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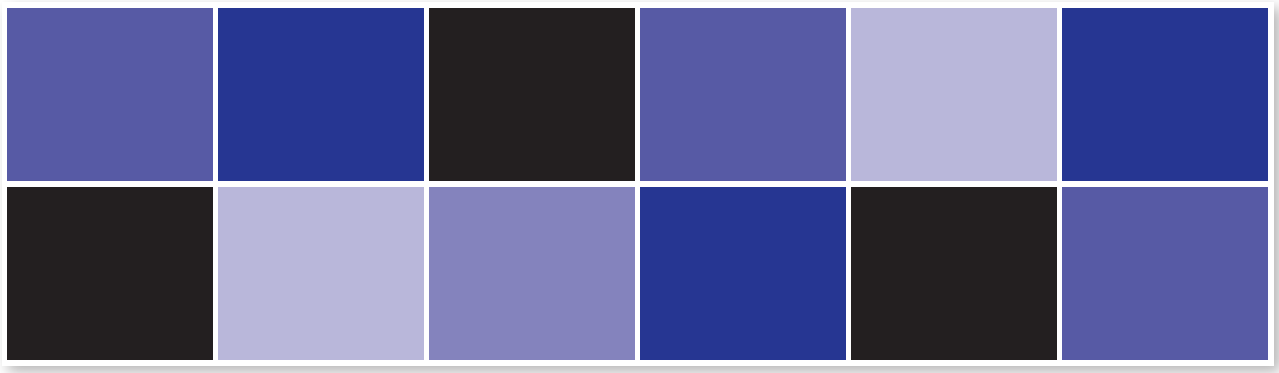
Rapid assessment of national civil registration and vital statistics systems



Health Information Systems Knowledge Hub
School of Population Health
University of Queensland

World Health Organization

Rapid assessment of national civil registration and vital statistics systems

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Acronyms

AIDS	acquired immunodeficiency virus
HIV	human immunodeficiency virus
ICD-10	International statistical classification of diseases and related health problems, 10th revision
WHO	World Health Organization

[1] *Improving the quality and use of birth, death and cause-of-death information: guidance for a standards-based review of country practices.* Geneva, World Health Organization, 2010.

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Background and rationale

In most countries, statistics on births, deaths, marriages, divorces and fetal deaths are recorded through the government's civil registration system, which creates a permanent record of each event. The records derived from civil registration systems have two main uses. First, they are personal legal documents, required by citizens as proof of facts (e.g. age, identity) surrounding events. These records are used, for example, to establish family relationships and inheritance rights, provide proof of age and establish rights based on age (e.g. school entry, driving privileges), provide proof of marriage or divorce and the right to marry, and provide evidence of death. Second, the data derived from these records form the basis of a country's vital statistics system.

Vital statistics are used to derive the fundamental demographic and epidemiological measures that are needed in national planning across multiple sectors such as education, labour and health. They are also critical for a wide range of government activities (e.g. population registers and other administrative registers) and commercial enterprises (e.g. life insurance, marketing of products). In the health sector, vital statistics form the core of a country's health information system; they:

- permit understanding of the prevalence and distribution of mortality due to diseases and injury, identification of health inequalities and priorities, monitoring of trends, and evaluation of the impact and effectiveness of health programmes;
- provide (when timely and complete) a reliable way to measure baseline levels and monitor progress towards global goals such as the Millennium Development Goals, and are important in understanding emerging health challenges due to, for example, noncommunicable diseases, injuries and human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS);
- enable tracking of national processes such as health sector reform, poverty reduction strategies and development efforts overall; and
- support planning, monitoring and evaluation in decentralized health systems[1], by providing information on health conditions at a local level.

Civil registration records are the best source of vital statistics. However, such systems are often weak or incomplete in developing countries. In countries where the civil registration system lacks complete coverage, or has major deficiencies due to issues of quality and timeliness, it may be necessary, on an interim basis, to use alternative sources to generate vital statistics. Sources for such interim data include population censuses, household sample surveys, demographic surveillance in sentinel sites and sample registration systems. Although these sources can and do generate measures of vital events, they do not provide individuals with the legal benefits of civil registration systems.

