation and availability of educational facilities, attitudes toward retirement, availability of earning opportunities for different age groups and the existence of social safety nets. Countries might also want to consider disaggregating according to urban/rural residence.

**COMMENTS AND LIMITATIONS**

The employment-to-population ratio indicator only provides a measure of persons in employment. It says nothing about the quality of employment in which people work posing the question of whether or not an increase of the indicator over time should be interpreted positively. An increase in the ratio has positive implications on poverty reduction only if the jobs obtained are well-paid, productive and secure—in other words, if they are decent jobs. Reviewing this indicator along with the other indicators for Target 1.B will provide a broader picture of the direction and quality of employment growth.

There is no optimal employment-to-population ratio. Developed economies tend to have lower ratios than developing economies because developed countries’ higher productivity and income levels mean that fewer workers are required to meet the needs of the entire population. Also, low ratios for young people can indicate that youth forgo employment to pursue educational opportunities. Very high ratios, on the other hand, indicate that the majority of poor people are working out of necessity regardless of the quality of work.

To some degree, the way in which persons in employment are measured can have an effect on the extent to which individuals are included in the data counts. Unless specific probes are built into the data collection instruments, certain groups of workers may be underestimated—particularly the number of employed persons who: (a) work for only a few hours in the reference period, especially if they do not do so regularly; (b) are in unpaid employment or (c) work near or in their home, thus mixing work and personal activities during the day. Since women, more often than men, are in these situations, it is to be expected that the number of women in employment will tend to be underestimated to a larger extent than the number of men.

**GENDER EQUALITY ISSUES**

Ratios for women may be lower than those for men as a result of women having fewer job opportunities in the labour markets. Efforts should be made to determine the underlying causes for lower participation of women and/or undercounting of their employment status.

**DATA FOR GLOBAL AND REGIONAL MONITORING**

The ILO is the agency responsible for compiling and publishing international figures for the employment-to-population ratio. The ILO assembles data using existing compilations maintained by various international organizations. Information compiled by these organizations is normally obtained from national sources or is based on official national publications.

The ILO produces aggregate estimates for regions and groups of countries. Not all countries report data for every year, so it is not possible to derive aggregated estimates of labour market indicators by merely adding country figures. To address this problem, the ILO uses econometric models that are used to produce estimates of labour market indicators in the countries and years for which no real data exist. These models use multivariate regression techniques to impute missing values at the country level.

There are some potential disparities between national and international data. First, the official working age varies from country to country. For ILO calculations, the lower age limit is 15 years. For many countries, this age corresponds to their national standard age for education completion and employment commencement. For others, it is appropriate to include younger workers because “working age” can, and often does, begin earlier. Similarly, some countries have a higher limit for eligibility because youth are expected to complete a higher level of education before working.

Secondly, the population base for employment ratios can vary across countries. In most cases, the resident population of working age is used, excluding members of the armed forces and individuals residing in mental, penal or other types of institution. Many countries, however, consider different population groups.

Thirdly, while national labour force surveys tend to be similar in essential features, data may contain non-comparable elements in terms of scope and coverage or variations in national definitions of the employment concept. Use of different sources can thus lead to distinct results.

Finally, differences can appear due to different definitions of the concept of work. While the international definition calls for inclusion of all persons who worked for at least one hour during the reference period, other definitions are used at the country level. Some countries measure persons employed in paid employment only, while other countries measure paid employees plus working proprietors who receive some remuneration based only on corporate shares.

**SUPPLEMENTARY INFORMATION**

No information available yet.

**EXAMPLES**

No information available yet.

**REFERENCES**

See “REFERENCES” for [Indicator 1.4](http://mdgs.un.org/unsd/mi/wiki/1-4-Growth-rate-of-GDP-per-person-employed.ashx).

1.6 Proportion of employed people living below $1 (PPP) per day

**GOAL AND TARGET ADDRESSED**

Goal 1. Eradicate extreme poverty and hunger. Target 1.B Achieve full and productive employment and decent work for all, including women and young people.

**DEFINITION AND METHOD OF COMPUTATION**

Definition
The proportion of employed people living below the poverty line, or the *working poor*, is calculated as the proportion of individuals who are *employed,*but nonetheless live in a household whose members are estimated to be living below the *poverty line.*Either the national poverty line or the international poverty line of $1.25 *purchasing power parity (PPP)*per day may be used as threshold.

This indicator is expressed as a percentage of total employment.

Concepts
*Working poor* refers to *employed* persons living below the poverty line.

The*poverty line* is the minimum level of income deemed necessary to achieve an adequate standard of living in a given country. *National poverty lines*are thresholds defined at the country level, below which a person is deemed to be poor (see Indicator 1.1a) For international comparisons, a poverty line of $1.25 a day measured at 2005 international prices and adjusted for PPP is used (see “DEFINITION AND METHOD OF COMPUTATION” for [Indicator 1.1](http://mdgs.un.org/unsd/mi/wiki/Indicator-1-1-Proportion-of-population-below-1-PPP-per-day.ashx)).

The *purchasing power parity (PPP)*conversion factor is the number of units of a country's currency required to buy the same amounts of goods and services in the domestic market as one United States dollar would buy in the United States.

*Employed*refers to persons above the nationally defined working age (different in every country, but generally close to 15 years) who worked or held a job during a specified reference period. Included are persons who worked for pay or profit (or pay in kind); persons who were temporarily absent from a job for such reasons as illness, maternity or parental leave, holiday, training or industrial dispute; and unpaid family workers who worked for at least one hour, although many countries use a higher hour limit in their definition. The measure of employment is intended to capture persons working in both the formal and informal sectors.

Method of computation

The number of working poor is calculated on the basis of cross-tabulations from household survey data sets that include variables on both poverty status and labour force characteristics. An individual is classified as working poor if he or she is 1) employed and 2) living in a household with per-capita consumption or income that is below the poverty line.

The working poverty rate is the proportion of working poor in total employment: Working poverty rate = number of employed persons living in a household with per-capita consumption or income below the poverty line / total employment \* 100.

**RATIONALE AND INTERPRETATION**

The proportion of working poor in total employment gives an indication of the lack of decent work in a country. Jobs that do not provide incomes high enough to lift individuals and their families out of poverty, at the very least, do not fulfil the income component of the definition of decent work. Within the development process, the share of working poor should decrease, and in turn, further foster development.

The working poor definition combines poverty data with countries’ specific labour market characteristics, such as the size of the labour force. Working poor estimates thereby provide a picture of the relationship between poverty and employment that is not depicted by standard poverty data.

**SOURCES AND DATA COLLECTION**

To estimate the number and proportion of the working poor, it is necessary to establish the poverty line. National poverty lines are defined differently across countries based on different calculation methods (see Indicator 1.1a).

Data on the labour market (labour force and total employment) are obtained from population censuses, labour force or other household surveys, establishment surveys, administrative records and official estimates based on results from several of these sources. Labour force surveys can be designed to cover virtually the entire population of a country, all branches of economic activity, all sectors of the economy, and all categories of workers, including own-account workers, unpaid family workers and persons engaged in casual work or marginal economic activity. For this reason, household-based labour force surveys offer a unique advantage in obtaining information on the labour market of a country and its structure.

However, labour force and household surveys may have limited geographical and population coverage. The ideal geographic coverage is the entire country (no geographic exclusions) and the entire population (with no exclusion of population groups).

Other sources such as population censuses and administrative records differ in scope, coverage, units of measurement and methods of data collection. Each source has advantages and limitations in terms of the cost, quality and type of information gained.

The best method for calculating the number of working poor is on the basis of cross-tabulations from micro survey data sets that include variables on both poverty status and labour force characteristics. However, these data are usually not available.

**DISAGGREGATION**

While it might be desirable to disaggregate the proportion of working poor by sex or age groups, disaggregation is frequently not feasible for the main reason that it is difficult to produce disaggregated poverty data. However, if estimates are derived from survey micro datasets, disaggregation is sometimes feasible.

**COMMENTS AND LIMITATIONS**

If the methodology used for the surveys from which poverty data are derived changes over time, it is extremely difficult to make useful temporal comparisons. However, if the same poverty line is used consistently over time and the same survey methodology has been used for collecting income and expenditure data, it should be possible to make valid temporal comparisons. Even if these conditions are met, however, poverty rates may vary quite substantially from year to year because of economic or weather conditions. For example, natural disasters or financial crises can have a major effect on poverty rates, at least in the short term.

This indicator is also limited because of the way in which non-market production and consumption are valued. In some countries these activities may represent an important part of income and consumption, and decisions must be made about the value to attach to these items. The attached value will have an important effect on poverty rates.

**GENDER EQUALITY ISSUES**

If disaggregation by sex is feasible in view of data availability, the indicator can be used to analyse gender differentials in the incidence of working poverty.

**DATA FOR GLOBAL AND REGIONAL MONITORING**

The International Labour Organization (ILO) produces estimates for this indicator. Estimates of the working poor are based on labour market input data (working-age population, labour force and employment) from econometric models that utilize available national data and apply multivariate regression techniques to impute missing values at the country level. The first step in each model is to assemble all available data for each indicator in question. It is important to note that only data that are national in coverage and comparable across countries and over time are used as inputs. This selection criterion is fundamental because models are designed to use the relationship between labour market indicators and their macroeconomic correlates—such as per-capita gross domestic product (GDP), GDP growth rates, demographic trends, country membership in the Highly Indebted Poor Country Initiative, geographic indicators and country and time dummy variables. Comparability of the labour market data used as inputs in the imputation models is essential to ensure that the models accurately capture the relationships between the labour market indicators and the macroeconomic variables.

For the calculation of the number of working poor, ILO uses poverty data from the World Bank based on the international poverty line of $1.25 a day. Because country-level estimates are model-driven and produced so that harmonized data are provided for every country and every year, there may be discrepancies between international and national data.

**SUPPLEMENTARY INFORMATION**

No information available yet.

**EXAMPLES**

No information available yet.

**REFERENCES**

See “REFERENCES” for [Indicator 1.1](http://mdgs.un.org/unsd/mi/wiki/Indicator-1-1-Proportion-of-population-below-1-PPP-per-day.ashx) and [Indicator 1.4](http://mdgs.un.org/unsd/mi/wiki/1-4-Growth-rate-of-GDP-per-person-employed.ashx).

1.7 Proportion of own-account and contributing family workers in total employment

**GOAL AND TARGET ADDRESSED**

Goal 1. Eradicate extreme poverty and hunger
Target 1.B: Achieve full and productive employment and decent work for all, including women and young people

**DEFINITION AND METHOD OF COMPUTATION**

Definition
The proportion of own-account workers and contributing family workers in total employment is defined as the proportion of workers in *self-employment*who do not have *employees,*and *unpaid family* workers in total *employment.*

This indicator is expressed as a percentage.

Concepts
*Own-account* workers are those workers who, working on their own account or with one or more partners, hold *self-employment*jobs and who have not engaged on a continuous basis any *employees*to work for them.

*Contributing family workers,*also known as *unpaid family workers,*are those workers who are self-employed in a market-oriented establishment operated by a related person living in the same household, who cannot be regarded as partners, because their degree of commitment to the operation of the establishment, in terms of working time or other factors to be determined by national circumstances, is not at a level comparable to that of the head of the establishment.

*Self employment* includes those jobs where the remuneration is directly dependent upon the profits (or the potential for profits) derived from the goods and services produced (where own consumption is considered to be part of profits).

*Employees*are all those workers who hold paid employment jobs, where the incumbents hold explicit (written or oral) or implicit employment contracts that give them a basic remuneration that is not directly dependent upon the revenue of the unit for which they work.

*Employment* refers to persons above the nationally defined working age (different in every country, but generally close to 15 years) who worked or held a job during a specified reference period. Included are persons who worked for pay or profit (or pay in kind); persons who were temporarily absent from a job for such reasons as illness, maternity or parental leave, holiday, training or industrial dispute; and unpaid family workers who worked for at least one hour, although many countries use a higher hour limit in their definition. The measure of employment is intended to capture persons working in both the formal and informal sectors.

*Vulnerable employment* is defined as the sum of the employment status groups of own-account workers and contributing family workers.

Method of computation
This indicator is calculated as the sum of contributing family workers and own-account workers divided by total employment multiplied by 100.

**RATIONALE AND INTERPRETATION**

Contributing family workers and own-account workers are less likely to have formal work arrangements, access to benefits or social protection programmes, and are more “at risk” to downturns in economic cycles. Therefore, these categories of workers are considered “vulnerable”. *Vulnerable employment* is a newly defined measure of persons who are employed under relatively precarious circumstances as determined by their status in employment.

There is a connection between vulnerable employment and poverty. If the proportion of vulnerable workers in total employment is sizeable, it may be an indication of widespread poverty. The connection arises because vulnerable workers lack social protection and safety nets to guard against poverty in periods of low economic demand. In addition, vulnerable workers are often incapable of generating sufficient savings for themselves and their families to offset declines in remuneration during economic downturns.

**SOURCES AND DATA COLLECTION**

Data are obtained from population censuses, labour force or other household surveys, establishment surveys, administrative records and official estimates based on results from several of these sources. Labour force surveys can be designed to cover virtually the entire population of a country, all branches of economic activity, all sectors of the economy, and all categories of workers, including own-account workers, unpaid family workers and persons engaged in casual work or marginal economic activity. For this reason, household-based labour force surveys offer a unique advantage for obtaining information on the labour market of a country and its structure.

However, labour force and household surveys may have limited geographical and population coverage. The ideal geographic coverage is the entire country (no geographic exclusions) and entire populations (no exclusion of population groups).

Other sources such as population censuses and administrative records differ in scope, coverage, units of measurement and methods of data collection. Each source has advantages and limitations in terms of the cost, quality and type of information gained.

**DISAGGREGATION**

Ideally, the data should be disaggregated by sex and age group. Information can also be disaggregated by urban/rural residence.

**COMMENTS AND LIMITATIONS**

Using the proportion of own-account and contributing family workers in total employment as an indicator of decent work is not without its limitations. Specifically, the jobs of some wage and salaried workers that are not included in the categorization of vulnerable workers might carry high economic risks, while some own-account workers might be quite well off and not vulnerable at all. Despite these limitations, vulnerable employment is especially relevant for the less developed economies and regions, and the fact that a strong correlation has been established between high poverty rates for a region and high shares of workers in vulnerable employment does substantiate the utility of the indicator to measure progress towards the goal of decent employment for all.

When using this indicator to assess vulnerable employment, differences in definitions and coverage over time (and across countries when making international comparisons) make comparisons difficult. Some definitional changes or differences in coverage can be overlooked— for example, differing age limits for measurement of employment. What is more important to note is that information from labour force surveys is not necessarily consistent with what is included in employment. For example, the information supplied in some countries may reflect civilian employment, which can result in an underestimation of “employees” and “workers not classifiable by status”, especially in countries that have large armed forces. Numbers of self-employed and contributing family workers would not be affected by this underestimation, but their relative shares in employment would be.

**GENDER EQUALITY ISSUES**

The indicator is highly gender sensitive since, historically, contributing family work is a status that is dominated by women. Consequently, women account for a disproportionate number of vulnerable workers in most countries.

**DATA FOR GLOBAL AND REGIONAL MONITORING**

Data for global and regional monitoring for this indicator are reported by the International Labour Organization (ILO). The majority of ILO data for this indicator reflect nationally-reported data collected by the ILO Bureau of Labour Statistics or other international organizations such as the Organization for Economic Co-operation and Development. ILO produces aggregate estimates for regions and groups of countries. Because not all countries report data every year, it is not possible to derive aggregate estimates of labour market indicators by merely summing across countries. To address this problem, the ILO maintains econometric models which are used to produce estimates of labour market indicators in the countries and years for which no real data exist. These models use multivariate regression techniques to impute missing values at the country level.

The ILO reports only available country-level information for this indicator. Therefore, no discrepancies between nationally reported and internationally reported data are likely to exist.

**SUPPLEMENTARY INFORMATION**

**EXAMPLES**

**REFERENCES**

See “REFERENCES” for [Indicator 1.4](http://mdgs.un.org/unsd/mi/wiki/1-4-Growth-rate-of-GDP-per-person-employed.ashx).

1.8 Prevalence of underweight children under-five years of age

**GOAL AND TARGET ADDRESSED**

Goal 1. Eradicate extreme poverty and hunger
Target 1.C: Halve, between 1990 and 2015, the proportion of people who suffer from hunger

**DEFINITION AND METHOD OF COMPUTATION**

Definition
The prevalence of *underweight children* under five years of age is defined as the percentage of children aged 0–59 months, whose weights are less than two standard deviations below the median weight for age groups in the *international reference population.*

Concepts
The *international reference population* is a population against which the growth of children can be compared. The reference population is defined by the World Health Organisation (WHO) Child Growth Standards. The standards are based on more than 8,000 children from Brazil, Ghana, India, Norway, Oman and the United States of America. These children were selected based on their exposure to an optimal environment for proper growth including recommended infant and young child feeding practices, good healthcare, non-smoking mothers, and other factors associated with good health outcomes.

The number of*underweight children* is the number of children under five years of age whose weights are less than two standard deviations below the median weight for each age in the*international reference population.*

Method of computation
The weights of children under five years of age are compared with the weights given in the standard reference population for each age group. The percentage of children underweight is the aggregate of the *number of children underweight* divided by the number of children weighed multiplied by 100.



**RATIONALE AND INTERPRETATION**

Child undernutrition, measured as the prevalence of underweight children, is an important component of the MDGs since it is linked to poverty, low levels of education, and poor access to health services. Undernourishment in children, even moderate, increases their risk of death, inhibits their cognitive development, and affects their health status later in life. Sufficient and good quality nutrition is the cornerstone for development, health and survival of current and succeeding generations. Healthy nutrition is also important for women during pregnancy and lactation, so that their children are born into sound developmental paths, both physically and mentally.

Under-five underweight prevalence is an internationally recognized public health indicator for monitoring nutritional status and health in populations. Child nutritional status is monitored more closely than adult nutritional status.

The numeric value of this indicator refers to the proportion of children under five years of age who are underweight according to the international standard reference. Within the reference group, approximately 2.3 per cent of the children are underweight. In the developing world, about a quarter (24 per cent) of children under-five are underweight according to the WHO Child Growth Standards.

**SOURCES AND DATA COLLECTION**

At the national level, data are generally collected from national household surveys, including Demographic and Health Surveys (DHS), Multiple Indicator Cluster Surveys (MICS) and national nutrition surveys. It should be noted that when comparing estimates within a country over time or across countries, these estimates should be based on the same reference population.

DHS and MICS are generally conducted every three-to-five years. Some countries conduct national nutrition surveys annually.

There are some problems with data collection and compilation that may affect the reliability of nutritional status indicators, such as:

* The underweight indicator reflects body mass relative to chronological age and is influenced both by the height of the child, and weight-for-height. Its composite nature complicates its interpretation. For example, the indicator fails to distinguish between short children of adequate body weight and tall, thin children.
* The accuracy of nutritional status indicators depends on proper measurements in age, weight, and height. For example, only those children with month and year of birth recorded and with valid height and weight measurements are included in the calculations.
* In April 2006, the WHO released the WHO Child Growth Standards to replace the widely used *National Center for Health Statistics* (NCHS)/WHO reference population. Studies have shown important differences between these two reference populations, especially during infancy. Therefore, to allow for comparability over time, it is likely that for some time the anthropometric indicators will have to be analyzed using both the NCHS/WHO and the new WHO Child Growth Standards.

**DISAGGREGATION**

Indicators of malnutrition generally show differences between rural and urban locations and among socioeconomic groups. In some countries, child nutrition may vary across geographical areas, and/or ethnic groups. Gender differences may also be more pronounced in some social and ethnic groups than in others.

Estimates of child undernutrition cross-tabulated by background information are available from most DHS and MICS surveys and from some national nutrition surveys as well.

**COMMENTS AND LIMITATIONS**

While underweight prevalence is a useful indicator to assess overall nutritional status of the population, stunting and wasting prevalence are also useful indicators for tracking trends in child malnutrition.

Stunting, also known as low height-for-age, measures levels of cumulative deficient growth associated with long-term factors, including chronic insufficient daily protein intake. This indicator is defined as the percentage of children under five whose heights are less than two standard deviations below the median height for the age of the standard reference population.

Wasting, also known as low weight-for-height, indicates in most cases a recent and severe process of weight loss, often associated with acute starvation or severe disease. This indicator is defined as the percentage of children under five whose weights are less than two standard deviations below the median weight for height of the reference population.

When possible, all three indicators (underweight, stunting, and wasting) should be analyzed and presented since they measure and reflect different aspects of child nutrition.

**GENDER EQUALITY ISSUES**

In most countries, data from national household surveys do not show significant differences in the underweight prevalence of boys and girls. However, these trends should continue to be monitored, particularly at the sub-national level and within subgroups of the population.

**DATA FOR GLOBAL AND REGIONAL MONITORING**

For international comparisons and global or regional monitoring, the United Nations Children’s Fund (UNICEF) compiles international data series and estimates based on data from national surveys.

UNICEF reviews and compiles survey results reported by individual countries every year and updates its global database on child nutrition indicators. In 2009, UNICEF started to convert its global trend database on child undernutrition from estimates based on the United States National Center for Health Statistics (NCHS)/WHO reference population to estimates based on the new WHO Child Growth Standards by re-analyzing available household survey data.

Estimates may come from different data sources, usually surveys conducted in different years that are recorded and published separately. In rare cases when nationally representative estimates come from different sources in the same year, all sources are included in the global database. However, only one source is selected as the point estimate to be published, and this selection is based on a thorough data quality review.

Regional and global estimates are based on averages weighted by the total number of children under five years of age. These estimates are presented only if available data cover at least 50 per cent of the total children under five years of age in the regional or global groupings.

Latest available estimates of underweight prevalence are published annually in December by UNICEF in *The State of the World’s Children*and online. WHO also publishes estimates through its online database: *WHO Database on Child Growth and Nutrition.*However, due to slight differences in calculations, there may be discrepancies between the estimates of UNICEF and WHO.

**SUPPLEMENTARY INFORMATION**

**EXAMPLES**

**REFERENCES**

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1.9 Proportion of population below minimum level of dietary energy consumption

**GOAL AND TARGET ADDRESSED**

Goal 1. Eradicate extreme poverty and hunger
Target 1.C: Halve, between 1990 and 2015, the proportion of people who suffer from hunger

**DEFINITION AND METHOD OF COMPUTATION**

Definition
The proportion of the population below the minimum level of dietary energy consumption, referred to as *the proportion of undernourished people*, is defined as the proportion of people in a population who suffer from hunger or food deprivation.

This indicator is expressed as a percentage.

Concepts
*Undernourishment*refers to the condition of people whose food consumption is continuously below a minimum dietary energy requirement for maintaining an acceptable minimum body size, a healthy life and carrying out light physical activity.

The estimate of the proportion of *undernourished people* is a measure of food deprivation based on the following three parameters:

* The three-year average amount of *food available for human consumption* per person per day;
* The *level of inequality* in access to that food; and
* The *minimum dietary energy required* for an average person—expressed in kilo-calories per day.

The *food available for human consumption* is the sum of domestically produced and imported food products, minus food exports, food withdrawn from stocks for purposes other than consumption and food losses. This is then converted into dietary energy terms expressed in kilo-calories and divided by the total population and the number of days in the year to come up with the average dietary energy consumption per person per day. To smooth annual fluctuations, a three-year average is calculated.

The *level of inequality in access to food* is measured by two coefficients: (1) the variation of dietary energy consumption due to income differences derived from food consumption and income data collected in household surveys; (2) the variation of dietary energy consumption due to biological factors derived from anthropometric survey data on attained height by sex and age, standards on energy requirements and data on the country sex-age population structure. Inequality in access to food due to income differences may be affected by changes in economic, socio-political and environmental factors such as physical availability of food and prices. Inequality in access to food due to biological factors reflects sex and age ranges in the total population and is affected by the population ageing.

The *minimum level of dietary energy requirements*, or cut-off point, is derived using energy standards established by the Food and Agriculture Organization of the United Nations, World Health Organization and United Nations University (FAO/WHO/UNU) for different sex and age groups performing sedentary physical activity and with a minimum acceptable body-weight for attained heights. Since a large adult needs almost double the dietary energy of a three-year old child, the minimum energy requirement per person for each country should take into account its mix of age, gender and body sizes. The cut-off point for the purpose of estimating undernourishment is calculated nationally as a population per person per day average value, based on dietary energy needed by different age and gender groups and the proportion of the population represented by each age group for a given year.

Method of computation
As it is not feasible to determine the precise energy consumption of individuals, the estimate of the proportion of individuals with insufficient energy consumption is defined within a probability distribution framework, as follows:




The graph above illustrates the assumption that dietary energy consumption follows a log normal distribution. The curve depicts the proportion of the population corresponding to different per person per day dietary energy consumption levels (x) represented by the horizontal line. The area under the curve up to the minimum acceptable dietary energy consumption (rL) represents the proportion of the population below the minimum level of dietary energy consumption or the proportion of the population undernourished (pU).

**RATIONALE AND INTERPRETATION**

This indicator measures an important aspect of the food insecurity of a population and the capacity for sustainable development which demands efforts to reduce poverty, including finding solutions to hunger and malnutrition. Alleviating hunger is a prerequisite for sustainable poverty reduction since under-nourishment seriously affects, among other things, labour productivity, health and learning capacity and hence earning propensity. It is necessary to use both food deprivation and child malnutrition (Indicator 1.8) indicators to have a comprehensive understanding of changes in the food and nutrition situation of countries.

The indicator ranges from 0 (no undernourished population) to 100 (the entire population is undernourished). A higher value of this indicator, means that more people suffer from undernourishment (food deprivation) in a given country. The following undernourishment categories for a population are considered the most common:

* Less than 5 per cent—Not a significant level of undernourishment.
* From 5 to 9 per cent—Low level of undernourishment.
* From 10 to 19 per cent—Moderate level of undernourishment.
* From 20 to 34 per cent—High level of undernourishment.
* 35 per cent and above—Very high level of undernourishment.

Changes in the indicator guide governments and international organizations in formulating policies and implementing actions towards: improving food availability and access by the population, decreasing the negative impact of increasing income inequalities on food access and coping with trends in food needs generated by the impact of population policies.

**SOURCES AND DATA COLLECTION**

Data are usually produced by national statistical offices, ministries of agriculture and other national institutions that prepare national food balances or are concerned with national food security. Data on food production and trade are generally available on a yearly basis. Food production data are compiled in accordance with the agricultural calendar, while trade data are compiled in accordance with the business calendar. Undernourishment estimates are derived for three-year periods to account for differences between these calendars.

Data for the calculation of this indicator could be obtained from the following sources:

* Food production is compiled by ministries of agriculture, ministries of industry, etc. on an annual basis;
* Food trade is compiled by ministries of trade, industry and commerce and customs departments on an annual basis;
* Private and public sector food balance sheets which estimate food availability for human consumption;
* Average daily dietary energy consumption per person (private consumption) by income or total expenditure levels (deciles of per person income or total expenditure) is derived from National Household Surveys that collect food consumption data. Such surveys are conducted on a less frequent basis by national statistical offices to estimate inequality in access to food due to income;
* Average heights attained by sex and age-group are derived from National Anthropometric Surveys to derive inequality in access to food due to biological factors. Such surveys are available on an occasional basis from national statistical offices or ministries of health; and
* Population and sex and age structure data are from national censuses conducted by national statistical offices.

The accuracy of dietary energy consumption estimates varies from country to country. Evaluation of accuracy is done through consistency checks, based on complete revisions of all related information (concepts, definitions and methods).

Country data on changes in the variance of the distribution of dietary energy consumption due to income variations in the population have been limited during the last three decades. This is because food consumption data collected in national household surveys need to be converted to dietary energy consumption in order to be utilized. Also, data on height secular trends by sex and age-groups are scarce since countries don’t usually conduct regular anthropometric surveys in the total population.

Data on population structure by sex and age group are updated periodically. Changes in the age-sex structure of the population impact both minimum dietary energy consumption and the variance of dietary energy consumption. Therefore, these changes need to be taken into account.

**DISAGGREGATION**

In assessing food insecurity, it is important to consider geographical areas that may be particularly vulnerable (such as areas with a high probability of major variations in food production or supply, or areas that are subject to natural disasters or are not well connected to markets) and the population groups whose access to food is precarious or sporadic (due to structural or economic vulnerabilities), such as particular ethnic or social groups. Gender differences may also be more pronounced in some social and ethnic groups.

To support disaggregated estimates, food consumption data collected through National Household Budget Surveys are used to estimate the proportion of undernourished people in various population groups at sub-national levels (defined geographically or by household or household member characteristics).

**COMMENTS AND LIMITATIONS**

In the methodology for estimating the proportion of undernourished people, a basic problem concerns the use of energy requirement norms and energy consumption for individuals. Even after taking into account the most influential factors on energy requirements and consumption, such as age, sex, body weight and activity, differences exist in the energy requirement of individuals. As it is not feasible to determine the energy consumption of individuals, the estimate of the proportion of individuals with insufficient energy consumption is defined within a probability distribution framework, which means that the results are not always 100 per cent accurate.

For many countries, the reliability of the underlying data and measures of inequality are uncertain. A relatively small variation in just one of these parameters can produce significant differences in a country’s estimated levels of hunger. Furthermore, estimates based on national production and trade figures cannot be used to pinpoint whether hunger has become concentrated in specific geographic areas and/or socio-economic groups.

This indicator is based on quantities of food that are available and accessible for human consumption but it does not take into account the quality of the food. Food deprivation can decrease because people have reached minimum levels of energy requirements, but people can still face deficiencies due to insufficient quantities of vitamins and minerals, as well as deficiencies in protein and essential amino-acids that are required for proper body growth and maintenance.

**GENDER EQUALITY ISSUES**

Intra-household access to food may show disparities by sex. Also, cultural patterns of distribution and nutritional taboos may affect women’s nutrition. Women’s higher requirements for iron during pregnancy and breast-feeding may result in iron deficiency anaemia, which affects the result of pregnancy and may increase women’s susceptibility to diseases. Therefore, whenever household survey food consumption data are available by sex, efforts should be made to conduct gender-based undernourishment analyses, including analyses of iron available in diets.

**DATA FOR GLOBAL AND REGIONAL MONITORING**

FAO is the agency responsible for compiling and monitoring this indicator at the global level, and for producing regional aggregates periodically.

Average food available for human consumption comes from national “food balance sheets” compiled by FAO every year. FAO then divides the energy equivalent of the available food by the total population to come up with the amount of average daily energy consumption. Data from household surveys are used to derive a coefficient of variation to account for the degree of inequality in access to food. The minimum dietary energy requirement level is derived from the FAO/WHO/UNU energy standards for different sex and age population groups.

A number of countries have estimated the proportion of undernourished people at national and sub-national levels using the FAO methodology, but using different sources of data on the amount of food available for human consumption. Private food consumption data are collected in household surveys that do not necessarily coincide with international level estimates which are derived from national food balances.

The national estimate is based on food consumed in households while the international estimate includes not only household food consumption but also public food consumption, except the food consumed by tourists and other non-local population groups (e.g. refugees). Public food consumption occurs in establishments such as prisons, hospitals, hotels, military barracks, residences and public food services (e.g. Red Cross).

Estimates for regional and sub regional monitoring are aggregated by adding up the number of undernourished people in each country within a region or sub-region and dividing this sum by the total population of the same region or sub-region.

**SUPPLEMENTARY INFORMATION**

**EXAMPLES**

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2.1 Net enrolment ratio in primary education

**GOAL AND TARGET ADDRESSED**

Goal 2: Achieve universal primary education
Target 2.A: Ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling

**DEFINITION AND METHOD OF COMPUTATION**

Definition
The net enrolment rate (NER) in primary education is the ratio of the number of *children of official primary school age* who are enrolled in *primary education*to the total population of *children of official primary school age*, expressed as a percentage

Concepts
*Children of official primary school age* are defined by the International Standard Classification of Education (ISCED97). The customary or legal age of entrance to primary school is not younger than five years or older than seven years and in principle covers six years of full-time schooling. Where more than one system of primary education exists within a country, the most widespread or common structure is used for determining the official school age group.

*Primary education* normally consists of programmes designed on a unit or project basis to give pupils a sound basic education in reading, writing and mathematics along with an elementary understanding of other subjects such as history, geography, natural science, social science, art and music.

Method of computation
To calculate the indicator, it is necessary to first determine the population of official primary school age, preferably by reference to the theoretical starting age and duration of ISCED97 Level 1 (primary education), for international comparability.

Then, the number of pupils of the official primary school age who are enrolled in primary education is divided by the population for the same age-group and the result is multiplied by 100.


Some children of primary school age might enter primary school early and advance to secondary school before they reach the official upper age limit of primary education. The NER does not include those children, underestimating the number of children who actually receive a full course of primary education. To overcome this limitation, an *adjusted net enrolment rate in primary education* can be calculated as the number of children of official primary school age who are enrolled either in primary or secondary education expressed as a percentage of the total population of children of official primary school age.


**RATIONALE AND INTERPRETATION**

The indicator is used to monitor progress toward the goal of achieving universal primary education (UPE), identified in both the Millennium Development Goals and Education for All initiatives. Net enrolment refers only to pupils of official primary school age, whereas gross enrolment includes pupils of any age.

Net enrolment rates below 100 per cent provide a measure of the proportion of primary school age children who are not enrolled in primary school. Values below 100 alert policy makers to the need for policies that increase primary school enrolment in order to achieve the goal of UPE. Policies can target different populations of children depending on the characteristics of unenrolled children. Some children may have entered school and then dropped out in subsequent years requiring policies to increase retention rates. Other children may never have entered school requiring policies that increase the economic, social or physical accessibility of schools.

**SOURCES AND DATA COLLECTION**

Data on school enrolment are usually recorded by the ministry of education or derived from surveys and censuses. If administrative data are not available, household survey data may be used, although household surveys usually measure self-reported attendance rather than enrolment as reported by schools. Also, household survey data may not be comparable between surveys. A serious problem with household survey data is also the inaccurate recording of pupils’ ages, depending on the time of the year that the survey is conducted. Later in the school year, some younger children may appear to be of primary school age when in fact they are not. It can also happen that older children appear to be of secondary school age when in fact they were of primary age at the start of the school year.

Among international surveys, Multiple Indicator Cluster Surveys (MICS) and Demographic and Health Surveys (DHS) and sometimes also Living Standards Measurement Studies and Core Welfare Indicators Questionnaire Surveys in Africa provide school attendance data.

Data should be organized according to the levels of education defined in ISCED97 to ensure international comparability of resulting indicators.

When using administrative data, population estimates are used in the denominator. The use of different population estimates in the denominator is often at the origin of differences between national and international data for this indicator, as international population estimates generally differ from those available at the national level.

**DISAGGREGATION**

Rural and urban differences are particularly important in the analysis of enrolment data, because of significant differences in school facilities, available resources, demand on children’s time for work, and drop-out patterns.

It is also important to consider data disaggregated by sex, age, geographic location, social and ethnic groups, and type of school. Gender differences in education may be more pronounced in some social and ethnic groups.

Most countries collect data disaggregated by sex, age and type of school. Although administrative data cannot generally distinguish between urban and rural enrolment, household surveys may allow disaggregating data for urban and rural areas.

**COMMENTS AND LIMITATIONS**

The theoretical maximum NER is 100 per cent. However, the NER may exceed this maximum due to inconsistencies between population and enrolment data derived from different data sources. School enrolments may be over or under-reported for various reasons.

Administrators may report exaggerated enrolments, especially if there is a financial incentive to do so. Inflated enrolment can be detected by examining data trends in relation to other variables closely related to enrolment (for instance, teachers and finance). Misreporting of enrolment by age is more difficult to overcome as children’s birth certificates may not exist or are not checked by school heads.

On the other hand, survey data may under-report attendance as they might not reflect actual attendance or dropout during the school year. Under-coverage may also result from surveys that miss schools or a sector of education; and children’s ages may be inaccurately estimated or misstated.

The NER can be compared with the Gross Enrolment Ratio (GER) to assess the incidence of under-aged and over-aged enrolment in primary education. The GER represents the number of pupils enrolled in primary education, regardless of age, divided by the population of official primary school age, multiplied by 100. The GER can also provide an estimate of the number of school places available and hence whether the education system has the capacity to provide education for all children of primary school age.

**GENDER EQUALITY ISSUES**

Families may perceive the value of education differently for boys and girls. In situations of limited resources, girls are more likely to suffer from limited access to education, especially in rural areas. However, where basic education is widely accepted and overall enrolment is high, girls’ enrolment tends to be equal or higher than boys’ enrolment. In order to highlight and monitor these differences, it is important to disaggregate the indicator by sex. It is also important to consider disaggregation by geographical areas and social or ethnic groups and sex, since gender differences may be more pronounced in some groups.

