REPUBLIC OF RWANDA

NATIONAL INSTITUTE OF STATISTICS OF RWANDA

RWANDA VITAL STATISTICS REPORT 2021

July, 2022

REPUBLIC OF RWANDA

NATIONAL INSTITUTE OF STATISTICS OF RWANDA

Rwanda Vital Statistics Report 2021

July, 2022

Rwanda Vital Statistics Report 2021 is produced by the National Institute of Statistics of Rwanda (NISR).
Additional information about this report may be obtained from NISR
P.O. Box 6139, Kigali, Rwanda; Telephone: +250 788 383103; E-mail: info@statistics.gov.rw;
Website: http://www.statistics.gov.rw
Recommended citation:

National Institute of Statistics of Rwanda (NISR), Rwanda Vital Statistics Report 2021, July, 2022

Preface

This report is produced based on data collected in 2021 to showcase the progress made by Rwanda in improving civil registration and vital statistics system and to assess how far we are toward attaining the targets set under the Civil Registration and Vital Statistics (CRVS) strategic plan elaborated in 2017. It will therefore be a useful tool to inform related policies and decisions and guide strategic interventions aimed at boosting implementation of the strategic plan. Ideally, 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).

The data used in this report were mainly generated by National Centralized and Integrated Civil Registration and Vital Statistics System (NCI-CRVS System), a digitized system launched in August 2020 for official registration of vital events. At the beginning, NCI-CRVS started with official registration of births and deaths occurring at health facilities and thereafter, the system operationalization was extended to capture births and deaths occurring in community. During that transition period, community births and deaths as well as marriages registrations were being captured via CRVS web-based system, an online platform initiated in 2015 to ease the collection of civil registration data and facilitate the timely production of vital statistics reports.

NCI-CRVS system's generated data were therefore merged with CRVS web-based system generated data to obtain exhaustive dataset to be used for analysis. To pinpoint the level of reliability of the results obtained, the outputs were compared with census and survey-based data including data from Rwanda demographic and health survey (RDHS) and Rwanda population and housing Census (RPHC).

The report compilation was mainly performed by National Institute of Statistics of Rwanda (NISR) staffs in charge of regular monitoring of CRVS data collection who provided the first draft, under the direction of NISR leadership. The draft was thereafter technically reviewed and validated in collaboration with CRVS key stakeholders.

The 2021 Vital Statistics report extends to births, deaths and causes of deaths and, marriages registered countrywide. It is the Rwanda's third vital statistics report, which is expected to be a resourceful provider of information on status of vital events registration in Rwanda and a reference source for future publications within the same scope.

MURANGWA Yusuf
Director General
National Institute of Statistics of Rwanda

Acknowledgments

The successful completion of this report is a result of a joint efforts of different staff from various institutions and organizations. Therefore, NISR wishes to acknowledge the efforts of several organizations and individuals who contributed in one way or another, to the successful process of strengthening civil registration and vital statistics system in Rwanda that led to the production of this vital statistics report. First, we would like to acknowledge the financial support from the government of Rwanda, the United Nations Population Fund (UNFPA), the United Nations Children's Fund (UNICEF), and Bloomberg D4H.

We are thankful to all current CRVS coordination structures, particularly the CRVS steering committee and CRVS technical working group for endorsing strategic decisions guiding operationalization of CRVS and overseeing implementation of CRVS system in Rwanda. We would like also to express a word of appreciation to the key CRVS stakeholders namely: MINALOC, NIDA, MoH, RBC, MINIJUST and MIGEPROF for their sustained contribution to the journey of strengthening civil registration and vital statistics system in Rwanda. Special appreciation goes to all civil registrars (particularly: hospital directors of nursing and midwifery, heads of health centres, sector executive secretaries and cell executive secretaries) and other supporting CRVS actors (health facilities data managers, sector civil registration officers) as day-to-day CRVS data providers, as well as district statisticians and district directors of good governance for their important role in coordinating civil registration data collection activities at the district level.