The World Health Organization (WHO), working with the University of Queensland in Australia, developed a comprehensive guide to support countries who wish to improve their civil registration and vital statistics systems. During the guide's development and field-testing phase, countries suggested that, before undertaking the detailed review, it would be useful to first carry out a rapid assessment to quickly evaluate the strengths and weaknesses of the current system. The results of this rapid assessment could then be used to make the case for a more detailed assessment.

This rapid assessment tool has therefore been developed to accompany the comprehensive guide, and countries are advised to apply it before undertaking a full review of their systems. It is available as both text and a spreadsheet, for ease of compilation of data. Both tools have been extensively peer reviewed by technical experts, and field tested in three countries.

[1] *Improving the quality and use of birth, death and cause-of-death information: Guidance for a standards-based review of country practices.* Geneva, World Health Organization, 2010.

The rapid assessment tool and its application

The rapid assessment tool consists of 25 questions about how the civil registration and vital statistics systems function (see "Rapid assessment questions", below). The questions are grouped into 11 areas:

- legal framework for civil registration and vital statistics;
- registration infrastructure and resources;
- organization and functioning of the vital statistics system;
- completeness of birth and death registration;
- data storage and transmission;
- *International statistical classification of diseases and related health problems* (ICD)[2]-compliant practices and certification within and outside hospitals;
- practices affecting the quality of cause-of-death data;
- ICD coding practices;
- coder qualification and training, and quality of coding;
- data quality and plausibility checks; and
- data access, dissemination and use.

Each question allows countries to select one of four scenarios (labelled A–D) describing a typical range of hypothetical situations. A numeric value (from 3 to 0) is attached to each scenario, allowing a total score to be obtained. The score has no scientific value and should only be taken as a rough indication of the functionality and quality of the civil registration and vital statistics systems. Some countries might find that the score can be used to help decide whether there is a need to carry out the comprehensive review. The rapid assessment tool is not a *replacement* for the detailed procedures described in the comprehensive guide; instead, it provides a quick overview of how well or how poorly a country's overall system is functioning.

Rather than the scores themselves, it is the process used to arrive at the scores that is important. The rapid assessment is *not a questionnaire* that one person should attempt to find suitable replies to; rather, it is a *group exercise* and should therefore be undertaken by a group of individuals knowledgeable in civil registration and vital statistics. The questions in the tool are designed to incite a discussion among senior staff responsible for various aspects of the civil registration and vital statistics systems. The composition of the team completing the assessment will vary by country, but it should include staff from national agencies involved with the collection or production of vital statistics such as the national statistics office, ministry of health and office of the registrar general. In principle, this same group would lead and oversee the comprehensive assessment completed using the detailed assessment tool.

The rapid assessment can be carried out in different ways. The group can meet and discuss each question before reaching a consensus on the overall country score. Alternatively, individual group members can score each question after the group discussion and the scores can then be averaged to produce a final result. Based on pilot experiences, the time needed for discussion of the issues raised by the questions would be around two hours.

Table 1 shows how the letter denoting a particular scenario for a question relates to the score.

Table 1 Scoring of scenarios for rapid assessment

Scenario	A	B	C	D
Score	3	2	1	0

The group should discuss and score all questions. If a particular scenario does not precisely define the situation in a country, the scenario most closely describing current practice is selected. A comments section is provided

[2] *International statistical classification of diseases and related health problems.* 10th Revision, version for 2007. Available at: http://apps.who.int/classifications/apps/icd/icd10online/

to enable respondents to provide additional detail or points of clarification for future reference. Total numeric scores are then converted into percentages. The spreadsheet version of the assessment questions will automatically calculate the scores and convert the absolute numbers into a percentage score. The spreadsheet tool can be downloaded from http://www.who.int/healthinfo/en/.

Based on the score obtained, the functioning of the national system can be situated.

Table 2 shows the ratings for the range of possible scores, and outlines the action required for each rating.

It is clear from Table 2 that countries with ratings below 65% will have much to gain from the careful application of the comprehensive WHO guide, and that even in countries with a score of 65–84%, the comprehensive review will be useful in identifying specific weaknesses.

