

# Strengthening the Civil Registration and Vital Statistics (CRVS) System in Colombia

Support from the Bloomberg Philanthropies Data for Health Initiative

November 2024

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## Summary

This case study is tailored for leaders and decision-makers from national statistics offices, civil registration authorities and ministries of health, as agencies at the core of a multi-agency and foundational Civil Registration and Vital Statistics (CRVS) system. Each of these agencies plays a critical role in shaping, sustaining and enhancing the system, making it possible to improve data accuracy, availability and utility in ways that support national planning, service delivery and public health.

Rapid, high-impact improvements to CRVS systems are achievable and sustainable, as the example of Colombia shows. Effective and lasting improvements rely on more than technical input alone; they require commitment to prioritize CRVS as a core national asset, with ongoing support at every level. When CRVS improvements align with government priorities and receive sustained engagement of national and local leadership, the results are both rapid and impactful. The success in Colombia illustrates how meaningful changes resulting in more CRVS data, better quality data, and more useful data were achieved in less than eight years.

The Bloomberg Philanthropies Data for Health Initiative's model for CRVS improvement is based on the following guiding principles that we believe are crucial to replicating Colombia's success:

- **National Ownership and Leadership:** Meaningful change can only be driven by those who understand local needs and can champion CRVS as a priority across sectors.
- **Capacity Strengthening:** Building the skills, infrastructure and capabilities at institutional and individual levels.
- **Sustainability From the Outset:** Prioritizing practices and systems that can endure and evolve over time.
- **Inclusiveness and Equity:** Ensuring that CRVS systems meet the needs of all groups within the population.

With this strategic technical assistance, Colombia has made remarkable strides in understanding the health of its population—even in the context of a pandemic—through its improved CRVS system. This case study offers a model for how committed national engagement, combined with targeted support, can create transformative change in a short time.

## Overview of the Current CRVS System

This overview of current CRVS system gives context to the specific system improvements described in the next section. These improvements, made by the Colombian government and supported by Data for Health, have enabled more rapid collection and use of registration data, as discussed below.

Interoperable Solutions

In Colombia, the official source of data to produce vital statistics is the RUAFND database (Registro Único de Afiliados–Módulo de Nacimientos y Defunciones), managed by the Ministry of Health and Social Protection since 2008. This system compiles data in real time from the medical certification of cause of death as well as notifications of births and deaths in hospitals and outside of the formal health sector (as seen in Figure 1, for deaths).