**DATA FOR GLOBAL AND REGIONAL MONITORING**

The United Nations Educational, Social and Cultural Organization Institute for Statistics (UIS) produces time series for this indicator based on enrolment data reported by education ministries or national statistical offices through questionnaires sent annually to countries, and United Nations population estimates. For the global monitoring of the Millennium Development Goals, UIS reports the *adjusted net enrolment ratio in primary education*. Population estimates are revised and submitted to international agencies every two years by the United Nations Population Division based on recent country population censuses or updated information on births, deaths and migration. Consequently, UIS updates its time series in order to make trends comparable for UPE monitoring.

Countries are asked to report data according to ISCED, the international standard classification of education, to allow international comparison and benchmark progress towards national and international goals. ISCED is a framework for the compilation and presentation of national and international education statistics and indicators that covers all organized and sustained learning activities for children, youth and adults including those with special educational needs. It provides a sound basis for statistical comparisons between different education systems, allowing for reliable comparisons among countries. Countries are currently asked to report according to ISCED97. A new revision (ISCED 2011) was adopted in 2011. The first international data collections based on the new revision are planned to begin in 2014. To make historical data comparable over time, data reported before 1998 are adjusted for countries where the primary school enrolment structure is different from the ISCED97 framework.

The data received by UIS are validated using electronic error detection systems that check for arithmetic errors and inconsistencies and perform trend analysis for implausible results. Queries are taken up with the country representatives reporting the data so that corrections can be made or explanations given to errors and implausible results.

When national data are not based on ISCED97, certain adjustments are made. In addition, if necessary, UIS adjusts nationally reported data for under-reporting or over-reporting. In such cases, the results will normally be designated as UIS estimates.

In countries for which administrative data by age are not available, household survey data may be used to estimate the age breakdown structure. UIS may also adjust the data to overcome inconsistencies between population and enrolment data when the NER exceeds 100 per cent. For discrepancies of up to 5 percentage points, the indicator is adjusted using a capping factor that sets the higher of the male and female adjusted NERs to 100 per cent and adjusts the other values proportionately so that the Gender Parity Index (see “DEFINITIONS AND METHOD OF COMPUTATION” for Indicator 3.1) of the new set of values remains the same as for the original values.

**SUPPLEMENTARY INFORMATION**

**EXAMPLES**

**REFERENCES**

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2.2 Proportion of pupils starting grade 1 who reach last grade of primary

**GOAL AND TARGET ADDRESSED**

Goal 2: Achieve universal primary education
Target 2.A: Ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling

**DEFINITION AND METHOD OF COMPUTATION**

Definition
The proportion of pupils starting grade 1 who reach last grade of primary measures the percentage of a cohort of pupils enrolled in grade 1 of the *primary level of education*in a given school year who are expected to reach the last grade of primary school, regardless of repetition.

Concepts
*Primary education*, according to the International Standard Classification of Education (ISCED97), normally consists of programmes designed on a unit or project basis to give pupils a sound basic education in reading, writing and mathematics along with an elementary understanding of other subjects such as history, geography, natural science, social science, art and music.

*Survival rate to the last grade of primary education* is another term that is sometimes used to describe the proportion of pupils starting grade 1 who are expected to reach the last grade of primary education.

Method of computation
The indicator is typically estimated from data on enrolment by grade for two consecutive years and repeaters by grade for the second year, in a procedure called the reconstructed cohort method. This method assumes that drop-outs do not return to school; that the promotion, repetition and drop-out rates for the last two years remain constant over the entire period in which the cohort is enrolled in school; and that the same rates apply to all pupils enrolled in a given grade, regardless of whether they previously repeated a grade.

The calculation is made by dividing the total number of pupils belonging to a school cohort who reach each successive grade up to the last grade of primary education by the number of pupils in the school cohort (in this case the students originally enrolled in grade 1 of primary education) and multiplying the result by 100.


**RATIONALE AND INTERPRETATION**

This indicator measures an education system’s success in retaining students from one grade to the next as well as its internal efficiency. Various factors account for poor performance on this indicator, including low quality of schooling, discouragement over poor performance and the direct and indirect costs of schooling. Students’ progress to higher grades may also be limited by the availability of teachers, classrooms and educational materials.

Indicator values range from 0 (none of the pupils starting grade 1 finish primary education) to 100 (all of the pupils finish). *Survival Rates* approaching 100 per cent indicate a high level of retention and a low incidence of dropout. It is important to note that it does not imply that all children of school age complete primary education. The *Survival Rate* is a percentage of a cohort of pupils (that is, children who have already entered school) and not a percentage of children of school age.

Survival rate to the last grade of primary education is of particular interest for monitoring progress toward universal primary education (UPE). It predicts the pattern of progression through the education system (promotion, repetition and drop out), and subsequent retention to the last grade of primary school, assuming no change in the current pattern. If survival rates are low, policy makers may need to take appropriate measures to improve the internal efficiency of the education system in order to achieve the UPE goal.

**SOURCES AND DATA COLLECTION**

The indicator is based on grade-specific enrolment data for two successive years and on grade repeater data for the second year. These data are collected by countries on an annual basis through regular school surveys. Household survey data, which can be obtained from Multiple Indicator Cluster Surveys (MICS) and Demographic and Health Surveys (DHS) in a standard way, can also be used as they include information on current and last year school grades, as well as on level of attendance.

**DISAGGREGATION**

Rural and urban differences are particularly important for the analysis of education data, because of significant differences in school facilities, available resources, demand on children’s time for work, and drop-out patterns. It is also important to consider data disaggregated by sex, age, geographic location, social and ethnic groups, and type of school. Gender differences in education may be more pronounced in some social and ethnic groups.

Most countries collect data disaggregated by sex, age and type of school. Although administrative data cannot generally distinguish between urban and rural enrolment, household surveys may allow disaggregating data for urban and rural areas.

The calculation method at the sub-national level follows the same model as the method at the national level. However, results at the sub-national level from administrative records may be distorted due to pupil movement and transfers between schools and regions during two consecutive years.

**COMMENTS AND LIMITATIONS**

Since the calculation of the *proportion of pupils starting grade 1 who reach last grade of primary* is based on pupil-flow rates, the reliability of the survival rate depends on the consistency of data coverage on enrolment and repeaters over time and across grades. Given that this indicator is usually estimated using cohort analysis models that are based on a number of assumptions, care should be taken in using the results in comparisons. Because flows caused by re-entrants, grade skipping, migration or transfers during the school year are not adequately captured, the indicator does not fully measure the true degree to which school entrants survive through primary education.

To complete the picture of primary completion, the indicator should be complemented by the intake rate to grade 1, which is given by the new entrants in the first grade of primary education expressed as a percentage of the population at the official primary school-entrance age. Together, these two indicators provide a much better measure of the proportion of children in the population who complete primary education.

**GENDER EQUALITY ISSUES**

The frequency of repetition and dropout r varies between girls and boys. Reasons for leaving school also differ for girls and boys, and by age. Families’ demand on children’s time to help in household-based work is an important factor and is often greater for girls. Also important for girls are security and proximity of school facilities and the availability of adequate sanitation and other services in schools.

**DATA FOR GLOBAL AND REGIONAL MONITORING**

The United Nations Educational, Social and Cultural Organization Institute for Statistics (UIS) monitors this indicator globally, producing time series on school enrolment and repeaters based on data reported by education ministries or national statistical offices through questionnaires sent annually to countries. Countries are asked to report data according to the levels of education defined in ISCED to ensure that indicators are internationally comparable. (On ISCED, see also DATA FOR GLOBAL AND REGIONAL MONITORING for [indicator 2.1](http://mdgs.un.org/unsd/mi/wiki/2-1-Net-enrolment-ratio-in-primary-education.ashx))

The data received by UIS are validated using electronic error detection systems that check for arithmetic errors and inconsistencies and perform trend analysis to detect implausible results. Queries are taken up with the country representatives reporting the data so that corrections can be made or explanations given to errors and implausible results.

When national data are not based on ISCED97, certain adjustments are made. In addition, if necessary, UIS adjusts nationally reported data for under-reporting or over-reporting. In such cases, the results will normally be designated as UIS estimates.

No regional averages are generated for this indicator.

**SUPPLEMENTARY INFORMATION**

**EXAMPLES**

**REFERENCES**

See “REFERENCES” from [Indicator 2.1](http://mdgs.un.org/unsd/mi/wiki/2-1-Net-enrolment-ratio-in-primary-education.ashx).

2.3 Literacy rate of 15-24 year-olds, women and men

**GOAL AND TARGET ADDRESSED**

Goal 2: Achieve universal primary education
Target 2.A: Ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling

**DEFINITION AND METHOD OF COMPUTATION**

Definition
The literacy rate of 15–24 year-olds is defined as the proportion of the population aged 15–24 years who can both read and write with understanding a short simple statement on everyday life.

Concepts
*Literacy*, in addition to the ability to read and write with understanding a short simple statement, generally also encompass numeracy, that is, the ability to make simple arithmetic calculations.

The *youth literacy rate* is another term for the literacy rate of 15–24 year-olds.

Method of computation
The youth literacy rate is the number of people aged 15–24 years who are literate divided by the total population in the same age group and multiplied by 100.



Since literacy data are not always available, modelling techniques can be used to produce annual estimates based on information from national censuses and surveys.

**RATIONALE AND INTERPRETATION**

The youth literacy rate reflects the outcomes of the primary education system over the previous 10 years or so, and is often seen as a proxy measure of social progress and economic achievement. The literacy rate for this analysis is simply the complement of the illiteracy rate. It is not a measure of the quality and adequacy of the literacy levels needed for individuals to function and participate in a society. Individual reasons for failing to achieve the literacy standard may include a low quality of schooling, difficulties in attending school or dropping out before attaining basic and sustainable education skills.

The indicator ranges from 0 (all the youth are illiterate) to 100 (all the youth are literate). Literacy rates below 100 per cent indicate the need to increase school participation and education quality.

**SOURCES AND DATA COLLECTION**

Population and housing censuses are the primary sources of basic literacy data. These data are usually collected together with other household characteristics including the educational, demographic and socio-economic statuses of household members. These literacy data are generally based on self-declaration (i.e. one person, usually the head of the household, indicates whether each member of the household is literate or not). The literacy definition may vary from one country to another or within the same country, from one population census to another. The collection of literacy data from this primary source follows the regularity of national population censuses which, in general, is every ten years.

National sample surveys are a second source of literacy data and involve the use of a literacy variable in a household or individual sample survey. These surveys are often designed to meet immediate data needs and do not always include systematic strategies for future repeats. So even though they may provide timely data, they may not always be a consistently reliable source over time.

International sample surveys, such as the Multiple Indicator Cluster Surveys (MICS), are a third source and involve the use of a literacy variable in a household or individual sample survey.

Population censuses are usually comprehensive and representative country-wide. Sample surveys may not be nationally representative. The targeted population of the survey may emphasize certain population categories more than others. For example, some surveys tend to give more emphasize to females aged 15–49.

Educational attainment should not be used as a proxy for literacy, as not all children who have received primary education acquired sustainable literacy skills.

**DISAGGREGATION**

Rural and urban differences are particularly important in the analysis of education data because of significant differences in school facilities, available resources, and demand on children’s time for work and drop-out patterns. It is also important to consider disaggregation by geographical area and social or ethnic groups. Gender differences may be more pronounced in some social and ethnic groups.

Literacy rate data should be collected to enable disaggregation by location (sub-national, urban and rural); age group (five-year age cohorts for the population aged 10 years and over (10–14, 15–19… 80–84, 85+)); and sex (total, male and female).

**COMMENTS AND LIMITATIONS**

Literacy is measured crudely in population censuses, either through self or household report or by assuming that people with no schooling are illiterate, making international comparisons difficult. Comparability over time, even for the same survey, may also be a problem because definitions of literacy used in surveys are not standardized.

Shortcomings in the definitions of literacy, measurement problems, and infrequency of censuses and household surveys weaken this indicator’s utility for monitoring education outcomes related to the goal of achieving universal primary education.

Literacy questions should be administered as part of national censuses and household surveys, or as part of post-census sample enumeration. Ideally, literacy tests should be included as part of the questionnaires, so literacy rates are not based on self-declaration.

**GENDER EQUALITY ISSUES**

Higher illiteracy rates for women are the result of lower school enrolment and early drop-outs. Moreover, women generally have less access to training and literacy programmes. Female literacy rates disaggregated by geographic area and socio-economic status of the population are of interest to policy makers because marginalized women are more likely to suffer from illiteracy.

**DATA FOR GLOBAL AND REGIONAL MONITORING**

The United Nations Educational, Social and Cultural Organization Institute for Statistics (UIS) is responsible for producing this indicator for global monitoring. The UIS collects literacy data from member states on an annual basis. These data are based on observed data reported by countries and territories as a response to a questionnaire that collects information and data on literacy. The primary respondent is the national statistical office (or equivalent agency) within each respective country and territory.

The data collected consist of the counts of the literacy for the population 10 years of age and older by region, urban/rural area, age group and sex. In order for the UIS to evaluate the quality and format of the data for inclusion in their database, it is necessary for countries to provide metadata corresponding to the data set. In addition, much of this information is made available to data users in order to facilitate their interpretation and use.

As definitions and methodologies used for data collection differ by country, comparisons are to be used with caution. In its efforts to improve the international comparability of literacy data, the UIS has developed guidelines to determine the suitability of national data for reporting at the international level. The guidelines specify that data collection tools must incorporate a “direct question” to assess literacy as part of its methodology. Data submitted to UIS must receive a satisfactory evaluation based on the responses to the questionnaire’s metadata section and be in the format required by the UIS. UIS produces estimates for countries with no recent national observed literacy data as well as projections to 2015 using the Global Age-specific Literacy Projections Model.

Population estimates from the United Nations Population Division are used to calculate the number of literates and illiterates. When these United Nations population estimates are not available, national population estimates are used.

Regional and global literacy indicators are calculated on the basis of the published data and when data are not available, imputations are made using secondary data sources. Averages, weighted by the population aged 15–24 of each country or territory within the region, are used to calculate regional figures. All countries and territories with UNPD population or national population estimates are included in the regional figures.

**SUPPLEMENTARY INFORMATION**

**EXAMPLES**

**REFERENCES**

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3.1 Ratios of girls to boys in primary, secondary and tertiary education

**GOAL AND TARGET ADDRESSED**

Goal 3: Promote gender equality and empower women
Target 3.A: Eliminate gender disparity in primary and secondary education, preferably by 2005, and in all levels of education no later than 2015

**DEFINITION AND METHOD OF COMPUTATION**

Definition
The *ratio* of girls to boys in*primary, secondary or tertiary education, or Gender Parity Index*, is the ratio between the Gross Enrolment Ratio (GER) of girls and that of boys, for each level of education.

Concepts
*Primary education*, according to the International Standard Classification of Education (ISCED97), normally consists of programmes designed on a unit or project basis to give pupils a sound basic education in reading, writing and mathematics along with an elementary understanding of other subjects such as history, geography, natural science, social science, art and music.

*Secondary education* is divided by ISCED97 into lower secondary education and upper secondary education. Lower secondary education is generally designed to continue the basic programmes of the primary level but with more subject-focused teaching, requiring more specialized teachers for each subject area. In upper secondary education, instruction is generally organized even more along subject lines and teachers typically need an even higher or more subject-specific qualification.

*Tertiary education* is defined by ISCED97 as programmes with an educational content more advanced than what is offered at the secondary level. The first stage is composed of largely theoretically based programmes intended to provide sufficient qualifications for gaining entry into advanced research programmes and professions with high skill requirements; and programmes that are generally more practical, technical and/or occupationally specific. The second stage of tertiary education comprises programmes devoted to advanced study and original research, which lead to the award of an advanced research qualification.

The *Gender Parity Index* (GPI) is another term used to describe the ratio of girls to boys in primary, secondary or tertiary education. The GPI is calculated based on the Gross Enrolment Ratio for a given level of education.

The *Gross Enrolment Ratio* (GER) is the total enrolment in a specific level of education, regardless of age, expressed as a percentage of the eligible official school-age population corresponding to the same level of education in a given school year.

Method of computation
The GPI is calculated by dividing the female GER by the male GER for a given level of education. To calculate the GER it is first necessary to determine the official school age population for each level of education. Then, the number of students enrolled in each level of education is divided by the official school age population for that level of education, and the result is multiplied by 100. GERs for boys and girls are calculated separately.



Note: For example, if the entrance age for primary education is 7 years with a duration of 6 years, then is (7-12) years.

This method requires information on the structure of education (that is, the theoretical entrance ages and durations of primary, lower secondary and upper secondary education), enrolments in each level of education and the populations of the age groups corresponding to the given levels of education. The age group for tertiary education usually corresponds to a five- year duration following the theoretical completion age of upper secondary education. Separate figures for boys and girls are required.

**RATIONALE AND INTERPRETATION**

Gender parity in access to and participation in schooling is the first step toward gender equality in education. Eliminating gender disparity at all levels of education improves women’s health and well-being, position in family and society, economic opportunities and returns, and political participation. A mother’s level of education has also proved to have a strong positive effect on her children’s education and family health. Women’s education is also an important determinant of economic development. This indicator of equality of educational opportunities is a measure of both fairness and efficiency.

A GPI of 1 indicates parity between the sexes. A GPI lower than 1 indicates a disparity in favour of boys, that is, a disadvantage for girls; whereas a GPI greater than 1 indicates a disparity in favour of girls, that is, a disadvantage for boys.

**SOURCES AND DATA COLLECTION**

Data on school enrolment are usually recorded by the ministry of education or derived from surveys and censuses. If administrative data are not available, household survey data may be used, although household surveys usually measure self-reported attendance rather than enrolment as reported by schools. Also, household survey data may not be comparable between surveys. A serious problem with household survey data is also the inaccurate recording of pupils’ ages, depending on the time of the year that the survey is conducted. Later in the school year, some younger children may appear to be of primary school age when in fact they are not. It can also happen that older children appear to be of secondary school age when in fact they were of primary age at the start of the school year.

Among international surveys, Multiple Indicator Cluster Surveys (MICS) and Demographic and Health Surveys (DHS) and sometimes also Living Standards Measurement Studies and Core Welfare Indicators Questionnaire Surveys in Africa provide school attendance data.

Data should be organized according to the levels of education defined in ISCED97 to ensure international comparability of resulting indicators.

Population estimates used in the denominator of the Gross Enrolment Ratio can be obtained from population censuses and vital statistics registration. The use of different population estimates in the denominator is often at the origin of differences between national and international data for this indicator, as international population estimates generally differ from those available at the national level.

**DISAGGREGATION**

Rural and urban differences are important for the analysis of gender differences in school enrolment, because of significant differences in school facilities, available resources, demand on children’s time for work, and drop-out patterns that affect girls and boys differently. It is also important to consider disaggregation by geographical areas and social or ethnic groups since gender differences may be more pronounced in some groups. Disaggregation should focus on identifying marginalized populations, particularly those living in remote areas or belonging to minorities.

Most countries collect data disaggregated by sex, age, region, type of school, etc. Some countries however proceed with systematic data collection only for total enrolment, and disaggregations at the national level are extrapolated from data collected from a sample of schools. These breakdowns allow policy makers to target the population sub-groups where gender differences are more pronounced. Although administrative data cannot generally distinguish between urban and rural enrolment, household surveys may allow disaggregating data for urban and rural areas.

**COMMENTS AND LIMITATIONS**

Caution should be exercised in interpreting trends towards gender parity. For example, the indicator cannot help determine whether improvements in the ratio reflect increases in girls’ school participation (desirable) or decreases in boys’ participation (undesirable). Also, it also does not reveal whether those enrolled in school complete the relevant education cycles or, whether the overall level of participation in education is low or high.

Finally, the difference between the value of the GPI and the value 1—representing perfect parity—does not mean the same thing for girls and boys. For example, a GPI of 0.5—0.5 units away from parity—indicates that the value of the female component of the indicator (that is, the female GER) is half the value of the male component (that is, the male GER). By contrast, a GPI of 1.5—also 0.5 units away from parity—indicates that the value of the male component of the indicator is two-thirds of the value of the female component (not half). Consequently, a disadvantage for boys in terms of gender parity appears more drastic than a disadvantage for girls.

It is therefore important to supplement the analysis of trends in GPIs with analysis of trends in the GER of men and women.

Special attention should be paid to interpreting data related to tertiary education where a ratio in favour of girls may reflect the fact that a higher number of men than women study abroad or join the labour market early.

**GENDER EQUALITY ISSUES**

In situations of limited resources, families make difficult choices about sending their children to school. They may perceive the value of education differently for boys and girls. Girls are more likely than boys to suffer from limited access to education, especially in rural areas. But where basic education is widely accepted and overall enrolment is high, girls tend to equal or outnumber boys at primary and secondary levels. The pattern is similar in higher education, but with larger differences between the two sexes.

**DATA FOR GLOBAL AND REGIONAL MONITORING**

For global and regional monitoring, the United Nations Educational, Social and Cultural Organization Institute for Statistics (UIS) produces time series data based on enrolment data reported by education ministries or national statistical offices, through questionnaires sent annually to countries, and population estimates produced by the Population Division of the United Nations Department of Economic and Social Affairs (UNPD). Population estimates are revised and submitted to international agencies every two years by the United Nations Population Division based on recent country population censuses or updated information on births, deaths and migration. Consequently, UIS updates its time series in order to make trends comparable for UPE monitoring.

The Gender Parity Index is calculated for each level of education. To ensure international comparability, the official school age populations for each level of education are those defined in ISCED97. (on ISCED, see DATA FOR GLOBAL AND REGIONAL MONITORING for Indicator 2.1)

Country figures may differ from international figures because of differences between nationally defined school age populations and levels, and those defined in ISCED97 or differences in coverage (that is, the extent to which different types of education—for instance, private or special education—or different types of programmes—for instance, adult education or early childhood care and education—are included in national figures). There might also be differences between national population data and population estimates prepared by the UNPD, which are used by UIS as denominator for the indicator.

Regional and global averages are calculated on the basis of the data published by the UIS and using the best possible non-publishable estimates where no publishable data exist. Averages are produced using the appropriate school-age populations as weights. At the tertiary level, this is the five-year age group immediately following the theoretical end of secondary education as defined by ISCED97.

**SUPPLEMENTARY INFORMATION**

**EXAMPLES**

**REFERENCES**

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3.2 Share of women in wage employment in the non-agricultural sector

**GOAL AND TARGET ADDRESSED**

Goal 3. Promote gender equality and empower women
Target 3.A: Eliminate gender disparity in primary and secondary education, preferably by 2005, and in all levels of education no later than 2015

**DEFINITION AND METHOD OF COMPUTATION**

Definition
The share of women in wage employment in the non-agricultural sector is expressed as a percentage of female workers in total *wage employment* in the *non-agricultural sector*.

Concepts
*Wage employment* refers only to wage earners and salaried employees, or persons in paid *employment*jobs. Employees are typically remunerated by wages and salaries, but may also be paid by commission from sales, piece-rates, bonuses or payments in kind such as food, housing, training, etc. Wage employment does not include self-employed (employers, own-account workers, members of producers' cooperatives and contributing family workers).

*Employment* refers to persons above the nationally defined working age (different in every country, but generally close to 15 years) who worked or held a job during a specified reference period. Typically, the specified age group excludes children and the elderly. Included are persons who worked for pay or profit (or pay in kind); persons who were temporarily absent from a job for such reasons as illness, maternity or parental leave, holiday, training or industrial dispute; and unpaid family workers who worked for at least one hour, although many countries use a higher hour limit in their definition. The measure of employment is intended to capture persons working in both the formal and informal sectors.

The *non-agricultural sector* includes *industry* and *services*.

*Industry* includes mining and quarrying (including oil production), manufacturing, construction, electricity, gas and water. These activities correspond to divisions 2-5 in the International Standard Industrial Classification of All Economic Activities (ISIC-Rev.2), tabulation categories C-F in ISIC-Rev. 3 and tabulation categories C in ISIC-Rev. 4.

*Services* include wholesale and retail trade and restaurants and hotels; transport, storage and communications; financing, insurance, real estate and business services; and community, social and personal services. These activities correspond to divisions 6-9 in ISIC-Rev. 2, tabulation categories G-Q in ISIC-Rev. 3, and tabulation categories G-U in ISIC-Rev. 4.

Method of computation
The *share of women in wage employment in the non-agricultural sector* is equal to the total number of women in wage employment in the industrial and service sectors divided by the total number of people in paid employment in that same sector, multiplied by 100.



**RATIONALE AND INTERPRETATION**

This indicator measures the degree to which women have equal access to paid employment in the industry and service sectors. With the growing levels of development and related structural economic changes, production tends to move from the agricultural sector towards the non-agricultural sectors. At the same time, this causes a movement to paid employment jobs away from other types of jobs, with an accompanying emergence of monetized industrial and services sectors. The extent to which women have access to paid employment could thus reflect their integration into the monetary economy while benefiting from a more s more regular and largely monetary income.  This on turn would be expected to have a positive impact on women’s autonomy, self-reliance within the household and enhance personal development and decision-making power.

This indicators also indicates the degree to which labor markets are open to women in industry and services sectors, which affects not only equal employment opportunity for women, but also economic efficiency through flexibility of the labor market and the economy’s capacity to adapt to changes over time.

The indicator may vary from 0 per cent (there are only men in wage employment in the non-agricultural sectors) to 100 per cent (there are only women in wage employment in the non-agricultural sectors). Equal numbers of women and men in the sectors would result in an indicator value of 50 per cent. An increase in the indicator means that more women have obtained paid jobs, which has positive implications for poverty reduction.

Low shares, or declining shares of women in wage employment call for policies to increase employment opportunities for women, both in terms of access to jobs and the quality of such jobs. There is no optimal share for women in paid employment; this indicator should be assessed in conjunction with other labour market indicators to inform more specific labour market policies.

When interpreting the indicator, the share of women in total employment, unemployment and the economically active population should be taken into account in order to assess whether women are under- or over-represented in non-agricultural wage employment. It is also important to consider information on employment by status in employment, because it is known that women are more likely to work as unpaid family workers. Additional information on the situation of women in the labour market that should be analysed include level of education, level of remuneration, wage differentials,sectoral and occupational segregation, and women’s and men’s access to social protection.

**SOURCES AND DATA COLLECTION**

While labour force surveys constitute a primary source of information, data can also be obtained from population censuses, establishment censuses and surveys, other household surveys, administrative records of different types, and official estimates based on results from several of these sources.

The various sources differ in coverage, scope, units of measurement and methods of data collection. Each source has advantages and limitations in terms of the cost, quality and type of information yielded. The results from various sources can be combined, provided that concepts, definitions, coverage, reference period, classification, etc. agree as far as possible.

* Labour force surveys allow for the joint measurement of the employed, unemployed and economically inactive population. They can be designed to cover virtually the entire population of a country, all branches of economic activity, all sectors of the economy and all categories of workers, including own account workers, unpaid contributing family workers, and persons engaged in casual work or marginal economic activity. They have a unique advantage for obtaining information on the total labour force and its structure.

* Population censuses, typically held every ten years, identify the economically active population, the branch of economic activity, and status in employment. These data provide indispensable benchmarks for analysis of the labour force, but much more frequent household surveys are needed to measure current levels and trends.

* Employment information obtained from other household surveys may also be considered, such as income and consumption surveys, demographic and health surveys, living standards measurement, and Multiple Indicator Cluster Surveys (MICS).

Establishment censuses and surveys, enterprise surveys and social insurance records are useful in obtaining data on employment for specific groups of workers and industries, as required for this indicator. Moreover, they provide deeper insights as they allow data on employment to be related more accurately to data on earnings, skills, occupation and industry. They are more precise and less costly, but can be limited in content and coverage of the labour force.

Various sources of data may be available for different or same points in time.  However, such disparate sources are seldom completely comparable in their sampling methods, coverage and definitions and the results should be considered with great care in trying to determine comparability over time. Therefore, great care should be taken when trying to compare data over time. There are a number of reasons why data obtained from different sources may not be easily combined:

* *Population and geographical coverage variations*. Each source provides certain types of data. Population censuses, labour force surveys and official estimates may cover the relevant population in its entirety. On the other hand, results from establishment surveys and administrative records are likely to cover only large private and public sector employers, in particular in developing countries. Depending on the source, measurement methods and coverage may also vary over time.

Labour force and household surveys may have limited geographical coverage. Surveys may be limited to major cities and urban areas, and they may exclude remote areas or conflict zones. Surveys may also exclude younger or older age groups, members of the armed forces, temporary migrants working abroad and indigenous populations.
* *Conceptual variations*. Although there are clear international standards for the concepts in this indicator, countries may use different definitions for employment status in different surveys; especially for part-time workers, students, members of the armed forces, and household or contributing family workers. National statistical offices, even when using the conceptual guidelines of the International Labour Organization (ILO), do not necessarily follow the same definitions or classifications. Also, the coverage of wage employment may differ from one source to another and within one source over time.

**DISAGGREGATION**

The indicator can be disaggregated by geographical regions, urban and rural areas, age groups, income and ethnicity.

Other disaggregations will vary depending on the sample design of the data source. Countries could tabulate the data by branch of industry, number of hours worked, presence of small children and working time arrangement.

Disaggregated data assists policy makers in monitoring progress, creating an environment that promotes decent, productive work for women, and implementing specifically targeted policies and programmes.

**COMMENTS AND LIMITATIONS**

The main limitation of this indicator is that it does not reflect the quality of wage employment such as the level of remuneration, conditions of work, and the legal and social protection work offers.

In developing countries where non-agricultural wage employment represents only a small portion of total employment, this indicator is less effective in depicting the conditions of women. To overcome this limitation, the share of women in total employment, unemployment and the economically active population should be considered along with the MDG 3.2 to assess whether women are under- or over-represented in non-agricultural wage employment. In developing countries where most employment is in agricultural activities, and where employment is frequently unpaid, additional indicators are needed to evaluate the situation of women in the labour market. Also it is important to consider the status in employment since women are more likely than men to work as unpaid family workers.

Further, the indicator does not reveal any differences in the quality of the different types of non-agricultural wage employment, such as formal and informal employmnet, in terms of earning, conditions of work, or the provision of legal or social protection.

**GENDER EQUALITY ISSUES**

In developing regions and outside the agricultural sector, wage employment is a middle-class, urban phenomenon. Outside of urban areas, non-agricultural paid employment is limited and is more likely to go to men. Men more often hold regular and better remunerated jobs, whereas women are frequently in peripheral, insecure, less valued jobs as home workers, casual workers or part-time or temporary workers, all of which affect differences in income.

As economies develop, the share of women in non-agricultural wage employment becomes increasingly important. A higher share in paid employment can secure higher incomes for women, as well as economic security and well-being. However, this shift is not automatic, nor does it account for differentials in working conditions between men and women. Other variables need to be considered, such as levels of education, levels of remuneration and wage differentials, and the extent to which women and men benefit from labour legislation and social programmes.

**DATA FOR GLOBAL AND REGIONAL MONITORING**

Data for global and regional monitoring for this indicator are reported by the International Labour Organization Department of Statistics.

Comprehensive statistics on total and wage employment disaggregated by sex, branch of economic activity, occupation and status in employment are collected annually through a specialized questionnaire sent directly to national statistical authorities. Statistics are also sourced from national statistics publications and web sites.  These statistics, together with  relevant methodological information on national practices,  aredisseminated online in the ILO Database on Labour Statistics (LABORSTA), http://laborsta.ilo.org/.

Data are assessed for validation and consistency through qualitative and quantitative checks. All departures from international standards or classifications are indicated with footnotes and where necessary, countries are contacted for further clarifications.

Regional and global estimates are calculated as weighted averages of the country level indicator, where the weights correspond to each country’s share in the total economically active population in the non-agricultural sector in the region/world in the benchmark year 1990. As estimates of economically active population in the non-agricultural sector are not available for few countries and territories (mainly small islands with population of less than 30,000), their weights are estimated by assuming that about one third of the total population is active in the non-agricultural sector.

The formula used to estimate the indicator at the regional and global level is as follows:

Where *Ii* is the indicator for country *i*and *wi*is the share of country i in the total economically active population in non-agricultural sector in the world.

*Treatment of missing values*

Proxy series such as the share of women in total wage employment have been used when data on wage employment in non-agriculture do not exist or are not available. Underlying this approximation is the assumption that the share of women in total wage employment is not significantly different from that in wage employment in the non-agricultural sector. Sensitivity analysis conducted on a selected number of countries has shown that there is a strong correlation between the indicator and the auxiliary variable.

If a country has data for some years but not for others, it is assumed that data values in the missing years are not abnormal. Values for the missing years are estimated on the basis of changes in correlated series from another source or series. Where data from multiple sources or multiple series from the same source are available, data selection is based on a number of criteria, including: the consistency of the concepts, definitions and classifications with international standards; the quality of the data; the availability of methodological information; and the availability of data or sources over time.

Where country data are not available, and no auxiliary variable can be used as a proxy indicator, the values are imputed. The missing values are imputed on the assumption that the data that are available for a given country are representative of that country’s deviation from the average trend across time, which is estimated based on the whole sample in the region. The imputed values are used solely for producing regional and global estimates of the indicator. Their use for monitoring at the national level may not be appropriate.

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3.3 Proportion of seats held by women in national parliament

**GOAL AND TARGET ADDRESSED**

Goal 3. Promote gender equality and empower women
Target 3.A: Eliminate gender disparity in primary and secondary education, preferably by 2005, and in all levels of education no later than 2015

**DEFINITION AND METHOD OF COMPUTATION**

Definition
The proportion of seats held by women in national parliaments is the number of *seats* held by women members in single or lower chambers of national parliaments, expressed as a percentage of all occupied seats.

Concepts
*Seats* refer to the number of parliamentary mandates, also known as the number of members of parliament. Seats are usually won by members in general parliamentary elections. Seats may also be filled by nomination, appointment, indirect election, rotation of members and by-election.

Method of computation
The indicator is calculated as the total number of seats occupied by women divided by the total number of seats occupied in parliament and multiplied by 100.

**RATIONALE AND INTERPRETATION**

The indicator measures the degree to which women have equal access to parliamentary decision making. Women’s participation in parliaments is a key aspect of women’s opportunities in political and public life, and is therefore linked to women’s empowerment. Equal numbers of women and men in lower chambers would give an indicator value of 50 per cent.

A stronger presence of women in parliament allows new concerns to be highlighted on political agendas, and new priorities to be put into practice through the adoption and implementation of policies and laws. The inclusion of the perspectives and interests of women is a prerequisite for democracy and gender equality, and contributes to good governance. A representative parliament also allows the different experiences of men and women to affect the social, political and economic future of societies.

Changes in the indicator have been tracked over time. Although the international community has supported and promoted women’s participation in political decision-making structures for several decades, improvement in women’s access to parliament has been slow. This has led to the introduction of special policy measures to increase women’s shares of parliamentary seats in several countries. Those countries that have adopted special measures generally have greater representation of women in parliament than countries without special measures.

**SOURCES AND DATA COLLECTION**

Data for calculating this indicator are available in administrative records of national parliaments and electoral management bodies.

The information is available in all countries where a national legislature exists and therefore does not include parliaments that have been dissolved or suspended for an indefinite period.

**DISAGGREGATION**

The indicator can be disaggregated for analysis by geographical region and sub-region, legislature type (single or lower, parliamentary or presidential), the method of filling seats (directly elected, indirectly elected, appointed) and the use of special measures.

**COMMENTS AND LIMITATIONS**

There can be difficulties in obtaining information on by-election results and replacements due to death or resignation. These changes are ad hoc events, which are more difficult to track. This indicator also excludes the numbers and percentages of women in upper chambers of parliament.

Parliaments can vary in their capacity to engage in law making, oversight of government and representation of the electorate. In terms of measuring women’s political decision-making power, this indicator may be limited because many women still face obstacles in fully and efficiently carrying out their parliamentary mandate. Different constraints may come into play: women parliamentarians may find that they do not have the support of their peers or that the gender-based policies they advocate are at odds with the policies of the political parties they represent.

Numbers do matter however, and women’s increased presence in parliament does, at a minimum, facilitate the articulation of women’s concerns and alter the gender dynamics in parliament. The role of women parliamentarians needs to be considered alongside the role of other government actors such as the executive; and in relation to the national gender machinery and women’s groups in civil society.

**GENDER EQUALITY ISSUES**

The involvement of women in setting political priorities delivers a stronger and more representative democracy and results in better outcomes for citizens. While parliaments vary in terms of the number of women members, it is apparent that the efforts of women have resulted in more gender policies that are of benefit to them and the communities in which they are based. Women parliamentarians are likely the most ardent promoters and defenders of women and have redefined political priorities to include gender equality issues. But this role does not fall exclusively on women and there is a need to better understand how to forge a partnership between men and women and how men can further support gender equality issues.

**DATA FOR GLOBAL AND REGIONAL MONITORING**

Data for global and regional monitoring for this indicator are reported by the Inter-Parliamentary Union (IPU) secretariat.

After each general election or renewal, a questionnaire is dispatched from the IPU to parliaments to solicit the latest available data. If no response is provided, other methods are used to obtain the information, such as from the electoral management body, parliamentary web sites or Internet searches. Additional information gathered from other sources is regularly crosschecked with parliament.

Regional and global averages are calculated by dividing the total number of women members by the total number of seats filled in single or lower chambers in each region or in all national parliaments.