A central tenet of the assessment approach is that the rapid assessment should be completed through a process of discussion among all group members leading to a common view on the issue. Thus, the purpose of the assessment is not simply to answer a question and decide on a score, but rather to engage in discussion on the possible weaknesses and strengths of the system, which will then be explored more fully in applying the full WHO guide, where necessary.

In some countries, the civil registration system is not the main vehicle for generating certain vital statistics, especially causes of death. Other mechanisms used include sample registration systems (e.g. India), disease surveillance points (e.g. China) and data collection through ministries of health (e.g. many countries in Latin America and the Caribbean). In such settings, it is important to distinguish between statistics derived from the civil registration system and those derived from alternative sources. This should be noted in the comments section of the questionnaire, because the rapid assessment is based on the premise that civil registration systems are the best source of vital statistics.

Table 2 Scores, ratings and actions required for rapid assessment

Score (%)	Rating	Actions required
<34	Dysfunctional	System requires substantial improvement in all areas
35–64	Weak	Many aspects of the system do not function well, and multiple issues require attention
65–84	Functional but inadequate	System works but some elements function poorly and require attention; specific weaknesses of the system should be identified by completing the comprehensive review
85–100	Satisfactory	Minor adjustments may be required in an otherwise well-functioning system

Rapid assessment questions

Legal framework for civil registration and vital statistics

1.Does the country have legislation that states that birth and death registration is compulsory?

Option	Response
A	Yes – the country has adequate and enforced legislation on civil registration, stating that registration of births and deaths is compulsory
B	Yes – the country has legislation on civil registration stating that registration of births and deaths is compulsory but it is in need of amendments
C	Yes – legislation exists but it is not enforced
D	No – there is no law that makes it obligatory to register births and deaths

Comments:

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2. Does the country have regulations that oblige all medical establishments to report all vital events to the vital statistics system within a given time?

Option	Response
A	Yes – all medical establishments (public, private, social insurance, others) report these events to the vital statistics system in a timely manner
B	Yes – regulations exist but not all medical establishments report the events
C	No - regulations only cover public medical establishments
D	No – no regulations exist

Comments:

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3. Does the country have legislation that states that death has to be certified by cause, and specifies who can certify the cause of death?

Option	Response
A	Yes – cause of death must be indicated on the death certificate according to International statistical classification of diseases and related health problems (ICD) rules and procedures, and can only be certified by a medical doctor
B	Cause of death must be indicated on the death certificate but it is not specified who can certify the cause
C	Cause of death must be indicated but only broad categories of cause are necessary, and the (non-medical) registrar or another local official is usually the certifier
D	No – it is not necessary to indicate the cause of death on the death certificate or at any stage of the registration of death

Comments:

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Registration infrastructure and resources

4. Are there adequate numbers of civil registration offices or registration points to cover the whole country?

Option	Response
A	Yes – the country has sufficient places where citizens can register births and deaths
B	Urban areas are well covered but there is only partial coverage of rural areas
C	Only the urban areas are well covered
D	No – only the capital city has registration offices

Comments:

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5. Do civil registration offices have adequate equipment to carry out their functions (for example, forms, telephones, photocopiers and computers)?

Option	Response
A	Yes – necessary supplies such as forms, paper and pens are adequate, and equipment such as telephones, photocopiers, and computers is widely available
B	Supplies such as forms, paper and pens are generally available everywhere, but there are widespread shortages of telephones, photocopiers and computers
C	In peripheral offices, supplies are often short, and only the central or provincial offices have telephones, photocopiers and computers
D	No – availability of both supplies and equipment is a problem in all civil registration offices

Comments:

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6. Have registrars received training to carry out their functions?