We gratefully acknowledge Vital strategies, United Nations Economic Commission for Africa, United Nations Economic and Social Commission for Asia and the Pacific, and the Statistics Norway for availing the template for the production of a vital statistics report, revision 1 that has been helpful in terms of conceiving the content and structure of the current report. We also acknowledge the technical support provided by Bloomberg Philanthropies Data for Health (D4H) and WHO in the collection and reporting of mortality statistics following international standards and guidelines as well as in capacity building of NISR technical staff. Their contribution has been a cornerstone for improvement of data collection tools, especially at the health facilities level.

Finally, a word of appreciation goes to NISR's CRVS technical team and technical staff from key stakeholder institutions who provided all they had in terms of technical skills to compile and produce this report in partnership with CRVS key stakeholders.

Contents

List of tables

List of figures

Acronyms and abbreviations

ANACONDA	Analysis of National Causes of Death for Action
APAI-CRVS	Africa Programme for Accelerated Improvement of Civil Registration and Vital Statistics
ASBR	Age-Specific Birth Rate
ASFR	Age-Specific Fertility Rate
ASMR	Age-Specific Mortality Rate
CBR	Crude Birth Rate
CDR	Crude Death Rate
COD	Cause of Death
CR	Civil Registrar
CRO	Civil Registration Officer
CRVS	Civil Registration and Vital Statistics
D4H	Data for Health
DHIS2	District Health Information Software 2
EICV	Enqête Intégrale sur le conditions de vie des ménages
ENMR	Early Neonatal Mortality Rate
GFR	General Fertility Rate
HBCP	Home-Based Care Practitioner
HMIS	Health Management Information System
ICD-10	International Classification of Causes of Deaths, Version 10
IECMS	Integrated Electronic Case Management System
LNMR	Late Neonatal Mortality Rate
MAS2	Second Mortality Assessment Survey
MCCOD	Medical Certification of Cause of Death
MIGEPROF	Ministère du Gerne at de la Promotion de la Famille (Ministry of Gender and Family Promotion)
MINALOC	Ministère de L'Administration Locale (Ministry of Local Government)
MINIJUST	Ministry of Justice
MOH	Ministry of Health
NCI-CRVS	National Centralized and Integrated Civil Registration and Vital statistics System
NGO	Non-Governmental Organizations
NIDA	National Identification Agency
NISR	National Institute of Statistics of Rwanda
NMR	Neonatal Mortality Rate
NSDS	National Strategy for Development of Statistics
RBC	Rwanda Biomedical Centre
RDHS	Rwanda Demographic and health survey
RPHC	Rwanda Population and Housing Census
TFR	Total Fertility Rate
UN	United Nations

UNECA	United Nations Economic Commission for Africa
UNICEF	United Nations Children's Fund
VS	Vital Statistics
VSR	Vital Statistics Report
WHO	World Health Organization

Definitions of key concepts

Age-specific fertility rate (ASFR): The annual number of births to women of a specified age or age group per 1,000 women in that age group.

Age-specific mortality rate (ASMR): A mortality rate limited to a particular age group. The numerator is the number of deaths in that age group; the denominator is the number of persons in that age group in the population.

Cause of death: All those diseases, morbid conditions or injuries which either resulted in or contributed to death and the circumstances of the accident or violence which produced any such injuries.

Child mortality rate: The probability (expressed as a rate per 1,000 live births) of dying between the first and the fifth birthday.

Civil Registration: UN defines civil registration as "the continuous, permanent, compulsory and universal recording of the occurrence and characteristics of vital events pertaining to the population as provided through decree or regulation in accordance with the legal requirements of a country. This process establishes and provides legal documentation for such events.

Completeness of registration: The proportion of vital events that are registered. It is the number of registered vital events divided by the 'actual' number of vital events that occurred in the same population during a specific period of time.