For international comparisons, this indicator is calculated considering only the single chamber in unicameral parliaments or the lower chamber in bicameral parliaments. It does not cover the upper chamber of bicameral parliaments, although this information is available on the IPU website at http://www.ipu.org/wmn-e/classif.htm.

**SUPPLEMENTARY INFORMATION**

**EXAMPLES**

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4.1 Under-five mortality rate

**GOAL AND TARGET ADDRESSED**

Goal 4. Reduce child mortality
Target 4.A. Reduce by two-thirds, between 1990 and 2015, the under-five mortality rate

**DEFINITION AND METHOD OF COMPUTATION**

Definition
The under-five mortality rate (U5MR) is the probability for a child born in a specified year to die before reaching the age of five, if subject to current age-specific mortality rates.

This indicator is expressed as number of deaths per 1,000 live births.

Concepts
A live birth is the complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of the pregnancy, which, after such separation, breathes or shows any other evidence of life, such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles, whether or not the umbilical cord has been cut or the placenta is attached. Each product of such a birth is considered a live birth.

Method of computation
The indicator is calculated as equal to the number of deaths of children under five in a calendar year divided by the number of live births in the same year and multiplied by 1,000.

The formula for computing this indicator is as follows:



where U5MR(n) is the under-five mortality rate for the calendar year n; D (0-4, n) is the number of children aged 0 to 4 during year n and who died during year n; and B (n) is the number of live births occurring during year n.

Two methods exist for calculating the U5MR: the direct method and the indirect method. The direct method requires each child’s date of birth, survival status, and date or age at death. This information is typically found in vital registration systems and in household surveys that collect complete birth histories, such as the Demographic and Health Surveys. A complete birth history records the dates of birth, and, if applicable, the dates of death of all children born to each woman that is interviewed. The direct method of estimating child mortality involves taking the data from the complete birth histories and estimating a life table. The method calculates the probability of dying before age five for children born alive during five-year periods before the survey (0-4, 5-9, etc.).

The indirect method requires less detailed information that is available in censuses, general surveys, and household surveys that collect incomplete birth histories such as the Multiple Indicator Cluster Surveys (MICS). This information consists of the total number of children born to each woman, the number who survive and the woman’s age (or the number of years since she first gave birth). The indirect method uses the Brass method, which converts the proportion of reported dead children ever born to women in age groups 15–19, 20–24,… and 45–49 into estimates of the probability of dying before attaining certain ages. The Brass method assumes that the age of the mother can serve as a proxy for the age of her children and thus for how long the children have been exposed to the risk of dying.

Despite requiring minimal data collection efforts, the indirect method involves the use of model life tables to adjust the data for the age pattern of mortality in the general population. Finding an appropriate model life table can be difficult, since the Coale and Demeny model life tables that are usually used are derived largely from the European experience.

**RATIONALE AND INTERPRETATION**

This indicator is useful because it relates directly to the MDG target of reducing the under-five mortality rate by two-thirds. It also reflects the social, economic and environmental conditions in which children (and others in society) live, including the quality of health care. Data on disease incidence and prevalence (morbidity data) are frequently unavailable, so mortality rates are often used to identify vulnerable populations. This indicator helps identifying such populations because in high-mortality settings a large proportion of all deaths occur before age 5. In fact, the under-five mortality rate captures more than 90 per cent of global mortality among children under the age of 18.

Reducing child mortality is a strongly and universally supported development goal. However, despite considerable progress, a large gap remains in the risks of dying before age 5 between developed and developing countries. For instance, in 2010, under-five mortality was 7 per thousand live births in the developed regions and 63 per thousand in the developing regions. The gap between the developed and developing regions is larger, in proportional terms, for death rates in early childhood than for those in adult ages. Under-five mortality levels are influenced by poverty and low levels of education, particularly of mothers; the availability, accessibility and quality of health services; environmental risks including access to safe water and sanitation; and nutrition.

**SOURCES AND DATA COLLECTION**

Possible sources of data include vital registration systems, national population censuses, household surveys conducted by global programmes, and multi-purpose surveys conducted without international sponsorship.

The best source of data for computing direct estimates of U5MRs is a complete vital statistics registration system—one covering at least 90 per cent of vital events in the population. However, few developing countries have well-functioning civil registration systems. Alternatively, household surveys that collect complete birth histories (such as the DHS) can be used to get direct estimates of U5MRs.

If no source of direct estimates is available, population censuses, household surveys that collect incomplete birth histories (such as the MICS), and general surveys can be used to derive indirect estimates of U5MRs.

**DISAGGREGATION**

Under-five mortality generally shows large disparities across geographical areas and between rural and urban areas. Under-five mortality may also vary across socioeconomic groups. Children in some ethnic groups might be at higher risk of malnutrition, poorer health and higher mortality. Gender differences may be more pronounced in some social and ethnic groups and in rural areas.

Under-five mortality can also be disaggregated into separate rates referring, respectively, to the probability of dying before age 1 and the probability of dying between ages 1 and 4.

**COMMENTS AND LIMITATIONS**

Data on under-five mortality are more complete and timely than data on adult mortality. Under-five mortality rates are also considered to be more robust than infant mortality rates when estimates are based on information drawn from household surveys.

Vital registration systems are the preferred source of data on under-five mortality because data are prospective and cover the entire population. However, in countries lacking a fully functioning vital registration system, household surveys, such as DHS and MICS, have become the primary source of data on child mortality, even though there are some limits to their quality.

Survey data are subject to recall error. Interviewed women may omit births and deaths, or include stillbirths along with live births. Survey data may also suffer from survivor selection bias and age truncation. Mothers may misreport their children’s birth dates, current ages or ages at death—perhaps more so if the child has died. The heaping of deaths at age 12 months is especially common. Age heaping may transfer deaths across the one-year boundary and lead to underestimates of infant mortality rates. Fortunately, it has little effect on under-five mortality rates, which makes the U5MR a more robust estimate than the infant mortality rate when data are drawn from household surveys.

There are also gender-based biases in the reporting of child deaths. Moreover, survey frequency is generally only every three to five years.

Another limitation is that indirect estimates rely on model actuarial (“life”) tables that may be inappropriate for the population concerned. Indirect estimates obtained from household surveys have attached confidence intervals that need to be considered when comparing values over time or across countries. Similarly, these estimates are often affected by non-sampling errors that may affect recent levels and trends of U5MRs.

**GENDER EQUALITY ISSUES**

In settings where there is no gender-based discrimination in the care and treatment of young children, under-five mortality rates are higher for boys than for girls due to biological factors that tend to favour girls, especially in early infancy. The degree of expected female advantage varies according to the overall level of mortality and the profile of causes of death. Thus, equal rates of under-five mortality for boys and girls would actually be considered an indication that girls are suffering disadvantage in survival.

The effects of gender discrimination on child survival become more apparent after early infancy, because nutrition and medical interventions are more important determinants of survival among older infants and young children. Because of the relative weight of neonatal deaths in overall under-five mortality, girls’ advantage in the neonatal period may mask disadvantage in later ages when considering the under-five mortality rate. To better assess gender differences in mortality among children under-five, it is preferable to disaggregate mortality rates by age, considering separately mortality under age one (infant mortality) and at ages 1-4.

Analysis of gender differences in mortality is also complicated by the large degree of sampling error in mortality estimates from sample surveys. Sampling error becomes larger when estimates are disaggregated by sex and it is often quite difficult to assign statistical significance to differentials or trends in under-five mortality by sex. This should be taken carefully into account before drawing comparisons between published estimates from different surveys. Vital registration, even if not complete, may also give valuable information on relative gender differentials if it can be assumed that gender bias in the reporting of births and deaths is not large. In countries or subpopulations with small numbers of deaths, estimates of differentials based on vital registration may fluctuate considerably from year to year.

**DATA FOR GLOBAL AND REGIONAL MONITORING**

The United Nations Children’s Fund (UNICEF), the World Health Organization (WHO), and the United Nations Population Division (UNPD) produce country estimates based on available national data for purposes of international comparisons and assessment of global and regional trends. Data series produced by the different agencies may differ owing to differences in methodologies used to estimate data and differences in reporting periods.

Current estimates of U5MR are generally based on empirical data from several or even many years before. Vital registration data are available on a yearly basis but are often published at the country level with a lag of 2 or more years. Population censuses are conducted every ten years and results are published one to three years after the census. Household surveys, such as DHS and MICS, are in general implemented every three to five years with results published within a year of field data collection. On average, the most recent U5MR estimates from household surveys refer to 2.5 years before the time of the survey or 3.5 years before the time of publication of findings.

Different data sources and calculation methods often yield widely different estimates of child mortality for a given time and place. In order to reconcile these differences, UNICEF developed, in coordination with WHO, the World Bank and UNPD, an estimation methodology that minimizes the errors embodied in each estimate and maximises the consistency of trends over time. These estimates are not necessarily recognized as the official U5MR country level estimates. However they allow comparisons to be made between countries, despite the varied numbers and types of country level data sources.

To seek out national data sources that might be overlooked, UNICEF conducts an annual exercise called the Country Reports on Indicators for the Goals (CRING). CRING gathers recent information for all indicators regularly reported by UNICEF, including the infant and under-five mortality rates.

After plotting all available values for infant and under-five mortality, analysts use weighted least squares models to fit a multi-spline regression line to the data points and extrapolate the trend to the present. The use of weights allows analysts to judge the relative quality of each data set and determine how representative each set is of the population. Analysts then decide which set of estimates (infant mortality rates or under-five mortality rates) are more consistent and use a model life table to derive the other set of estimates from it.

Global figures produced by the inter-agency group for child mortality estimation may differ from those produced at the country level for different reasons. Global estimates use all available data obtained from different sources (vital registration, census, and household surveys) to produce estimates that represent trends and levels of child mortality in the countries. On the other hand, country estimates are obtained from just one source (normally household surveys such as the DHS), a combination of data sources, or from using different estimation methods.

Inter-agency group estimates are updated annually. U5MR estimates are produced and presented at the regional and global levels only if data are available for at least 50 per cent of the region or the total population of the countries considered.

**SUPPLEMENTARY INFORMATION**

**EXAMPLES**

**REFERENCES**

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4.2 Infant mortality rate

**GOAL AND TARGET ADDRESSED**

Goal 4. Reduce child mortality
Target 4.A. Reduce by two-thirds, between 1990 and 2015, the under-five mortality rate

**DEFINITION AND METHOD OF COMPUTATION**

Definition
The infant mortality rate (IMR) is the probability that a child born in a specified year will die before reaching the age of one, if subject to current age-specific mortality rates.

This indicator is expressed in terms of deaths per 1,000 *live births*.

Concepts
A *live birth* is the complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of the pregnancy, which, after such a separation, breathes or shows any other evidence of life, such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles, whether or not the umbilical cord has been cut or the placenta is attached. Each product of such a birth is considered a live birth.

Method of computation
The indicator is calculated by dividing the number of deaths of infants under one year of age in a calendar year by the number of live births in the same year and multiplied by 1,000.

The formula for computing this indicator is as follows:



where *IMR(n)* is the infant mortality rate for the calendar year *n; D (0, n)* is the number of infants aged 0 during year *n* and who died during year *n*; and *B (n)* is the number of live births occurring during year *n*.

Two types of methods exist for calculating the IMR: the direct method and the indirect method. For details on the direct and indirect methods of estimation, see “DEFINITION AND METHOD OF COMPUTATION” for [Indicator 4.1](http://mdgs.un.org/unsd/mi/wiki/4-1-Under-five-mortality-rate.ashx).

**RATIONALE AND INTERPRETATION**

Although the MDG target relates specifically to under-five mortality, the infant mortality rate is also useful to monitor progress since it represents an important component of under-five mortality. Infant mortality rates are also important because they reflect the social, economic and environmental conditions in which children (and others in society) live, including the quality and accessibility of health care (both in general and at child birth). In addition, data on disease incidence and prevalence (morbidity data) are frequently unavailable, so mortality rates are often used to identify vulnerable populations.

**SOURCES AND DATA COLLECTION**

See “SOURCES AND DATA COLLECTION” for [Indicator 4.1](http://mdgs.un.org/unsd/mi/wiki/4-1-Under-five-mortality-rate.ashx).

**DISAGGREGATION**

Infant mortality generally shows large disparities across geographical areas and between urban and rural areas. The infant mortality rate may also vary across socioeconomic groups, and is often used to identify social distress in populations. Infants in some ethnic groups might be exposed to higher risks of malnutrition, poorer health and higher mortality; and gender differences may be more pronounced in some social and ethnic groups.

Infant mortality can also be disaggregated into the neonatal and postneonatal periods. Neonatal mortality reflects safe delivery and availability of infant resuscitation, while postneonatal mortality is more influenced by nutrition and infectious diseases.

**COMMENTS AND LIMITATIONS**

The infant mortality rate is considered to be a more robust estimate than the under-five mortality rate if data are drawn from vital statistics registrations. On the contrary, when using survey data, infant mortality might be underestimated and under-five mortality rates are considered to be more robust than infant mortality rates. Survey data are subject to survivor selection bias and age truncation. Mothers may misreport their children’s birth dates, current ages or ages at death—perhaps more so if the child has died. The heaping of deaths at age 12 months is especially common. Age heaping may transfer deaths across the one-year boundary and lead to underestimates of infant mortality rates. Also, indirect estimates of the IMR are more depending than U5MR on the choice of model life table.

For more detailed comments on data limitations, see “COMMENTS AND LIMITATIONS” for [Indicator 4.1](http://mdgs.un.org/unsd/mi/wiki/4-1-Under-five-mortality-rate.ashx).

**GENDER EQUALITY ISSUES**

Girls have a survival advantage over boys during the first year of life, largely based on biological differences. This is especially so during the first month of life when perinatal conditions are most likely to cause or contribute to death. In later infancy, discrimination against girls in food or medical care may begin to increase their mortality rates relative to boys. A careful examination of gender differences in infant mortality would require disaggregating the infant mortality rate by sex into neonatal (up to 1 month) and postneonatal (1-11 months) components. Although it is possible to do this with DHS data, it should be kept in mind that sampling error can lead to wide confidence intervals for the disaggregations and difficulty in interpreting trends. Such information may also be available from vital registration data.

**DATA FOR GLOBAL AND REGIONAL MONITORING**

Infant mortality rates are published annually by the United Nations Children’s Fund (UNICEF) in *The State of the World’s Children* and by the World Bank in *World Development Indicators*. They are also included in the World Health Organization’s (WHO) *World Health Statistics*. These data series may differ, however, because of differences in the methodologies used to estimate data and differences in reporting periods.

For detailed explanations on how global and regional estimates are derived, see “DATA FOR GLOBAL AND REGIONAL MONITORING” for [Indicator 4.1](http://mdgs.un.org/unsd/mi/wiki/4-1-Under-five-mortality-rate.ashx).

**SUPPLEMENTARY INFORMATION**

**EXAMPLES**

**REFERENCES**

See “REFERENCES” for [Indicator 4.1](http://mdgs.un.org/unsd/mi/wiki/4-1-Under-five-mortality-rate.ashx).

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4.3 Proportion of 1 year-old children immunised against measles

**GOAL AND TARGET ADDRESSED**

Goal 4. Reduce child mortality
Target 4.A. Reduce by two-thirds, between 1990 and 2015, the under-five mortality rate

**DEFINITION AND METHOD OF COMPUTATION**

Definition
The proportion of 1 year-old children immunized against measles is the proportion of *children under one year of age* who have received at least one dose of *measles-containing vaccine*.

This indicator is expressed as a percentage.

Concepts
*Children under one year of age* who have received a measles vaccine are estimated as the percentage of children aged 12–23 months who received at least one dose of measles vaccine any time before the survey or before the age of 12 months.

*Measles-containing vaccines* are live attenuated viral measles vaccines consisting of one dose given by the intramuscular or subcutaneous route, with the opportunity for a second dose at least one month after the first. It is generally recommended for children to be immunized against measles at the age of 9 months. In certain countries in Latin America and the Caribbean it is recommended for children to be immunized between the ages of 12 months and 15 months.

Method of computation
Immunization coverage is calculated by dividing the total number of vaccinations by the number of children in the target population and multiplying by 100.



For most vaccines, the target population is the national annual number of live births or number of surviving infants (this may vary depending on a country’s policies and the specific vaccine).

**RATIONALE AND INTERPRETATION**

The indicator provides a measure of the extent of coverage and the quality of the child health care system in a country. Immunization is an essential component for reducing under-five mortality rates. Governments in developing countries usually subsidize immunizations against measles and diphtheria, pertussis (whooping cough) and tetanus (DPT) as part of their basic health package. Among these vaccine-preventable childhood diseases, measles is the leading cause of child mortality. Health and other programmes targeted at measles are one practical means of reducing child mortality.

Vaccination coverage for measles needs to be above 90 per cent to stop transmission of the virus. When coverage is high and the denominator has been underestimated, coverage estimates can exceed 100 per cent.

**SOURCES AND DATA COLLECTION**

The two data sources available at the national level are reports of vaccinations performed by service providers (administrative data), and household surveys containing information on children’s vaccination histories (coverage surveys). The target population is taken from administrative data, where available, otherwise survey data are used.

The main types of surveys used as sources of information on immunization coverage are the Expanded Programme on Immunization (EPI)-30 cluster surveys, the Multiple Indicator Cluster Surveys (MICS) and the Demographic and Health Surveys (DHS). Routine administrative data are compiled by national EPI programme managers.

EPI 30–cluster surveys are frequently conducted by national EPI staff and designed specifically for measuring immunization coverage. These surveys are simple to administer and easy to conduct but have a precision level of plus or minus 10 percentage points at 50 per cent coverage. The MICS and DHS are more extensive surveys which cover a variety of indicators, have a more rigorous design, and typically have a higher degree of precision. However, they are more expensive, logistically more complex and the questionnaire is longer and more difficult to administer.

When determining the vaccination coverage rate, credence is given to administrative and official country reports rather than surveys unless there is a reason to believe they are inaccurate. Immunization coverage surveys are frequently used in connection with administrative data.

**DISAGGREGATION**

Disparities in vaccination coverage are generally along the lines of residence and economic status. Therefore, data disaggregated by those characteristics are the most useful. In most countries, there are not significant differences in vaccination coverage between sexes.

While administrative data can be broken down at sub-national levels, such data are not commonly reported in disaggregated form.

Large-scale surveys, such as MICS and DHS, routinely provide findings disaggregated by sex, urban/rural residence, age group, parents’ educational level, and wealth quintile.

**COMMENTS AND LIMITATIONS**

There are several limitations to this indicator. For coverage estimates based on administrative data, biases occur when some sites fail to report their information. A similar bias occurs when the data collection/reporting system excludes part of the population. The most common example is when significant proportions of vaccinations are performed in the private sector and are not reported to the public health authorities. If the target population is derived from the total population and the numerator is based only on children receiving vaccination in the public sector this will lead to an underestimation of vaccination coverage.

In many developing countries, lack of precise information on the size of the cohort of children under one year of age makes immunization coverage difficult to estimate. An overestimation of the cohort will underestimate coverage, while an underestimation will inflate the estimate of coverage. In cases where coverage is high and the cohort has been underestimated, coverage estimates can exceed 100 per cent. Errors in estimating the cohort size can result from population projections based on old censuses or can be due to sudden shifts in populations—internal migration for example.

While it is theoretically possible to immunize 100 per cent of the target population, especially in small countries, in reality it is unlikely. In cases where coverage levels in excess of 100 per cent are encountered, these are often reported as 99 per cent. These levels are most likely to be the result of a systematic error ascertainment of the numerator or the denominator, a mid-year change in target age groups, or inclusion of children outside the target age group in the numerator.

Estimates based on surveys also have advantages and disadvantages. The principal advantages of surveys are that an estimate of immunization coverage can be obtained even if the denominator for the whole population is unknown and vaccinations given by the private sector are included. In addition, because they include individuals who have not been vaccinated, reasons for not vaccinating can be identified. The main disadvantage of surveys is that they provide information on the previous birth year’s cohort (making them difficult to use for timely programme intervention). In addition, survey methodology may entail a wider than desired confidence interval, interviewers may be poorly trained, and survey implementation and supervision may be less than desired. In some instances, the length or complexity of the survey may compromise the accuracy of the responses. As always, care should be taken to not generalize survey results beyond the population represented in the survey. For example, a survey on urban populations will, in general, not be representative of the entire country.

For instance, some countries in Latin America and the Caribbean administer the measles vaccine at 12–15 months of age. This has to be taken into account in calculations of vaccination coverage based on household surveys.

In summary, both sources of empirical data are potentially subject to a variety of biases. The challenge is to interpret the data available, attempt to ascertain and adjust for possible biases and derive the most accurate estimate of immunization coverage. Various additional indicators can be used to verify the accuracy of data, especially those data gathered through administrative systems. Examples include information on vaccine shortages, supplementary immunization activities, disease incidence and programmatic developments such as additional funding or staffing improvements.

**GENDER EQUALITY ISSUES**

Immunization programmes are generally free of charge and should not discriminate between boys and girls. However, the fact that sizeable gender differences are present in both the DHS and the MICS results for some countries from different regions, combined with qualitative literature on gender gaps in immunisation, strongly suggests that immunisation –like health status more broadly– is not gender-neutral.

Differences in immunization may be due to son preference and is often closely linked with maternal education levels, where immunization bias against girls is less likely among more educated mothers.

Gender differences in immunisation not only impact girls. Biases exist against boys as well. The underlying causes of these differences have as of yet not been well investigated in the literature, but are possibly related to fears of male sterilisation.

**DATA FOR GLOBAL AND REGIONAL MONITORING**

The World Health Organization (WHO) and the United Nations Children’s Fund (UNICEF) compile country data based on administrative and survey data gathered through the annual WHO-UNICEF Joint Reporting Form on Vaccine Preventable Diseases. This form is sent out by both organizations to countries’ Ministries of Health with expected completion by April 15 of each year.

There are three types of data requested and collected through the JRF:

1. Administrative coverage data.
	* The number of measles vaccination doses administered as recorded by health providers;
	* The number of children in the target population, usually live births or infants surviving to the age of one year; and
	* An estimate of completeness of reporting, e.g., percentage of districts in the country that reported their data.
2. Survey data (national surveys conducted by DHS, MICS, EPI Cluster or other valid instruments).
3. Official national estimate (the estimate of coverage that the Ministry of Health believes to be correct; which may or may not coincide with the administrative or national survey data).

Data collected in the WHO-UNICEF Joint Reporting Form constitute the major source of information on estimates of national immunization coverage, reported cases of vaccine-preventable diseases (VPDs), and immunization schedules, as well as indicators of immunization system performances. Surveys are frequently used in conjunction with administrative data; in other instances they constitute the sole source of information on immunization coverage levels. The principle types of surveys are the EPI 30–cluster survey, MICS, and the DHS.

International estimates are based on an appraisal of individual data points, patterns and trends in the data, and information on local circumstances affecting service delivery. In instances where alternative data are not available, estimates are based solely on officially reported data. In cases where alternative sources of data are available, there is an attempt to determine whether data accurately reflect immunization system performance, or whether data are compromised and present a misleading view of coverage achievements. If adjustments are proposed, they are made in consultation with the individual countries.

Draft reports produced by the WHO-UNICEF working group are sent to each country for review, comment, contribution and final approval. Country recommended adjustments are made to the estimates through consultation with the WHO-UNICEF working group, after which final reports are completed. This collaboration prior to the public release of the final estimates is important not only to inform national authorities of the results of the review before its general release, but also to take advantage of local expertise and knowledge. The consultations with local experts attempt to put the data in the context of local events, both those occurring in the immunization system (e.g., vaccine shortage for parts of the year, donor withdrawal, etc.) and more widely occurring events (e.g., international incidences, civil unrest, heightened political commitment to immunization, etc.).

Adjustments are not made to reported data in cases where data for a country were available from a single source, usually the national reports to WHO. Data are adjusted using smoothing techniques in an attempt to fit data points to a curve since immunization coverage levels vary over time.

Global and regional coverage is calculated using estimated and reported coverage figures together with estimates of the target population size from the United Nations Population Division. The formula for aggregating coverage for a region (and globally) is:



When coverage figures have not been reported, i.e. the vaccine is routinely scheduled but no figure was reported to WHO, a statistical method is used to estimate the most likely coverage, and this estimate is used in the global and regional calculations. UNICEF only computes a regional estimate if there are data available for countries comprising more than 50 per cent of the region’s population.

**SUPPLEMENTARY INFORMATION**

**EXAMPLES**

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5.1 Maternal mortality ratio

**GOAL AND TARGET ADDRESSED**

Goal 5. Improve maternal health
Target 5.A: Reduce by three quarters, between 1990 and 2015, the maternal mortality ratio

**DEFINITION AND METHOD OF COMPUTATION**

Definition
The maternal mortality ratio (MMR) is the annual number of *maternal deaths* from any cause related to or aggravated by pregnancy or its management (excluding accidental or incidental causes) during pregnancy and childbirth or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, per 100,000 *live births*, for a specified year.

Concepts
*Maternal deaths* can be divided into two groups, namely direct and indirect obstetric deaths. Direct obstetric deaths result from obstetric complications of the pregnant state (pregnancy, labour and puerperium); from interventions, omissions or direct treatment; or from a chain of events resulting from any of these. Indirect deaths result from previously existing diseases, or diseases that developed during pregnancy, which were not directly due to obstetric causes, but were aggravated by the physiological effects of pregnancy.

A *live birth* is the complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of the pregnancy, which, after such separation, breathes or shows any other evidence of life—such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles—whether or not the umbilical cord has been cut or the placenta is attached. Each product of such a birth is considered a live birth.

Method of computation
The maternal mortality ratio is calculated by dividing recorded (or estimated) maternal deaths by total recorded (or estimated) live births in the same period and multiplying by 100,000. The measurement requires information on pregnancy status, timing of death (during pregnancy, during childbirth, or within 42 days of termination of pregnancy), and cause of death.

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**RATIONALE AND INTERPRETATION**

This indicator monitors deaths related to pregnancy and childbirth. It reflects the capacity of health systems to provide effective health care in preventing and addressing the complications occurring during pregnancy and childbirth.

Indicator values range from less than 10, as in most developed countries, to over 1,000, with an average of around 290 per 100,000 live births in the developing regions. Values above 1,000 however are found in a relatively small group of countries and are to be considered extremely high. According to international estimates, in 2008, 14 countries had maternal mortality ratios of or above 1,000.

Estimating maternal mortality, in particular when there are problems with data quality, results in wide ranges of uncertainty bracketing the produced estimates. It is therefore, advisable to interpret the maternal mortality ratio within the context of other reproductive health-related information including presence of skilled health personnel at delivery, antenatal care, and levels of fertility.

**SOURCES AND DATA COLLECTION**

Primary sources of data include vital registration systems, household surveys, reproductive age mortality studies, disease surveillance or sample registration systems, special studies on maternal mortality, and national population censuses. Complete vital statistics registration systems with accurate cause of death estimations are the most reliable data source for calculating maternal mortality and monitoring change over time. However, these are rare in developing countries. Official data are usually available from health service records, but few women in rural areas have access to health services. Therefore in developing countries, survey data, especially those from the Demographic and Health Surveys (DHS) and similar household surveys constitute the most common source of data on maternal mortality.

Because maternal mortality is a relatively rare event, large sample sizes are needed when data are derived from household surveys. This is very costly and may still result in estimates with large confidence intervals.

The sisterhood method, used in DHS surveys, reduces sample size requirements by asking survey respondents about the survivorship of sisters. Respondents are asked four simple questions about how many of their sisters reached adulthood, how many have died and whether those who died were pregnant at the time of death. While this method reduces sample size requirements, it produces estimates covering some 7-12 years before the survey, which renders data problematic for monitoring progress or observing the impact of interventions. The direct sisterhood method asks respondents to provide date of death, which permits the calculation of more recent estimates, but even then the reference period tends to refer to 0-6 years before the survey.

**DISAGGREGATION**

Due to the large margins of uncertainty surrounding these estimates, maternal mortality ratios are presented at the national level only. Disaggregation is not recommended.

**COMMENTS AND LIMITATIONS**

Maternal mortality is difficult to measure. Vital registration and health information systems in most developing countries are weak, and thus, cannot provide an accurate assessment of maternal mortality. Even figures derived from complete vital registration systems, such as those in developed countries, suffer from misclassification and underreporting of maternal deaths.

Due to very large confidence intervals, maternal mortality estimates might not be suitable for assessing trends over time. As a result, it is recommended that country level process indicators, such as attendance by skilled health personnel at delivery and use of health facilities for delivery, be used to supplement maternal mortality ratios for assessing progress towards the reduction in maternal mortality at the country level.

The maternal mortality ratio should not be confused with the maternal mortality rate (whose denominator is the number of women of reproductive age), which reflects not only the risk of maternal death per pregnancy or birth but also the level of fertility in the population. The maternal mortality ratio (whose denominator is the number of live births) indicates the risk of death once a woman becomes pregnant, and does not take fertility levels into consideration.

**GENDER EQUALITY ISSUES**

The low social and economic status of girls and women is a fundamental determinant of maternal mortality in many countries. Low status limits the access of girls and women to education, good nutrition and family planning—key determinants of too early, too many, and risky pregnancies—as well as to the necessary health services to prevent and/or treat complications of pregnancy and childbirth.

**DATA FOR GLOBAL AND REGIONAL MONITORING**

Maternal mortality ratios can be calculated directly from data collected through vital registration systems, household surveys or other sources. However, these sources might have data quality problems, particularly related to the underreporting and misclassification of maternal deaths, and they may have limited comparability.

The World Health Organization (WHO), United Nations Children’s Fund (UNICEF), United Nations Population Fund (UNFPA) and The World Bank (WB) have developed a method of adjusting existing data in order to take into account these data quality issues and to ensure the comparability of different data sources. This method involves assessing data for completeness and, where necessary, adjusting for underreporting and misclassification of deaths as well as development of estimates through statistical modelling for countries with no reliable national level data.

Data on maternal mortality and other relevant variables are obtained through databases maintained by WHO, the United Nations Population Division, UNICEF, and WB. Data from countries varies in terms of the source and methods. Given the variability of the sources of data, different methods are used for each data source in order to arrive at country estimates that are comparable and permit regional and global aggregation.

Only about one third of all countries/territories has complete, reliable data available, and do not require additional estimations. For another third, country-reported estimates of maternal mortality are adjusted for the purposes of comparability. For the final third— those countries with no appropriate maternal mortality data—a statistical model is employed to predict maternal mortality levels. However, the point estimates calculated with this methodology might not represent true levels of maternal mortality. It is advised to consider the estimates together with the reported uncertainty margins within which the true levels are thought to lie.

The ability to generate country, regional, and global estimates with higher precision and accuracy would be greatly facilitated if country civil registration systems were further improved. This improvement would reduce the need to conduct special maternal mortality studies (which are time-consuming, expensive, and of limited use in monitoring trends).

Regional and sub-regional estimates are weighted averages of the country data, using the total number of live births in each country as the weight. Regional aggregates are presented only if available data cover at least 50 per cent of total births in the regional grouping.

**SUPPLEMENTARY INFORMATION**

**EXAMPLES**

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5.2 Proportion of births attended by skilled health personnel

**GOAL AND TARGET ADDRESSED**

Goal 5. Improve maternal health
Target 5.A: Reduce by three quarters, between 1990 and 2015, the maternal mortality ratio

**DEFINITION AND METHOD OF COMPUTATION**

Definition
The proportion of births attended by skilled health personnel is the proportion of total *live births* that are attended by a *skilled birth attendant* trained in providing life saving obstetric care.

The indicator is expressed as a percentage.

Concepts
A*live birth* is the complete expulsion or extraction, from its mother, of a product of conception, irrespective of the duration of the pregnancy, which, after such separation, breathes or shows any other evidence of life—such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles—whether or not the umbilical cord has been cut or the placenta is attached. Each product of such a birth is considered a live birth.

A *skilled birth attendan*t is an accredited health professional—such as a midwife, doctor or nurse—who has been educated and trained to proficiency in the skills needed to manage normal (uncomplicated) pregnancies, childbirth and the immediate postnatal period; and in the identification, management and referral of complications in women and newborns. *Traditional birth attendants* either trained or not, are excluded from the category of skilled health workers.

*Traditional birth attendants* are traditional, independent (of the health system), non-formally trained and community-based providers of care during pregnancy, childbirth and the postnatal period.

Method of computation
The indicator is calculated as the number of births attended by skilled health personnel (doctors, nurses or midwives) divided by the total number of births in the same period and multiplied by 100.

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**RATIONALE AND INTERPRETATION**

Measuring maternal mortality accurately is notoriously difficult, except where there is comprehensive registration of deaths and causes of death. Several process indicators have been proposed for tracking progress toward improving maternal health, such as attendance of professional care during pregnancy and childbirth, which is particularly important for the management of complications. Assistance by properly trained health personnel is key to lowering maternal deaths. The proportion of women who give birth with the assistance of a medically trained health care provider is one of the most widely used of these process indicators.

Indicator values are close to 100 where skilled birth assistance is provided to all women, as is the case in most of the developed regions. Values of less than 20 per cent are found in settings where health care is very poor and maternal mortality is a major public health problem. The proportion of births attended by skilled health personnel should be closely followed together with a set of related indicators disaggregated by socio-economic characteristics to identify target populations and plan policy measures accordingly.

**SOURCES AND DATA COLLECTION**

Data are collected through national-level household surveys, including Multiple Indicator Cluster Surveys (MICS) and Demographic Health Surveys (DHS). These surveys are generally conducted every 3–5 years by national statistical offices or ministries of health.

In order to facilitate interpretation of trends and differentials based on survey data, it is useful to report confidence intervals together with estimates.

In the absence of survey data, some countries may have health facility data. However, it should be noted that these data may overestimate the proportion of deliveries attended by a skilled professional because the denominator presumably excludes women who give birth outside of health facilities.

**DISAGGREGATION**

The disaggregation of this indicator by urban and rural areas, age of mother, and by levels of social and economic status would help assess the basis of different degrees of access to reproductive health care and inform the necessary policies and interventions.

**COMMENTS AND LIMITATIONS**

This indicator is a measure of a health system’s ability to provide adequate care during birth, a period of elevated mortality risk for both mothers and newborns. However, this indicator may not adequately capture women’s access to good quality care, particularly when complications arise. In order to effectively reduce maternal deaths skilled health personnel should have the necessary equipment and adequate referral options.

In addition, standardization of the definition of skilled health personnel is sometimes difficult because of differences in training of health personnel in different countries. Although efforts have been made to standardize the definitions of doctors, nurses, midwives and auxiliary midwives used in most household surveys, it is probable that many skilled attendants’ abilities to provide appropriate care in an emergency depends on the environment in which they work.

Recall error is another potential source of bias in the data. In household surveys, the respondent is asked to recall each live birth for a period of up to five years before the interview. The respondent may or may not know or remember the qualifications of the attendants at delivery during the reference period.

As mentioned above, facility data, if used, would exclude women who give birth at home and thus would overestimate the true proportion of deliveries with a skilled attendant.

**GENDER EQUALITY ISSUES**

The low social status of women in some countries limits their access to economic resources and basic education and thus their ability to make decisions related to health and nutrition. Some women are denied access to care when it is needed either because of cultural practices of seclusion or because decision-making is the responsibility of other family members. Lack of access to or use of essential obstetric services is a crucial factor contributing to high maternal mortality.

**DATA FOR GLOBAL AND REGIONAL MONITORING**

Data for global monitoring are reported by the United Nations Children’s Fund (UNICEF) and the World Health Organization (WHO). These agencies obtain the data from national sources; both survey and registry data.

Before data can be included in the global databases, UNICEF and WHO undertake a process of data verification that includes correspondence with field offices to clarify any questions.

Discrepancies between international and national estimates are possible if national figures are compiled at the health facility level. These would differ from international figures which are based on survey data collected at the household level.

In terms of the limitations of survey data, some survey reports may present a total percentage of births attended that includes a type of provider that does not conform to the definition provided above (e.g., providers that are not considered skilled, such as a community health worker). In those cases, the percentage of births attended by a physician, nurse, or midwife are totalled and entered into the global database as the estimate for this indicator.

Regional and global estimates are then calculated based on averages of country data weighted by the total number of births in each country. The regional and sub-regional aggregates are presented only if available data cover at least 50 per cent of total births in the regional grouping.

**SUPPLEMENTARY INFORMATION**

**EXAMPLES**

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5.3 Contraceptive prevalence rate

**GOAL AND TARGET ADDRESSED**

Goal 5. Improve maternal health
Target 5.B: Achieve, by 2015, universal access to reproductive health

**DEFINITION AND METHOD OF COMPUTATION**

Definition
The *contraceptive prevalence rate* is the percentage of *women of reproductive age* who are currently using, or whose sexual partner is currently using, at least one contraceptive method, regardless of the method used. It is reported for women aged 15 to 49 who are married or in a union.

Concepts
*Women of reproductive age* include all women aged 15 to 49.