Option	Response
A	Yes – all registrars have received adequate training
B	All registrars receive some training but the training is insufficient, and skills and knowledge are largely acquired on the job
C	Most registrars (particularly in smaller offices) receive only on-the-job training
D	No – lack of training is a serious problem and has a negative effect on the functioning of civil registration

Comments:

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Organization and functioning of the vital statistics system

7. How well do the different government agencies and departments responsible for civil registration and vital statistics systems collaborate? (These include departments of health, civil registration and local government, statistics, and others)

Option	Response
A	The involved agencies collaborate very well and there is an interagency committee to ensure that the civil registration and vital statistics systems interact seamlessly
B	Although there is no formal interagency committee, the agencies involved have regular meetings to identify and resolve problems
C	There is no interagency committee, which delays efforts to resolve problems and can lead to serious data quality issues and bottlenecks (e.g. in data transfer)
D	There is little interagency collaboration, with the various agencies functioning independently, resulting in problems such as duplication of work and inconsistencies in the estimates derived from vital statistics issued by each agency

Comments:

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8. Can the vital statistics system generate both national and subnational statistics on births and deaths each year?

Option	Response
A	Yes – annual statistics are generated on births, deaths, and causes of death by sex and age at both national and for all subnational levels
B	Annual statistics on births and deaths by sex and age are generated at national and subnational levels, but statistics on cause of death by sex and age are only available nationally
C	The vital statistics system can only generate births and deaths by sex and age for reporting regions and not for the whole country; cause of death data are obtained only from hospitals
D	No – the information collected by the civil registration system is not compiled for statistical purposes

Comments:

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Completeness of registration of births and deaths

Before replying to questions 9 and 10, carefully read Box 1, which explains the concept of completeness. If no recent completeness estimates exist for birth and death registrations, they can be calculated using the simple method indicated in Box 1.

9. According to the most recent evaluation, how complete is birth registration in your country?

Option	Response
A	A recent evaluation (that is, in the last 10 years) showed that completeness of birth registration was 90% or higher (specify the date and method used to calculate completeness, and who calculated it)
B	A recent evaluation showed that completeness of birth registration was between 70% and 89% (specify the date and method used to calculate completeness, and who calculated it)
C	A recent evaluation showed that completeness of birth registration was between 50% and 69% (specify the date and method used to calculate completeness, and who calculated it)
D	*Either* – a recent evaluation showed that less than 50% of all births were registered (specify the date and method used to calculate completeness, and who calculated it) *or* – there has not been a recent evaluation of the completeness of birth registration

Comments - include date, method used, institution/person who calculated the completeness level:

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10. According to the most recent evaluation, how complete is death registration in your country?

Option	Response
A	A recent evaluation (that is, in the last 10 years) showed that completeness of death registration was 90% or higher (specify the date and method used to calculate completeness, and who calculated it)
B	A recent evaluation showed that completeness of death registration was between 70% and 89% (specify the date and method used to calculate completeness, and who calculated it)
C	A recent evaluation showed that completeness of death registration was between 50% and 69% (specify the date and method used to calculate completeness, and who calculated it)
D	*Either* – a recent evaluation showed that less than 50% of all deaths were registered (specify the date and method used to calculate completeness and who calculated it) *or* – there has not been a recent evaluation of the completeness of death registration

Comments - include date, method used, institution/person who calculated the completeness level:

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Data storage and transmission

11. How are birth and death records transmitted from local and regional offices to a central storage in the capital city?

Option	Response
A	All information is exchanged electronically from local to regional offices, then to a central office
B	Paper copies are sent from local offices to the regional office and processed there for electronic transmission to the central office
C	The system is still mainly paper based, with copies sent from local offices to the regional office, where they are scanned, then sent to the central office for processing
D	Paper copies are used throughout the system to transfer birth and death records to a central storage facility

Comments:

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12. What procedures are in place to ensure that all local and regional offices report to the central office within agreed times?

Option	Response
A	There is an agreed schedule for reporting to the central office, with reporting deadlines taken seriously and closely monitored – it is rarely necessary to send out reminders
B	An agreed schedule for reporting to the central office exists and this is largely adhered to – delays in local and regional offices are usually communicated to the central office
C	Although there is a schedule of reporting from local and regional offices, this is not strictly adhered to and there is currently little that the central office can do to ensure the timely transfer of data
D	The local and regional offices report to the central office with erratic timelines, and there is little effort by the central office to encourage more timely and regular reporting

Comments:

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ICD-compliant practices and certification within and outside hospitals