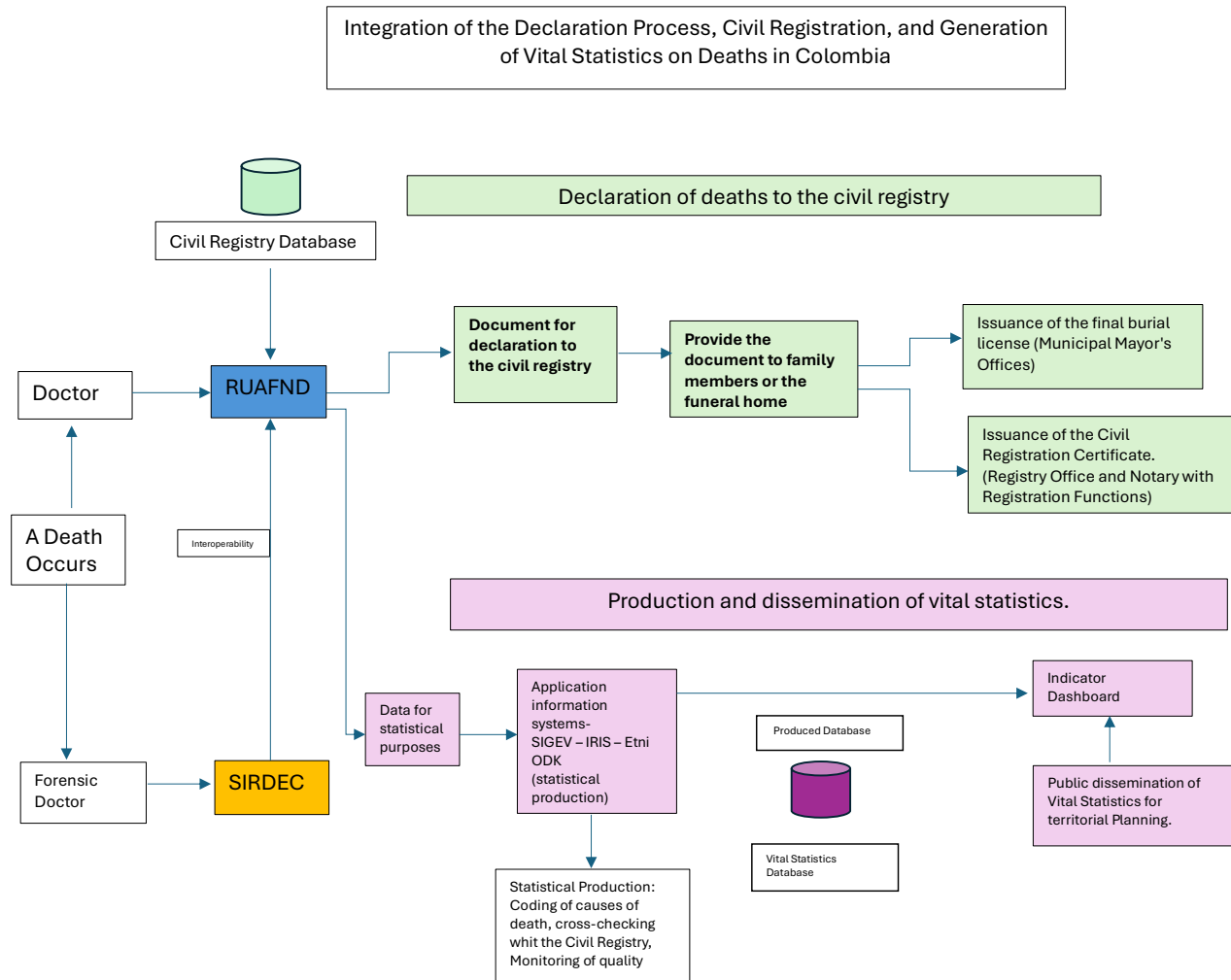


Figure 1. Process of producing vital statistics from ICD-coded mortality data in Colombia

Forensic pathologists medically certify the causes of non-natural deaths through a web application known as the Missing Persons and Cadavers Network Information System (SIRDEC), administered by the Institute of Legal Medicine and Forensic Sciences (Instituto de Medicina Legal y Ciencias Forenses). Subsequently, this information is populated into RUAFND through an interoperable interface with SIRDEC. Medical certification of cause of death in both the RUAFND and SIRDEC systems follow the recommendations of the ICD (International Classification of Diseases) issued by the World Health Organization.

### Vital Event Notification and Registration

Whether a family receives a birth or death certificate in a timely manner largely depends on whether the hospital concerned has a civil registry bureau or not. For births, most declarations are timely thanks to the RUAFND live birth notification tool. The tool provides documentary evidence from the health sector to verify the occurrence of the birth. This allows the newborn to be issued a birth certificate before leaving the hospital.

For deaths, however, the process often takes much longer. The relatives or funeral homes are required to go to the civil registry offices to register the event and request the death certificate. Upon the arrival of the family, the civil registrar's office validates the occurrence of the event using the notification from the health sector and the corresponding entry in RUAFND.

To increase coverage in hard-to-reach rural areas where there are no hospitals or doctors available to medically certify cause of death, other authorized health professionals, such as nurses and health promoters, have been employed. These professionals have the capacity to issue paper-based live birth and death notifications, which are subsequently entered into RUAFND by departmental or municipal health authorities.

### Production of Vital Statistics

The database generated through RUAFND is sent monthly to the National Administrative Department of Statistics (DANE), where the Vital Statistics Information System (SIGEV) is used to produce official vital statistics. Through this platform, officials carry out quality management and cross-checking for the data received from RUAFND and from the civil registry system to identify possible omissions. In addition, automated and manual International Classification of Diseases (ICD) mortality coding of causes of death is performed for all institutional and forensically investigated deaths.

The production of vital statistics and their dissemination also complies with international standards and is carried out digitally. The data on births and deaths is presented in dashboards that are disseminated publicly<sup>1</sup> on a provisional basis every three months, with final figures produced 12 months after the end of the year, to include all events that were registered within one year of occurrence.

## Impact From the Data for Health Initiative From 2017 to 2024

This section of the paper details the achievements that resulted from the Initiative in three key areas: digitization and interoperability, strengthening governance for CRVS systems, and capacity strengthening for physicians and other health professionals.