*Contraceptive methods* include modern and traditional methods. Modern methods of contraception include female and male sterilization, oral hormonal pills, intra-uterine devices (IUD), male and female condoms, injectables, implants (including Norplant), vaginal barrier methods and spermicides. Traditional methods of contraception include the rhythm method (periodic abstinence), withdrawal, lactational amenorrhea method (LAM) and folk methods. Note that LAM is classified in some surveys as a modern method. For MDG reporting on this indicator, LAM is classified as a traditional method.

Method of computation

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**RATIONALE AND INTERPRETATION**

The contraceptive prevalence rate, which serves as a proxy measure of access to reproductive health services, is useful for tracking progress towards the target of achieving universal access to reproductive health, especially when the indicator is considered in conjunction with information about women’s knowledge of family planning or accessibility, and the quality of family planning services. Information on contraceptive prevalence complements the indicator of unmet need for family planning (see Indicator 5.6). The sum of contraceptive prevalence and unmet need determines the total demand for contraception. Unlike the unmet need indicator, contraceptive prevalence does not take into account whether women or couples do or do not desire additional children. This makes the indicator more difficult to interpret than unmet need because contraceptive prevalence rates vary across societies with vastly different preferred family sizes. For the same reason, it is difficult to specify the desired target for contraceptive prevalence rates.

**SOURCES AND DATA COLLECTION**

Contraceptive prevalence rates are calculated from nationally representative surveys with questions on current use of contraception. Surveys that commonly include this information are: Demographic and Health Surveys (DHS), Fertility and Family Surveys (FFS), Reproductive Health Surveys (RHS) conducted with assistance from the United States Centers for Disease Control and Prevention, Multiple Indicator Cluster Surveys (MICS) and other national surveys.

Surveys gather information through direct questions to women, including the woman’s age and whether she is married or in a consensual union. The questions on contraceptive methods often include two parts: a general question asking women if they are currently using a method of contraception and a follow-up question regarding the type of contraceptive method currently used. In order to obtain an accurate measure of contraceptive prevalence, it is desirable for the survey interviewer to provide a description or a list of the specific methods of family planning. If this is not done, the level of contraceptive use may be significantly underreported, especially where the use of traditional methods such as withdrawal or calendar rhythm, or use of contraceptive sterilization, is common. In some surveys, such as the DHS, the methods are described in a series of “probe” questions about methods the respondent has heard about, before the respondent is asked about current use of contraception. In highly literate populations, the interviewer might provide the respondent with a printed list of the methods.

In recording data on the type of contraceptive method used, it is important to keep in mind that some respondents may use more than one method at a time. In such cases, a selection is either made a posteriori by the survey enumerator based on the effectiveness of the methods used or by respondents based on their own assessment of the method they used most frequently. Identifying only one method or one combination of methods per respondent allows contraceptive prevalence to be computed as the sum of levels of use of each method. If more than one method or one combination of methods is recorded per respondent and no selection criteria are employed, the sum of the various methods used may exceed the overall level of contraceptive prevalence.

It is also important to note that contraceptive prevalence is measured at the time of interview. There is, however, a lag, generally between one and two years, between the date of an interview and the diffusion of the survey report. On average, the surveys are undertaken every three to five years.

**DISAGGREGATION**

Contraceptive use may vary significantly across socioeconomic groups and regional and geographical areas. For policy purposes, information on contraceptive prevalence should be disaggregated, at a minimum, by age and current marital status. This information is important because it allows the monitoring of differences in access to contraceptive methods for more vulnerable groups such as adolescents and unmarried women.

Contraceptive use can be disaggregated by other social or economic characteristics, such as the woman’s level of educational attainment, urban or rural residence, and number of children as relevant for the policy needs of each country or area.

**COMMENTS AND LIMITATIONS**

Differences in survey design and implementation, as well as differences in the way survey questionnaires are formulated and administered can affect the comparability of data over time, and between countries. Some of the most common differences are the range of contraceptive methods included in the surveys, and whether or not probe questions are included in the questionnaire. The lack of probe questions can result in an underestimation of contraceptive prevalence.

The characteristics (age, sex, marital or union status) of the persons for whom contraceptive prevalence is measured (base population) also affects the comparability of data on contraceptive prevalence. Although the standard definition of the contraceptive prevalence rate refers only to women who are married or in a union, alternative base populations are sometimes presented including sexually active women (irrespective of marital status), ever-married women, or men and women who are married or in union.

The time frame used to assess contraceptive prevalence can also vary. Often it is left to the respondent to determine what is meant by “currently using” a method of contraception. Some surveys ask about use within the past month. Occasionally, when information on current use is not collected, data on use of contraceptive methods at last sexual intercourse or during the previous year has been utilized to estimate current contraceptive prevalence. Any differences between the data presented and the standard definition of contraceptive prevalence should be clearly indicated.

Sampling variability can also be an issue in data collection, especially when contraceptive prevalence is measured for a specific subgroup (according to method, age-group, level of educational attainment, place of residence, etc.) or when analyzing trends over time.

**GENDER EQUALITY ISSUES**

Statistics on contraception prevalence rates are based primarily on women. This is mostly for pragmatic reasons, because the majority of contraceptive methods are female-based. It can also be argued that the extent to which women control their reproduction is an indicator of how they control their own lives in general, so that the contraceptive prevalence can also be seen as an indicator of women’s empowerment. Recent surveys have also interviewed samples of men about contraceptive use.

**DATA FOR GLOBAL AND REGIONAL MONITORING**

Data for this indicator are reported at the global level by the United Nations Population Division. Data are obtained from national repositories or from published survey reports. In exceptional cases, data are taken from other published analytic reports. If clarification is needed, contact is made with the survey sponsors or authoring organization, which may supply corrected or adjusted estimates in response.

Regional estimates are weighted averages of the country data, using the number of married or in-union women aged 15–49 for the reference year in each country as the weight. Global estimates are weighted averages of the regional estimates, using the number of women aged 15–49 who are married or in a union in each region as the weight. No figures are reported if less than 50 per cent of the reference population in the region is covered.

**SUPPLEMENTARY INFORMATION**

**EXAMPLES**

**REFERENCES**

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5.4 Adolescent birth rate

**GOAL AND TARGET ADDRESSED**

Goal 5. Improve maternal health
Target 5.B: Achieve, by 2015, universal access to reproductive health

**DEFINITION AND METHOD OF COMPUTATION**

Definition
The adolescent birth rate is the annual number of *live births to adolescent women per 1,000 adolescent women*.

Concepts
The adolescent birth rate is also referred to as the age-specific fertility rate for women aged 15–19.

A *live birth* is the complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of the pregnancy, which, after such separation, breathes or shows any other evidence of life—such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles—whether or not the umbilical cord has been cut or the placenta is attached. Each product of such a birth is considered a live birth.

*Adolescent women* are for the purpose of this indicator defined as women 15 to 19 years of age.

Method of computation
The adolescent birth rate is calculated as the number of live births to adolescent women divided by the total number of adolescent women and multiplied by 1,000.

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The indicator is calculated differently depending on whether data from civil registrations, surveys or censuses are used.

1. Civil registration:
	* Number of live births to adolescent women is the registered number of live births by women 15 to 19 years of age during a given year.
	* Number of adolescent women is the estimated population of women aged 15 to 19 as of 1 July of a given year. For purposes of monitoring this indicator at the national level, population figures may be taken from reliable national sources or from the population estimates published by the United Nations Population Division in *World Population Prospects*. In cases where the numerator does not cover the complete de facto population, an alternative appropriate population estimate may be used if available.
2. Survey data: The adolescent birth rate is generally computed based on retrospective birth histories. Whenever possible, the reference period corresponds to the 5 years preceding the survey. The reported observation year corresponds to the middle of the reference period.
	* Number of live births to adolescent women refers to live births to women that were 15 to 19 years of age at the time of the birth during a reference period before the interview.
	* Number of adolescent women refers to person-years lived between the ages of 15 and 19 by the interviewed women during the same reference period.
3. In surveys where no retrospective birth histories are available, the number of births can be estimated based on the questions on the date of last birth or the number of births in the 12 months preceding the survey.
	* Census data: The adolescent birth rate is generally computed based on the date of the last birth or the number of births in the 12 months preceding the enumeration. The census data provide both the numerator and the denominator. In some cases, rates based on censuses are adjusted for under registration. In some cases, where no other reliable data exists, the *own-children method of indirect estimation* could be used for obtaining estimates of the adolescent birth rate for a number of years before the census (for more information see *Manual X: Indirect Techniques for Demographic Estimation,* United Nations (1983)).

**RATIONALE AND INTERPRETATION**

The adolescent birth rate is an essential indicator for the design of policies aiming to achieve an overall improvement of maternal health. Maternal mortality for younger adolescent women (below age 18) tends to be much higher than for older women or older adolescents (ages 18 and 19). When the overall maternal mortality for adolescent women is high, reducing adolescent fertility contributes to improving maternal health by reducing overall maternal mortality rates.

Very early motherhood not only increases the risk of dying in childbirth, it jeopardizes the well-being of mothers and their children as well. Young mothers frequently forego education and socio-economic opportunities; and children born to adolescent mothers are at greater risk of dying in infancy or childhood and, if they survive, have fewer opportunities to participate in education.

Levels of the adolescent birth rate range from less than 2 to approximately 230 births per 1000 adolescent women. Values of 50 or more per 1000 women are considered high and values of 10 or less per 1000 women are regarded as low. Higher values of the adolescent birth rate might indicate an unmet need for family planning among young women, many of whom may want to delay their pregnancies.

**SOURCES AND DATA COLLECTION**

Data on births by age of mother are usually obtained from civil registration systems, as long as the latter cover 90 per cent or more of all live births. Census or survey estimates can supplement registry data for periods when civil registration data are not available. In countries lacking a civil registration system or where the coverage is lower than 90 per cent, the adolescent birth rate can be obtained from household survey and census data. In countries with multiple survey programmes, large sample surveys conducted on an annual or biennial basis are given precedence.

Surveys from which the data can usually be obtained are: Demographic and Health Surveys (DHS), Reproductive Health Surveys (RHS) conducted with assistance from the United States Centers for Disease Control and Prevention, Multiple Indicator Cluster Surveys (MICS) and other nationally sponsored surveys. When estimates are available in a survey report, they should be extracted directly. Otherwise, if microdata are available, estimates should be produced using an appropriate method of calculation. For census data, the estimates should be the same as in census reports, including any adjustment undertaken by the national statistical office.

**DISAGGREGATION**

The disaggregation of adolescent birth rates by geographical area, rural or urban residence, women’s level of education, poverty status and other characteristics that are relevant in the national context help identify population sub-groups where levels of adolescent birth rates are highest and formulate policies for the reduction of maternal mortality and the improvement of reproductive health of adolescent girls and for the reduction of child mortality.

**COMMENTS AND LIMITATIONS**

There are a number of limitations when it comes to the calculation of this indicator. When using civil registration data, adolescent birth rates are subject to limitations which depend on the completeness of birth registration; the treatment of infants born alive but dead before registration or within the first 24 hours of life; the precision of the reported age of the mother; and the inclusion of births from previous periods. Population estimates may suffer from limitations connected to age misreporting and coverage. Another limitation is that the number of live births may also include births to women below age 15 (e.g., live births by age of mother are for women 12 to 19 years of age) or that the indicator is calculated for different age groups for both the number of live births and the number of women (e.g., women 16 to 19 years of age). In countries where the civil registration system registers births by the place of occurrence, rather than by the place of usual residence of the mother, the number of adolescent births may be inflated in urban areas with a hospital infrastructure that serves women from surrounding rural areas. This affects the accuracy of the indicator when it is reported separately for rural and urban areas. When using survey and census data, both the number of live births to adolescent women and the number of adolescents come from the same population. Nonetheless the data can be skewed due to age misreporting, birth omissions, misreporting the date of birth of the child, and sampling variability in the case of surveys. Another limitation is that the adolescent birth rate is commonly reported as the percentage of total fertility contributed by women aged 15–19. The adolescent birth rate, however, is to be preferred over the latter because the percentage of total fertility contributed by women aged 15–19 can vary significantly as a result of changes in fertility rates for other age groups even when the fertility rate of adolescents remains constant.

**GENDER EQUALITY ISSUES**

Women who become mothers very early frequently miss out on education and socio-economic opportunities. Thus, high adolescent birth rates may contribute to a large gender gap in education. High adolescent birth rates also indicate a prevalence of early marriages among women, and are often a sign of a social structure in which women are expected to affirm their adulthood by assuming their social role as mothers as early as possible. As such, declining adolescent birth rates can indicate increasing gender equality and women’s empowerment. A high adolescent birth rate can also contribute to high maternal mortality.

**DATA FOR GLOBAL AND REGIONAL MONITORING**

At the global level, data for this indicator are compiled by the United Nations Population Division (UNPD). Whenever possible, civil registration data are used. For adolescent birth rates, the figures used are the ones reported by National Statistical Offices to the United Nations Statistics Division. When these are not available or reliable, data are obtained from other regional statistical units, or collected from the country directly. Adolescent population figures are those published in the *World Population Prospects* produced by UNPD. In cases where either the numerator or denominator is missing, the estimate of the rate produced by the country statistical office is used.

When data from civil registration are unavailable, survey or census data are examined. For survey data, DHS, RHS and MICS are the usual references. Whenever the estimates are available in the survey report, they are taken directly from it. In other cases, the national microdata are used by the UNPD to produce the estimates. For census data, estimates are preferably obtained directly from census reports, including the adjustments done by the national statistical office. In other cases, the adolescent birth rate is produced using appropriate methods of calculation. In some cases, the rates based on censuses are adjusted for under registration based on indirect methods of estimation. For countries with no other reliable data, the own-children method of indirect estimation provides estimates of the adolescent birth rate for a number of years before the census.

UNPD calculates regional and global estimates for the indicator. For reference years with missing data, the closest data point is used. Averages are produced using the number of women 15-19 years of age in the reference year as the weight. The figures are taken from the latest revision of *World Population Prospects.* Regional averages are provided only when more than 50 per cent of the women 15-19 years of age in the region are covered. For most regions coverage exceeds 95 per cent.

**SUPPLEMENTARY INFORMATION**

**EXAMPLES**

**REFERENCES**

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5.5 Antenatal care coverage (at least one visit and at least four visits)

**GOAL AND TARGET ADDRESSED**

Goal 5. Improve maternal health
Target 5.B: Achieve, by 2015, universal access to reproductive health

**DEFINITION AND METHOD OF COMPUTATION**

Definition
Antenatal care coverage (at least one visit) is the percentage of women aged 15–49 with a *live birth* in a given time period that received *antenatal* care provided by *skilled health personnel* at least once during their pregnancy.

Antenatal care coverage (at least four visits) is the percentage of women aged 15–49 with a *live birth* in a given time period that received *antenatal care* by any provider four or more times during their pregnancy.

Concepts
A *live birth* is the complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of the pregnancy, which, after such separation, breathes or shows any other evidence of life—such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles—whether or not the umbilical cord has been cut or the placenta is attached.

*Antenatal care* constitutes screening for health and socioeconomic conditions likely to increase the possibility of specific adverse pregnancy outcomes; providing therapeutic interventions known to be effective; and educating pregnant women about planning for safe birth and emergencies during pregnancy and how to deal with them.

*Skilled health personnel* are accredited health professionals—such as a midwifes, doctors or nurses—who have been educated and trained to proficiency in the skills needed to manage normal (uncomplicated) pregnancies; childbirth and the immediate postnatal period; and in the identification, management and referral of complications in women and newborns. Both trained and untrained *traditional birth attendants* are excluded.

*Traditional birth attendants* are traditional, independent (of the health system), non-formally trained and community-based providers of care during pregnancy, childbirth and the postnatal period.

Method of computation
The percentage of women aged 15–49 with a live birth in a given time period that received antenatal care provided by skilled health personnel at least once during their pregnancy (ANC 1+) is calculated by dividing the number of women attended at least once during pregnancy by skilled health personnel for reasons related to the pregnancy by the total number of women with a live birth and multiplying by 100.

The percentage of women aged 15–49 with a live birth in a given time period that received antenatal care four or more times during pregnancy (ANC 4+) is calculated by dividing the number of women attended at least four times during pregnancy by any care provider for reasons related to the pregnancy by the total number of women with a live birth and multiplying by 100.

Unlike ANC 1+, ANC 4+ includes care given by any provider, not just skilled health personnel. This is because key national level household surveys do not collect information on type of provider for each visit.

**RATIONALE AND INTERPRETATION**

The antenatal period presents opportunities for reaching pregnant women with interventions that may be vital to their health and wellbeing and to that of their infants. The World Health Organization (WHO) recommends a standard model of four antenatal visits based on a review of the effectiveness of different models of antenatal care. WHO guidelines are specific on the content of antenatal care visits, which should include:

* a clinical examination;
* blood testing to detect syphilis and severe anaemia (and others such as Human Immunodeficiency Virus and malaria as necessary according to epidemiological context);
* estimations of gestational age and uterine height;
* taking blood pressure;
* recording maternal weight/height;
* performing a detection of symptomatic Sexually Transmitted Infections Urine test (multiple dipstick);
* requesting blood type and Rh;
* giving tetanus toxoid;
* providing iron/folic acid supplementation; and
* providing recommendations for emergencies/hotlines for emergencies.

It is important to note that the indicators of antenatal care (at least one visit and at least four visits) do not capture these components of care. These indicators are based on a standard question that simply asks if the health of the woman was checked during pregnancy. Thus, it should not be assumed that women received all of the components listed above. The indicator values range from 0 to 100, with 100 being the ideal situation in which all pregnant women between 15 and 49 years have seen a doctor at least once—or four times—during their pregnancy. For ANC 1+, indicator values generally fall between 50 and 100 per cent. For ANC 4+, values tend to be lower, often substantially. Antenatal care coverage figures should be closely followed together with a set of other related indicators, such as proportion of deliveries attended by a skilled health worker or deliveries occurring in health facilities, and disaggregated by background characteristics, to identify target populations and plan policy actions accordingly.

**SOURCES AND DATA COLLECTION**

Household surveys should be used as the main data sources for the antenatal care indicator. Possible surveys include Demographic and Health Surveys (DHS), Multiple Indicator Cluster Surveys (MICS), Fertility and Family Surveys (FFS), Reproductive Health Surveys (RHS) and other surveys based on similar methodologies. Surveys are normally conducted at 3 to 5 year intervals.

In order to facilitate interpretation of trends and differentials based on survey data, it is useful to report confidence intervals together with estimates.

**DISAGGREGATION**

The disaggregation of this indicator by geographical area and population groups provides an indication of the wide differences in access to reproductive health care in different areas and by different socio-economic groups. Further analyses are needed to understand the reasons of such differences in order to plan actions to overcome them.

**COMMENTS AND LIMITATIONS**

Receiving antenatal care during pregnancy does not guarantee the receipt of interventions that are effective in improving maternal health. Receiving antenatal care at least four times, which is recommended by WHO, increases the likelihood of receiving effective maternal health interventions during antenatal visits. Importantly, although the indicator for at least one visit refers to visits with skilled health providers, four or more visits usually measures visits with any provider because national-level household surveys do not collect provider data for each visit. In addition, standardization of the definition of skilled health personnel is sometimes difficult because of differences in training of health personnel in different countries.

Recall error is a potential source of bias in the data. In household surveys, the respondent is asked about each live birth for a period up to five years before the interview. The respondent may or may not know or remember the qualifications of the person providing antenatal care.

**GENDER EQUALITY ISSUES**

The low social status of women in some countries limits their access to economic resources and basic education and thus their ability to make decisions related to health and nutrition. Some women are denied access to care when it is needed either because of cultural practices of seclusion or because decision-making is the responsibility of other family members.

**DATA FOR GLOBAL AND REGIONAL MONITORING**

Data for this indicator at the global level are produced by the United Nations Children’s Fund (UNICEF), for ANC +1 and ANC +4, and WHO, for ANC +4. are The main data sources for global antenatal care indicators are national-level household surveys including: DHS, MICS, FFS, RHS and national surveys based on similar methodologies. For industrialized countries (where the coverage is high), data sources include routine service statistics.

Before data are included in the global databases, UNICEF and WHO undertake a process of data verification that includes correspondence with field offices to clarify any questions regarding estimates.

Discrepancies between global and national level data are possible if national figures are compiled at the health facility level. These figures would differ from global figures which are based on survey data collected at the household level.

Some survey reports may present a total percentage of pregnant women with antenatal care from a skilled health professional that does not conform to the definition provided above (for example, includes a provider that is not considered skilled such as a community health worker). In that case, the percentages with antenatal care from a doctor, a nurse or a midwife are totalled and entered into the global database.

UNICEF and WHO also produce regional and global estimates. These are based on population-weighted averages weighted by the total number of births. These estimates are presented only if available data cover at least 50 per cent of total births in the regional or global groupings.

**SUPPLEMENTARY INFORMATION**

**EXAMPLES**

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5.6 Unmet need for family planning

**GOAL AND TARGET ADDRESSED**

Goal 5. Improve maternal health
Target 5.B: Achieve, by 2015, universal access to reproductive health

**DEFINITION AND METHOD OF COMPUTATION**

Definition
This indicator is defined as the percentage of *women of reproductive age*, either married or in a consensual union, who have *an unmet need for family planning*.

Concepts
*Women of reproductive age* include all women aged 15 to 49.

*Women with an unmet need for family planning* are women who are fecund and sexually active but are not using any *method of contraception*, and report not wanting any more children or wanting to delay the birth of their next child for at least two years. Included are:

* all pregnant women (married or in a consensual union) whose pregnancies were unwanted or mistimed at the time of conception;
* all postpartum amenorrheic women (married or in consensual union) who are not using family planning and whose last birth was unwanted or mistimed;
* and all fecund women (married or in consensual union) who are neither pregnant nor postpartum amenorrheic, and who either do not want any more children (want to limit family size), or who wish to postpone the birth of a child for at least two years or do not know when or if they want another child (want to space births), but are not using any contraceptive method.

*Infecund* women are not included in the numerator.

*Infecund women* are women who were first married five or more years ago, have not had a birth in the past five years, are not currently pregnant, and have never used any kind of contraceptive method. Also included are women who self-report that they are infecund, menopausal or have had a hysterectomy, never menstruated, have been postpartum amenorrheic for 5 years or longer, or (for women who are not pregnant or in postpartum amenorrhea) if the last menstrual period occurred more than six months prior to the survey.

*Postpartum amenorrheic* women are women who have not had a menstrual period since the birth of their last child and their last child was born in the period 0-23 months prior of the survey interview. If their period has not returned and their last child was born 24 months or more prior to the interview, women are considered fecund, unless they fall into one of the infecund categories above. Note that in previous definitions of unmet need for family planning, women were classified as being postpartum amenorrheic if their period had not returned for up to 5 years after the birth of their last child.

The *methods of contraception* considered for the calculation of this indicator include both modern and traditional methods of contraception. Modern methods of contraception include female and male sterilization, oral hormonal pills, intra-uterine devices (IUD), male and female condoms, injectables, implants (including Norplant), vaginal barrier methods and spermicides. Traditional methods of contraception include the rhythm method (periodic abstinence), withdrawal, lactational amenorrhea method (LAM) and folk methods. Note that LAM is classified in some surveys as a modern method. For computation of this indicator for MDG reporting, current contraceptive use is use of any method (whether modern or traditional).

Method of computation
Unmet need for family planning is calculated using the following formula:


The diagram below indicates the procedure for the computation of the number of women of reproductive age, either married or in a consensual union, who have an unmet need for family planning.



**RATIONALE AND INTERPRETATION**

Unmet need for family planning shows the gap between women's reproductive intentions and their contraceptive behaviour. The indicator is useful for tracking progress towards the target of achieving universal access to reproductive health. Information on contraceptive prevalence complements the indicator of unmet need for family planning. The sum of contraceptive prevalence and unmet need identifies total demand for family planning.

In principle, this indicator may range from 0 (no unmet need) to 100 (no needs met). However, values approaching 100 per cent do not occur in the general population of women, since, at any one time, some women wish to become pregnant and others are not at risk of pregnancy. Unmet needs of 25 per cent or more are considered very high, and values of 5 per cent or less are regarded as very low.

When unmet need for family planning is measured in a comparable way at different dates, the trend indicates whether there has been progress towards meeting women’s needs for family planning. It should be noted that, even when contraceptive prevalence is rising, unmet need for family planning may sometimes fail to decline, or may even increase. This can happen because in many populations the demand for family planning increases because of declines in the number of children desired. Changes in the desired spacing of births or changes in the percentage of women who are at risk of pregnancy can also influence the trend in demand for family planning, independently of trends in contraceptive prevalence.

Note that there is not a direct relationship between the unmet need for family planning, desired family sizes, and the actual fertility level. For instance, it is possible for unmet need to be high even though the actual fertility level matches the desired family size. This can happen either because of individual variation in the population’s desired family size, differences between the desired family size of men and women such that desired family size does not reflect the ideals of women, or because there are many mistimed births such that the number of births is desired, but the timing of births is not.

**SOURCES AND DATA COLLECTION**

Information on unmet need for family planning is collected through household surveys such as the Demographic and Health Surveys (DHS), Reproductive Health Surveys (RHS) and national surveys based on similar methodologies. Recently, a shorter, alternative approach to measuring unmet need has been developed and incorporated into the core Multiple Indicator Cluster Survey (MICS) programme. These surveys tend to be undertaken every three to five years. Other survey programmes, like the Pan-Arab Project for Family Health (PAPFAM) and the European Fertility and Family Surveys (FFS) can also be used.

Differences in the questions included in particular surveys may sometimes affect the estimates of unmet need for family planning and make comparability difficult over time or across countries. For example, some surveys do not gather all the information required to estimate infecundity in the same way. Differences in questions about contraceptive use, fertility desires and assessment of postpartum amenorrhea may also indirectly affect the measured level of unmet need for family planning.

Only women who are married or in a consensual union are assumed to be sexually active for the calculation of this indicator. If unmarried women are to be included in the calculation, it is necessary to determine the timing of the most recent sexual activity. Unmarried women should only be included in the numerator if they have had intercourse in the month prior to the survey interview.

**DISAGGREGATION**

This indicator may be disaggregated by geographical area, age, education, rural or urban residence, poverty status and other characteristics that are relevant in the national context. Such analysis can identify population sub-groups where levels of unmet need are highest to help guide programmes aimed at improving access to family planning and other reproductive health services.

The total level of unmet need for family planning can also be separated into two additive components: unmet need for family planning to limit family size and unmet need for purposes of birth spacing. The family planning and other reproductive health needs of women who want to limit births are likely to differ from the needs of women who want to space births to some extent. For instance, some family planning methods are more suitable for long-term than short-term use.

**COMMENTS AND LIMITATIONS**

Although the majority of estimates of unmet need for family planning follow the standard method of calculation, there can be differences in the precise definition or method of calculation of this indicator. For instance, some surveys do not include pregnant women with a mistimed or unwanted pregnancy in the number of women with unmet need for family planning.

Trends in unmet need for family planning in a particular population should be based on successive data points that were calculated in a comparable way. In designing and monitoring programmes aimed at reducing unmet need for family planning, this indicator should be interpreted in connection with other relevant national data, including qualitative and quantitative information regarding the reasons that women who are at risk of an undesired or mistimed pregnancy are not using family planning, and assessments of the availability and quality of family planning and other reproductive health services.

According to the standard definition of unmet need for family planning, women who are using a traditional method of contraception are not considered to have an unmet need for family planning. Because traditional methods can be considerably less effective than modern methods, additional analyses may be conducted to distinguish between women relying on traditional and modern methods in order to determine the unmet need for *modern contraception*.

**GENDER EQUALITY ISSUES**

This indicator highlights the degree of congruence between women’s own stated preferences for number and timing of births and their family planning practice. Disaggregation of this indicator according to women’s social and demographic characteristics can provide additional insight regarding the degree to which unmet need for family planning particularly affects vulnerable groups such as adolescents and poor women. In addition, the sample surveys that provide the information needed to assess unmet need usually provide additional information that is useful in understanding the reasons, including gender-based reasons, why women have an unmet need for family planning. For example, some women may not know about contraceptive methods, while others may be dissuaded from using a method because of opposition from their partner or others.

**DATA FOR GLOBAL AND REGIONAL MONITORING**

The unmet need for family planning is produced at the global level by the United Nations Population Division (UNPD) in collaboration with the United Nations Population Fund (UNFPA).

The figures are generally obtained from national household surveys that are internationally coordinated—such as DHS, MICS and RHS. When DHS, MICS or RHS data are not available, data from national surveys that have incorporated the DHS methodology, but were conducted by national authorities without international technical assistance are used as inputs. Other national surveys conducted as part of the European Fertility and Family Surveys (FFS) and the Pan-Arab Project for Family Health (PAPFAM) may be considered as well.

The data are taken from published survey reports or, in exceptional cases, other published analytical reports. If clarification is needed, contact is made with the survey sponsors or authoring organization, which occasionally may supply corrected or adjusted estimates in response. The received data are not adjusted by the responsible international agencies, UNPD and UNFPA.

Regional estimates are weighted averages of the country data, using as weights the number of women aged 15–49 who are married or in a union for the reference year in each country. Global estimates are weighted averages of the regional estimates, using as weight the number of women aged 15–49 who are married or in a union in each region. No figures are reported if less than 50 per cent of the reference population in the region are covered.

**SUPPLEMENTARY INFORMATION**

**EXAMPLES**

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6.1 HIV prevalence among population aged 15-24 years

**GOAL AND TARGET ADDRESSED**

Goal 6. Combat HIV/AIDS, malaria and other diseases
Target 6.A. Have halted by 2015 and begun to reverse the spread of HIV/AIDS

**DEFINITION AND METHOD OF COMPUTATION**

Definition
The prevalence of *Human Immunodeficiency Virus (HIV)* among the population 15–24 years of age is the number of individuals aged 15–24 living with HIV expressed as a percentage of the total population aged 15-24.

Concepts
*Human Immunodeficiency Virus (HIV)* is a virus that weakens the immune system, ultimately leading to Acquired Immuno Deficiency Syndrome (AIDS). HIV destroys the body’s ability to fight off infection and disease, which can ultimately lead to death. Without treatment, median survival from the time of infection is about 10.5 years for males and 11.5 years for females. Access to treatment is uneven, and no vaccine is currently available.

Method of computation
This indicator is calculated by dividing the number of cases of HIV among the population aged 15–24 years by the total population aged 15–24 and multiplying by 100.

**RATIONALE AND INTERPRETATION**

HIV and AIDS are major public health problems in many countries. Indicators for monitoring the HIV epidemic and the impact of interventions are crucial. Since about 40 per cent of all new HIV cases are among people 15 to 24 years old, this indicator is especially important. Moreover, changes in HIV prevalence reflect changes in the rate of new infections (HIV incidence). Trends in HIV prevalence for young age groups are considered to better reflect a country’s overall trend in HIV incidence and risk behaviour.

**SOURCES AND DATA COLLECTION**

For generalized epidemics, antenatal clinic attendees and population based surveys are the primary sources of data. In concentrated and low level epidemics (where HIV prevalence in pregnant women is below 1 per cent), surveillance should focus on populations with high risk behaviours such as injecting drug users, men who have sex with men and sex workers.

Inclusion of HIV testing is being increasingly adopted by countries in household surveys like the Demographic and Health Surveys (DHS) and AIDS Indicator Surveys (AIS).

**DISAGGREGATION**

This indicator should be disaggregated by sex, location (urban/rural, major regions/provinces), and socio-economic characteristics such as education level and wealth quintile when possible.

**COMMENTS AND LIMITATIONS**

HIV prevalence among young people aged 15–24 years is a better proxy for monitoring overall HIV incidence than prevalence among people aged 15–49 years. Trends in HIV prevalence for older age groups are slow to reflect changes in HIV incidence because of the long average duration of HIV infection. However, comparable data for younger age groups are still limited, even as countries are increasingly collecting better data on young people, mainly by capturing data on young pregnant women attending antenatal clinics. In the meantime, HIV prevalence among 15–49 year olds is frequently used to measure HIV prevalence trends.

An important limitation of this indicator is that trends in HIV prevalence do not necessarily reflect the impacts of interventions to reduce HIV. Declines in HIV prevalence may be the result of infection saturation among the most vulnerable individuals and/or rising mortality rates rather than changes in behaviour. The use of parallel behavioural surveillance survey data is recommended to help interpret HIV prevalence trends.

**GENDER EQUALITY ISSUES**

Women are more likely to acquire HIV from men during sexual intercourse than vice versa. In addition to this physiological disadvantage, the unequal social status of women throughout the world places them at a higher risk of contracting HIV. Women are at a disadvantage when it comes to accessing information about HIV prevention, the ability to negotiate safe sexual encounters and access to treatment for HIV/AIDS once infected. As a result of these inequities and epidemic dynamics, the proportion of women among people living with HIV/AIDS has been rising in many regions. In sub-Saharan Africa, women and girls are affected disproportionately by HIV; they account for approximately 60 per cent of estimated HIV infections.

**DATA FOR GLOBAL AND REGIONAL MONITORING**

Data for global and regional monitoring are produced by the World Health Organization (WHO) and the Joint United Nations Programme on HIV/AIDS (UNAIDS). MDG Indicator 6.1 “HIV prevalence among population aged 15-24 years” was chosen as a proxy indicator for incidence rate when the indicators for the Millennium Declaration were developed. However, data for the younger population are limited, while estimated incidence rates among people 15-49 years are now available for a larger number of countries.

Incidence is the best measure of ongoing spread of HIV in a country, while prevalence among the population aged 15-49 years can be seen as an indicator of the overall burden of HIV/AIDS in a country. However, it is important to remember that changes overtime are difficult to follow using prevalence among population 15-49 years, and will be even more difficult as coverage of antiretroviral treatment becomes wider. A stable prevalence in the population aged 15-49 is a positive trend in the short perspective; people living with HIV are not dying as they used to do.

The UNAIDS Epidemiology team collaborates with national counterparts to generate national HIV estimates for women and men. Different approaches are used for generalized epidemics (where adult HIV prevalence exceeds 1 per cent and transmission is mostly heterosexual), and low-level or concentrated epidemics (where HIV is below 1 per cent and is concentrated in groups with behaviours that expose them to a high risk of HIV infection).

For countries with generalized epidemics, surveillance data from HIV-tested blood samples of pregnant women attending antenatal clinics and HIV prevalence results from population-based surveys are entered into the UNAIDS/WHO *Estimation and Projection Package* software, which generates a curve that estimates the evolution of adult HIV prevalence rates over time. This adult prevalence curve, along with national population estimates obtained from the United Nations Population Division, antiretroviral therapy (ART) coverage in adults, pregnant women and children, and various epidemiological assumptions (fertility rates, male/female population ratios, survival time after HIV infection, HIV sex and age distribution) are entered into the software, which estimates numbers of adults and children infected, new infections, deaths, orphans and treatment needs.

For countries with low-level or concentrated epidemics, surveillance data are gathered for populations at high risk (such as sex workers, men who have sex with men and injecting drug users). Estimates are made of the sizes of those populations, and of the sizes of populations that are at lower but significant risk (such as the partners of sex workers and their clients, partners of injecting drug users, etc.). That information is then processed as described above.

Country estimates are collected and reviewed based on new findings at the country level, as well as previous data trends. Country data are validated by country representatives for accuracy. Regional workshops are conducted every 2 years to produce draft estimates of HIV prevalence. These are finalized through correspondence with the country. No adjustments are made for international comparability since the data are already comparable because of standardized methodologies. There is no treatment of missing values. When the information needed to calculate the indicator is not available, the indicator is not estimated.

Improved methods, enhanced data and new estimation tools are enabling a better understanding of the degrees of uncertainty that surround HIV and AIDS estimates. This is part of an ongoing process of improving estimates and developing appropriate ranges—all of which are vital for effective HIV/AIDS planning and programming at national and regional levels.

Data quality and ranges of uncertainty surrounding data estimates vary from country to country. Ranges of uncertainty define the boundaries within which actual HIV prevalence lies. The following three factors determine the extent of the ranges around HIV estimates for adults:

1. *The HIV prevalence level.* Ranges tend to be relatively smaller when HIV prevalence is higher. For example, in one country with a 15 per cent prevalence the bounds of the number of adults living with HIV is + or – 9 per cent around a best estimate of 1 million people. By contrast, in one country with a 0.8 per cent prevalence, the range is + or – 51 per cent around a best estimate of 14,000 people.
2. *The quality of the data.* Countries with better quality data have smaller ranges than countries with poorer quality data. The ranges for Asia and the Pacific are comparatively broad—which reflects the fact that HIV surveillance of key populations (such as injecting drug users, sex workers and men who have sex with men) is relatively poor in most countries in that region, hence resulting in more uncertainty. In general, the ranges for sub-Saharan Africa are narrower, because of recent improvements in the collection and interpretation of HIV data in that region (including the availability of national survey data for most countries).
3. *The type of epidemic (generalized or low-level/concentrated).* Ranges tend to be wider in countries with low-level or concentrated epidemics than in countries with generalized epidemics because in low-level or concentrated epidemics, both the numbers of people in the groups at higher risk of HIV infection and HIV prevalence rates need to be estimated.

