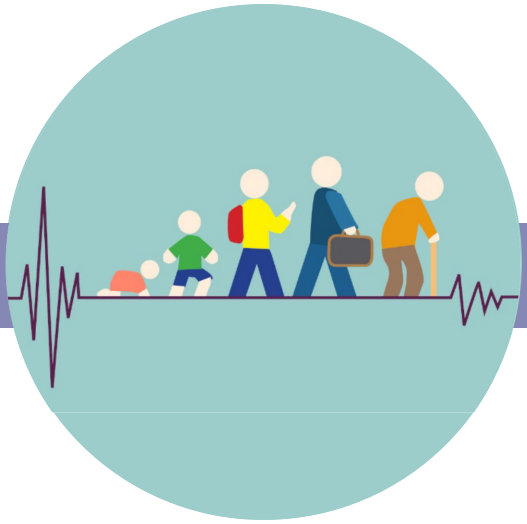

MODULE 9:

Civil Registration and Vital Statistics System

9A: Registration of Events

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MEASURE Evaluation

This module is one of 12 HIS data source modules in *Health Information System Strengthening: Standards and Best Practices for Data Sources*. The full series of modules (available at https://www.measureevaluation.org/resources/publications/tr-17-225) is intended to provide health authorities and other health information stakeholders with a reference guide that, along with other sources, can help align the HIS data sources with international standards and best practices.

Type of Data Generated: Births, Deaths, and Causes of Death

Description

The civil registration and vital statistics system has two functions, one legal and the other statistical. Two or more national agencies share the responsibility for these functions. To carry out the legal function, the civil registration system operates under a national civil registration authority. The civil registration system is the continuous, permanent, compulsory, and universal recording of vital events pertaining to the population, as provided through decree or regulation, in accordance with the legal requirements of a country (UN, 2014a). The civil registrar records and archives minimally recommended information surrounding individual vital events: births, deaths, causes of death, marriages, and divorces (UN, 2014a). The registrar can then issue a legal certificate to an individual to use for legal, administrative, and other purposes.

The second function of the CRVS system is to compile and process vital statistics, namely from records archived in the civil register. In a well-functioning civil registration system, these records constitute the timeliest and most accurate source of vital statistics in a country. The civil registration authority can process these data or else coordinate with the national statistics office (NSO) or another agency to process them.

Most countries have a legal framework in place for a national civil registration system. In most low- and middle-income countries, however, the coverage of birth and death registration remains under 50 percent, and vital statistics from civil registration records are not routinely tabulated (United Nations Statistical Division, 2017). Regardless of registration coverage levels, modernizing a CRVS system to facilitate regular processing of vital statistics has great value for countries (UN, 2014a; Inter-American Development Bank & United Nations Children's Fund, 2015; Africa Programme for Accelerated Improvement of Civil Registration and Vital Statistics, n.d.). The timely production and dissemination of standard tabulations of vital statistics can call attention to the need for strengthening this data source and improve the capacity to use and interpret the data.

National governments in most regions of the world have renewed commitments to strengthen CRVS systems.[19] Since 2014, about 20 regional and international partners have come together as members of the Global Civil Registration and Vital Statistics Group to coordinate global activities to support countries in their commitments (UN, 2014b).

Registration Coverage

To mark progress toward higher birth and death registration coverage and to mobilize the resources needed to achieve higher coverage, the international community has agreed to work toward the goal, "Universal civil registration of births, deaths, and other vital events, including reporting cause of death, and access to legal proof of registration for all individuals by 2030" (WHO, 2014. Table 11 shows the targets that relate to that goal.

[19] Examples of commitments to strengthen CRVS systems include the following: the United Nations Economic and Social Commission for Asia and the Pacific "Make Every Life Count" Global Summit on Civil Registration and Vital Statistics (Thailand, 2014); the United Nations Economic Commission for Africa first, second, and third Conferences of African Ministers Responsible for Civil Registration (Ethiopia, 2010; South Africa, 2012; Cote d'Ivoire, 2015); the WHO Regional Office for the Eastern Mediterranean Regional Strategy for the Improvement of Civil Registration and Vital Statistics Systems 2014–2019; and the Pan American Health Organization Regional Plan of Action for Strengthening Vital and Health Statistics.