13. Does the country use the standard International form of medical certificate of cause of death for reporting?

Option	Response
A	Yes – the form is always used by doctors to certify cause of death
B	The form is always used when deaths occur in health facilities , but is not generally used outside health facilities
C	The form is used to certify death only in major hospitals
D	No – the form is not used for certifying causes of death

Comments:

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14. When medical certification of cause of death is rare, is verbal autopsy[1] routinely used to determine the cause of death? (This question does not apply to countries where all deaths generally are medically certified as part of civil registration. Countries in this category should give themselves a score of 3)

Option	Response
A	Yes – verbal autopsy is routinely applied to certify death using the international standard tool[2] or a similar questionnaire based on this
B	Verbal autopsy using the international standard tool is progressively being introduced but is not currently in general use
C	Verbal autopsy is used but is not based on the international standard tool
D	Verbal autopsy is not routinely used to determine cause of death in cases where the death is not certified by a physician

Comments:

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Practices affecting the quality of cause-of-death data

15. What training do doctors receive for certifying the cause of death?

Option	Response
A	All medical students are introduced to the ICD during their studies, and are taught how to certify cause of death and correctly complete the medical death certificate
B	No special training in the ICD or death certification is included in the medical curriculum, but all medical students learn about the ICD and death certification during their internships
C	No special training in the ICD or death certification is included in the medical curriculum, and only limited on-the-job training is available during internships
D	No training or on-the-job instructions in the ICD and death certification is given to doctors

Comments:

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16. What percentage of causes of death in your country are classified as "Ill-defined and unknown causes of mortality" (as defined in Chapter XVIII of ICD-10[1])?

Option	Response
A	<10%
B	10–19%
C	20–39%
D	40% or more

Comments:

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ICD coding practices

17. In your country, is cause of death coded according to a national language version of the ICD?

Option	Response
A	Yes – ICD coding is done using a national language version of the ICD or a nationally agreed international language
B	ICD coding is done, but no national language version of the ICD is available, which makes the coders' task more difficult
C	ICD coding is done according to a short list in the national language
D	No – the ICD is not used

Comments:

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[1] *International statistical classification of diseases and related health problems.* 10th Revision, version for 2007. Available at: http://apps.who.int/classifications/apps/icd/icd10online/

Coder qualification and training, and quality of coding

18. What qualifications do mortality coders have for coding mortality in accordance with ICD principles and rules?

Option	Response
A	Mortality coders must pass a formal test following a compulsory and intensive ICD-training course; additional courses are offered as needed
B	Mortality coders are given a short training course in the ICD and pass a basic test. Complex issues are learnt on the job from more experienced coders
C	New coders are instructed by more experienced coders; new coders are given the ICD volumes and expected to learn on the job
D	New coders are provided with minimal instructions from other coders and receive incomplete ICD materials

Comments:

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19. What quality assurance procedures are in place for checking the coding?

Option	Response
A	A national regulatory procedure is in place to periodically review the quality of coded certificates, and feedback is given to coders so they can improve if necessary
B	National evaluation of a random sample of coded certificates takes place occasionally to monitor the quality of the coding
C	Quality evaluation is left to local supervisors who check the work of individual coders on an ad hoc basis
D	No procedures exist and no evaluations of the quality of coding have been carried out

Comments:

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Data quality and plausibility checks

20. What consistency and plausibility checks on fertility and mortality levels are carried out before the data are released?

Option	Response
A	Checks on overall levels of fertility and mortality derived from the vital statistics data are made routinely by calculating rates and comparing these over time; rates are also compared to data derived from other sources, such as censuses and surveys
B	Checks on overall levels of fertility and mortality derived from vital statistics data are undertaken by calculating rates and comparing these to earlier time series
C	Checks are limited to computer programmes that simply look for compilation errors before the data are published
D	No specific checks are routinely carried out for data quality and plausibility of birth and death statistics

Comments:

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21. What consistency and plausibility checks are applied to data on cause of death?