Assumptions, methodologies and data used to produce the estimates are gradually changing as a result of ongoing enhancement of the knowledge of the epidemic; hence comparisons of recent estimates with those published in previous years may yield misleading conclusions.

There is a lag between the reference year and the actual production of data. Regional estimates are published in December and country estimates the following July in the Global Report.

**SUPPLEMENTARY INFORMATION**

**EXAMPLES**

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6.2 Condom use at last high-risk sex

**GOAL AND TARGET ADDRESSED**

Goal 6. Combat HIV/AIDS, malaria and other diseases
Target 6.A. Have halted by 2015 and begun to reverse the spread of HIV/AIDS

**DEFINITION AND METHOD OF COMPUTATION**

Definition
Condom use at last *higher-risk sex* is the percentage of young men and women aged 15–24 reporting the use of a condom the last time they had sexual intercourse with a non-marital, non-cohabiting sexual partner of those who had sex with such a partner in the last 12 months.

Concepts
*Higher-risk sex* is defined as sex with a non-marital, non-cohabiting sexual partner.

Method of computation
The indicator is calculated by dividing the number of respondents aged 15–24 reporting using a condom the last time they had sex with a non-marital and non-cohabiting sexual partner, by the total number of respondents aged 15–24 reporting having had sex with a non-marital, non-cohabitating sexual partner in the last 12 months and multiplying by 100.

**RATIONALE AND INTERPRETATION**

Consistent use of condoms in non-regular sexual partnerships substantially reduces the risk of sexual HIV transmission. Condom use is especially important for young people, who often experience the highest rates of HIV infection because they have low prior exposure to infection and (typically) relatively high numbers of non-regular sexual partnerships. Consistent condom use with non-regular sexual partners is important even in countries where HIV prevalence is low, because it can prevent the spread of HIV where higher-risk sex is common. Condom use is one measure of protection against HIV/AIDS, but it is not the only measure. Equally important are delaying age of first sex, reducing the number of higher-risk sexual partners and being faithful to one partner.

This indicator shows the extent to which condoms are used by young people aged 15-24 who engage in non-regular sexual relationships. However, the broader significance of this indicator will depend upon the extent to which young people engage in such relationships. Thus, levels and trends of condom use should be interpreted carefully using the data obtained on percentages of young people who have started sex and that have engaged in a non-regular partnership within the last year.

A rise in this indicator is an extremely powerful sign that condom promotion campaigns are having the desired effect on their main target population.

**SOURCES AND DATA COLLECTION**

Data on the use of condoms during high-risk sex are collected every 3-5 years through household surveys, such as Multiple Indicator Cluster Surveys (MICS), Demographic and Health Surveys (DHS), Reproductive and Health Surveys (RHS), Behavioural Surveillance Surveys (BSS), and other nationally representative household surveys. Nationally representative population-based surveys, such as DHS and MICS, are conducted by national statistical offices or other relevant government offices, generally with the collaboration of international agencies.

**DISAGGREGATION**

The indicator could be presented separately for males and females, and disaggregated by the age groups 15–19 and 20–24, urban and rural residence, wealth quintiles, education levels, and by geographical regions. This will enable policy makers to better characterize HIV risk groups.

**COMMENTS AND LIMITATIONS**

The maximum protective effect of condoms is achieved when their use is consistent rather than occasional. The current indicator does not provide information on levels of consistent condom use. However, the alternative data collection method of asking whether condoms were always/sometimes/never used in sexual encounters with high-risk partners in a specified period is subject to recall bias. Furthermore, trends in condom use during the most recent sex act will generally reflect trends in consistent condom use. The current indicator is therefore considered adequate to address the target since it is assumed that if use at last higher-risk sex rises, consistent use will also increase.

**GENDER EQUALITY ISSUES**

Women’s risk of becoming infected with HIV during unprotected sexual intercourse is higher than that of men. And the risk is even higher for younger women. Social and cultural factors may increase women’s vulnerability to HIV infection. For instance, cultural norms related to sexuality often prevent girls from taking active steps to protect themselves.

**DATA FOR GLOBAL AND REGIONAL MONITORING**

The United Nations Children’s Fund (UNICEF) is the international agency responsible for the indicator at the international level. Data are collected through household surveys, such as Multiple Indicator Cluster Surveys (MICS), Demographic and Health Surveys (DHS), Rural Household Surveys, Reproductive and Health Surveys, and Behavioural Surveillance Surveys. The results are reported regularly in the final reports of these surveys.

As part of routine data quality control, survey results are checked for inconsistencies and to ensure that data are collected using a clearly defined population-based sampling frame, permitting inferences to be drawn for the entire population. UNICEF also conducts an annual exercise called the *Country Reports on Indicators for the Goals* (CRING), in which data maintained in the global databases at UNICEF for indicators regularly reported by UNICEF, are sent to countries for validation and updating. Updates from countries must be accompanied by original source documentation, e.g. survey reports.

No adjustments are made to the data compiled from DHS, MICS and other surveys that are statistically sound and nationally representative.

There is no treatment of missing values. When the information needed to calculate the indicator is not available, the indicator is not estimated.

Regional and global estimates are based on population-weighted averages weighted by the total number of young women and men 15–24 years of age. These estimates are presented only if available data cover at least 50 per cent of total men and women aged 15–24 years in the regional or global groupings.

**SUPPLEMENTARY INFORMATION**

**EXAMPLES**

**REFERENCES**

See “REFERENCES” for [Indicator 6.1](http://mdgs.un.org/unsd/mi/wiki/6-1-HIV-prevalence-among-population-aged-15-24-years.ashx).

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6.3 Proportion of population aged 15-24 years with comprehensive correct knowledge of HIV/AIDS

**GOAL AND TARGET ADDRESSED**

Goal 6. Combat HIV/AIDS, malaria and other diseases
Target 6.A. Have halted by 2015 and begun to reverse the spread of HIV/AIDS

**DEFINITION AND METHOD OF COMPUTATION**

Definition
This indicator is the percentage of the population aged 15–24 that has a *comprehensive correct knowledge of Human immunodeficiency virus/Acquired immunodeficiency syndrome (HIV/AIDS).*

Concepts
*Comprehensive correct knowledge* of HIV/AIDS is correctly identifying the two major ways of preventing the sexual transmission of HIV (using condoms and limiting sex to one faithful, uninfected partner), knowing that a healthy-looking person can transmit HIV and rejecting the two most common *local misconceptions* about HIV transmission.

*Local misconceptions* about HIV transmission vary from country to country. Examples of common misconceptions include: a person can get HIV from a mosquito bite, by sharing food with someone who is infected, by hugging or shaking hands with an infected person or through supernatural means.

*Human Immunodeficiency Virus (HIV)* is a virus that weakens the immune system, ultimately leading to Acquired Immuno Deficiency Syndrome (AIDS). HIV destroys the body’s ability to fight off infection and disease, which can ultimately lead to death. Without treatment, median survival from the time of infection is about 10.5 years for males and 11.5 years for females. Access to treatment is uneven, and no vaccine is currently available.

Method of computation
This indicator is calculated by dividing the number of persons aged 15–24 years who have a comprehensive correct knowledge of HIV/AIDS by the total number of persons aged 15–24 and multiplying by 100.

A person is considered as having a comprehensive correct knowledge of HIV/AIDS if he or she gave the correct answers to all of the following five questions:

1. Can the risk of HIV transmission be reduced by having sex with only one uninfected partner who has no other partners?
2. Can a person reduce the risk of getting HIV by using a condom every time he or she has sex?
3. Can a healthy-looking person have HIV?
4. Can a person get HIV from mosquito bites?
5. Can a person get HIV by sharing food with someone who is infected?

The first three questions are applicable to every country and should not be altered. Questions 4 and 5 ask about local misconceptions and may be adapted depending on what the most common misconceptions are in the specific country. Examples include: “Can a person get HIV by hugging or shaking hands with a person who is infected?” and “Can a person get HIV through supernatural means?”

Young persons who have never heard of HIV and AIDS should be excluded from the numerator but included in the denominator. A person answering, “Don’t know”, should not be considered as having a comprehensive correct knowledge of HIV/AIDS.

**RATIONALE AND INTERPRETATION**

This indicator reflects the success of national information, education and communication programmes and other efforts in promoting knowledge of valid HIV prevention methods, and in reducing misconceptions about the disease and ultimately decreasing the risk of transmission.

The belief that a healthy-looking person cannot be infected with HIV is a common misconception that can result in unprotected sexual intercourse with infected partners. Correcting false beliefs of possible modes of HIV transmission is as important as providing correct information on true modes of transmission. For example, the belief that HIV is transmitted through mosquito bites can weaken the motivation to adopt safer sexual behaviour, while the belief that HIV can be transmitted through sharing food reinforces the stigma faced by people living with AIDS.

This indicator is particularly useful in countries where knowledge about HIV and AIDS is poor because it allows for easy measurement of incremental improvements over time. However, it is also important in other countries because it can be used to ensure that pre-existing high levels of knowledge are maintained.

**SOURCES AND DATA COLLECTION**

Data on knowledge and misconceptions about HIV and AIDS are collected every 3–5 years through household surveys, such as Multiple Indicator Cluster Surveys (MICS), Demographic and Health Surveys (DHS), Reproductive and Health Surveys (RHS), Behavioural Surveillance Surveys (BSS), and other nationally representative household surveys.

Nationally representative population-based surveys, such as MICS and DHS, are conducted by national statistical offices or other relevant government offices, in collaboration with international partners.

**DISAGGREGATION**

The indicator should always be produced and presented as separate percentages for women and men; for the age groups of 15–19 and 20–24 years; and by urban and rural residence, wealth quintiles, education levels, and geographical regions. This will enable policy makers to better characterize HIV knowledge across different groups. In addition, scores on each of the individual survey questions (based on the same denominator) should be produced along with the score for the composite indicator.

**COMMENTS AND LIMITATIONS**

Surveying the most-at-risk populations is challenging. The overall sample is normally not sufficiently large to provide a representative sample of the most-at-risk sub-group of the population. If there are concerns that the data are not based on a representative sample, these concerns should be reflected in the interpretation of the survey data. Where different sources of data exist, the best available estimate should be used. Information on the sample size, the quality and reliability of the data, and any related issues should be included in the report submitted with this indicator.

**GENDER EQUALITY ISSUES**

In most countries young men have higher levels of comprehensive knowledge of HIV than women due to gender differences that give men better education, access to the media and other sources of HIV related information, skills and services than women.

**DATA FOR GLOBAL AND REGIONAL MONITORING**

The United Nations Children’s Fund (UNICEF) is the international agency responsible for this indicator at the international level. Data are compiled from DHS, MICS and other surveys at the country level that are statistically sound and nationally representative. The results are reported regularly in the final reports of these surveys.

As part of a routine data quality control process, survey results are checked for inconsistencies and to make sure that data are collected using a clearly defined population-based sampling frame, permitting inferences to be drawn about an entire population. UNICEF also conducts an annual exercise called the *Country Reports on Indicators for the Goals* (CRING), in which data maintained in the global databases at UNICEF are sent to countries for validation and updates on recent information for all indicators regularly reported on by UNICEF. Updates from countries must be accompanied by original source documentation, e.g. survey reports.

The data from household surveys used to produce the indicator are weighted according to the survey design to create a nationally representative indicator. No additional alterations are made to the data.

There could be discrepancies between global and national figures if national figures are calculated based on only some components of the indicator or on surveys based on only some geographic areas. No estimations are produced if no data are available.

Regional and global estimates are based on population-weighted averages weighted by the total number of young women and men 15–24 years of age. These estimates are presented only if available data cover at least 50 per cent of total men and women 15–24 years of age in the regional or global groupings.

**SUPPLEMENTARY INFORMATION**

**EXAMPLES**

**REFERENCES**

See “REFERENCES” for [Indicator 6.1](http://mdgs.un.org/unsd/mi/wiki/6-1-HIV-prevalence-among-population-aged-15-24-years.ashx).

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6.4 Ratio of school attendance of orphans to school attendance of non-orphans aged 10-14 years

**GOAL AND TARGET ADDRESSED**

Goal 6. Combat HIV/AIDS, malaria and other diseases
Target 6.A. Have halted by 2015 and begun to reverse the spread of HIV/AIDS

**DEFINITION AND METHOD OF COMPUTATION**

Definition
This indicator is defined as the ratio of *school attendance of orphans* aged 10–14 to *school attendance of non-orphans* aged 10–14 years.

Concepts
*School attendance* is defined as the proportion of children in a given group attending school.

*Orphans* are defined as children aged 10–14 whose biological parents have both died.

*Non-orphans* are defined as children aged 10–14 whose parents are both still alive and who currently live with at least one biological parent.

The age of children is measured as of the last birthday.

Method of computation
To calculate the indicator, the school attendance rate of orphans aged 10–14 years is divided by the school attendance rate of non-orphans aged 10–14 years

The school attendance of orphans aged 10–14 years is calculated by dividing the number of children who have lost both parents and attend school by the total number of children who have lost both parents.

The school attendance of non-orphans aged 10–14 years is calculated by dividing the number of children whose parents are both still alive, who live with at least one parent and who attend school, by the total number of children whose parents are both still alive and who live with at least one parent.

**RATIONALE AND INTERPRETATION**

HIV/AIDS is claiming the lives of many adults just when they are forming families and bringing up children. As a result, orphan prevalence is rising steadily in many countries. Fewer relatives within the prime adult ages mean that orphaned children face an increasingly uncertain future.

Orphans often encounter stigmatisation and increased poverty—factors that can jeopardize children’s well-being. Orphaned children and adolescents face decreased access to adequate nutrition, basic health care, housing and clothing. They may turn to survival strategies that increase their vulnerability to HIV. They are likely to drop out of school because of discrimination, emotional distress, inability to pay school fees, or the need to care for younger siblings or relatives or carers infected with HIV. It is important, therefore, to monitor the extent to which AIDS support programmes succeed in securing educational opportunities for orphaned children.

**SOURCES AND DATA COLLECTION**

Data on school attendance of orphans and non-orphans are collected every 3–5 years through household surveys, such as Multiple Indicator Cluster Surveys (MICS), Demographic and Health Surveys (DHS) and other nationally representative household surveys.

Nationally representative population-based surveys, such as MICS and DHS, are conducted by national statistical offices or other relevant government offices, in collaboration with international partners.

**DISAGGREGATION**

Data on this indicator are difficult to disaggregate by other characteristics because of the small sample sizes for orphans of both parents in many countries, especially in small or nascent HIV epidemics. The indicator could be disaggregated by age, sex, and urban and rural residence, if sample size permits.

**COMMENTS AND LIMITATIONS**

This indicator is not a direct measure of schooling for children orphaned by AIDS. Given the difficulties in measuring the number of children orphaned by AIDS, the indicator is calculated on the basis of all orphans aged 10–14 years independently of the cause of death of the parents. However, it is believed that a high proportion of deaths of adults with school-age children in countries heavily impacted by the HIV epidemics is likely to be related to AIDS.

The indicator is limited to children aged 10–14 for comparability purposes, as age at school entry varies across countries. Also, the age-range 10–14 years is used because younger orphans are more likely to have lost their parents recently so any detrimental effect on their education will have had little time to materialize.

The definitions of orphan/non-orphan used for this indicator (both parents have died versus both parents are still alive) are chosen so that the maximum effect of disadvantage resulting from missing parents can be identified and tracked over time.

Due to coverage limitations, this indicator will tend to understate the relative challenges orphaned children face in attending school. Household surveys, that are the typical source of information for calculating this indicator, can miss children in unstable households, and orphaned children are disproportionately likely to be in such households. Also, children that are more likely to be orphans, such as those living on the street or in institutions are sometimes not recorded in household surveys.

**GENDER EQUALITY ISSUES**

Boys and girls are both affected. However, girls might be more likely than boys to leave school to care for ill parents and younger siblings. Other gender equality issues on education are elaborated under the indicators of Goals 2 and 3.

**DATA FOR GLOBAL AND REGIONAL MONITORING**

The United Nations Children’s Fund (UNICEF) is the international agency responsible for the indicator at the international level. Data for this indicator are collected through household surveys, such as Demographic and Health Surveys (DHS), Multiple Indicator Cluster Surveys (MICS), Behavioural Surveillance Surveys (BSS), and other nationally representative surveys. The results are reported regularly in the final reports of these surveys.

As part of a process of routine data quality control, survey results are checked for inconsistencies and to ensure that data are collected using a clearly defined population-based sampling frame, permitting inferences to be drawn for the entire population. UNICEF also conducts an annual exercise called the *Country Reports on Indicators for the Goals (CRING)* , in which data maintained in the global databases at UNICEF for all regularly reported indicators are sent to countries for validation and updating. Updates from countries must be accompanied by original source documentation, e.g. survey reports.

No adjustments are made to the data compiled from DHS, MICS and other surveys that are statistically sound and nationally representative. The lag between the reference year and actual production of data series depends on the availability and reliability of the survey for each country.

The data from household surveys used to produce the indicator are weighted according to the survey design to create a nationally representative indicator. No additional alterations are made to the data.

There is no treatment of missing values. When the information needed to calculate the indicator is not available, the indicator is not estimated.

Regional and global estimates are based on population-weighted averages weighted by the total number of children aged 10–14 years. These estimates are presented only if available data cover at least 50 per cent of total children 10–14 years of age in the regional or global groupings.

**SUPPLEMENTARY INFORMATION**

**EXAMPLES**

**REFERENCES**

See “REFERENCES” for [Indicator 6.1](http://mdgs.un.org/unsd/mi/wiki/6-1-HIV-prevalence-among-population-aged-15-24-years.ashx).

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6.5 Proportion of population with advanced HIV infection with access to antiretroviral drugs

**GOAL AND TARGET ADDRESSED**

Goal 6. Combat HIV/AIDS, malaria and other diseases
Target 6.B: Achieve, by 2010, universal access to treatment for HIV/AIDS for all those who need it

**DEFINITION AND METHOD OF COMPUTATION**

Definition
The proportion of eligible adults and children living with HIV currently receiving antiretroviral therapy is defined as the percentage of adults and children who are currently receiving *antiretroviral therapy (ART)* of all adults and children who are eligible for ART.

Concepts
*Human immunodeficiency virus (HIV)* is a virus that weakens the immune system, ultimately leading to the *Acquired immunodeficiency syndrome (AIDS)* . HIV destroys the body’s ability to fight off infection and disease, which can ultimately lead to death. Infections associated with severe immunodeficiency are known as “opportunistic infections”, because they take advantage of a weakened immune system. Without treatment, average survival from the time of infection is about 10.5 years for males and 11.5 years for females. Access to treatment is uneven, and no vaccine is currently available.

*Antiretroviral therapy (ART)* consists of the use of at least three antiretroviral (ARV) drugs to maximally suppress HIV and stop the progression of HIV disease.

*Acquired immunodeficiency syndrome (AIDS)* refers to the most advanced stages of HIV infection. AIDS is defined clinically by the occurrence of any of more than 25 related opportunistic infections or cancers in a person with serological evidence of HIV infection. An immunological diagnosis of AIDS can also be made if the CD4 count is less than 200 cells per mm3 in an HIV-infected adult (for AIDS diagnosis in children see: <http://www.who.int/hiv/pub/vct/hivstaging>)

*Eligible for ART* are those with advanced HIV infection requiring antiretroviral therapy. This is based on recommendations by WHO which were updated in 2010. For example, WHO recommended in 2010, based on new evidence, that the CD4 threshold at which antiretroviral therapy is deemed necessary for adults to be changed from 200 cells per mm3 to 350 cells per mm3. Eligibility criteria for initiating antiretroviral therapy among infants and children are in accordance with WHO treatment guidelines for infants and children.

Method of computation
This indicator is calculated by dividing the number of adults and children in need for ART who receive it by the total number of adults and children with HIV eligible for ART and multiplying by 100.

**RATIONALE AND INTERPRETATION**

As the HIV epidemic matures, increasing numbers of people are reaching advanced stages of HIV infection. ART has been shown to reduce mortality among those infected and efforts are being made to make it more affordable to all of those in need. This indicator assesses progress toward providing ART to all eligible people.

**SOURCES AND DATA COLLECTION**

Numbers of adults and children receiving antiretroviral therapy are derived from national programme reporting systems, aggregated from health facilities or other service delivery sites. Health facility reports compile data from facility registers and/or reports from drug supply management systems. ART includes drugs received during the last month of a reporting period. External validation of these figures can also be carried out with data from pharmaceutical companies when available. Some countries have developed their own methods of estimating the number of people who need antiretroviral therapy. In some cases, these estimates are based only on registered HIV cases and therefore do not account for people with HIV who are unaware of their HIV status.

At the international level, UNAIDS and WHO have developed modelling methods to generate country estimates of the magnitude of the epidemic and key impact indicators, including mortality. Treatment needs are estimated by taking into consideration epidemiological surveillance data, adult HIV prevalence over time, average survival time of people living with HIV with and without antiretroviral therapy, and average time between seroconversion and eligibility for antiretroviral therapy.

The total number of adults and children with HIV who need antiretroviral therapy is generated using a standardized statistical modelling approach. The estimation of the number of adults with advanced HIV infection who should start treatment is based on the assumption that the average time from HIV seroconversion to eligibility for antiretroviral therapy is eight years and, without antiretroviral therapy, the average time from eligibility to death is about three years.

Country generated data may differ from estimates by UNAIDS/WHO. National capacity building in the use of the modelling methods has been supported by a global series of training workshops which take place biennially. These workshops bring participants up-to-date with the latest developments in new data collection and build capacity in countries to produce updated estimates. Data inputs to the models are gathered at the national level, for example HIV seroprevalence inputs are from national sentinel HIV surveillance data and national prevalence surveys; population inputs are from national data on the size of groups with high-risk behaviours and estimates of adult population by administrative sub-regions; inputs on treatment needs are from national data on the distribution of CD4 counts (a measure of immune system strength) in adults starting ART per year; and inputs on treatment coverage are from national data on the number of adults and children receiving ART by age group, by year, and by first and second regimens. The large majority of low- and middle income countries now use the above models.

**DISAGGREGATION**

Treatment data are available disaggregated by sex for most countries. Further breakdowns are recommended by age, such as those below the age of 15 and those ages 15 and above. The group below the age of 15 can be further disaggregated into those below the age of 1, 1–4 and 5–15 years of age. If available, treatment data can be disaggregated by 1st and 2nd line regimens, the provision of treatment through the private or public sector, and by the most-at-risk populations (i.e. sex workers, injecting drug users, and men who have sex with men).

**COMMENTS AND LIMITATIONS**

Estimates of the number of people receiving antiretroviral therapy can be uncertain in countries that have not established regular reporting systems for recording people who initiate treatment for the first time; rates of adherence among people who receive treatment; numbers of people who discontinue treatment; and numbers of people who die while undergoing treatment.

The reported number of people on antiretroviral therapy carries uncertainties as well. Programme monitoring systems need to be further developed to increase accuracy. For example, some patients pick up several months of antiretroviral drugs during one visit to a treatment centre, which could include antiretroviral therapy for the last month of the reporting period, but might not be recorded in the patient register as visits for the last month of the reporting period. Efforts should be made to account for these patients, as they need to be included in the calculation of the indicator.

Although this indicator allows trends to be monitored over time, it does not attempt to distinguish between the different types of treatment regimens available nor does it measure the cost, quality or effectiveness of treatment. Antiretroviral therapy for post-exposure prophylaxis is not included either.

**GENDER EQUALITY ISSUES**

Equity in treatment access for women living with HIV has been a concern, given the general social and economic inequities between women and men, as well as the greater biological risk of HIV infection that women face relative to men. Available data suggest that overall women are not disadvantaged in access to antiretroviral therapy. For example, data from 109 countries reveal that, in 2010, 58 per cent of adults receiving antiretroviral therapy were female, even though women represented 53 per cent of the people in need.

Most countries do not report gender breakdowns for the under 15 age group.

**DATA FOR GLOBAL AND REGIONAL MONITORING**

WHO, UNAIDS and the United Nations Children’s Fund (UNICEF) are responsible for reporting data for this indicator at the international level, and have been compiling country specific data since 2003.

Data are gathered from the most recent reports from health ministries or from other reliable sources in the countries, such as bilateral partners, foundations and nongovernmental organizations that are major providers of treatment services. Countries report to the international system as part of the Global AIDS Progress Reporting of the 2011 Political Declaration on HIV/AIDS (former United Nations General Assembly Special Session on HIV/AIDS (UNGASS) reporting).

Specialized software is used to generate uncertainty ranges around estimates for antiretroviral therapy need. Depending on the quality of surveillance data, the ranges for some countries can be large. Uncertainty ranges around levels of treatment coverage are based on uncertainty ranges around the need estimates.

Regional and global estimates are calculated as weighted averages of country level indicators where the weights correspond to each country’s share of the total number of people needing antiretroviral therapy. Although WHO and UNAIDS collect data on the number of people receiving antiretroviral therapy in high-income countries, no need numbers have been established for these countries. Aggregated coverage percentages are based solely on low- and middle-income countries.

**SUPPLEMENTARY INFORMATION**

**EXAMPLES**

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6.6 Incidence and death rates associated with malaria

**GOAL AND TARGET ADDRESSED**

Goal 6. Combat HIV/AIDS, malaria and other diseases
Target 6.C. Have halted by 2015 and begun to reverse the incidence of malaria and other major diseases

**DEFINITION AND METHOD OF COMPUTATION**

Definition
The incidence rate of *malaria* is the number of new cases of *malaria* per 100,000 people per year.
The death rate associated with *malaria* is the number of deaths caused by *malaria* per 100,000 people per year.

Concepts
Malaria is an infectious disease caused by the parasite Plasmodium and transmitted via the bites of infected mosquitoes. Symptoms usually appear between 10 and 15 days after the mosquito bite and include fever, headache, and vomiting. The working definition of a case of *malaria* is “fever with plasmodium parasites” which defines individuals that require anti-malarial treatment.

Method of computation
The malaria incidence rate (I) is the number of new cases of malaria (M) divided by the total population (Pop) and multiplied by 100,000.

The malaria death rate (I) is the number of deaths due to malaria (D) divided by the total population (Pop) and multiplied by 100,000.


**RATIONALE AND INTERPRETATION**

Information on the incidence of malaria is required to determine needs for malaria treatment. Data on malaria incidence can be compared to levels of access to malaria treatment to identify underserved populations and, in situations of resource constraint, to target treatment interventions toward high priority areas. Data on changes in malaria incidence help in judging the success of treatment programme implementation, and help to determine whether programmes are performing as expected or whether adjustments in the scale or in the blend of strategies are required. In highly endemic settings, incidence rates are typically as high as 1.5 cases per child under 5 years old per year, and 1 case for every 10 adults per year.

Information on malaria death rates also helps to judge the success of programme implementation and may point to failures of programmes in terms of prevention of malaria or access to effective treatment.

Malaria is serious in its own right, but also increases the risk of death from other conditions. In addition, malaria imposes an economic burden on families, particularly those who are least able to pay for prevention and treatment and most affected by loss of income due to the disease. The disease represents a financial burden to malaria-endemic countries that must use scarce resources to provide bed nets, insecticides and drugs in an effort to control the disease.

**SOURCES AND DATA COLLECTION**

Information on the number of malaria cases, reporting completeness and case confirmation rates are compiled annually by national ministries of health (National Malaria Control Programs) from data collected by national administrations of health services.

**DISAGGREGATION**

There are two principal causal agents of malaria according to which incidence and death rates can be disaggregated:

1. *Plasmodium falciparum* which is predominant in Africa and other high transmission settings, and is responsible for most severe cases and death; and
2. *Plasmodium vivax* which has a wider geographical distribution but is less likely to lead to severe cases of malaria. Countries that confirm malaria cases in laboratories usually provide a breakdown of the proportion of cases due to *Plasmodium falciparum* and *Plasmodium vivax*. Some programmes also distinguish between cases that are detected passively (from persons reporting to health facilities) and actively (by searching for cases in communities), and between cases that are indigenous to an area and cases that are likely to have been imported.

It is also useful to examine incidence and death rates by age-group and sex. In low transmission settings where little immunity to malarial disease exists, cases are evenly distributed by age. In high transmission settings, cases and deaths are concentrated in children under five because frequent exposure has enabled older age groups to develop some immunity. The incidence of malaria appears to be evenly distributed across sexes in children, but pregnant women are particularly susceptible to disease.

Compiling incidence rates for occupational groups, urban/rural populations, and income is useful as well. The incidence of disease is higher in certain occupational groups that are exposed to a higher risk of infection, e.g. forest workers, and among rural populations as they generally carry a greater burden of malaria than urban populations. It is likely that differences in incidence exist by wealth quintile (within urban/ rural strata) owing to differences in housing conditions and the availability and use of preventive measures such as insecticide-treated nets (ITNs).

Administrative data on malaria cases are frequently disaggregated by age group (under or over five years of age) and particular risk groups (pregnant women). Other disaggregations are difficult to undertake in a routine setting and require national malaria control programmes to undertake operational research.

**COMMENTS AND LIMITATIONS**

Estimates of the number of malaria cases are particularly sensitive to the completeness of health facility reporting. If health ministries keep accurate records of the number of surveillance reports received and expected from health facilities, then adjustments can be made for missing reports. However, if this information is not rigorously recorded, and the stated reporting completeness differs from reality then the number of malaria cases will be incorrectly estimated. In addition, many cases recorded in poorly resourced countries are not confirmed by microscopic examination; hence a substantial proportion of patients diagnosed with malaria may have fevers due to other illnesses.

In terms of recording deaths caused by malaria, the symptoms of malaria may be similar to those of other diseases so one cannot always be certain that a death is due to malaria. This is particularly the case with children since many deaths occur in children who may simultaneously suffer from a range of conditions including respiratory infections, diarrhoea, and malnutrition.

In areas of high malaria transmission, parasite prevalence measured through nationally representative household surveys can provide an indication of the risk of malaria infection and trends in disease burden. However, this indicator needs to be treated with caution because many infections may be asymptomatic and not reflect a diseased state. In addition, the indicator does not always reflect changes over time since at high levels of transmission intensity, moderate reductions in inoculation rates do not necessarily translate to reductions in prevalence. Parasite prevalence is less relevant in areas of low transmission intensity where parasite prevalence rates are less than 5 per cent and more difficult to measure precisely.

**GENDER EQUALITY ISSUES**

Potential differences between men and women are a function of biological factors and gender roles and relations. Biological factors vary between men and women and influence susceptibility and immunity to tropical diseases. Women’s immunity is particularly compromised during pregnancy, making pregnant women more likely to become infected and implying differential severity of the consequences.

Malaria infection during pregnancy can range from an asymptomatic infection to a severe life-threatening illness depending on the epidemiological setting. In areas of stable malaria transmission most adult women have developed enough natural immunity that infection does not usually result in symptoms, even during pregnancy. In such areas, the main impacts of malaria infection are malaria-related anaemia in the mother, and the presence of parasites in the placenta, which contribute to low birth-weight, a leading cause of impaired development and infant mortality. Malaria during pregnancy is an important cause of maternal mortality. In areas of unstable malaria transmission most women have acquired little immunity to malaria and are thus at risk of severe malaria and death.

Gender roles and relations may influence access to and control of resources needed to protect women and men from being infected. For instance, an unequal balance of power between men and women and an inequitable access to health care and financial resources as a result of gender and other social inequalities lead to a higher vulnerability to malaria and other infectious diseases among women. These inequalities can also affect women’s ability to respond appropriately and access prevention and treatment efforts where available.

In some societies, the activities of men and women during peak biting times may also result in different risks of infection. In particular, men may often have a greater occupational risk of contracting malaria than women if they work in forests at peak biting times, or migrate to areas of high endemicity for work.

**DATA FOR GLOBAL AND REGIONAL MONITORING**

The World Health Organization (WHO) is the agency responsible for compiling these indicators at the international level. WHO compiles information supplied by national ministries of health, the agencies responsible for malaria surveillance in endemic countries. Population data are derived from projections made by the United Nations Population Division.

Data are adjusted to allow for international comparability. Adjustments are made for underreporting of cases in countries due to patients not using public sector facilities, or gaps in public sector reporting systems and over-diagnosis of malaria in countries that do not undertake laboratory confirmation of cases. Where data from surveillance systems are not available, or are considered to be of insufficient quality, incidence is derived from estimated levels of malaria risk and will mostly be from a different source than locally available estimates.

The methods applied for calculating incidence rates are described fully in the *World Malaria Reports 2010 and 2011*, together with procedures for estimating the uncertainty around estimates.

The number of malaria deaths is derived by one of two methods:

* By multiplying the estimated number of *Plasmodium falciparum* malaria cases in a country by a fixed case-fatality rate. This method is used for all countries outside Africa and for countries in Africa where estimates of case incidence are derived from routine reporting systems, and where malaria comprises less than 5 per cent of all deaths in children under 5.
* For countries in the African Region where malaria comprises 5 per cent or more of all deaths in children under 5, the number of deaths is derived from an estimate of the number of people living at high, low or no risk of malaria. Malaria death rates for these populations are inferred from longitudinal studies of malaria deaths as described in the *Global Burden of Disease: 2004 Update.*

**FOOTNOTE**

**SUPPLEMENTARY INFORMATION**

**EXAMPLES**

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6.7 Proportion of children under 5 sleeping under insecticide-treated bednets

**GOAL AND TARGET ADDRESSED**

Goal 6. Combat HIV/AIDS, malaria and other diseases
Target 6.C. Have halted by 2015 and begun to reverse the incidence of malaria and other major diseases

**DEFINITION AND METHOD OF COMPUTATION**

Definition
This indicator is defined as the proportion of children aged 0–59 months who slept under an *insecticide-treated mosquito net* the night prior to the survey.

This indicator is expressed as a percentage.

Concepts
An *insecticide-treated mosquito net*, or bednet, is a net that has been treated with insecticide within the previous 12 months or has been permanently treated. In permanently treated nets the insecticide lasts for the useful life of the mosquito net, defined as at least 20 washes and at least three years of use under field conditions.

Method of computation
The indicator is calculated by dividing the number of children aged 0–59 months who slept under an insecticide-treated mosquito net the night prior to the survey by the total number of children aged 0–59 months included in the survey and multiplying by 100.

**RATIONALE AND INTERPRETATION**

In areas of sub-Saharan Africa with high levels of malaria transmission, regular use of an insecticide-treated net has been shown to reduce mortality in children under-five by as much as 20 per cent. This indicator will allow countries to monitor progress towards widespread use of insecticide-treated nets in efforts to limit contact between humans and mosquitoes. It is important to note, however, that malaria control programmes now advise monitoring the proportion of total population (regardless of age) sleeping under an ITN.

**SOURCES AND DATA COLLECTION**

This indicator is calculated with data from national-level household surveys, including Multiple Indicator Cluster Surveys (MICS), Demographic Health Surveys (DHS), and Malaria Indicator Surveys (MIS). In addition, malaria modules have been added to other ongoing household surveys.

Data from sample surveys are subject to sampling errors and are generally available only every three to five years. Malaria Indicator Surveys are implemented during interim years between DHS and MICS in order to increase the frequency of malaria data collection.

The lag between the survey reference year and the actual production of data series differs among surveys. For household surveys, such as DHS and MICS, the results tend to be published within a year of field data collection.

**DISAGGREGATION**

The indicator should be disaggregated by sex, mother’s level of education, area of residence and wealth index quintiles. Estimates should be disaggregated by urban and rural areas and by sub-national populations living in areas with malaria transmission (see below).

**COMMENTS AND LIMITATIONS**

In some countries, significant proportions of the population live in areas where malaria is not transmitted. Therefore, estimates of bed net use at the national level may underestimate use among subpopulations living in areas where malaria is transmitted. However, for many countries it is difficult to accurately define at-risk areas, and to identify households surveyed within those areas since surveys do not always geo-code households or villages where survey interviews occur. In addition, survey sample sizes are not always large enough to offer meaningful results for sub-national areas.

Another limitation is that recall bias during interviews can lead to inaccurate date reports of the last insecticide impregnation of nets. Also, information is not typically collected on whether insecticide used to treat nets was “approved” insecticide; nor is information collected on whether nets were washed after treatment, which can reduce the net’s effectiveness.

The seasonality of the surveys can also cause under-estimation of coverage as data collection is often carried out during the dry season when net use is likely at its lowest.

**GENDER EQUALITY ISSUES**

Gender bias could influence a child’s access to an ITN. For example, if there are not enough ITNs for everyone in the household, it is possible that preference could be shown to a boy child over a girl child in terms of who sleeps under a bed net.

**DATA FOR GLOBAL AND REGIONAL MONITORING**

The United Nations Children’s Fund (UNICEF) is the agency responsible for compiling these data and for reporting on this MDG indicator at the international level. Data are compiled in the UNICEF global malaria databases. Data incorporated in these databases are derived from national-level household surveys, including MICS, DHS and MIS. No adjustments are made to the data compiled from DHS, MICS, MIS or other surveys that are statistically sound and nationally representative.

The data are reviewed in collaboration with the Roll Back Malaria (RBM) partnership, which was launched in 1998 by the World Health Organization (WHO), UNICEF, the United Nations Development Programme (UNDP) and the World Bank (WB).