Table 11. Targets for the global CRVS scaling up plan

Targets	2020	2025	2030
Births in given year are registered	80%	90%	100%
Children whose births are registered have been issued certificates	70%	85%	90%
Deaths in given year reported, registered, and certified with key characteristics	60%	70%	80%
Maternal and newborn deaths reported, registered, and investigated	80%	90%	100%
Deaths in children under 5 reported, disaggregated by age and sex	60%	70%	80%
Cause of deaths in hospitals reliably determined and officially certified	80%	90%	100%
Countries have community assessments of probable cause of death determined by verbal autopsies using international standards	50%	65%	80%

Source: World Bank & WHO (2014)

Sustainable Development Goals related to registration coverage

SDG 16, Indicator 16.9.1: Proportion of children under 5 years of age whose births have been registered with a civil authority, by age

SDG 17, Indicator 17.19.2: Proportion of countries that have achieved 100 percent birth registration and 80 percent death registration

In addition, in 2016, UN member states defined SDG Target 16.9 (on providing legal identification to individuals) and Target 17.19 (on building statistical capacity) that include measures of birth and death registration coverage by 2030 (UN Economic and Social Council, 2016).

To reach these targets in their own context, some countries require substantial infrastructure investments to expand civil registration services. Other countries that have sufficient civil registration service points and few remote populations, may be able to increase coverage quickly by strengthening oversight and accountability of local service centers, and improving coordination with the health sector or other notifiers of births and deaths.

For countries that currently have low registration coverage, a number of techniques can be used to estimate completeness of coverage (UN, 2014a). A simple approach is to assess the total number of births or deaths registered within a defined period and area as a percentage of the expected number of events (WHO, 2010b; WHO, 2013a). For comparisons of coverage over time using this approach, it is important that the expected numbers of events, which constitute the denominator, are used consistently from the same source, because expected numbers vary between sources. Ideally, the expected numbers used should be official numbers produced by the NSO. Otherwise, expected numbers from an international source, such as the UN Population Division or the U.S. Census Bureau International Data Base, can be used (UN Population Division, 2015; U.S. Census Bureau, 2015). One disadvantage of using an international source is that the numbers represent only the expected number at the national level, and the NSO may produce the numbers at the subnational level, allowing insight into patterns of inequalities in registration coverage.

For countries in which registration coverage is approaching completeness, a more precise method is needed, namely a direct method to match records from an independent source to the civil registration records. These methods are presented in UN documents (UN, 2014a) as well as in older, but still relevant, sources, such as those produced by the International Institute for Vital Registration and Statistics (IIVRS) (1990).

Causes of Death

Complete and comparable information on causes of death is an important part of a fully functioning CRVS system. Guidance on these data is addressed in a separate CRVS section following this one: Civil Registration and Vital Statistics System: Causes of Death.

Types of Indicators

Civil Registration and Vital Statistics data are used to derive a range of fertility and mortality rates and ratios. If birth and death registration coverage is largely complete, then direct approaches to deriving this information can be used. These indicators can be produced at subnational levels, to the extent that intercensal estimates exist for denominators. Useful guidance on the required data and computation of vital registration rates and ratios is presented in the *Handbook of Vital Statistics Methods* (UN, 1955) and the *Handbook on the Collection of Fertility and Mortality Data* (UN, 2004).

Because birth and death registration coverage in many countries is still incomplete, a demographer, statistician, or someone with specialized training should routinely evaluate the CRVS data and apply conventional techniques to adjust or correct the data before deriving fertility and mortality measures. These are referred to as indirect techniques of estimation. Two authoritative sources on these techniques are the Manual X Indirect Techniques for Demographic Estimation (UN, 1983) and the International Union for the Scientific Study of Population tools for demographic estimation (International Union for the Scientific Study of Population, 2011).