Crude Birth Rate (CBR): The number of live births relative to the size of that population during a given period, usually one year. It is expressed in numbers of births per 1,000 population per year.

Crude marriage rate: The crude marriage rate is the ratio of the number of marriages in a population during a reference period over the person-years lived by the population during the same period. It is expressed as marriages per 1,000 population.

Crude Death Rate (CDR): The number of deaths relative to the size of the population during a given period, usually one year. It is expressed in numbers of deaths per 1,000 population per year.

Death: The permanent disappearance of all evidence of life at any time after live birth has taken place (postnatal cessation of vital functions without capability of resuscitation). This definition excludes foetal deaths, which are defined separately.

Delayed registration: is a registration that arrives too late for inclusion in the annual (or monthly or quarterly) statistics; after one year of occurrence of the event, according to the law of the country.

Ill-defined cause of death: Any code that cannot or should not be used for the underlying cause of death (generally referring to 'R codes' in the International Classification of Diseases). For instance, a 'mode of death' such as heart failure or kidney failure; symptoms such as back pain or depression; and risk factors such as high blood pressure, are all uninformative codes for public health purposes.

Infant Mortality Rate (IMR): Probability (expressed as a rate per 1,000 live births) of a child born in a specific year or period dying before reaching the age of one, if subject to age-specific mortality rates of that period.

Late registration: is vital events that are registered after the deadline for registration according to the law of the country, but before exceeding one year.

Life expectancy at birth: The average number of years that a newborn could expect to live if he or she were to pass through life exposed to the sex- and age-specific death rates prevailing at the time of his or her birth, for a specific year, in a given country, territory, or geographic area.

Live birth: The complete expulsion or extraction from the mother of a product of conception, irrespective of the duration of 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 live born (all live-born infants should be registered and counted as such, irrespective of gestational age or whether alive or dead at the time of registration, and if they die at any time following birth, they should also be registered and counted as deaths).

Low Birth Weight (LBW) refers to the weight at birth of fewer than 2,500 grams (5.5 lbs.) as per World Health Organization definition.

Marriage is a special contract of permanent union between a man and a woman entered into in accordance with law for the establishment of conjugal and family life.

Neonatal Mortality Rate (NMR): Number of deaths during the first 28 completed days of life per 1,000 live births in a given year or period.

Place of Occurrence refers to the place where the vital event took place,

Sex ratio at birth: The number of male births for a specific area and during a specified period divided by the number of female births for the same area and period.

The General Fertility Rate (GFR) is the number of resident live births for a specific area during a specified period divided by the female population age between 15 and 49 years (usually estimated at mid-year) for the same area and period multiplied by 1,000.

Timely registration: is the registration effected within the time stipulated by the law (30 days for births and death in Rwanda).

Total Fertility Rate (TFR): The sum of age-specific fertility rates for females aged between 15 and 49 years during a specified period, usually one year. It is an estimate of the average number of children a cohort of women would bear if they went through their child-bearing years experiencing the same age-specific fertility rates.

Under-five mortality rate (U5MR): Is the probability for a new-born to die before his/her fifth anniversary. Under-five mortality rate is the probability of dying between birth and exactly 5 years of age, expressed per 1,000 live births.

Underlying cause of death: The cause of death to be used for primary statistical tabulation purposes has been designated as the underlying cause of death. The underlying cause of death is defined as "(a) the disease or injury which initiated the train of events leading directly to death, or (b) the circumstances of the accident or violence which produced the fatal injury" (ibid., sect. 4.1.2).

Vital statistics system: A vital statistics system is defined as the total process of (a) collecting information by civil registration or enumeration on the frequency of occurrence of specified and defined vital events, as well as relevant characteristics of the events themselves and the person or persons concerned, and (b) compiling, processing, analysing, evaluating, presenting and disseminating theses data in statistical form.