Regional and global estimates are based on population-weighted averages weighted by the total number of children under five years of age. These estimates are presented only if available data cover at least 50 per cent of total children under five years of age in the regional or global groupings.

Because nationally-representative data on insecticide treated mosquito net use are collected through large-scale household surveys, and these figures are not modified, there would normally not be discrepancies between global and national figures. However, there could be discrepancies if national figures are calculated based only on those geographic areas with malaria transmission, or if national figures do not fit the standard indicator definition used for global reporting.

**SUPPLEMENTARY INFORMATION**

**EXAMPLES**

**REFERENCES**

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6.8 Proportion of children under 5 with fever who are treated with appropriate anti-malarial drugs

**GOAL AND TARGET ADDRESSED**

Goal 6. Combat HIV/AIDS, malaria and other diseases
Target 6.C. Have halted by 2015 and begun to reverse the incidence of malaria and other major diseases

**DEFINITION AND METHOD OF COMPUTATION**

Definition
The proportion of children under 5 with fever who are treated with anti-malarial drugs is defined as the percentage of children aged 0–59 months who were ill with a fever in the two weeks before the survey and who received any *anti-malarial drugs* during that time.

Concepts
*Anti-malarial drugs* are drugs that are used to treat *malaria*. Anti-malarial drugs are prescribed according to the type of malaria that the patient has. Artemisinin-based combination therapy (ACT) is recommended for the treatment of confirmed, uncomplicated malaria caused by *Plasmodium falciparum*. Chloroquine remains effective for most cases of *Plasmodium vivax*.

*Malaria* is an infectious disease caused by the parasite Plasmodium and transmitted via the bites of infected mosquitoes. Symptoms usually appear between 10 and 15 days after the mosquito bite and include fever, headache, and vomiting. If not treated, this disease can become life-threatening by disrupting the blood supply to vital organs.

*Fever:* Presumptive malaria diagnosis (based on fever) used to be the standard, especially for young children, in areas with *Plasmodium falciparum.* In 2010, however, WHO recommended universal use of diagnostic testing to confirm malaria infection before treatment.

Method of computation
The indicator is calculated by dividing the number of children aged 0–59 months with a fever during the two weeks prior to the survey who received any anti-malarial medicine during that time by the total number of children aged 0–59 months with a fever during the two weeks prior to the survey.

**RATIONALE AND INTERPRETATION**

Prompt diagnosis and effective treatment of malaria within 24 hours of the onset of symptoms is necessary to prevent life-threatening complications. This indicator, however, is based on all children with fever and not children with confirmed malaria. Thus, as the use of diagnostics has scaled up, this indicator has become difficult to interpret. If parasitological confirmation is available to determine that some fever cases are not malaria, these children will be excluded from treatment and thus, from the numerators, although they will still be included in the denominator due to their non-malarious fevers. This will result in an underestimate of the true levels of antimalarial treatment.

**SOURCES AND DATA COLLECTION**

Information on the proportion of fever cases seeking care are obtained from nationally representative household surveys which are generally conducted by national statistical offices within malaria endemic countries. The most common sources are the Demographic and Health Survey (DHS) or the Multiple Indicator Cluster Survey (MICS), which are typically conducted every three to five years. The lag between the reference year and the actual production of data series differs between surveys. For household surveys, such as DHS and MICS, the results are usually published within a year of field data collection. Malaria Indicator Surveys (MIS) are often conducted in interim years between DHS and MICS in order to increase the frequency of malaria data collection. Since data on this indicator are compiled in sample surveys, data are subject to sampling errors.

**DISAGGREGATION**

Disparities by sex, mother’s education, area of residence (urban/rural) and wealth index quintiles should be assessed. Estimates should also be disaggregated by sub-national populations living in areas with malaria transmission.

**COMMENTS AND LIMITATIONS**

Interpretation of levels and trends in malaria treatment coverage among all febrile children is limited as fevers are not always the result of malaria infection. In countries that are scaling up the use of diagnostics, measuring treatment rates among all children with fever cannot be used for monitoring the progress of programmes targeted toward treating confirmed malaria cases.

This indicator has other limitations as well. Many children with fever are still treated with less effective traditional monotherapies, such as chloroquine. Therefore, the proportion of children treated with *any antimalarial* will be significantly higher than the proportion of children treated with *effective anti-malarial medicines*. In addition, information is not collected on whether the anti-malarial treatment was administered correctly.

Because of difficulty recalling past events, respondents may not provide reliable information on episodes of fever within the previous two weeks or on the identity of prescribed drugs. Data may also be biased by the seasonality of survey data collection, which is most often carried out during the dry season for logistical reasons.

In some countries, significant proportions of the population live in areas with no malaria transmission. Therefore, estimates of intervention coverage at the national level may underestimate the level of coverage among sub-populations living in areas of malaria transmission. For many countries, it is difficult to accurately define at-risk areas within countries and to identify households surveyed within those areas since surveys do not always geocode survey households or villages. In addition, survey sample sizes are not always large enough to offer meaningful results for sub-national areas.

**GENDER EQUALITY ISSUES**

Access to health care services for malaria can be affected by gender issues. When health care is too expensive for families or communities, boys and men may receive priority for access to household finances for treatment.

**DATA FOR GLOBAL AND REGIONAL MONITORING**

The United Nations Children’s Fund (UNICEF) is the agency responsible for compiling the data for this indicator and for reporting on this MDG indicator at the international level. Data are derived from national-level household surveys, including MICS, DHS and MIS. No adjustments are made to the data compiled from DHS, MICS, MIS or other surveys that are statistically sound and nationally representative.

The data are reviewed in collaboration with the Roll Back Malaria (RBM) partnership, launched in 1998 by the World Health Organization (WHO), UNICEF, the United Nations Development Programme (UNDP) and the World Bank (WB).

Regional and global estimates are based on population-weighted averages weighted by the total number of children under five years of age. These estimates are presented only if available data cover at least 50 per cent of total children under five years of age in the regional or global groupings.

Because all nationally-representative data on anti-malarial use are collected only through large-scale household surveys, and these figures are not modified, there would normally not be any discrepancies between global and national figures. However, there can be discrepancies if national figures are calculated based on only those geographic areas with malaria transmission, or if national figures do not fit the current standard indicator definition used for global reporting.

**SUPPLEMENTARY INFORMATION**

**EXAMPLES**

**REFERENCES**

See “REFERENCES” in [Indicator 6.7](http://mdgs.un.org/unsd/mi/wiki/6-7-Proportion-of-children-under-5-sleeping-under-insecticide-treated-bednets.ashx).

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6.9 Incidence, prevalence and death rates associated with tuberculosis

**GOAL AND TARGET ADDRESSED**

Goal 6. Combat HIV/AIDS, malaria and other diseases Target 6.C. Have halted by 2015 and begun to reverse the incidence of malaria and other major diseases

**DEFINITION AND METHOD OF COMPUTATION**

Definition
The incidence of *tuberculosis (TB)* is defined as the number of new *TB cases* in one year per 100,000 population. The prevalence of *tuberculosis* is defined as the number of *TB cases* in a population at a given point in time (sometimes referred to as "point prevalence") per 100,000 population. Death rates associated with *tuberculosis* are defined as the estimated number of deaths due to *TB* in one year per 100,000 population.

Concepts
A *tuberculosis case* is defined as a patient in whom tuberculosis has been bacteriologically confirmed or diagnosed by a clinician.

*Tuberculosis* is an infectious bacterial disease caused by Mycobacterium tuberculosis, which most commonly affects the lungs. It is transmitted from person to person via droplets from the throat and lungs of people with the active respiratory disease. In healthy people, infection with Mycobacterium tuberculosis often causes no symptoms, since the person's immune system acts to “wall off” the bacteria. The symptoms of active TB of the lung are coughing, sometimes with sputum or blood, chest pains, weakness, weight loss, fever and night sweats. Tuberculosis is treatable with a six-month course of antibiotics.

Method of computation
This indicator is calculated by dividing the calculated numbers of incidence, prevalence and deaths by the total population in units of 100,000 people. Population estimates are used where the only data available are data reported through the administration of health services. Total population in the survey is used when the data come from household surveys.

**RATIONALE AND INTERPRETATION**

Detecting tuberculosis and curing it are key interventions for addressing poverty and inequality. Prevalence and deaths are more sensitive markers of the changing burden of tuberculosis than incidence (new cases), but data on incidence are more comprehensive and give the best overview of the impact of global tuberculosis control.

Incidence rates are important because they give an indication of the extent of TB in a population, and of the size of the task faced by a national TB control programme. Incidence rates can be used to track changes in the rate at which people infected with *Mycobacterium tuberculosis* develop TB disease. Because TB can develop in people who became infected in the past, however, the effect of TB control on incidence is less visible than the effect on prevalence or death rates.

Prevalence and death rates can be used to directly monitor the burden of TB because they indicate the number of people suffering from the disease at a given point in time and the number dying each year. Prevalence and mortality rates are also useful for monitoring the effects of improvements in TB control because treatment reduces the average duration of the disease (thus decreasing prevalence) and the likelihood of dying from the disease.

**SOURCES AND DATA COLLECTION**

Available data sources differ from country to country, but generally include case notifications and death records (from routine surveillance and vital registration), and measures of the prevalence of disease (from population-based surveys). Prevalence of disease surveys are costly and logistically complex; however, they do provide a direct measure of bacteriologically confirmed, prevalent TB disease, and can serve as a platform for other investigations, e.g., the interactions between patients and the health system. In addition, mortality surveys and demographic surveillance systems that use verbal autopsy to determine cause of death are a potential source of improved estimates of TB mortality. Surveys are particularly useful where routine surveillance data are poor.

The availability of direct measures of tuberculosis prevalence is increasing, with national surveys being implemented in around 20 TB-endemic countries between 2010 and 2015. Direct measures of the tuberculosis death rate come from vital statistics registration. Reliable figures require that death registration be nearly universal and that the cause of death be reported routinely on the death record and determined by a qualified observer according to the latest International Classification of Diseases. Such information is not available in many developing countries.

In the absence of direct measures of prevalence and death rates, a variety of techniques can be used to estimate these values. Administrative data are derived from the administration of health services. Data can also be obtained from household surveys such as Multiple Indicator Cluster Surveys (MICS) or the Demographic and Health Surveys (DHS), although these usually refer only to children under five and do not provide death rates. Population data come directly or indirectly from population censuses.

**DISAGGREGATION**

Case notifications should be disaggregated by site of disease (pulmonary/extra-pulmonary), type of laboratory confirmation (usually sputum smear), and history of previous treatment.

New smear-positive cases can be disaggregated by age and sex. Many control programmes can also disaggregate cases according to the presence of drug resistance. The World Health Organization (WHO) recommends that recording and reporting programmes include disaggregation of notified cases by HIV status.

**COMMENTS AND LIMITATIONS**

Routine surveillance data provide a good basis for estimating incidence in countries where the majority of incident cases are treated and notified to WHO. But in most countries with a high burden of tuberculosis, incidence can only be estimated indirectly, usually with a large uncertainty. Nevertheless, where the proportion of cases notified is consistent over time (even if it is low), trends in notified cases can help assess trends in incidence. Where TB control efforts change over time it is difficult to differentiate between changes in incidence and changes in the proportion of cases notified.

**GENDER EQUALITY ISSUES**

At younger ages, the prevalence of disease is similar in boys and girls. At older ages, a higher prevalence has been found in men, and in most parts of the world, more men than women are diagnosed with tuberculosis and die from it. However, recent analyses comparing infection and disease rates suggest that the propensity to develop the disease after infection with *Mycobacterium tuberculosis* (the progression rate) may be greater among women of reproductive age than among men of the same age. A recent review of socio-economic and cultural factors relating to these suggested differences has called for further research to clarify such differences in the epidemiology of tuberculosis.

Although more men than women die of tuberculosis, the disease is still a leading cause of death from infectious diseases among women. Because tuberculosis affects women mainly in their economically and reproductively active years, the impact of the disease is also strongly felt by their children and families.

**DATA FOR GLOBAL AND REGIONAL MONITORING**

WHO is the international agency responsible for these indicators at the international level. Data are collected yearly through requests for information to the National Tuberculosis Control Programmes (NTPs) or other relevant public health authorities. A standardized online data collection website is used by all countries. Estimates are made using these data as well as country-specific analyses of TB epidemiology based on the published literature and consultation with national and international experts. NTPs that respond to WHO are also asked to update information for earlier years where possible. As a result of such revisions, the data (case notifications, treatment outcomes, etc.) presented for a given year may differ from those published previously.

Online reports completed by countries are compiled and reviewed by WHO country offices, regional offices and headquarters. Feedback is then sent back to the NTP correspondent in order to complete any missing responses and to resolve any inconsistencies. Then, using the complete set of data for each country, a profile is constructed that tabulates all key indicators, including epidemiological and financial data and estimates, and this too is returned to each NTP for review. In the WHO European Region only, data collection and verification are performed jointly by the WHO regional office and the European Centre for Disease Prevention and Control (ECDC). ECDC subsequently publishes an annual report with additional analyses, using more detailed data for the European Region.

Where population data are needed to calculate TB indicators, the latest United Nations Population Division estimates are used. These estimates sometimes differ from those made by the countries themselves, some of which are based on more recent census data.

Regional and global estimates are produced by aggregating national estimates, (i.e. to calculate the global incidence rate of TB per 100,000 population for a given year, TB incidence estimates for individual countries are summed and divided by the sum of the population of all countries multiplied by 100,000).

All estimates of TB burden (incidence, prevalence and mortality) are provided with uncertainty bounds.

**SUPPLEMENTARY INFORMATION**

**EXAMPLES**

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6.10 Proportion of tuberculosis cases detected and cured under directly observed treatment short course

**GOAL AND TARGET ADDRESSED**

Goal 6. Combat HIV/AIDS, malaria and other diseases
Target 6.C. Have halted by 2015 and begun to reverse the incidence of malaria and other major diseases

**DEFINITION AND METHOD OF COMPUTATION**

Definition
The proportion of *tuberculosis (TB) cases detected*, also known as the *TB detection rate*, is the number of estimated *new TB cases* detected in a given year using the DOTS approach) expressed as a percentage of all new *TB cases*.

The proportion of *TB cases detected and cured*, also known as the *TB treatment success rate*, is the number of new, *TB cases* in a given year that were cured or completed a full treatment of *DOTS* expressed as a percentage of all new *TB cases*.

Concepts
*Tuberculosis* is an infectious bacterial disease caused by Mycobacterium tuberculosis, which most commonly affects the lungs. It is transmitted from person to person via droplets from the throat and lungs of people with the active respiratory disease. In healthy people, infection with Mycobacterium tuberculosis often causes no symptoms, since the person's immune system acts to “wall off” the bacteria. The symptoms of active TB of the lung are coughing, sometimes with sputum or blood, chest pains, weakness, weight loss, fever and night sweats. Tuberculosis is treatable with a six-month course of antibiotics.

A *tuberculosis case* is defined as a patient in whom tuberculosis has been bacteriologically confirmed or diagnosed by a clinician.

*Case detection* means that TB is diagnosed in a patient and is reported within the national surveillance system.

*A new case of TB* is defined as a patient who has never received treatment for TB, or who has taken anti-TB drugs for less than 1 month.

*DOTS* is a proven TB treatment system based on accurate diagnosis and consistent treatment with a full course of anti-tuberculosis drugs (isoniazid, rifampicin, pyrazinamide, streptomycin and ethambutol). It is the first component and foundation of the internationally-recommended Stop TB Strategy, which was launched by WHO as a successor to the DOTS strategy in 2006.

Method of computation
The *TB case detection rate* is calculated by dividing the number of new cases notified to the World Health Organization (WHO) by the estimated number of incident cases for the same year and multiplying by 100.

The estimated number of incident cases is calculated as described for Indicator 6.9.

The *TB treatment success rate* is calculated by dividing the number of new, registered TB cases that were cured or completed a full course of treatment by the total number of new registered cases and multiplying by 100.

The treatment success rate is calculated based on the results of the treatment for each patient. At the end of treatment, each patient is assigned one of the following six mutually exclusive treatment outcomes: cured; completed; died; failed; defaulted; and transferred out with outcome unknown. The proportions of cases assigned to these outcomes, plus any additional cases registered for treatment but not assigned to an outcome, add up to 100 per cent of cases registered.

**RATIONALE AND INTERPRETATION**

Since tuberculosis is an airborne contagious disease, finding and treating cases and thus limiting the risk of acquiring infection is the primary means of controlling the spread of TB. The recommended approach to primary control is the Stop TB Strategy, an inexpensive strategy that could prevent millions of tuberculosis cases and deaths over the coming decade.

TB case detection rates and TB treatment success rates provide a measure of the effectiveness of national TB programmes in finding and diagnosing people with TB.

**SOURCES AND DATA COLLECTION**

Data for this indicator are derived from National TB programmes, which monitor and report cases detected, treatment progress and programme performance. Through this system, cohorts of patients can be monitored directly and accurately by making systematic evaluations of patient progress and treatment outcomes.

The number of new cases detected by national TB programmes is collected as part of the routine surveillance (recording and reporting) that is an essential component of the Stop TB Strategy. Quarterly reports of the number of TB cases registered are then compiled and sent (either directly or via intermediate levels) to the central office of the national TB control programme.

**DISAGGREGATION**

Disaggregated surveillance data (e.g. clinic, district, province; by age, sex) are useful for drawing out the maximum information on the TB epidemic and the impact of control measures. It is also useful, where possible, to analyze treatment success rates disaggregated by drug resistance and HIV status.

**COMMENTS AND LIMITATIONS**

One of the main limitations in detecting TB cases is that ministries of health in developing countries usually report only a fraction of the number of cases in the population.

Another important limitation of this indicator is that, even where treatment is of high quality, reported treatment success rates will only be high when the routine information system is also functioning well. The treatment success rate will be affected if the outcome of treatment is not recorded for all patients (including those who transfer from one treatment facility to another).

Where treatment success rates are low, the cause of the problem can only be identified by determining which of the unfavourable treatment outcomes are most common. Several factors affect the likelihood of treatment success, including the severity of disease (often related to the delay between onset of disease and the start of treatment), HIV infection, drug resistance, malnutrition and the levels of support provided to patients to ensure that they complete treatment.

**GENDER EQUALITY ISSUES**

See “GENDER EQUALITY ISSUES” for [Indicator 6.9](http://mdgs.un.org/unsd/mi/wiki/6-9-Incidence-prevalence-and-death-rates-associated-with-tuberculosis.ashx).

**DATA FOR GLOBAL AND REGIONAL MONITORING**

WHO is the agency responsible for the calculation of this indicator at the international level. Data are collected through on online data collection website used by all countries on an annual basis. Countries provide national data periodically, and estimates are made using these data as well as country-specific analyses of TB epidemiology based on the published literature and consultation with national and international experts.

Because treatment for TB lasts between six and eight months, there is a delay in assessing treatment outcomes. Each year national TB control programmes report to WHO the number of cases of TB diagnosed in the preceding year, and the outcomes of treatment for the cohort of patients who commenced treatment during the year prior to that. Data are produced annually.

The TB case notifications and treatment outcomes reported by countries follow the WHO recommendations on case definitions, recording and reporting. Data are therefore internationally comparable and there is no need for any adjustment. No imputations are made for missing values.

Regional and global estimates are produced by aggregating national estimates. To calculate the global treatment success rate, the number of new cases cured and/or with completed treatment in individual countries is divided by the total number of new cases registered for treatment in a given year.

**SUPPLEMENTARY INFORMATION**

**EXAMPLES**

**REFERENCES**

See “REFERENCES” for [Indicator 6.9](http://mdgs.un.org/unsd/mi/wiki/6-9-Incidence-prevalence-and-death-rates-associated-with-tuberculosis.ashx).

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7.1 Proportion of land area covered by forest

**GOAL AND TARGET ADDRESSED**

Goal 7. Ensure environmental sustainability Target 7A. Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources

**DEFINITION AND METHOD OF COMPUTATION**

Definition
The proportion of land area covered by forest is the amount of *forest area* in the total *land area*.

This indicator is expressed as a percentage.

Concepts
*Forest area* includes land spanning more than 0.5 hectares with trees higher than 5 metres and a canopy cover of more than 10 per cent. Areas under reforestation that have not yet reached but are expected to reach a tree height of 5 metres and canopy cover of 10 per cent are included, as are temporarily unstocked areas, resulting from human intervention or natural causes, which are expected to regenerate. Also included are: areas with bamboo and palms, provided that height and canopy cover criteria are met; forest roads, firebreaks and other small open areas; forest in national parks, nature reserves and other protected areas such as those of specific scientific, historical, cultural or spiritual interest; windbreaks, shelterbelts and corridors of trees with an area of more than 0.5 hectares and width of more than 20 metres; and plantations primarily used for forestry or protective purposes, such as rubber-wood plantations and cork oak stands.

*Forest area* excludes land that is predominantly under agricultural or urban land use, such as tree stands in agricultural production systems (e.g. fruit plantations and agroforestry systems), and trees in urban parks and gardens.

*Land area* is the total surface area of a country less the area covered by inland waters, like major rivers and lakes.

Method of computation
This indicator is calculated by dividing the total area of forest by total land area and multiplying by 100.

**RATIONALE AND INTERPRETATION**

Forests fulfil a number of functions that are vital for humanity, including the provision of wood and non-wood forest products; and services such as habitat for biodiversity, carbon sequestration, coastal protection and soil and water conservation.

This indicator provides a measure of the relative extent of forest in a country. The availability of accurate data on a country's forest area is a key element for forest policy and planning within the context of sustainable development. Changes in forest area reflect the demand for land for other uses and may help identify unsustainable practices in the forestry and agricultural sectors.

Negative trends in the proportion of land covered by forest are a cause for concern due to the role played by forests in biodiversity conservation, climate change and provision of livelihoods. Positive trends indicate large reforestation efforts or the natural expansion of forest onto abandoned agricultural land.

**SOURCES AND DATA COLLECTION**

Data on forest areas originate from national forest inventories or assessments and special studies. It is possible to produce estimates with information from ground surveys, cadastral surveys, remote sensing or a combination of these. National forest inventories are expensive and, as a result, they are carried out at infrequent intervals in many countries. On the other hand, easier access to remote sensing imagery has enabled recent assessments of forest and tree cover in some countries.

**DISAGGREGATION**

Data on forest area can be disaggregated by ownership, designated function or purpose and characteristics of the forest.

**COMMENTS AND LIMITATIONS**

The indicator does not capture key characteristics or conditions of forest resources such as whether the forests are undisturbed primary forests, severely degraded forests or something in between. Nor does the indicator capture forest health and vitality, the actual volume of trees, the amount of carbon sequestered, tree diversity, forest values, or forest management status.

In addition, differences in methodologies and definitions over time make it difficult to compare the results of different assessments within a given country and to accurately estimate changes over time.

**GENDER EQUALITY ISSUES**

Men and women use forest products in different ways. Women typically gather forest products for fuel, fencing, food for the family, fodder for livestock, medicine and raw materials for income-generating activities. Men more often cut wood to sell or use for building materials. Women’s access to forest products may not be ensured—even where women have ownership rights to land.

**DATA FOR GLOBAL AND REGIONAL MONITORING**

The Food and Agriculture Organization of the United Nations (FAO) has been collecting and analyzing data on forest area since 1946. This is done at intervals of 5–10 years as part of the *Global Forest Resources Assessment.*

Data are reported by countries using standardized formats, definitions and reporting years. The reporting format ensures that countries provide the full reference for original data sources as well as national definitions and terminology. The data are then aggregated and used for regional and global monitoring purposes. For countries and territories where no information is provided, data are prepared by FAO using existing information and literature searches.

Once received, country reports undergo rigorous review processes to ensure correct use of definitions and methodology as well as internal consistency. Comparisons are made with past assessments and other existing data sources. Regular contact between national correspondents and FAO staff, and regional/sub-regional review workshops form part of this review process. All country reports (including those prepared by FAO) are sent to the respective national heads of forestry for validation before finalization.

**SUPPLEMENTARY INFORMATION**

**EXAMPLES**

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7.2 CO2 emissions, total, per capita and per $1 GDP (PPP)

**GOAL AND TARGET ADDRESSED**

Goal 7. Ensure environmental sustainability Target 7.A. Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources

**DEFINITION AND METHOD OF COMPUTATION**

Definition
This indicator is defined as the *total carbon dioxide (CO2) emissions* from energy, industrial processes, agriculture and waste (minus CO2 removal by sinks), presented as total emissions, emissions per unit population of a country, and emissions per unit value of a country’s *gross domestic product (GDP)* , expressed in terms of *purchasing power parity (PPP).*

Concepts
*Total carbon dioxide (CO2) emissions* are defined as the total amount of carbon dioxide emitted by a country as a consequence of human activities, minus carbon dioxide removals by *sinks*. The term “total” implies that emissions from all national activities are considered. The typical sectors for which CO2 emissions are estimated are energy, industrial processes, agriculture and waste. Emissions resulting from land-use changes and forest cover changes are also calculated. The energy sector includes emissions from the consumption of solid, liquid and gaseous fuels and emissions from oil/gas flaring. Industrial processes include emissions from cement production and some other processes. The waste sector includes emissions from waste incineration.

*Sinks* are processes, activities or mechanisms which remove a greenhouse gas, an aerosol or a precursor of a greenhouse gas from the atmosphere. Forests and other vegetation are considered sinks because they remove carbon dioxide through photosynthesis.

*Gross domestic product (GDP)* is an aggregate measure of production equal to the sum of the gross values added of all resident institutional units engaged in production (plus any taxes, and minus any subsidies, on products not included in the value of their outputs). It is calculated without making deductions for the consumption of fixed capital or for depletion and degradation of natural resources.

The *purchasing power parity (PPP)* conversion factor is the number of units of a country's currency required to buy the same amounts of goods and services in the domestic market as the United States dollar would buy in the United States. Using the PPP factor is often considered as a practical way to address the problem of possible imperfection in the currency exchange rates observed on the real currency markets.

Method of computation
This indicator is calculated by first computing total carbon dioxide emissions. The Intergovernmental Panel on Climate Change (IPCC) has developed methodologies for estimating carbon dioxide emissions which are classified into three tiers—the higher the tier, the higher the quality and accuracy of the data estimate. Tier 1 methods are relatively straightforward and require little country-specific data whereas Tier 3 methodologies are complex and usually require a large amount of country-specific data. The application of these methodologies by countries varies according to specific national circumstances.

Emissions are normally estimated at the level of individual emissions sources, which may correspond to a physical facility (e.g. a power plant) or to an industrial or economic group (e.g. cement production). For each individual source category, CO2 emissions are often estimated using an equation of the type shown below (which corresponds to a Tier 1 method):

*Emissionsfuel* = *Fuel Combustedfuel* x *Emission Factorfuel,tech*

where *Emissionsfuel* are CO2 emissions by type of fuel (for the given category), *Fuel Combustedfuel* is the quantity of fuel combusted, and *Emission Factorfuel,tech*. is the CO2 emission factor by type of fuel, which may depend on the combustion technology used. Sometimes a carbon oxidation factor (often assumed to equal 1) is added to this equation. While the equation is simple, estimating values for the amount of fuel combusted and selecting emission factors which are consistent with the definitions of the IPCC emission categories are more difficult.

The formula above does not apply to estimating CO2 emissions from industrial processes where the emissions need to be calculated for each process depending on the chemical reactions involved.

Carbon dioxide emissions can be expressed as units of carbon dioxide or converted to units of carbon content. To convert carbon dioxide to carbon content, the quantity of carbon dioxide is multiplied by the ratio of the molecular weight of carbon to that of carbon dioxide (12/44).

Once total CO2 emissions are estimated, the indicator is calculated by dividing total carbon dioxide emissions by total population, and by dividing total carbon dioxide emissions by GDP in terms of PPP

**RATIONALE AND INTERPRETATION**

The indicator monitors countries’ efforts to reduce CO2 emissions. CO2 emissions are largely a by-product of energy production and use. They account for the largest share of greenhouse gases associated with global warming. The major part of CO2 is released as a result of combustion processes when fossil fuels such as coal, oil and gas are burned, usually in order to produce energy. CO2 is also released as part of certain industrial processes, for example in cement production, and in the waste incineration process.

Continued growth of greenhouse gas emissions at or above the current rates can cause further warming and induce many changes in the global climate system. As CO2 is the major component of greenhouse gases, monitoring CO2 emissions is particularly important. Rising CO2 emissions lead to increases in the concentration of carbon dioxide in the atmosphere, higher global temperatures, rising sea levels and other sizable adverse impacts on the animals, plants and people inhabiting the planet. Several international conventions and agreements aim to halt and reverse the effects of emissions, the United Nations Framework Convention on Climate Change (UNFCCC) and its Kyoto Protocol being the most prominent.

**SOURCES AND DATA COLLECTION**

National carbon emissions are estimated from detailed data on emission sources, using source-specific emission factors. Emission inventories are usually compiled by energy or environment ministries, or by specialized environmental agencies.

**DISAGGREGATION**

Generally, CO2 emissions are calculated for individual sources or source categories which are then aggregated to obtain a national total. The number of individual source categories may vary depending on data availability, the organizational and methodological framework of the assessment, and the resources available. The list below illustrates a typical disaggregation of CO2 emissions by category that is used by countries that report CO2 emissions to the UNFCCC. Many countries use even more detailed disaggregations of their CO2 sources.

1. Energy
	1. Fuel Combustion
		1. Energy Industries
		2. Manufacturing Industries and Construction
		3. Transport
		4. Other Sectors
		5. Other
	2. Fugitive Emissions from Fuels
		1. Solid Fuels
		2. Oil and Natural Gas
2. Industrial Processes
	1. Mineral Products
	2. Chemical Industry
	3. Metal Production
	4. Other Production
	5. Production of Halocarbons and SF6
	6. Consumption of Halocarbons and SF6
	7. Other
3. Solvent and Other Produce Use
4. Agriculture
	1. Enteric Fermentation
	2. Manure Management
	3. Rice Cultivation
	4. Agricultural Soils
	5. Prescribed Burning of Savannas
	6. Field Burning of Agricultural Residues
	7. Other
5. Land Use, Land-Use Change and Forestry
	1. Forest Land
	2. Cropland
	3. Grassland
	4. Wetlands
	5. Settlements
	6. Other Land
	7. Other
6. Waster
	1. Solid Waste Disposal on Land
	2. Waste-water Handling
	3. Waste Incineration
	4. Other
7. Other

Since disaggregated emissions are usually available, CO2 emissions indicators can be calculated at various levels, from national totals to emissions from specific industries. However, the more the indicator is disaggregated, the less transparent its interpretation becomes.

**COMMENTS AND LIMITATIONS**

Carbon dioxide is only one of the greenhouse gases and therefore this indicator provides information on only one part of overall greenhouse gas emissions. Accordingly, the overall impact on climate change may be underestimated if only CO2 emissions are included in the estimate. However, usually the share of CO2 in total greenhouse gas emissions is high, ranging from 70 per cent to 90 per cent, and it is therefore reasonable to use CO2 emissions as a simple proxy for a more complex composition of greenhouse gases.

CO2 emissions/removals from land-use change and forestry are often known with much less certainty than emissions from other sectors, if they are known at all. In uncertain cases, CO2 emissions/removals from forests and land-use changes can be excluded and “total” CO2 emissions can be estimated as the sum of emissions from energy, industrial processes and waste.

**GENDER EQUALITY ISSUES**

Not applicable for this indicator

**DATA FOR GLOBAL AND REGIONAL MONITORING**

Data at the global and regional level are calculated by the United Nations Statistics Division (UNSD) on the basis of country-level data provided by the UNFCCC Secretariat (for most industrialized countries) and the Carbon Dioxide Information Analysis Center (CDIAC) of the US Department of Energy (DOE) (for all other countries). The two sets of data are calculated with a rather different approach.

The UNFCCC Secretariat compiles CO2 emissions data submitted by UNFCCC Annex I Parties. These data are often prepared using disaggregations of emissions/removals by source/sink categories based on the more complex methodologies recommended by the IPCC (Tier 2 and Tier 3 methods). The data are prepared and reported annually with a two-year lag. The entire data series is normally provided because data for earlier years are recalculated every year to ensure consistency of the time series.

CDIAC estimates CO2 emissions for all other countries for which the UNFCCC Secretariat does not provide data. These emissions estimates are derived primarily from energy statistics published by UNSD, using mostly IPCC Tier 1 methods. Energy statistics are compiled primarily from annual questionnaires distributed by UNSD and supplemented by official national statistical publications and, in a few cases, by other sources and estimates. These estimates are made annually, with a two-year lag.

Since both sets of data use methodologies recommended by the IPCC or consistent with IPCC recommendations, no significant data inconsistencies are expected between the two sets, although, for a given country, results of an emission estimate may differ.

Due to a lack of data relating to emissions from land use, land-use change and forestry, the CO2 emissions estimates used in the MDG process are made without accounting for CO2 emissions/removals from forests and land-use changes.

**SUPPLEMENTARY INFORMATION**

**EXAMPLES**

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7.3 Consumption of ozone-depleting substances

**GOAL AND TARGET ADDRESSED**

Goal 7. Ensure environmental sustainability Target 7.A: Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources

**DEFINITION AND METHOD OF COMPUTATION**

Definition
The consumption of ozone-depleting substances is the sum of the consumption of the *ozone-depleting potential- weighted metric tons* of all *ozone-depleting substances* controlled under the Montreal Protocol on Substances that Deplete the Ozone Layer.

Concepts
*Ozone-depleting potential-weighted metric tons* are metric tons of individual *ozone-depleting substances* multiplied by their *ozone-depleting potential*.

*Ozone-depleting substances (ODS)* are defined in the Montreal Protocol as substances containing chlorine or bromine that destroy the stratospheric ozone layer which absorbs most of the biologically damaging ultraviolet radiation. The phasing out of ozone depleting substances, and their substitution by less harmful substances or new processes, are aimed at the recovery of the ozone layer. Substances controlled by the Montreal Protocol are categorised into annexes, with different groups in each annex. These include chlorofluorocarbons (CFCs) (Annex A, group I), halons (Annex A, group II), and methyl bromide (Annex E, group I) among others.

*Controlled substances* are substances in Annex A, Annex B, Annex C or Annex E of the Montreal Protocol, whether existing alone or in a mixture. They include the isomers of any such substance, but exclude any controlled substance or mixture that is in a manufactured product other than a container used for the transportation or storage of that substance. Therefore trade in finished products would not fall under the control of the Protocol.

*Ozone depleting potential (ODP)* refers to the amount of ozone depletion caused by a substance. It is the ratio of the impact on ozone of a chemical substance compared to the impact of a similar mass of CFC-11. The ODP of CFC-11 is defined to be 1. CFCs have ODPs that range from 0.6 to 1 while hydrochlorofluorocarbons (HCFCs) have ODPs that range from 0.001 to 0.52. Halons have ODPs of up to 10 while methyl bromide has an ODP of 0.6. A full list of the controlled substances as well as the control measures applicable to each group of substance can be found in the protocol text, which is available at <http://ozone.unep.org/>.

Method of computation
Consumption of ODS is calculated as the national production of ODS plus imports, minus exports, minus destroyed quantities, minus feedstock uses of a controlled substance.

Destruction and feedstock uses both remove ODS from the system, hence they are subtracted when calculating consumption. The Montreal Protocol also specifies that consumption shall not include the amounts used for quarantine and pre-shipment applications of methyl bromide, and further specifies that exports to non-Parties will count as consumption in the exporting Party.

The precise formula for calculating consumption is:

Consumption = (Total ODS Production) – (Destroyed ODS) – (Production for Internal Feedstock Use) – (Production for internal quarantine use (for methyl bromide only)) + (Total New Imports) – (Import for Feedstock) – (Import for Quarantine Use) – (Total New Exports) + (Exports to Non-parties)

Consumption of individual substances need to be multiplied by their ozone depleting potential and summed to calculate the consumption of all ODS in ozone-depleting potential weighted metric tons.

**RATIONALE AND INTERPRETATION**

This indicator is used to monitor reduction in the usage of ODS that are controlled under the Montreal Protocol as these man-made substances have scientifically been shown to be solely responsible for ozone depletion. In particular, this indicator helps with the monitoring of the progress towards meeting commitments to phase out the use of ODS in countries that have ratified the 1987 Montreal Protocol on Substances that Deplete the Ozone Layer and its Amendments of London (1990), Copenhagen (1992), Montreal (1997) and Beijing (1999).

The Vienna Convention for the Protection of the Ozone Layer (1985) and the Montreal Protocol (1987) are now recognized as having been successful in preventing the global environmental catastrophe that might have occurred following the depletion of the stratospheric ozone. The Montreal Protocol aims to reduce and eventually eliminate emissions of anthropogenic ODS by ceasing their production and consumption. The phasing out of ODS and their replacement with less harmful substances or new processes are aimed at the recovery of the ozone layer.

**SOURCES AND DATA COLLECTION**

Estimation of the consumption of ODS requires data on national ODS production plus imports, minus exports, minus stocks destroyed. These can be derived from national production and international trade statistics.