Fertility and mortality indicators derived from CRVS data include the following:

- Crude birth rate
- Age-specific fertility rate
- Total fertility rate
- Birth rates by birth order
- Birth ratios by specific characteristics (e.g., sex, duration of marriage, and parity)
- Crude death rate
- All-cause age- and sex-specific death rates
- Early childhood death rates and ratios, including neonatal, postnatal, infant, and under-five child mortality
- Fetal and perinatal death rates and ratios (e.g., by sociodemographic characteristics of the mother)
- Death ratios by specific characteristics (e.g., sex, cause of death, and occupation)
- Cause-specific mortality rates resulting from infectious diseases, noncommunicable diseases, and accidents and injuries

A well-functioning CRVS system is also an important source for efficiently monitoring about a dozen global development indicators defined in the 2015–2030 SDGs (Table 12). Several of the SDG indicators correspond with former Millennium Development Goal (MDG) indicators, whose measurement period has been extended. Several of the indicators, denoted in Table 12 by an asterisk, require data on cause of death.

Table 12. Global development indicators, MDG and SDG, derived from the CRVS system

MDG†	SDG‡	Indicator
Target 5.A, Indicator 1	Target 3.1, Indicator 1	Maternal mortality ratio
Target 5.A, Indicator 2	Target 3.1, Indicator 2	Proportion of births attended by skilled health personnel
Target 4.A, Indicator 1	Target 3.2, Indicator 1	Under-five mortality rate
Target 4.A, Indicator 2	N/A	Infant mortality rate
N/A	Target 3.2, Indicator 2	Neonatal mortality rate
N/A	Target 3.4, Indicator 1	Mortality of cardiovascular disease, cancer, diabetes, or chronic respiratory disease*
N/A	Target 3.4, Indicator 2	Suicide mortality rate*
Target 6.C, Indicator 6	N/A	Incidence and death rates associated with malaria*
Target 6.C, Indicator 9	N/A	Incidence, prevalence, and death rates associated with tuberculosis*
N/A	Target 3.6, Indicator 1	Death rate caused by road traffic fatal injuries*
Target 5.B, Indicator 4	Target 3.7, Indicator 2	Adolescent birth rate (ages 10–14 years; ages 15–19 years) per 1,000 women in that age group
N/A	Target 3.9, Indicator 1	Mortality rate attributed to household and ambient air pollution*
N/A	Target 3.9, Indicator 2	Mortality rate attributed to unsafe water, unsafe sanitation, and lack of hygiene (exposure to unsafe water, sanitation, and hygiene services)
N/A	Target 3.9, Indicator 3	Mortality rate attributed to unintentional poisoning*
N/A	Target 16.1, Indicator 1	Number of victims of intentional homicide per 100,000 population, by age and sex*
N/A	Target 16.9, Indicator 1	Proportion of children under five years of age whose births have been registered with civil authority, by age
N/A	Target 17.19, Indicator 2	Proportion of countries that have achieved 100 percent of birth registration and 80 percent of death registration

† Extracted from the official list of MDG indicators. Retrieved from http://mdgs.un.org/unsd/mdg/Host.aspx?Content=Indicators/OfficialList.htm

‡ Extracted from the *Report of the Inter-Agency and Expert Group on Sustainable Development Goal Indicators* (UN Economic and Social Council, 2016)

* Cause of death indicator

N/A=not applicable

Alternative Data Sources

Until existing CRVS systems are sufficiently strengthened, population-based surveys and censuses can provide periodic indicators of fertility and mortality, although these sources produce less timely and less precise information, and do not provide the potential individual benefits of official registration. For example, vital statistics from surveys lack precision, especially at subnational levels, because of statistical uncertainty inherent in sample estimates; vital statistics from population censuses lack timeliness because they are generated only once every 10 years; and vital statistics from a routine health information system provide valuable operational data for the health sector, but they are incomplete at the population level because they include events in health facilities but not necessarily those occurring in the community.