Option	Response
A	In addition to checking the stability of patterns in cause of death over time, the proportion of ill-defined and unknown deaths is routinely monitored, and the age and sex patterns for major causes of death are checked for plausibility
B	Routine checks of the consistency of patterns in cause of death are made to ensure that mortality from any disease group does not vary significantly from year to year, and that any fluctuations can be explained
C	Checks are limited to automated checks for compilation and data entry errors
D	There are no consistency and plausibility checks routinely carried out on data for cause of death

Comments:

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Data access, dissemination and use

22. Does the country publish or make available annual numbers of births disaggregated by sex, age and geographical or administrative region?

Option	Response
A	Yes - annual data on births are published by all three disaggregations (sex, age and geographical or administrative region) Please indicate name of publication or web address where these data can be found
B	Annual data on births are published according to any two disaggregations
C	Annual data on births are available but disaggregated by sex only
D	No annual statistics on birth are published

Comments:

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23. Does the country publish or make available annual numbers of deaths disaggregated by sex, age and geographical or administrative region?

Option	Response
A	Yes - annual data on deaths are published by all three disaggregations (sex, age and geographical or administrative region). Please indicate name of publication or web address where these data can be found
B	Annual data on deaths are published according to any two of the above disaggregations
C	Annual data on deaths are available but disaggregated by sex only
D	No annual statistics on death are published

Comments:

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24. What is the delay between the reference year and the time when detailed national statistics on cause of death, classified by sex and age, are made available to the public?

Option	Response
A	Less than 2 years
B	More than 2 years but less than 3 years
C	More than 3 years but less than 5 years
D	5 years or more

Comments:

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25. How are data on vital events used for policy and programme purposes? (The group should discuss actual examples of where vital registration data are used)

Option	Response
A	Data on births, deaths, and causes of death are widely used for socioeconomic planning and for monitoring the health status of the population, including the use of data on cause of death for public health purposes
B	Data on births and deaths are used for reporting on health-related indicators such as the Millennium Development Goals and other national health-related goals, but cause-specific data are rarely used for public health purposes
C	Only data on births are used for reporting on some indicators, such as fertility
D	Data from the civil registration and vital statistics systems are not routinely used for policy and programme purposes

Comments:

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Box 1

Calculation of completeness of vital statistics

Completeness is a measure of the extent to which the births and deaths that occur in a country in a given year are registered by the civil registration system. There are various demographic techniques for estimating the completeness of deaths registration, such as the Bennett–Horiuchi, Chanrasekaran–Deming, and Brass Growth Balance methods.[1] Alternatively, it is possible to estimate completeness by dividing the actual number of registered births (or deaths) in the country by the total estimated number of births (or deaths) in the country for the same period, and multiplying by 100. A simple way to measure completeness in this way is to use an independent estimate of the number of births (or deaths) in the country. If no reliable national estimate is available, then an international estimate can be used. For example, each year the United Nations estimates birth and death rates in its Member States using various sources and demographic estimation techniques[2]. The reliability of calculating the completeness of registration in this way clearly depends on the reliability of the independent estimates of crude birth rate (CBR) and crude death rate (CDR).

Completeness of birth registration is calculated as YB = RB/(CBR x P) x 100

YB	Estimated birth registration completeness (%)
RB	Actual number of Registered births
CBR	Crude birth rate, as estimated by the United Nations (per 1000)
P	Total population size (divided by 1000)

Completeness of death registration is calculated as YD = RD/(CDR x P) x 100

YD	Estimated death registration completeness (%)
RD	Actual number of registered deaths
CDR	Crude death rate, as estimated by the United Nations (per1000)
P	Total population size (divided by 1000)

Sample calculation

The United Nations estimates that the CDR for country X in 2005 was 5.4 per 1000 population. The population of country X in 2005 was reported as 69 421 000.

Suppose that, during 2005, the civil registration system registered 280 510 deaths. The completeness of death registration in country X would be estimated as:

YD = 280 510/(5.4 x 69 421) x 100 = 280 510/374, 873 x 100 = 74.8%

[1] *Principles and recommendations for a vital statistics system,* Series M, No. 19/Rev. 2. New York, United Nations Statistics Division, 2001. Sales No. 01.XVI.10. Available at: http://unstats.un.org/unsd/publication/SeriesM/SeriesM_19rev2E.pdf

[2] *World population prospects*. New York 2008, United Nations Department of Economic and Social Affairs Statistics Division.