Data are usually collected and reported by the Ministry of Environment or by designated authorities such as an Environmental Protection Agency, Environment Management Authority, or National Ozone Unit. Countries collect the data using a variety of methods. These methods include securing consumption quantities from known producers and consumers, using estimates and surveys, and collecting information through (or from) customs agencies among other methods.

**DISAGGREGATION**

Consumption data can be disaggregated by sectors in which consumption or production of ODS takes place, and by substance. Such disaggregated data allow policymakers to identify sectors and substances that are more/less responsive than others to efforts to reduce ODS consumption and production.

**COMMENTS AND LIMITATIONS**

For ozone depletion, this indicator does not reveal much about current trends in deterioration of the ozone layer because the ecosystem response to ODS consumption is delayed by up to several decades.

Another limitation for this indicator is that there are sometimes problems with the accuracy of the available consumption data. Sources of inaccuracies include errors of omission, under-reporting, over-reporting, and mis-categorisation where one substance is incorrectly reported as a different substance.

Availability of data for all substances varies across countries and years. In some cases, the consumption values for "All Ozone-Depleting Substances" refer only to those substances for which data were available in that year.

**GENDER EQUALITY ISSUES**

Not applicable for this indicator.

**DATA FOR GLOBAL AND REGIONAL MONITORING**

Data for this indicator at the international level are reported by the United Nations Environment Programme (UNEP) Ozone Secretariat. Countries that are Party to the Montreal Protocol report data annually to the Ozone Secretariat using data reporting formats agreed by the Parties. Parties not reporting when required are reminded by the Secretariat, and may also be subject to the non-compliance procedure of the Protocol once the deadline for reporting has passed.

Different countries have different methods of collecting the data, with varying degrees of accuracy. However, country data are not adjusted in any way and the reported numbers are used to calculate consumption of ODS in ozone-depleting potential metric tons.

Currently, the reported data are not validated by the UNEP Ozone Secretariat. However, inconsistencies in the data are checked and rectified in consultation with the countries. Starting with data for 2005, reported exports by Parties are communicated in aggregated form at the end of the year to Importing Parties to allow for cross-checking and verification.

Simple straight summation is used to derive global and regional estimates. Data are released on the Secretariat’s web site http://ozone.unep.org/ continuously and incrementally as different countries report their data.

**SUPPLEMENTARY INFORMATION**

**EXAMPLES**

**REFERENCES**

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7.4 Proportion of fish stocks within safe biological limits

**GOAL AND TARGET ADDRESSED**

Goal 7. Ensure environmental sustainability Target 7.A: Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources Target 7.B: Reduce biodiversity loss, achieving, by 2010, a significant reduction in the rate of loss

**DEFINITION AND METHOD OF COMPUTATION**

Definition
The proportion of fish stocks within safe biological limits is defined as the proportion of *fish stocks* or species that are exploited within the level of *maximum sustainable biological productivity*.

This indicator is expressed as a percentage.

Concepts
The Food and Agriculture Organization of the United Nations (FAO) has divided the world oceans into 21 statistical areas, and stock assessment is carried out based on these statistical areas. In total, 584 *fish stocks and species* have been monitored since 1974, with stock assessment information on 441 stock or species. The stock assessment classifies fish stocks into 3 categories: non-fully exploited, fully exploited, and overexploited. The stocks within *safe biological limits* are those classified as non-fully exploited and fully exploited.

The *maximum sustainable biological productivity* is the largest yield (or catch) that can be taken from a fish stock over an indefinite period, commonly called the Maximum Sustainable Yield (MSY). The aim of this threshold yield is to achieve the maximum productivity of fish resources while maintaining biodiversity and proper functioning of the relevant ecosystems for present and future generations.

When fishing drives down the *biomass* of a fish stock below the level at which an MSY can be produced, the stock is said to be *overexploited*. In contrast, the stock is *non-fully exploited* if its biomass is above the level corresponding to MSY. When population size is maintained at or close to the level that produces MSY, the species is said to be *fully exploited*, allowing the population to continue to be productive indefinitely. Sustainable fishery management aims to control fishing pressure so that the stock is maintained at the most productive level.

The *biomass* of a fish stock is the quantity, usually by weight, of a stock at a given time. Whether a fish stock or species is *overexploited* is judged based on the estimate of current stock biomass relative to its virgin stock level. This information can only be obtained through stock assessment, although some alternative methods may be used when no adequate data are available.

Method of computation
This indicator is calculated as the number of fish species with a stock assessment of non-fully exploited or fully exploited divided by the total number of fish species with a stock assessment and multiplied by 100.

**RATIONALE AND INTERPRETATION**

This indicator provides a means of monitoring progress and changes in the exploitation and management of global fishery resources as a direct measure of sustainability. It is an important reference for policy formulation and decision making related to sustainable management of fishery resources at the regional and global levels by international institutions.

The United Nations Conference on the Law of the Sea, the United Nations Fish Stocks Agreement, the Plan of Implementation of the 2002 World Summit on Sustainable Development, the strategic goal of the Conference of the Parties to the Convention on Biological Diversity (CBD) in 2010, among others, all refer to the MSY-based reference points and targets. Many countries, including Australia, New Zealand and the United States, and the European Union set their management targets based on MSY.

The indicator is currently estimated at regional and global levels, which are less useful for fisheries management at national level because the incorporation of fish stocks having different stock status at the FAO statistical areas may lose information at stock level. National policy and management strategy require information and indicators specific to the fish stocks and fishing areas relevant to each country.

**SOURCES AND DATA COLLECTION**

All United Nations member countries are asked to report their annual landings by fish species or species group to FAO. The *Handbook of Fishery Statistical Standards* provides comprehensive definitions of concepts and details of standard classifications applied by the international agencies. The *Handbook* does not attempt to include details of national systems, many of which were developed for specific national purposes and thus differ from systems used internationally. Nevertheless, authorities considering introducing or revising national statistical systems are encouraged to ensure that the system developed incorporates a high degree of compatibility with the international standards described in the *Handbook*.

To ensure data quality, each collection is documented to highlight definitions and to specify the structure, sources, coverage, processes, intended use, etc.

Formal stock assessment requires time series of both catch and effort data, together with other biological parameters. Catch means biomass of a fish species that was caught or landed. Fishing effort is a measure of fishing intensity, usually measured as the number of fishing vessels multiplied by time spent fishing. Although FAO collects statistics on the numbers of fishermen and fishing vessels in different categories, no fishing effort data have been collected.

The FAO database covers only official statistics provided by member countries. Regional scientific committees and management bodies are other important sources of fisheries data. However, their significance in data collection varies from commission to commission. For example, a number of tuna commissions have their own data collection system.

**DISAGGREGATION**

At the international level, the indicator can be calculated separately for each FAO statistical area as well as being presented globally. In addition, for specific fish species or groups it is useful to show the degree of exploitation, as an aid to determining policy on which species need particular attention.

**COMMENTS AND LIMITATIONS**

Data quality varies from country to country. In some countries, there is no specific system or network for collecting statistical data on fish catches and other fishery data. Fishery landings data are often reported by national governments in aggregated form rather than by fish species. Many fish stocks do not have adequate data to support formal stock assessment. In such cases FAO evaluates their stock status using simple ad hoc methods that are less data-demanding, but this introduces greater uncertainty. Fishing has a major influence on the abundance of fish populations. However, it is widely recognised that other factors, such as environmental changes, coastal development, climatic change, predator-prey interaction and habitat modification also play an important role.

**GENDER EQUALITY ISSUES**

Women play an important role in fisheries activities, particularly in developing countries. They are the dominant actors in fish production, processing and marketing, and many are involved in small-scale aquaculture operations. Many of the poorest families in rural communities are headed by women. Safeguarding their continued access to fish will not only ensure the food security but also the economic welfare of their families and households. Although gender issues in fisheries were often side-lined, gender mainstreaming in this area has recently been improving

**DATA FOR GLOBAL AND REGIONAL MONITORING**

The Food and Agriculture Organization of the United Nations (FAO) is the agency in charge of publishing and monitoring global data for this indicator. International and regional data are included in the bi-annual FAO publication “State of World Fisheries and Aquaculture (SOFIA)”. The FAO’s fisheries statistical database includes data from 1950 and is updated every year ([www.fao.org/fishery/statistics/en](http://mdgs.un.org/unsd/mi/wiki/www.fao.org/fishery/statistics/en)).

No international comparability issues have been identified, as FAO is the sole agency that has such comprehensive fishery statistics data. Quality control is applied while compiling the data and training is offered to member countries to increase professional skills. However, the reliability of the data reported by member countries cannot be checked.

**SUPPLEMENTARY INFORMATION**

**EXAMPLES**

**REFERENCES**

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7.5 Proportion of total water resources used

**GOAL AND TARGET ADDRESSED**

Goal 7. Ensure environmental sustainability Target 7.A: Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources Target 7.B: Reduce biodiversity loss, achieving, by 2010, a significant reduction in the rate of loss

**DEFINITION AND METHOD OF COMPUTATION**

Definition
The proportion of total water resources used is the total volume of groundwater and surface water withdrawn from their sources for human use (in the agricultural, domestic/municipal and industrial sectors), expressed as a percentage of the *total actual renewable water resources*.

The term “used” in the indicator name refers to “withdrawn” (see section below).

Concepts
*Total actual renewable water resources (TARWR)* are the sum of *internal renewable water resources* and the *Total actual external renewable water resources.* The terms “water resources” and “water withdrawal” are understood here as freshwater resources and freshwater withdrawal.

*Internal renewable water resources* are defined as the long-term average annual flow of rivers and recharge of groundwater for a given country or region generated from endogenous precipitation.

*Total actual external renewable water resources* are that part of the country’s annual renewable water resources that are not generated in the country. It includes inflows from upstream countries (groundwater and surface water), and part of the water of border lakes and/or rivers. It takes into account the quantity of flow reserved by upstream (incoming flow) and/or downstream (outflow) countries through formal or informal agreements or treaties and may (if available) include reduction of flow due to withdrawal in upstream countries.

*Freshwater withdrawal* is estimated at the country level for the following three main sectors: agriculture, municipalities (including domestic water withdrawal) and industries. Freshwater withdrawal includes primary freshwater (not withdrawn before), secondary freshwater (previously withdrawn and returned to rivers and groundwater) and fossil groundwater. It does not include non-conventional water, i.e. direct use of treated wastewater, direct use of agricultural drainage water and desalinated water.

Method of computation
The indicator is computed as the total freshwater withdrawn divided by the total actual renewable water resources and multiplied by 100.

Total freshwater withdrawn is estimated as the volume of water withdrawn by the three main sectors: agriculture, municipalities (including domestic water withdrawal) and industries. It is expressed as km3 (1,000,000,000 m3) withdrawn per year.

The total actual renewable water resources for a country or region are calculated as the sum of internal renewable water resources and the actual external renewable water resources, also expressed in km3 per year. It refers to a long-term annual average. A glossary of water resources terms and the detailed method of calculation of the TARWR can be found at the AQUASTAT water resources page (<http://www.fao.org/nr/water/aquastat/water_res/index.stm>) and in the water resources balance sheet (<http://www.fao.org/nr/water/aquastat/water_res/CountryWaterBalanceTemplate.xls>).

**RATIONALE AND INTERPRETATION**

The purpose of this indicator is to show the degree to which total renewable water resources are being exploited to meet the country's water demand. It measures a country's pressure on its water resources and therefore on the sustainability of its water use.

The indicator shows to what extent water resources are already used, and signals the need for adjusted supply and demand management policies. It can also indicate the likelihood of increasing competition and conflict between different water uses and users in a situation of increasing water scarcity. Increased water scarcity, shown by an increase in the value of the indicator, has negative effects on the sustainability of the natural resources and subsequent negative effects on economic development. On the other hand, very low values of the indicator may indicate that there is still potential for increase in water usage in a sustainable way.

Physical water scarcity occurs when there is not enough water to meet both human demands (agricultural, municipal, industrial) and environmental flow requirements. Physical water scarcity exists if more than 75 per cent of a country's river flows are withdrawn, while figures above 60 per cent are considered to be approaching scarcity. There is little or no physical water scarcity if less than 25 per cent of water from a country's rivers is withdrawn. Economic water scarcity is scarcity caused by lack of investment in water or lack of human capacity to satisfy the demand for water.

**SOURCES AND DATA COLLECTION**

Data for this indicator are usually collected by national ministries and institutions having water-related issues in their mandate, such as ministries of water resources, agriculture, or environment. Data are mainly published within national water resources and irrigation master plans, national statistical yearbooks and other reports (such as those from projects, international surveys or results and publications from national and international research centres).

**DISAGGREGATION**

The indicator could be disaggregated to show total freshwater withdrawals for different sectors (e.g., agriculture, municipalities and industry) and use efficiencies for these sectors, in order to be able to also provide consumptive use data for the different sectors in addition to withdrawal data. In general, during data collection disaggregated information is collected and aggregated to produce country totals.

**COMMENTS AND LIMITATIONS**

Water withdrawal as a percentage of water resources is a good indicator of pressure on limited water resources, one of the most important natural resources. However, it only partially addresses the issues related to sustainable water management.

Supplementary indicators that capture the multiple dimensions of water management would combine data on water demand management, behavioural changes with regard to water use and the availability of appropriate infrastructure, and measure progress in increasing the efficiency and sustainability of water use, in particular in relation to population and economic growth. They would also recognize the different climatic environments that affect water use in countries, in particular in agriculture, which is the main user of water. Sustainability assessment is also linked to the critical thresholds fixed for this indicator and there is no consensus on such threshold.

Trends in water withdrawal show relatively slow patterns of change. Usually, three-five years are a minimum frequency to be able to detect significant changes, as it is unlikely that the indicator would show meaningful variations from one year to the other.

Estimation of water withdrawal by sector is the main limitation to the computation of the indicator. Few countries actually publish water use data on a regular basis by sector.

*Renewable water resources* include all surface water and groundwater resources that are renewed on a yearly basis without consideration of the capacity to harvest and use this resource. *Exploitable water resources*, which refer to the volume of surface water or groundwater that is available with an occurrence of 90% of the time, are considerably less than renewable water resources, but no universal method exists to assess such exploitable water resources.

There is no universally agreed method for the computation of incoming freshwater flows originating outside of a country's borders. Nor is there any satisfactory method to account for return flows—water withdrawn which flows back to the river system or is collected by a drainage network— in the computation of water resources and use. In countries where return flow (secondary water) represents a substantial part of water withdrawal, the indicator will tend to overestimate water withdrawal as percentage of renewable water resources.

Other comments and limitations include:

* scarcity of accurate and complete data;
* local sub-national variation in water resources and water withdrawal could be considerable, for example, at the level of local or individual river basins;
* lack of account of seasonal variations in water resources;
* lack of consideration to the distribution among water uses;
* lack of consideration of water quality and its suitability for use; and
* since abstraction can occur from fossil groundwater (non-renewable freshwater) the indicator can, in principle, be greater than 100 percent.

**GENDER EQUALITY ISSUES**

Women and men tend to have different water-related uses, priorities and responsibilities. There are also trends along gender lines in terms of access and control over water and water rights. Gender differences and inequalities mean that women and men experience and respond to changes in water availability, services or water policies differently. Thus integrated water resources management initiatives should be studied for differential impacts on women and men.

**DATA FOR GLOBAL AND REGIONAL MONITORING**

The Food and Agriculture Organization of the United Nations (FAO) is the agency responsible for compiling data and calculating this indicator at the international level. This is done through its Global Information System on Water and Agriculture (AQUASTAT) country surveys since 1993. These surveys are carried out every ten years, on average.

Data are obtained through detailed questionnaires filled in by national experts and consultants who collect information from the different institutions and ministries having water-related issues in their mandate. Literature and information at the country and sub-country level are reviewed including national policies and strategies; water resources and irrigation master plans; national reports, yearbooks and statistics; reports from projects; international surveys; results and publications from national and international research centres; and the Internet.

Data obtained from national sources are systematically reviewed to ensure consistency in definitions and consistency in data from countries located in the same river basin. A methodology has been developed and rules established to compute the different elements of national water balances.

Estimates are based on country information, complemented, when necessary, with expert calculations based on unit water use figures by sector, and with available global datasets. In the case of conflicting sources of information, the difficulty lies in selecting the most reliable one. In some cases, water resources figures vary considerably from one source to another. There are various reasons for such differences, including differing computation methods, definitions or reference periods, double counting of surface water and groundwater or of transboundary river flows. Moreover, estimates of long-term average annual values can change due to the availability of better data from improvements in knowledge, methods or measurement networks.

Where several sources result in divergent or contradictory information, preference is given to information collected at the national or sub-national level rather than at regional or world levels. Moreover, except in the case of evident errors, official sources are privileged. As regards shared water resources, the comparison of information between countries makes it possible to verify and complete data concerning the flows of transboundary rivers and to ensure data coherence at the river basin level. In spite of these precautions, the accuracy, reliability and frequency with which information is collected vary considerably by region, country and category of information. Information is completed using models when necessary.

Regional and global level aggregations are done using simple summation. Total water use is divided by total renewable water resources for the region or globe.

AQUASTAT data on water resources and use are published every three years in the *United Nations World Water Development Report*, or when new information becomes available on the FAO-AQUASTAT website at <http://www.fao.org/nr/aquastat>.

**SUPPLEMENTARY INFORMATION**

**EXAMPLES**

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The following resources of specific interest to this indicator are available on this site:

* AQUASTAT *glossary* (<http://www.fao.org/nr/water/aquastat/data/glossary/search.html>).
* *Main country database* [([^http://www.fao.org/nr/water/aquastat/dbase/index.stm](http://mdgs.un.org/unsd/mi/wiki/%20%28%5B%5Ehttp%3A/www.fao.org/nr/water/aquastat/dbase/index.stm)).
* *Publications* (<http://www.fao.org/nr/water/aquastat/catalogues/index2.stm>) (contains, amongst others, the reports referred to in the text above).
* *Water use* (<http://www.fao.org/nr/water/aquastat/water_use/index.stm>).
* *Water resources* (<http://www.fao.org/nr/water/aquastat/water_res/index.stm>).
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7.6 Proportion of terrestrial and marine areas protected

**GOAL AND TARGET ADDRESSED**

Goal 7. Ensure environmental sustainability Target 7.A: Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources Target 7.B: Reduce biodiversity loss, achieving, by 2010, a significant reduction in the rate of loss

**DEFINITION AND METHOD OF COMPUTATION**

Definition
The proportion of terrestrial and marine areas protected is defined as the proportion of a country’s total *terrestrial and marine area* that is designated as a *protected area*.

This indicator is expressed as a percentage.

Concepts
The *terrestrial and marine area* of a country is the sum of the *terrestrial area* and any *marine area* falling within the country’s borders. It is also referred to as territorial area.

*Terrestrial area* includes total land area and inland waters.

*Marine areas*, also known as *territorial seas*, are defined by the 1982 United Nations Convention on the Law of the Sea as belts of coastal waters extending at most twelve nautical miles from the baseline (usually the mean low-water mark) of a coastal state.

*Protected areas* (marine, terrestrial or freshwater), as defined by the International Union for Conservation of Nature (IUCN), are clearly defined geographical spaces, recognized, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values.

Only protected areas that are “nationally designated” are included in this indicator. The status "designated" is attributed to a protected area when the corresponding authority, according to national legislation or common practice (e.g. by means of an executive decree or the like), officially endorses a document of designation. The designation must be made for the purpose of biodiversity conservation, not single species protection or fortuitous *de facto* protection arising because of some other activity (e.g. military).

Method of computation
The indicator is computed by dividing the total protected area–both terrestrial and marine–by the total territorial area of the country and multiplying by 100.

**RATIONALE AND INTERPRETATION**

Habitat conservation is vital for stemming the decline in biodiversity. The establishment of protected areas is an important mechanism for achieving this aim, and this indicator serves as a means of measuring progress toward reducing biodiversity loss.

Levels of access to protected areas vary. Some areas, such as scientific reserves, are maintained in their natural state and closed to any other use. Others are used for recreation or tourism, or even open for the sustainable extraction of natural resources.

In addition to protecting biodiversity, protected areas have become places of high social and economic value: supporting local livelihoods; protecting watersheds from erosion; harbouring an untold wealth of genetic resources; supporting thriving recreation and tourism industries; providing for science, research and education; and forming a basis for cultural and other non-material values.

**SOURCES AND DATA COLLECTION**

Data are compiled by ministries of environment and other ministries responsible for the designation and maintenance of protected areas.

Data and knowledge gaps can arise due to difficulties in measuring the proportion of a protected area within the total terrestrial and/or marine environment, and in determining whether a site conforms to the IUCN definition of a protected area.

**DISAGGREGATION**

This indicator can be separately expressed for marine areas and for terrestrial areas. However, protected areas can encompass both marine and terrestrial environments, so determining separately the size of the protected area that is classified as marine and as terrestrial may be difficult.

**COMMENTS AND LIMITATIONS**

The indicator provides a measure of governments’ willingness to protect biodiversity. However, it does not measure the effectiveness of protected areas in reducing biodiversity loss, which ultimately depends on a range of management and enforcement factors not covered by the indicator.

The indicator does not provide information on internationally designated protected areas and other areas that although important for conserving biodiversity, are not designated as protected (e.g. many indigenous and community conserved areas).

The data also do not usually include sites protected under local or provincial law.

**GENDER EQUALITY ISSUES**

Women play a central role in the conservation, management and use of biodiversity. In rural areas of poor, developing countries, women’s daily tasks are tied closely to biodiversity. They are responsible for gathering edible wild plants (fruits, leaves and roots of native plants) to feed their families as a supplement to agricultural grains, especially during unfavourable situations such as famine, conflicts and epidemics. Other female tasks tied closely to biodiversity are the gatherings of medicinal plants, firewood and other bush products for medicine, fuel, house-building, paint and even manure and pesticide.

Women’s knowledge of biodiversity is immense and broad, because their communities’ well-being depends on it, and preservation of this knowledge is crucial for maintaining biodiversity. Yet, their contribution is often overlooked. They are “invisible” partners from grassroots to policy level.

There is therefore an urgent need to consider gender issues in development efforts, to promote true partnership and ensure the sustainable conservation and use of biodiversity.

**DATA FOR GLOBAL AND REGIONAL MONITORING**

The UNEP World Conservation Monitoring Centre (UNEP-WCMC) is the agency in charge of calculating and reporting global and regional figures for this indicator. UNEP-WCMC aggregates the global and regional figures from the national figures that are calculated from the World Database on Protected Areas (WDPA). WDPA is jointly managed by UNEP-WCMC and IUCN.

UNEP-WCMC produces the UN List of Protected Areas every 5-10 years, based on information provided by national ministries/agencies. In the intervening period between compilations of UN Lists, UNEP-WCMC works closely with national ministries/agencies and NGOs responsible for the designation and maintenance of protected areas, continually updating the WDPA as new data become available.

Quality control criteria are applied to ensure consistency and comparability of the data in the WDPA. New data are validated at UNEP-WCMC through a number of tools and translated into the standard data structure of the WDPA. Discrepancies between the data in the WDPA and new data are resolved in communication with data providers. Processed data is fully integrated into the published WDPA.

The WDPA is held within a Geographic Information System (GIS) that stores information about protected areas such as their name, size, type, date of establishment, geographic location (point) and/or boundary (polygon).

The total area of a country’s/territory’s terrestrial protected areas and marine protected areas in territorial waters is divided by the total area of its land areas (including inland waters) and territorial waters to obtain the relative coverage (percentage) of protected areas.

The total protected area is calculated using all the nationally designated protected areas recorded in WDPA whose location and extent is known. Protected areas with unknown location and/or extent are excluded from the data compilation. Protected areas with unknown year of establishment are included in the data and analysis for every year from 1990 to present. Where no new data are received for a country/territory during a year, protected area coverage is assumed to be equal to the previous year.

A supplementary indicator, used at the global level, shows trends in the proportion of areas of particular importance for biodiversity that are covered by protected areas (as defined above). Two networks of such sites have been assessed in this way: Important Bird Areas (IBAs) and Alliance for Zero Extinction sites (AZEs).

IBAs are places of international significance for the conservation of birds. IBAs are identified (usually at a national scale through multi-stakeholder processes) using a standardised set of data-driven criteria and thresholds, relating to threatened, restricted-range, biome-restricted and congregatory species. IBAs are delimited so that, as far as possible, they: (a) are different in character, habitat or ornithological importance from surrounding areas; (b) provide the requirements of the trigger species (i.e. those for which the site qualifies) while present, alone or in combination with networks of other sites; and (c) are or can be managed in some way for conservation. Data on IBAs are managed by BirdLife International, and are available online at http://www.birdlife.org/datazone/site/search.

AZEs are sites meeting three criteria: endangerment (supporting at least one Endangered or Critically Endangered species, as listed on the IUCN Red List); irreplaceability (holding the sole or overwhelmingly significant (≥95%) known population of the target species, for at least one life history segment); and discreteness (having a definable boundary within which the character of habitats, biological communities, and/or management issues have more in common with each other than they do with those in adjacent areas) (Rickets *et al*., 2005). Hence AZEs represent locations at which species extinctions are imminent unless appropriately safeguarded (i.e. protected or managed sustainably in ways consistent with the persistence of populations of target species).

The IBA and AZE site networks are, by definition, areas of particular importance for biodiversity as referred to in the CBD target. Hence, they represent priority areas to consider designating as formal protected areas.

The supplementary indicator shows the percentage of IBAs and AZEs that are completely covered by protected areas (Butchart et al. 2012)

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7.7 Proportion of species threatened with extinction

**GOAL AND TARGET ADDRESSED**

Goal 7. Ensure environmental sustainability Target 7.B: Reduce biodiversity loss, achieving, by 2010, a significant reduction in the rate of loss

**DEFINITION AND METHOD OF COMPUTATION**

Definition
The proportion of species threatened with extinction measures the proportion of *threatened species* expected to go extinct in the near future without additional conservation action. It is an index based on the number of species in each category of extinction risk on the International Union for Conservation of Nature (IUCN) Red List.

This indicator is expressed as an index ranging from 0 to 1.

Concepts
*Threatened species* are those listed on the IUCN Red List in the categories as Vulnerable, Endangered or Critically Endangered (i.e. species that are facing a high, very high or extremely high risk of extinction in the wild). Changes over time in the “proportion of species threatened with extinction” are largely driven by improvements in knowledge and changing taxonomy. The *IUCN Red List Index (RLI)* accounts for such changes and is a more sensitive indicator than the simple proportion of threatened species. It measures change in extinction risk over time resulting from genuine improvements or deteriorations in the status of individual species. It can be calculated for any representative set of species that have been assessed for the IUCN Red List at least twice.

Method of computation
The IUCN RLI is calculated at a point in time by first multiplying the number of species in each Red List Category by a weight (ranging from 1 for ‘Near Threatened’ to 5 for ‘Extinct’ and ‘Extinct in the Wild’) and summing these values. This is then divided by a maximum threat score which is the total number of species multiplied by the weight assigned to the ‘Extinct’ category. This final value is subtracted from 1 to give the IUCN RLI value.

Mathematically this calculation is expressed as:

Where Wc(t,s) is the weight for category (c) at time (t) for species (s) (the weight for ‘Critically Endangered’ = 4, ‘Endangered’ = 3, ‘Vulnerable’ = 2, ‘Near Threatened’ = 1, ‘Least Concern’ = 0. ‘Critically Endangered’ species tagged as ‘Possibly Extinct’ or ‘Possibly Extinct in the Wild’ are assigned a weight of 5); WEX = 5, the weight assigned to ‘Extinct’ or ‘Extinct in the Wild’ species; and N is the total number of assessed species, excluding those considered data deficient in the current time period, and those considered to be ‘Extinct’ in the year the set of species was first assessed.

The formula requires that:

* Exactly the same set of species is included in all time periods, and
* The only Red List Category changes are those resulting from genuine improvement or deterioration in status (i.e. excluding changes resulting from improved knowledge or taxonomic revisions).

In many cases, species lists will change slightly from one assessment to the next (e.g. owing to taxonomic revisions). The conditions can therefore be met by retrospectively correcting earlier Red List categorizations using current information and taxonomy. This is achieved by assuming that the current Red List Categories for the taxa have applied since the set of species was first assessed, unless there is information to the contrary that genuine status changes have occurred. Such information is often contextual (e.g., relating to the known history of habitat loss within the range of the species). If there is insufficient information available for a newly added species, it is not incorporated into the IUCN RLI until it is assessed for a second time, at which point earlier assessments are retrospectively corrected by extrapolating recent trends in population, range, habitat and threats, supported by additional information.

**RATIONALE AND INTERPRETATION**

The world’s species are impacted by a number of threatening processes, including habitat destruction and degradation, overexploitation, invasive alien species, human disturbance, pollution and climate change. This indicator can be used to assess overall changes in the extinction risk of sets of species as a result of these threats and the extent to which threats are being mitigated.

The IUCN RLI value ranges from 1 (all species are categorized as ‘Least Concern’) to 0 (all species are categorized as ‘Extinct’). An intermediate value indicates how far the set of species has moved overall towards extinction. Thus, the IUCN RLI allows comparisons between sets of species in both their overall *level* of extinction risk (i.e. how threatened they are on average), and in the rate at which this risk changes over time. A downward trend in the IUCN RLI over time means that the expected rate of future species extinctions is worsening (i.e. the rate of biodiversity loss is increasing). An upward trend means that the expected rate of species extinctions is abating (i.e. the rate of biodiversity loss is decreasing), and a horizontal line means that the expected rate of species extinctions is remaining the same, although in each of these cases it does not mean that biodiversity loss has stopped. An upward IUCN RLI trend would indicate that the MDG target of significantly reducing the rate of biodiversity loss may have been met. An IUCN RLI value of 1 would indicate that biodiversity loss has been halted.

**SOURCES AND DATA COLLECTION**

National agencies producing IUCN RLI data include non-governmental organisations (NGOs), government and academic institutions working jointly and separately. Data are gathered from published and unpublished sources, species experts, scientists, and conservationists through correspondence, workshops, and electronic fora. Data are submitted by national agencies to IUCN, or are gathered through initiatives of the IUCN Red List Partnership, which includes: BirdLife International; Botanic Gardens Conservation International; Conservation International; NatureServe; Royal Botanic Gardens, Kew; Sapienza University of Rome; Texas A&M University; Wildscreen; and Zoological Society of London.

Most countries of the world have initiated programmes to assess the status of their species using IUCN Red List Categories and Criteria. These countries will be able to implement the IUCN RLI based on national extinction risk, once they have carried out at least two national Red Lists using the IUCN system in a consistent way. A few countries have completed national RLIs for selected taxa.

**DISAGGREGATION**

This indicator can be disaggregated by ecosystems, habitats, geographic divisions, taxonomic subsets (e.g. families), suites of species relevant to particular international treaties or legislation, and by species that are exposed to particular threatening processes. In each case, information can be obtained from the IUCN Red List to determine which species occur in particular ecosystems, habitats, and geographic areas of interest.

Changes in the RLI are calculated for subsets of species, excluding those genuine status changes among subsets of species that were driven by processes operating outside the ecosystem/habitat/country.

**COMMENTS AND LIMITATIONS**

There are four main sources of uncertainty associated with IUCN RLI values and trends.

(a) Inadequate, incomplete or inaccurate knowledge of a species’ status. This uncertainty is minimized by assigning estimates of extinction risk to categories that are broad in magnitude and timing.

(b) Delays in knowledge about a species becoming available for assessment. Such delays apply to a small (and diminishing) proportion of status changes, and can be overcome in the IUCN RLI through back-casting.

(c) Inconsistency between species assessments. These can be minimized by the requirement to provide supporting documentation detailing the best available data, with justifications, sources, and estimates of uncertainty and data quality, which are checked and standardized by IUCN through Red List Authorities, a Red List Technical Working Group and an independent Standards and Petitions Sub-committee.

(d) Species that are too poorly known for the Red List Criteria to be applied are assigned to the Data Deficient category, and excluded from the calculation of the IUCN RLI. For birds, only 0.8 per cent of extant species are evaluated as Data Deficient, compared with 24 per cent of amphibians. If Data Deficient species differ in the rate at which their extinction risk is changing, the IUCN RLI may give a biased picture of the changing extinction risk of the overall set of species. The degree of uncertainty this introduces can be quantified once a significant proportion of Data Deficient species have been re-assigned to other Red List Categories and then reassessed.

The main limitation of the IUCN RLI is related to the fact that the Red List Categories are relatively broad measures of status, and the IUCN RLI can practically be updated only every four years. The IUCN RLI captures trends in one particular aspect of biodiversity: the rate at which species are moving towards or away from extinction. However, biodiversity encompasses a much wider spectrum, from genes, through populations and species, to ecosystems. In addition, the IUCN RLI does not capture particularly well the deteriorating status of common species that are declining slowly as a result of general environmental degradation.

A complementary indicator could be one that uses estimates of population trends in selected species to measure biodiversity loss as the reduction of populations and the relative effectiveness of measures to reduce or reverse these.

**GENDER EQUALITY ISSUES**

See “GENDER EQUALITY ISSUES” for Indicator 7.6 for considerations of gender and biodiversity.

**DATA FOR GLOBAL AND REGIONAL MONITORING**

The UNEP World Conservation Monitoring Centre (UNEP-WCMC) is the agency in charge of publishing and monitoring the global figures for this indicator. The International Union for the Conservation of Nature (IUCN) Red List Index (RLI) is used as the basis for calculating this indicator.

The Red List Categories and Criteria and associated documentation for each species on the IUCN Red List are determined globally and provided principally by the Specialist Groups and stand-alone Red List Authorities of the IUCN Species Survival Commission (SSC), the BirdLife International partnership, IUCN Secretariat-led initiatives, and the other IUCN Red List partner organizations. The staff of the IUCN Global Species Programme compile, validate and curate these data, and are responsible for publishing and communicating the results.

Red List assessments are made, either through open workshops or open-access web-based discussion fora. Assessments are reviewed by the appropriate Red List Authority (an individual or organization appointed by the IUCN SSC to review assessments for specific species or groups of species) to ensure standardization and consistency in the interpretation of information and application of the criteria. A Red List Technical Working Group and the IUCN Red List Unit work to ensure consistent categorization between species, groups and assessments. Finally, a Standards and Petitions Sub-committee monitors the process and resolves challenges and disputes over Red List assessments.

The IUCN RLI can be applied at global, regional, and national scales. Global IUCN RLIs are based on repeated assessments of species’ extinction risk at the global scale. While they can be disaggregated to show trends for species at smaller spatial scales, the reverse is not true. National or regional IUCN RLIs cannot be aggregated to produce IUCN RLIs showing global trends. This is because a taxon’s global extinction risk has to be evaluated at the global scale and cannot be directly determined from multiple national scale assessments across its range (although the data from such assessments can be aggregated for inclusion in the global assessment).

The IUCN publishes guidelines on applying the IUCN Red List Categories and Criteria at regional or national scales. If all species within a particular region or country have been assessed at least twice using the IUCN approach, an IUCN RLI can be calculated from national data.

The global IUCN Red List is updated annually. IUCN RLIs for any sets of species that have been comprehensively reassessed in that year are usually released alongside the update of the IUCN Red List. Data stored and managed in the IUCN Red List database (IUCN’s Species Information Service, SIS) are made freely available for non-commercial use through the IUCN Red List website.

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7.8 Proportion of population using an improved drinking water source

**GOAL AND TARGET ADDRESSED**

Goal 7. Ensure environmental sustainability Target 7.C. Halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation

**DEFINITION AND METHOD OF COMPUTATION**

Definition
The proportion of population using an *improved drinking water source* is the share of the population that uses any types of improved *drinking water* supplies.

This indicator is expressed as a percentage.

Concepts
An *improved drinking water source* is a facility that, by nature of its construction, is protected from outside contamination in particular from contamination with fecal matter. *Improved drinking water sources* include: piped water into dwelling, plot or yard; public tap/standpipe; borehole/tube well; protected dug well; protected spring; rainwater collection and bottled water. Users of bottled water are considered to have access to improved sources only when they have a secondary source which is of an otherwise improved type. *Improved drinking water sources* do not include unprotected wells, unprotected springs, water provided by carts with small tanks/drums, tanker truck-provided water and bottled water (if the secondary source is not improved) or surface water taken directly from rivers, ponds, streams, lakes, dams, or irrigation channels.

*Drinking water* is defined as water used for ingestion, food preparation and basic hygiene purposes.

Method of computation
The indicator is computed for both urban and rural areas by dividing the number of people who use an improved water source by the total urban or rural population and multiplying by 100.

**RATIONALE AND INTERPRETATION**

Use of an improved drinking water source is a proxy for measuring access to safe drinking water. Improved drinking water sources are more likely to be protected from external contaminants than unimproved sources either by intervention or through their design and construction. Greater access to improved drinking water sources is important as it contributes to lowering the incidence of many diseases in developing countries. This indicator does not specify a minimum available amount of water per capita per day, nor does it specify a distance to the source expressed either in the amount of time required to collect water or the actual distance in meters.