### I. Digitization and interoperability

**Digital Improvements to RUAFND: Improved timeliness and quality of notification and medical certification of cause of death to protect legal rights and facilitate public policies**

**Initiative-supported work:** The second version of RUAFND has significantly improved the timeliness and quality of notifications of births and deaths and medical certification of cause of death in Colombia, reducing errors and duplications in data entry. This was achieved through the incorporation of new functionalities, such as the streamlined integration with the civil registry database and the automation of identity data, minimizing errors in data entry.

Medical certification of cause of death practices were vastly improved by ensuring the medical certificate of cause of death (MCCD) form met international standards as set out by WHO. This included adding information on the time intervals from the MCCD forms into RUAFND.

<sup>1</sup>Source: National Administrative Department of Statistics (DANE), Colombia. Births and Deaths Statistics. <https://www.dane.gov.co/index.php/estadisticas-por-tema/demografia-y-poblacion/nacimientos-y-defunciones>

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**Results:** After the Data for Health Initiative began in Colombia, the team prioritized reducing to three days the amount of time from the occurrence of a vital event and its entry into RUAFND. In 2018, 73% of paper notifications for deaths with a cause of death and 85% of notifications of births were entered into RUAFND within three days. With support from the initiative, currently, 99% of all births and 97% of all deaths are captured in RUAFND within three days of the occurrence of the event. This reduction in the time to notify births, and deaths with cause of death, enabled the residents of Colombia to obtain the critical documents for their families and provides the government of Colombia with vital events data in near real time.

During the COVID-19 pandemic, thanks to the improved availability of mortality data, a Rapid Mortality Surveillance System was quickly established. This system measured excess deaths compared to the five-year pre-pandemic historical averages on a weekly basis, using death records from the RUAFND database. This allowed for data analysis and was instrumental in the ability to make decisive actions to mitigate the effects of the pandemic, such as the targeted provision of intensive-care unit beds and guiding where to increase vaccination coverage.

### Interoperable solution between RUAFND and SIRDEC: Improved efficiency and quality in medical certification of cause of death for non-natural deaths

**Initiative-supported work:** The standardization and digital improvements between legal medicine and the health sector through the interoperability layer between the SIRDEC and RUAFND systems has significantly improved the timeliness of data on causes of death issued by forensic doctors. This now enables an efficient flow of information on natural and non-natural deaths.

**Results:** These improvements should reduce the need for requests for data clarification or revisions by DANE, while raising the quality of the description of injuries and their external causes. This will, in turn, facilitate the coding of causes of death and, consequently, more timely production of mortality statistics.

### Transformative improvements in the production of vital statistics

**Initiative-supported work:** The improvements to the SIGEV application (which automates the production of vital statistics) have unified several phases of the statistical production process and centralized the management of quality and completeness of information. This enables a more effective follow-up of critical variables, for example, those with the greatest omissions or errors in data entry. This system is used throughout the country by more than 30 DANE officials and leaders.

**Results:** The use of a single platform has facilitated timely monitoring and necessary adjustments within 30 days of the occurrence of the event. During this time users can make modifications directly in the RUAFND or SIRDEC databases, reducing the need to make additional amendments and statistical changes. Furthermore, automating cross-checks between DANE and the civil registry has improved vital statistics management across regions, thus increasing the reliability and quality of statistics for all CRVS stakeholders involved.

ICD mortality coding in Colombia is a centralized process involving a team of eight expert ICD mortality coders and the use of Iris software, which facilitates the selection of the underlying cause of death. Since the transition from the Mortality Medical Data System to Iris in Colombia in 2019, the accuracy and efficiency of ICD mortality coding has improved considerably. Among the advantages offered by Iris is a dictionary of diagnostic terms adapted to the local context and standardization to ICD-10 mortality coding rules.

Currently, the ICD mortality coding system automatically codes 60% of all underlying causes of deaths. A total of 287,251 deaths were medically certified in Colombia in 2022. Iris determined an underlying cause of death for 172,350 of them, leaving 114,901 MCCDs, plus those for external deaths, totaling 33,668.

### Community surveillance process to improve coverage in rural areas

**Initiative-supported work:** In 2018, the national completeness of medical certification of cause of death of all expected deaths reached 86%, with 85% for females and 87% for males. However, significant differences were observed at the subnational level. Specifically, in 2019, completeness reached 79% in the department of Cauca, 73% in Putumayo, 58% in Guanía and 47% in La Guajira. These regions face multiple access barriers, both geographical and cultural, which greatly affect the ability to provide a medical certificate of cause of death.