Executive summary

The National Institute of Statistics of Rwanda (NISR) within the third National Strategy for Development of Statistics (NSDS3), which is being implemented from 2019/20 to 2023/24, committed to strengthen administrative data collection system including Civil Registration and Vital Statistics System (CRVS) in Rwanda to complement official statistics from surveys and censuses.

To ease registration services delivery and enable the digitization of CRVS system, the National Centralized and Integrated CRVS system (NCI-CRVS) was initiated and started to be operational in August 2020. This system was, in December 2020, integrated with CRVS-web based system, an electronic web-based system initiated in 2015, to facilitate the collection, storage and use of vital statistics data. The compilation of this report made use of data from these electronic systems.

The report is organized within 7 chapters namely: 1) Introduction and background; 2) Rwanda's civil registration system; 3) Data quality, timeliness and completeness of registration; 4) Births statistics, 5) Deaths statistics 6) Causes of death statistics; 7) Marriages statistics. To assess the reliability of results obtained, a comparative analysis involving data from other sources was performed. Only vital events that occurred in 2021 were considered for analysis in this report.

Birth statistics:

The comparison of registered births with estimated live births at national level showed a slight decrease in rate of birth registration completeness, from 85.8% in 2020 to 84.2% in 2021. However, the share of births registered within 30 days underwent an upward shift, from 72.3% in 2020 to 93.7% in 2021. Hypothetically, the effect of transition from using a paper-based registration system to a digitized registration system at decentralized entities may have contributed to slowing down the completeness of birth registration due to limited public awareness on changes in registration process. COVID-19 prevention measures also may have had negative impact.

The computation of fertility indicators in 2021 adopted the use of adjustment practice where the results showed a crude birth rate (CBR) equivalent to 28.4‰, general fertility rate (GFR) equivalent to 106‰ and total fertility rate (TFR) equivalent to 3.5 live births per woman. CRVS computed fertility indicators returned small values in 2021 when compared to the results of RDHS 2019/20 that showed a CBR equivalent to 31.8, GFR equivalent to 134 and a TFR equivalent to 4.1 births per woman. Further analysis of CRVS data showed an average weight at birth equivalent to 3112.0 grams in 2021, up from 3108 grams in 2020; and a share of low birth weight equivalent to 6.5%, down from 7.1%, in 2020. The sex ratio at birth was consistently found to be 103 male births per 100 female births since 2019.

Death statistics:

Vital statistics on deaths showed a total of 19,797 deaths registered in 2021 of which 51.4% occurred in the community. The comparison of registered deaths with expected deaths gives 26.2% completeness of death registration in 2021, down from 29.9% in 2020. Mortality

statistics showed a high number of deaths among males compared to females with a sex ratio at death equivalent to 119.8 males' deaths per 100 females' deaths, down from 124.1 in 2020. Due to the low completeness rate of death registration, adjustment techniques were used to obtain country representative estimates where the crude death rate was found to be 5.8‰.

Causes of deaths:

Analysis of causes of death data depicts a slight improvement in data quality regarding death certification and reporting where the proportion of causes of deaths that are usable for policies and proper decision-making stands at 56.6% of the total causes reported by health facilities in 2021, up from 43.8% of usable causes of death in 2020. Across age groups, analysis shows that among institutional deaths, the group of non-communicable diseases is generally more frequent to females aged 35 and above and among males aged 45 and above. The external causes and injuries were found to be more frequent among males than females. Generally, a group of communicable diseases, maternal, perinatal and nutritional conditions represents 51% of the total usable causes while the group of non-communicable diseases and external causes represents 41% and 8%, respectively.

Marriage statistics:

Marriages statistics were computed based on legal marriages registered in 2021 where CRVS system generated data show a total of 33,809 legal marriages registered in 2021, slightly up from 30,859 in 2019; giving annual crude marriage rate equivalent to 2.6‰ in 2021. Further analysis shows that below age of 30, females are more frequently married than their counterparts males while at age of 30 and above, males predominate. The most frequently chosen matrimonial regime is "Community of property" representing 98.5% of the total marriage regimes recorded. This report did not manage to release divorce statistics as the system that could provide accurate information on divorces is under revision.