**SOURCES AND DATA COLLECTION**

Since the late 1990s, population-based data on the use of water sources have routinely been collected at national and sub-national levels in more than 150 countries using censuses and surveys by national governments, often with support from international development agencies. National-level household surveys are generally conducted every 3-5 years in most developing countries, while censuses are generally conducted every 10 years.

Nationally representative household surveys that typically collect information about water and sanitation include Multiple Indicator Cluster Surveys (MICS), Demographic Health Surveys (DHS), World Health Surveys (WHS), Living Standards and Measurement Surveys (LSMS), Core Welfare Indicator Questionnaires (CWIQ), and the Pan Arab Project for Family Health Surveys (PAPFAM). The survey questions and response categories pertaining to access to drinking water are fully harmonized between MICS and DHS. The same standard questions are being promoted for inclusion into other survey instruments and can be found at [www.wssinfo.org](http://mdgs.un.org/unsd/mi/wiki/www.wssinfo.org).

Line-ministries and water utility companies usually keep records based on the number and type of facilities constructed or the number of piped household connections maintained. Occasionally, these records form the basis for national coverage estimates, sometimes exclusively or in combination with the latest survey or census data. Administrative or provider-based data are often based on cumulative totals of facilities constructed multiplied by a fixed number of users per type of facility. Administrative data often exclude facilities constructed under NGO supported programmes or facilities constructed by individual households without outside support. In addition, cumulative reporting does not reflect facilities that have fallen into disrepair. Provider-based data are only used for countries in developing regions when there are no survey or census data on access to or use of drinking water sources.

In contrast, sample surveys and censuses provide an estimate of what facilities are actually used by the population interviewed, at the time of measurement, including those constructed by different actors and excluding those that have fallen into disrepair and are no longer in use. For these reasons, data from surveys and censuses are deemed more reliable and objective than administrative records.

In order to classify drinking water service categories as “improved” or “not improved”, as required for the MDG indicator, data need to be collected by facility type. DHS and MICS surveys use the MDG classification of improved and unimproved drinking water sources as their standard response categories. Other sample survey instruments and censuses are encouraged to use a similar classification or at least ensure compatibility between the MDG indicators and survey response categories. Insufficient disaggregation of service categories is the most common problem for adequately assessing progress using this indicator.

Starting in 2008, the World Health Organisation/United Nations Children’s Fund (WHO/UNICEF) Joint Monitoring Programme for Water Supply and Sanitation (JMP) separated drinking water sources into three categories:

* Piped connections on premises (into dwelling, plot or yard)
* Other improved drinking water sources
* Unimproved water sources

In 2012, the JMP estimate separate “surface water” from the unimproved water sources.

Trends in the use of these four categories provide valuable information to programme managers and policy makers, but trend analysis is possible only when an adequate level of disaggregation of service categories is included in surveys.

Increasingly, people use bottled water as their main source of drinking water. Since bottled water is largely used for ingestion only, the DHS and MICS have included an additional question to determine what secondary source is used for other household purposes such as cooking or hand washing. Failure to record such information may mask the fact that many users of bottled water have access to piped drinking water as well. The JMP encourages other sample survey instruments and censuses to add a similar additional question. A sample question is at: <http://www.childinfo.org/files/MICS4_Household_Questionnaire_v3.0.doc>.

**DISAGGREGATION**

The indicator should be monitored separately for urban and rural areas. Because of national differences in characteristics that distinguish urban from rural areas, a single definition does not apply to all countries.

Geographical and socio-economic disaggregation is also possible. Censuses allow for the highest level of geographical or administrative disaggregation. Depending on the sample size and design of nationally representative sample surveys, they can also support regional or, in exceptional cases, provincial disaggregation. Censuses and most sample surveys allow for disaggregation by wealth quintiles, level of education and sex of the head of the household, or ethnic group.

**COMMENTS AND LIMITATIONS**

Given the lack of nationally representative data on drinking water quality and safety and the high costs and technical difficulties of collecting such information at a large scale, the Inter-agency Expert Group on MDG Indicators endorses the use of this indicator on the use of *an improved drinking water source* as a proxy for access to safe drinking water.

The proxy indicator does not reflect the time spent on getting water from improved sources not on premises. Sustainable access is currently not measured for reasons of a lack of common understanding of what constitutes sustainable access and how to reliably measure it.

Alternative indicators that can be considered include:

* Proportion of households using an improved drinking water source;
* Proportion of households with household connections to a public piped water distribution system; and
* Proportion of population with access to household connections to a public piped distribution system.

**GENDER EQUALITY ISSUES**

Women and men usually have different roles in water and sanitation activities. These differences are particularly pronounced in rural areas. Women are most often the users, providers and managers of water in rural households and the guardians of household hygiene. Also, women and girls are more likely than men and boys to bear the burden of carrying water from distant sources. When a water system breaks down, women are generally the ones most affected because they have to travel farther for water or use other means to meet the household’s water and sanitation needs. MICS and DHS collect information on who usually goes to the source to collect water for the household, by sex and age group (under 15 years and 15 years and older).

**DATA FOR GLOBAL AND REGIONAL MONITORING**

The WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation (JMP) is charged with international monitoring of the MDG drinking water and sanitation target. UNICEF and WHO collect survey and census data through an annual round of consultations by UNICEF country offices, through internet searches, direct contacts with national statistics offices and searches at the document repositories of the International Household Survey Network and other institutions. DHS and MICS data are obtained directly from Measure DHS and UNICEF.

The primary data sources for international monitoring include nationally representative surveys and censuses. When the JMP receives new survey or census data, the validity of the data is assessed based on objective criteria, including national representativeness; adequate sample size; implementing institution; questionnaire design; adequate disaggregation by urban, rural and type of drinking water source New survey data are entered into the JMP database only if these criteria are met.

In some cases data are adjusted to improve comparability over time or when the country definition of use of improved drinking water is different from the international definition. When the definition of a particular category does not allow to assess whether a category is improved or not, additional information from other surveys in that country is used. If additional information is not available, the JMP considers only half of the users of e.g. a “well” or a “spring” as using a protected well or protected spring and half as using an unprotected well or spring. . Survey and census coverage data for urban and rural areas are then plotted on a time scale from 1990 to the present. A linear trend line, based on the least-squares method, is drawn through these data points to estimate urban and rural coverage for the baseline year 1990 and for the year of the most recent estimate.

Regional and global estimates are aggregated from national estimates using population-weighted averages. These estimates are presented only if available data cover at least 50 per cent of the total population in the relevant regional or global grouping. Population estimates are provided by the United Nations Population Division on a biennial basis.. For the purpose of regional aggregation, countries with missing data weigh in at the regional average for the purpose of determining the regional population with and without access.

**SUPPLEMENTARY INFORMATION**

**EXAMPLES**

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7.9 Proportion of population using an improved sanitation facility

**GOAL AND TARGET ADDRESSED**

Goal 7. Ensure environmental sustainability Target 7.C. Halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation

**DEFINITION AND METHOD OF COMPUTATION**

Definition
The indicator is defined as the proportion of population using an *improved sanitation facility*.

This indicator is expressed as a percentage.

Concepts
An *improved sanitation facility* is defined as a facility that hygienically separates human excreta from human, animal and insect contact. *Improved sanitation facilities* include flush/pour-flush toilets or latrines connected to a sewer, septic tank or pit; ventilated improved pit latrines; pit latrines with a slab or platform of any material which covers the pit entirely, except for the drop hole; and composting toilets/latrines. *Unimproved facilities* include public or shared facilities of an otherwise improved type; flush/pour-flush toilets that discharge directly into an open sewer or ditch or elsewhere; pit latrines without a slab; bucket latrines; hanging toilets or latrines; and the practice of open defecation in the bush, field or bodies of water.

Definitions and detailed descriptions of these facilities can be found at the website of the World Health Organisation/United Nations Children’s Fund (WHO/UNICEF) Joint Monitoring Programme (JMP) for Water Supply and Sanitation at www.wssinfo.org.

Method of computation
This indicator is computed for both urban and rural areas by dividing the number of people using improved sanitation facilities by the total urban or rural population and multiplying by 100.

**RATIONALE AND INTERPRETATION**

Studies suggest that the use of improved sanitation facilities reduces diarrhoea-related morbidity in young children by more than one-third. If hygiene promotion is added, such as teaching proper hand washing, the morbidity could be reduced even further Improved sanitation would also help accelerate economic and social development in countries where poor sanitation is a major cause for missed work and school days because of illness. Girls in particular—especially during puberty—miss out on schooling because of the lack of clean and safe latrines.

Millions of people—especially the poor in developing countries—defecate in bags, buckets, fields or roadside ditches, because they lack access to improved sanitation facilities, causing serious health risks to themselves and others. Adequate sanitation is important for both urban and rural populations, but the risks of poor sanitation practices, notably open defecation, are considered greater in populated peri-urban and slum areas where it is more difficult to avoid contact with waste.

**SOURCES AND DATA COLLECTION**

Since the late 1990s, population-based data on use of sanitation facilities have routinely been collected at national and sub-national levels in more than 150 countries using censuses and surveys by national governments, often with support from international development agencies. National-level household surveys are generally conducted every 3-5 years in most developing countries, while censuses are generally conducted every 10 years.

Nationally representative household surveys which typically collect information about water and sanitation include Multiple Indicator Cluster Surveys (MICS), Demographic Health Surveys (DHS), World Health Surveys (WHS), Living Standards and Measurement Surveys (LSMS), Core Welfare Indicator Questionnaires (CWIQ), and the Pan Arab Project for Family Health Surveys (PAPFAM). The survey questions and response categories pertaining to access to basic sanitation are fully harmonized between MICS and DHS. The same standard questions are being promoted for inclusion in other survey instruments and can be found at [www.wssinfo.org](http://mdgs.un.org/unsd/mi/wiki/www.wssinfo.org).

Line-ministries and utility companies usually keep records based on the number and type of facilities constructed. In the developing regions, using such data would be error-prone. Administrative or provider-based data are often based on cumulative totals of facilities constructed multiplied by a fixed number of users per type of facility. Administrative data often exclude facilities constructed under NGO supported programmes or those constructed by individual households without outside support. In addition, cumulative reporting does not reflect facilities that have fallen into disrepair. Provider-based data are only used for countries in developing regions when there are no survey or census data available.

In contrast, sample surveys and censuses provide an estimate of what facilities are actually used at the time of measurement, including those constructed by different actors and excluding those that have fallen into disrepair and are no longer in use. For these reasons, data from surveys and censuses are deemed more reliable and objective than administrative records.

In order to classify sanitation service categories as “improved” or “not improved”, as required for the MDG indicator, data need to be collected by facility type. DHS and MICS surveys use response categories to collect data consistent with the MDG classification of improved and unimproved facilities (see the “Definition” and “Concept” sections above for the disaggregated categories). Other sample survey instruments and censuses are encouraged to use the same or at least a harmonised classification. Insufficient disaggregation of service categories is the most common problem for adequately assessing progress using this indicator.

Starting in 2008, the World Health Organisation/United Nations Children’s Fund (WHO/UNICEF) Joint Monitoring Programme for Water Supply and Sanitation (JMP) separates sanitation facilities into four categories:.

* Improved sanitation facilities;
* Shared sanitation facilities;
* Unimproved sanitation facilities; and
* Open defecation.

Trends in the use of these four categories provide valuable information to programme managers and policy makers, but trend analysis is possible only when an adequate level of disaggregation of service categories is included in surveys.

Improved sanitation facilities exclude facilities of an otherwise acceptable type that are public or shared between two or more households. DHS and MICS collect information on how many families use the same sanitation facility. Based on such information, the total proportion of the population that shares a facility of an otherwise acceptable type can be estimated. Since 2009, DHS and MICS have distinguished between the use of public and shared facilities. Other sample survey instruments and censuses are encouraged to add similar questions. Sample questions can be found at: <http://www.childinfo.org/files/MICS4_Household_Questionnaire_v3.0.doc>.

**DISAGGREGATION**

The indicator should be monitored separately for urban and rural areas. Because of national differences in characteristics that distinguish urban from rural areas a single definition does not apply to all countries.

Geographical and socio-economic disaggregation is also possible. Censuses allow for the highest level of geographical or administrative disaggregation. Depending on the sample size and design of nationally representative sample surveys, they can support regional or, in exceptional cases, provincial disaggregation. Censuses and most sample surveys allow for disaggregation by wealth quintile, level of education of the head of household, or ethnic group.

**COMMENTS AND LIMITATIONS**

The MDG target calls for halving the proportion of the population without sustainable access to basic sanitation. An all encompassing and widely supported definition for sustainable access to basic sanitation is so broad that it includes no less than 24 criteria, all of which have to be met to qualify as sustainable access. The “use of an improved sanitation facility” has been adopted as a reasonable and measurable proxy measure of sustainable access to basic sanitation.

Surveys and censuses often fail to adequately define service categories. The failure to properly define responses or service categories in a survey hampers international efforts to compare survey results over time and across countries.

The JMP estimates of open defecation rates are particularly valuable for policy purposes. However, the category of open defecation is grouped together with other facilities that do not meet the national definition of “access to sanitation” under one category, as “other”.

**GENDER EQUALITY ISSUES**

Several studies and anecdotal evidence have found that in many societies, women and girls are deterred from using public sanitation facilities or facilities too far away from their household for fear of harassment. In some cultures women are not allowed to use the same sanitation facilities as men. In addition, some types of facilities may impact women more than men. Open defecation does not only represent a lack of facilities for dealing with urine and feces, but also implies, in the case of women, a lack of privacy and facilities to manage menstrual hygiene. Depending on who responds to a survey question about the type of toilet facility members of the household usually use, a response may or may not capture the use of a facility by all household members at all times. Current survey instruments are time-limited and therefore do not allow surveyors to obtain sex specific information about toilet use. Only sanitation specific surveys can provide such information.

**DATA FOR GLOBAL AND REGIONAL MONITORING**

The WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation (JMP) is charged with international monitoring of the MDG drinking water and sanitation target.

The primary data sources used for international monitoring include nationally representative surveys and censuses. When the JMP receives new survey or census data, the validity of the data is assessed based on objective criteria, including national representativeness; adequate sample size; implementing institution; questionnaire design; adequate disaggregation by urban, rural and type of facility. New survey data are entered into the JMP database only if these criteria are met.

Coverage estimates are based on data from nationally representative household surveys and national censuses. In some cases, adjustments are made to improve data comparability over time and when the survey / census records can not readily be compared with international definition. When the definition for a particular category is not precise enough to determine whether a category is improved or not, information from other surveys in that country are used to interpret the category in question. Where additional information is not available, half of the users of the category in question are classified as using an improved facility and half as using an unimproved one. Data from available survey / census are plotted for each country on a time scales from 1990 to the present. A linear trend line, based on the least-squares method, is drawn through these data points to estimate urban and rural coverage for the baseline year 1990 and for the year of the most recent estimate.

Regional and global estimates are aggregated from national estimates using population-weighted averages. These estimates are presented only if available data cover at least 50 per cent of the total population in the regional or global grouping. Population estimates are provided by the United Nations Population Division. For the purpose of regional aggregation, countries with missing data weigh in at the regional average for the purpose of determining the regional population with and without access.

**SUPPLEMENTARY INFORMATION**

**EXAMPLES**

**REFERENCES**

See REFERENCES for Indicator 7.8.

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7.10 Proportion of urban population living in slums

**GOAL AND TARGET ADDRESSED**

Goal 7. Ensure environmental sustainability Target 7.D: By 2020, to have achieved a significant improvement in the lives of at least 100 million slum dwellers

**DEFINITION AND METHOD OF COMPUTATION**

Definition
The proportion of urban population living in slums is the proportion of the *urban population* that live in *households* lacking one or more of the following basic services: *improved water, improved sanitation, durable housing, sufficient living area or security of tenure*.

This indicator is expressed as a percentage.

Concepts
A *slum household* is defined as a group of individuals living under the same roof lacking one or more of the following basic services: *access to improved drinking water source; access to improved sanitation facilities; durability of housing; sufficient living area; security of tenure.* However, since information on security of tenure is not available for most countries, only the first four indicators are used to define a slum household. An *improved drinking water source* is a facility that, by nature of its construction or through active intervention, is protected from outside contamination and in particular from contamination with fecal matter. *Improved drinking water sources* include: piped water into dwelling, plot or yard; public tap/standpipe; borehole/tube well; protected dug well; protected spring; rainwater collection and bottled water (bottled water is included if a secondary available source is also improved). *Improved drinking water sources* exclude unprotected wells, unprotected springs, water provided by carts with small tanks/drums, tanker truck-provided water and bottled water (if a secondary source is not improved) or surface water taken directly from rivers, ponds, streams, lakes, dams, or irrigation channels.

An *improved sanitation facility* is defined as a facility that hygienically separates human waste from human contact. *Improved sanitation facilities* include flush/pour-flush toilets or latrines connected to a sewer, septic tank, or pit; ventilated improved pit latrines; pit latrines with a slab or platform of any material which covers the pit entirely, except for the drop hole; and composting toilets/latrines. *Unimproved facilities* include public or shared facilities of an otherwise acceptable type; flush/pour-flush toilets or latrines which discharge directly into an open sewer or ditch; pit latrines without a slab; bucket latrines; hanging toilets or latrines which directly discharge into water bodies or into the open; and the practice of open defecation in the bush, field or bodies of water. *Durability of housing*. A house is considered “durable” if it is built on a non-hazardous location and has a structure permanent and adequate enough to protect its inhabitants from the extremes of climatic conditions, such as rain, heat, cold and humidity. For the estimation procedure the durability of housing is measured by the building materials for the roof, walls and/or the floor. For example, an earthen floor is an indicator of a non-durable house. *Sufficient living area*. A house is considered to provide a sufficient living area for the household members if not more than three people share the same habitable room that is a minimum of four square meters in area. *Secure tenure*. Secure tenure is the right of all individuals and groups to effective protection by the State against arbitrary unlawful evictions. People have secure tenure when there is evidence of documentation that can be used as proof of secure tenure status or when there is either de facto or perceived protection against forced evictions. *Urban population*. For city level data, the standard area of reference is the *urban agglomeration*. The *urban agglomeration* is defined as the built-up or densely populated area containing the city proper; suburbs, and continuously settled commuter areas. However, because of national differences in characteristics that distinguish urban from rural areas a single definition does not apply to all countries. Each country should use the definitions adopted by its National Statistical Office as used in the national population and housing censuses and national household surveys.

Method of computation
Household survey data are tallied ensuring that households lacking more than one basic service are counted only once. The indicator is computed by dividing the number of people living in urban households lacking one or more basic service by the total urban population and multiplying by 100.

**RATIONALE AND INTERPRETATION**

This indicator measures the proportion of urban dwellers living in deprived housing conditions. It is a key indicator measuring the adequacy of the basic human need for shelter. Overcrowding, inadequate housing, lack of improved water and improved sanitation are manifestations of poverty. They are associated with health risks and are often detrimental to human and economic development.

The indicator enables disaggregation of other urban indicators into slum and non-slum. Many indicators show that the situation in rural areas is worse than in urban areas, but such comparisons mask differences within cities across social groups that are clustered in poor areas lacking basic services such as improved water, improved sanitation, durable house or sufficient living area. However, by disaggregating urban data into slum and non-slum, it is possible to show that the situation in some slum areas can be as bad as, or worse than, the situation in rural areas.

**SOURCES AND DATA COLLECTION**

The preferable data sources are population and housing censuses and household surveys that contain information on all five components of slum: improved water, improved sanitation, durable housing, sufficient living area and secure tenure. Nationally representative household surveys, which typically collect information on water, sanitation and housing conditions, include Urban Inequities Surveys (UIS), Multiple Indicator Cluster Surveys (MICS), Demographic Health Surveys (DHS), World Health Surveys (WHS), Living Standards and Measurement Surveys (LSMS), Core Welfare Indicator Questionnaires (CWIQ), and the Pan Arab Project for Family Health Surveys (PAPFAM). The survey questions and response categories pertaining to access to drinking water are fully harmonized between MICS and DHS. The same standard questions are being promoted for inclusion into other survey instruments and can be found at [www.wssinfo.org](http://mdgs.un.org/unsd/mi/wiki/www.wssinfo.org) or at [ww2.unhabitat.org/programmes/guo](http://mdgs.un.org/unsd/mi/wiki/ww2.unhabitat.org/programmes/guo). National-level household surveys are generally conducted every 3-5 years in most developing countries, while censuses are generally conducted every 10 years. National Statistics Offices usually carry out censuses and often are involved in carrying out nationally representative sample surveys.

**DISAGGREGATION**

It is preferable that all five components of the slum indicator be sufficiently disaggregated in the sources used for computation. For ways to disaggregate the data by facility type, see “DISAGGREGATION” for Indicator 7.8 for improved drinking water and see “DISAGGREGATION” for Indicator 7.9 for improved sanitation.

Most UIS and DHS disaggregate the durability of the material used to build a house into: rudimentary, semi modern or modern.

In determining sufficient living area, it is important to distinguish rooms used for sleeping and rooms used for other purpose. The calculation of the overcrowding indicator is based on only the number of rooms used for sleeping.

**COMMENTS AND LIMITATIONS**

Defining a slum at the household level presents a compromise between theoretical and methodological considerations. The definition is simple, operational and pragmatic. It can be easily understood and adapted by governments and other partners. It offers clear, measurable indicators, provided as a proxy to capture some of the essential attributes of slums. And it uses household-level data, which are collected on a regular basis by governments and non-governmental organizations, that are accessible and available in most parts of the world. However, the definition lacks the spatial component as well as the type of shelter deprivation. As the indicator does not take into account the number and extent of the five conditions of housing deprivation, it does not provide information on the severity of slum conditions. Four out of the five component indicators measure physical expression of slum conditions: lack of water, lack of sanitation, overcrowded conditions, and non-durable housing structures. These indicators focus attention on the circumstances that surround slum life, depicting deficiencies and casting poverty as an attribute of the environments in which slum dwellers live. The fifth indicator—security of tenure—considers legality, which is not as easy to measure or monitor, since the tenure status of slum dwellers often depends on de facto or de jure rights—or lack thereof. There is no current mechanism to monitor secure tenure, since household-level data on property entitlement, evictions, ownership, and other indicators of secure tenure are not widely available through mainstream systems of data collection, such as censuses and household surveys. Alternative analytical measures that can be considered include identifying the five components of deprivation separately and distinguishing households with single shelter deprivation (lacking only one basic service) from those with multiple shelter deprivation (lacking two or more basic services).

**GENDER EQUALITY ISSUES**

Households headed by women tend to have lower incomes and are therefore more likely to lack durable dwellings to accommodate all household members. Divorced, separated or widowed women are more likely to head households in which their children live, with limited resources to improve their housing conditions. In certain situation, they become homeless.

**DATA FOR GLOBAL AND REGIONAL MONITORING**

The United Nations Human Settlements Programme (UN-HABITAT) is the agency responsible for compiling data and calculating this indicator at the international level.

Estimated data for this indicator are obtained via an initial country desk review of primary (published or electronic) sources. Data can be obtained either from the country or from official international database publications such as Demographic and Health Survey-DHS (<http://www.measuredhs.com>) or Multiple Indicators Clusters Survey – MICS (<http://www.childinfo.org>) or Integrated Public Use Micro data Series –IMPUS (<http://www.ipums.org>), or national official databases, or via CDs.

In some instances information is cross-checked with alternative estimates or sources, or with other countries with similar characteristics. Many countries in Africa and Asia have done DHS surveys more than once. When these data are available, both data files are accessed as a confirmatory measure.

Estimations are produced only for countries with good quality household surveys or census data. Only those survey and census data that are well documented and considered valid are included in the estimation. Some surveys are not considered valid because their classification of facilities has inadequate detail or the categories are not comparable with other surveys. Regional and Global estimates are based on countries with available data. Individual country estimates are summed to regional and global totals. Missing data for countries are estimated based on the average of countries with data.

**SUPPLEMENTARY INFORMATION**

**EXAMPLES**

**REFERENCES**

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8.14 Fixed-telephone subscriptions per 100 inhabitants

**GOAL AND TARGET ADDRESSED**

Goal 8. Develop a global partnership for development Target 8.F: In cooperation with the private sector, make available the benefits of new technologies, especially information and communications

**DEFINITION AND METHOD OF COMPUTATION**

Definition
Fixed-telephone subscriptions refers to the sum of the active number of analogue fixed-telephone lines, voice-over-IP (VoIP) subscriptions, fixed wireless local loop (WLL) subscriptions, integrated services digital network (ISDN) voice-channel equivalents and fixed public payphones.

Method of computation
This indicator is calculated as the number of fixed-telephone subscriptions in a country, divided by the population and multiplied by 100.

**RATIONALE AND INTERPRETATION**

Even though the number of fixed-telephone subscriptions worldwide has started to decrease, fixed-telephone subscriptions are still a critical infrastructure indicator. Despite the rapid growth of mobile-cellular telephone subscriptions, largely replacing fixed-telephony in an increasing number of countries, fixed-telephones remain essential for voice traffic as well as in providing a basis for upgrading to fixed-broadband infrastructure.

**SOURCES AND DATA COLLECTION**

Data on fixed-telephone subscriptions are available from administrative records collected regularly, and at least annually, from telecommunication operators by national regulatory authorities or the Ministry in charge of Telecommunications and Information and Communication Technologies (ICT). Data are reliable and comparable, especially if regulatory authorities and sector ministries adhere to the same definition as the International Telecommunication Union. But they do not always provide information on the geographic distribution of fixed-telephone subscriptions or the distribution between residential and business subscriptions.

**DISAGGREGATION**

It is useful to disaggregate data for this indicator by urban/rural areas, considering the limited availability of fixed-telephone lines in rural areas, particularly in developing countries. It is also useful to distinguish residential from business subscriptions, where these data are collected.

Data on the number of fixed-telephone subscriptions are administrative data and refer to telecommunication infrastructure. They cannot be broken down by sex. Some household surveys include questions about access to and use of ICT. Responses to such surveys can be used to analyse differences by sex, as well as by other socio-economic variables, in access to and uses of ICT.

**COMMENTS AND LIMITATIONS**

Data on fixed-telephone subscriptions are considered to be very reliable, timely, and complete. Very few cases of incomplete country data exist, and those that do are usually for countries following periods of war or turmoil.

Technological change has blurred the traditional definition of a fixed-telephone subscription, which used to refer to the connection – typically a copper wire – from a subscriber to the telephone company’s switching exchange. Voice services are increasingly provided over Internet Protocol (VoIP), a relatively new and often more affordable communication channel that is distinct from the Public Switched Telephone Network (PSTN). Some countries have started to collect data on VoIP and while others are encouraged to measure access to voice telephony by type of technology.

**GENDER EQUALITY ISSUES**

Information and communication technologies (ICTs) are essential tools for the advancement of gender equality and for promoting women’s empowerment. They can provide women and girls an education and job training, promote literacy, improve access to health care, enable the exercise of legal rights and participation in government. Accelerating broadband and ICT provision to women and girls can contribute to gender equality, empowerment and social and economic development of both men and women.

**DATA FOR GLOBAL AND REGIONAL MONITORING**

Data for global and regional monitoring of this indicator are produced by the International Telecommunication Union (ITU). Data on fixed-telephone subscriptions are collected through annual questionnaires that ITU sends to government telecommunication agencies, usually the regulatory authority, or the Ministry in charge of telecommunication/ICT. When countries do not reply to the questionnaire, ITU carries out research and collects missing values from government web sites, as well as from annual reports by operators. Data are complemented by market research reports.

The data, which are mainly based on administrative records, are verified to ensure consistency with data from previous years. Data are usually not adjusted, but discrepancies in the definition, reference year or breaks in comparability in between years are noted. For this reason, data are not always strictly comparable.

Missing values for the number of fixed-telephone subscriptions are estimated based on the Compound Annual Growth Rate of the last three years and adjusted for regional trends.

Discrepancies between global and national figures may arise when countries use a different definition than the one used by ITU. For example, some countries do not include the number of ISDN voice-channel equivalents and/or fixed-wireless local loop subscriptions when calculating the number of fixed-telephone subscriptions. Discrepancies may also arise in cases where the end of a fiscal year differs from that used by ITU, which is the end of December for most countries. A number of countries have fiscal years that end in March, June, or September.

Regional and global aggregates of the number of fixed-telephone subscriptions are calculated as unweighted sums of the country values. Regional and global penetration rates (per 100 population) are averages of the country values weighted by the population of the countries and regions.

**SUPPLEMENTARY INFORMATION**

**EXAMPLES**

**REFERENCES**

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8.15 Mobile-cellular subscriptions per 100 inhabitants

**GOAL AND TARGET ADDRESSED**

Goal 8. Develop a global partnership for development
Target 8.F: In cooperation with the private sector, make available the benefits of new technologies, especially information and communications

**DEFINITION AND METHOD OF COMPUTATION**

This indicator is defined as the number of *mobile-cellular telephone subscriptions* per 100 population.

Concepts
*Mobile-cellular telephone subscriptions* refer to the number of subscriptions to a public mobile-telephone service that provide access to the PSTN using cellular technology. The indicator includes the number of postpaid subscriptions and the number of active prepaid accounts (i.e. that have been used during the last three months). The indicator applies to all mobile-cellular subscriptions that offer voice communications. It excludes subscriptions via data cards or USB modems, subscriptions to public mobile data services, private trunked mobile radio, telepoint, radio paging and telemetry services.

Method of computation
This indicator is calculated as the number of mobile-cellular telephone subscriptions divided by the population and multiplied by 100.

**RATIONALE AND INTERPRETATION**

This indicator is widely available and especially important for developing countries where fixed-telephone infrastructure is often limited. Mobile-cellular telephony is increasingly replacing fixed-telephony in many countries. Mobile-cellular telephony has been highlighted as a success factor and technology for connecting people that were previously unconnected, especially in rural and remote areas, where fixed-telephone infrastructure is limited. It is therefore a key indicator for measuring telephone access and uptake.

**SOURCES AND DATA COLLECTION**

Data for mobile-cellular telephone subscriptions are available from administrative records collected regularly, and at least annually, from telecommunications operators by national regulatory authorities or the Ministry in charge of Telecommunications and Communication Technologies (ICT).

When countries collect data on the number of mobile-cellular telephone subscriptions, it is important to distinguish between active and non-active subscriptions. Non-active subscriptions (accounts) should be deleted from subscription lists after a certain period of ‘inactivity’ (usually three months). This is particularly important in countries with many prepaid subscriptions.

**DISAGGREGATION**

Data on mobile-cellular telephone subscriptions are not collected by urban/rural area. Data should be disaggregated by post-paid and pre-paid accounts. Some household surveys include questions about access to and use of ICT. Responses to such surveys can be used to analyse differences by sex, as well as by other socio-economic variables, in access to and uses of mobile-cellular telephone.

**COMMENTS AND LIMITATIONS**

Data on mobile-cellular telephone subscriptions are considered to be reliable, timely, and complete.

Mobile-cellular telephone penetration in many countries has surpassed 100 per cent. This can be due to a number of factors such as inactive pre-paid accounts (which should not be included but sometimes are) and multiple SIM cards. Statistics on this indicator should distinguish clearly between post-paid subscriptions and pre-paid accounts and only take into considerations subscriptions that have been used within a certain time period (usually three months).

**GENDER EQUALITY ISSUES**

Information and communication technologies (ICTs) are essential tools for the advancement of gender equality and for promoting women’s empowerment. They can provide women and girls an education and job training, promote literacy, improve access to health care, enable the exercise of legal rights and participation in government. Accelerating broadband and ICT provision to women and girls can contribute to gender equality, empowerment and social and economic development of both men and women.

**DATA FOR GLOBAL AND REGIONAL MONITORING**

Data for global and regional monitoring of this indicator are produced by the International Telecommunication Union (ITU). Data on mobile-cellular telephone subscriptions are collected through annual questionnaires that ITU sends to government telecommunication agencies, usually the regulatory authority, or the Ministry in charge of telecommunication/ICT. When countries do not reply to the questionnaire, ITU carries out research and collects missing values from government web sites, as well as from Annual Reports by operators. Data are complemented by market research reports.

The data, which are mainly based on administrative records, are verified to ensure consistency with data from previous years. However there are comparability issues for mobile subscriptions owing to the prevalence of prepaid subscriptions. These issues arise from determining when a prepaid subscription is considered no longer active. Missing values are estimated by ITU.

Discrepancies between global and national figures may arise when countries use different definitions than the ones used by ITU and especially when national data for active and non-active subscriptions are not clearly distinguished. Discrepancies may also arise in cases where the end of a fiscal year differs from that used by ITU, which is the end of December for most countries. A number of countries have fiscal years that end in March June or September.

Regional and global aggregates of the number of mobile-cellular telephone subscriptions are calculated as unweighted sums of the country values. Regional and global penetration rates (per 100 population) are averages of the country values weighted by the population of the countries and regions.

**SUPPLEMENTARY INFORMATION**

**EXAMPLES**

**REFERENCES**

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8.16 Internet users per 100 inhabitants

**GOAL AND TARGET ADDRESSED**

Goal 8. Develop a global partnership for development
Target 8.F: In cooperation with the private sector, make available the benefits of new technologies, especially information and communications

**DEFINITION AND METHOD OF COMPUTATION**

Definition
This indicator is the *percentage of individuals using the Internet*.

Concepts
The *Internet* is a world-wide public computer network. It provides access to a number of communication services including the World Wide Web and carries e-mail, news, entertainment and data files, irrespective of the device used (not assumed to be only via a computer − it may also be by mobile-cellular telephone, other wireless devices, games machine, digital TV etc.). Access can be via a fixed or mobile network.

*Individuals using the Internet* refers to those that used the Internet in the last 12 months from any location. Data are based on surveys generally carried out by national statistical offices or estimated based on the number of Internet subscriptions.

Method of computation
This indicator is calculated by dividing the total number of in-scope individuals using the Internet (from any location) in the last 12 months by the total number of in-scope individuals.

**RATIONALE AND INTERPRETATION**

Besides capturing the use of the Internet, this indicator is able to measure changes in Internet access and use. In countries where many people access the Internet at work, at school, at cybercafés or other public locations, increases in public access serve to increase the number of users despite limited numbers of Internet subscriptions and of households with Internet access. Developing countries especially tend to have many Internet users per Internet subscriptions, reflecting that home access is not the primary location of access.

**SOURCES AND DATA COLLECTION**

A growing number of countries are measuring the percentage of individuals using the Internet through household surveys. Surveys usually indicate a percentage of the population for a certain age range (e.g. 15-74 years old). The percentage of individuals using the Internet in this age range is used to estimate the percentage of individuals using the Internet for the entire population. Where surveys are not available, an estimate of the percentage of individuals using the Internet may be derived based on a number of indicators such as fixed (wired)-broadband subscriptions, fixed-telephone subscriptions, active mobile-broadband subscriptions and the income of the country.

**DISAGGREGATION**

Disaggregation for this indicator, including by age and sex, is possible in countries where data are derived from household surveys. This is the case in a growing number of developing countries.

**COMMENTS AND LIMITATIONS**

While the data on the percentage of individuals using the Internet are very reliable for countries that have carried out official household surveys, they are much less reliable in cases where the number of Internet users is estimated based on the number of Internet subscriptions. The methodology used to estimate the percentage of individuals using the Internet should always be described when presenting the data.

**GENDER EQUALITY ISSUES**

Disparities in the status of women and girls within households, as well as differences in education and culture, may affect their access to the Internet.

**DATA FOR GLOBAL AND REGIONAL MONITORING**

Data for global and regional monitoring of this indicator are produced by the International Telecommunication Union (ITU). Data on percentage of individuals using the Internet are collected through an annual questionnaire that ITU sends to national statistical offices (NSOs). If the NSO provides survey-based data for the number of individuals using the Internet, ITU uses these data. If the NSO has not collected any Information and Communication Technologies (ICT) data, then ITU estimates the percentage of individuals using the Internet using a statistical model that includes several indicators such as the number of fixed (wired)-broadband subscriptions, fixed-telephone subscriptions, active mobile-broadband subscriptions and the income of the country.

The data are verified to ensure consistency with previous years’ data. For most developed and an increasing number of developing countries, percentage of individuals using the Internet data are based on methodologically sound household surveys conducted by national statistical agencies. For countries where household surveys do not include information on this indicator, and where countries do not provide their own estimates, ITU estimates the percentage of individuals using the Internet based on a statistical model that includes several indicators such as the number of fixed (wired)-broadband subscriptions, fixed-telephone subscriptions, active mobile broadband subscriptions and the income of the country.

Data are usually not adjusted, but discrepancies in the definition, reference period or the break in comparability between years are noted in a data note. For this reason, data are not always strictly comparable.

Discrepancies between global and national figures may arise when countries use a different definition than the one used by ITU. Discrepancies may also arise in cases where the age scope of the surveys differs, or when the country only provides data for a certain age group and not the total population. Since there are major data gaps for this indicator at the country level, ITU estimates many of these data.

Regional and global aggregates of the number of Internet users are calculated as unweighted sums of the country values. Regional and global values for the percentage of individuals using the Internet are averages of the country values weighted by the population of the countries and regions.

**SUPPLEMENTARY INFORMATION**

**EXAMPLES**

**REFERENCES**

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