To begin addressing these differences and inequities at the subnational level, two digital strategies have been implemented for the notification of vital events. The first strategy allows indigenous and Afro-Colombian communities to report births using digital forms. They have thus far reported close to 300 births in Chocó and other indigenous regions of Colombia that would have otherwise gone uncounted and unregistered.

The second strategy, Colombia Rural Vital, improves the notification of births and deaths in rural areas through text messaging. Colombia Rural Vital uses verbal autopsies to determine a probable cause of death.

**Results:** Since 2018, the Colombia Rural Vital strategy has trained more than 2,000 people, including community leaders, nursing assistants, health promoters and doctors in the use of verbal autopsies to determine a probable cause of death in highly rural communities. A total of 924 births have been registered and 640 deaths notified; verbal autopsy was conducted for all of those deaths. In 2023, 10% (326 out of 3,240) of deaths that occurred in the demonstration sites have been notified thanks to this critical strategy. Without it, none of these deaths would have been counted.

The department of Putumayo stands out as a success story for Colombia Rural Vital. The local government committed to scaling the strategy from only one municipality initially to all 13 municipalities thanks to the political will and collaboration of actors in the local CRVS system, achieving sustainable solutions with local governments.

## II. Strengthening governance for CRVS systems

**Initiative-supported work:** The recent update of Colombia's CRVS Principles and Procedures Manual, the first revision in 26 years, has strengthened the system's governance and overall functioning. This manual aims to improve information management in terms of coverage, quality and timeliness by standardizing eight processes: notification, certification and registration of births and deaths; medical certification of cause of death; and the production and dissemination of vital statistics.

**Results:** Adoption of the manual at the national and subnational levels is now facilitating better inter-institutional coordination for the validation of processes and regulatory revisions. To formalize this progress, a law has been proposed to ensure the adoption of the manual as an integral part of the CRVS operation. The law is in the process of being approved by all the institutions of the country's intersectoral commission on vital statistics.

## III. Capacity strengthening for physicians and other health professionals

**Initiative-supported work:** Since 2019, the implementation of virtual training tools has had significant results in Colombia. For example, more than 5,000 physicians have completed the online course in birth and death notification and medical certification of cause of death. About one-third of all physicians using RUAFND in the country have now been trained. Since 2024, 45 forensic pathologists from all over the country have also been trained, and about 1,000 more forensic pathologists using SIRDEC are expected to receive training in 2025. In addition, 400 nurses, assistants and health promoters have participated in the course on verbal autopsies in the Colombia Rural Vital demonstration regions, thus improving the process of capturing cause of death for death occurring at home.

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These courses have been integrated into the continuous training processes of medical education requirements in health institutions throughout the country, which guarantees their institutionalization and sustainability.

**Results:** Improved timeliness of data in RUA FND, automated ICD mortality coding, centralized quality management, and ongoing training in ICD mortality coding have all helped reduce the percentage of ill-defined causes in cause-of-death data, which decreased from 8.5% in 2017 to 5.7% of all deaths in 2022.

### IV. Remaining priorities and next steps

The Data for Health Initiative has facilitated and supported the government of Colombia to modernize its CRVS system. This effort has promoted a high degree of digitization that optimizes the flow of data, converting vital events into valuable information for decision-making. The digitization of the CRVS system makes it possible to understand and analyze fertility and mortality patterns in the country, providing key inputs for the analysis of population trends. It also provides the necessary inputs for planning and evaluating health policy, education, economy and allows Colombia to track and measure national and territorial indicators including the Sustainable Development Goals (SDGs).

Despite these achievements, significant challenges remain, such as the transition to ICD-11 for mortality coding and the decision on how to reflect a person's sex and gender in the death certificate. These actions are crucial to generate quality statistics that adequately reflect the reality of the country.

To help address these remaining challenges, Colombia is accessing continued support under the Data for Health Initiative through the Global Grants Program to support the transition to ICD-11, which will take place officially in 2025. Specifically, DANE and the Legal Medicine Department will focus on improving the capacity for forensic pathologists to certify external causes of death. The Global Grants Program is also supporting improvements to the use of Iris, the automated coding software for the selection of underlying cause of death.



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