Standards

- **Standards for national CRVS systems.** Since 1953, the UN Statistical Division has compiled and maintained the fundamental standards for generating accurate, reliable, and regular vital statistics from national civil registration systems. In 2014, the UN Statistical Commission adopted the third revision of the Principles and Recommendations for a Vital Statistics System (first revision in 1973, second revision in 2001) (UN, 2014a). The five UN handbooks on CRVS published with the second revision remain highly relevant in their respective areas (UN, 1998a–1998e).
- **CRVS assessment tools.** WHO and the University of Queensland have produced two assessment tools to guide countries in a standards-based review of the CRVS system (WHO, 2010a; WHO, 2010b). The first tool is a rapid assessment consisting of 25 questions addressing 11 areas of the system. Assuming that the key informants are readily available to contribute, the rapid assessment can be conducted in a few hours using an automated spreadsheet for immediate results. The second tool is a detailed tool to review and strengthen the CRVS system, including guidance for a comprehensive review (building on the rapid assessment) and the development of a road map for strengthening weak areas.
- **CRVS training.** The U.S. Centers for Disease Control and Prevention (CDC) provides a CRVS training course for public health professionals. The training materials consist of an instructor guide, participant notes, 10 chapters on selected CRVS topics with PowerPoint slide sets, optional exercises and assignments, and technical appendices. At least 10 training days are necessary to cover the material. All materials are available free of charge and can be downloaded from the CDC website (CDC, 2015a).
    - Many countries will also benefit from rediscovering a series of 72 technical papers on the CDC website, published from 1979 to 1998 by the IIVRS. These papers offer an historical perspective on vital statistics systems in various countries and whose improvement methods are still relevant to current efforts (CDC, 2015b).
- **Sample Vital Registration with Verbal Autopsy (SAVVY).** For countries whose civil registration system does not provide complete coverage of birth and death registration and cause of death information, a probabilistic sample of areas in which all events are properly recorded has the potential to provide representative fertility and mortality indicators (President's Emergency Plan for AIDS Relief, U.S. Agency for International Development, MEASURE Evaluation, & U.S. Census Bureau, n.d.)

Best Practices

- Establish an **interagency CRVS group** with representation from national stakeholders and development partners to plan and conduct a standards-based assessment of the CRVS system and, based on the results, develop a detailed workplan to strengthen the system. This group is also valuable for routine CRVS operations.
- Estimate the **completeness of coverage** of registered births and deaths at least annually, at the national and subnational levels, to inform the interpretation and reliability of CRVS data for decision making.
- **Align official registration forms** with the UN minimal-recommended data elements.
- Undertake steps to obtain cause of death data as part of a long-term plan toward implementing **International Classification of Diseases, Tenth Revision (ICD-10) medical certification and coding of cause of death.** Interim measures to fill the gap in cause of death information may be establishing a SAVVY system or implementing the WHO Simplified Mortality List (see the CRVS System: Causes of Death section).
- Disseminate annual civil registration vital statistics according to **standard tabulations** recommended by the UN Statistics Division. These may be in the form of a **national vital statistics report** published by official

official vital statistics authorities or another dissemination medium. Note that even if the national CRVS system lacks full registration coverage, or does not collect all required data items for the recommended tabulations, it is nevertheless important to produce the tables to the extent possible and document where the information falls short in quality or completeness.

- Ensure that designated national authorities comply with **international reporting** practices by (1) submitting official vital statistics data to the UN Statistics Division for publication in the annual Demographic Yearbook and the biannual Population and Vital Statistics Report (United Nations Statistics Division, n.d.a; United Nations Statistics Division, n.d.b) and (2) submitting annual cause of death data to WHO to be publicly disseminated through the WHO Mortality Database (WHO, n.d.).

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