CHAPTER 1: INTRODUCTION AND BACKGROUND

1.1. Background

An effective civil registration and vital statistics system provides essential data, rates and other quantitative measures for the accurate planning of programmes designed to promote the wellbeing of the citizens. The data collected from vital events registration are essential to planning for social development, including the design and implementation of public health measures, maternal and childcare, family planning, social security, education, housing and economic development. Accurate information is essential for proper planning for the needs of the community, particularly for health and education facilities, as well as for housing and the labour market. Accurate and comprehensive vital statistics generated from civil registration provide for comparison and evaluation of differences among regions, between districts and wards within a region, and at the international level between countries. Death records are of particular importance in public health, for identifying the magnitude and distribution of major disease problems, epidemics and pandemics. Data from these records can be used for epidemiological studies. Cause of death information is essential for medical research for major causes of death such as cancer and heart diseases.

As a source of vital statistics, civil registration has important uses for individuals, societies, and the government. For individuals, copies of registration records can be used as legal documents for evidentiary purposes. Information compiled from registration records is needed for administrative applications such as national identity programs and the electoral roll. It also serves as the starting point for several operational programs, particularly in family planning, medical research, maternal and childcare programs, historical demography, genetic studies and so forth. The establishment of the vital events registration system is in-linewith the national development plan of Rwanda.

Civil registration has administrative and legal use on one hand, and statistical, demographic and epidemiological use on the other. Vital statistics are used to get precise and up-to-date measurements of demographic changes and for the study and analysis of trends. Vital statistics are also primary data sources for the health sector in the implementation, monitoring and evaluation of different health interventions and epidemiological studies.

Measuring the progress towards the realization of Sustainable Development Goals requires a sustained source of data that speaks to the outlined indicators. The global 2030 development agenda implicitly recognizes and underlines the importance of individual and aggregate records and data on birth and death in the realization of basic human and civil rights as well as in the monitoring of development. The Sustainable Development Goals (SDGs), anchored on the vision of eradicating extreme poverty from the face of the earth by the year 2030, have as the first of its five transformative shifts to “Leave no one behind.” They emphasize on the need to ensure that no person is excluded or denied universal human rights and access to basic economic opportunities. Several SDGs indicators require data from civil registration to measure progress. The domestication of SDGs in Rwanda re-emphasized the crucial role of CRVS data in monitoring a successful implementation and measuring achievements.

The African Agenda 2063 similarly re-echoes social inclusiveness as a prerequisite to the continent’s growth and development. A fundamental challenge to the realization of these visions remains the fact that civil registration systems are largely very weak in most of the developing world; hence a majority of the population remain legally “invisible” in the eyes of

the state, denying them the right to be known and planned for by their governments, access to fundamental opportunities and services, as well as the ability to claim their rights or to participate in governance processes.

Individual identity records and documents generated from a CRVS system help to fulfill the first fundamental human right that every individual is entitled to upon birth i.e., the right to a name and an identity; from which other human and civil rights are founded. The recognition of the existence of persons by their governments, and the ability of individuals to transact with each other and with the state, through legal identity documents, are fundamental attributes good governance that can only be realized by states where complete civil registration systems exist. Records of birth, marriage, divorce, and death derived from civil registration systems also provide a permanent, continuous, universal and reliable source of vital statistics for accurate and timely planning, resource allocation and for good governance. Measurements and monitoring of many of the SDGs indicators require vital statistics data on a continuous and timely basis.

Civil registration and vital statistics system in Rwanda is still under development and as a result, like in many other African countries, some of our people have come into this world and left without leaving a trace on official records. However, efficient civil registration and vital statistics system is a precondition for enabling regular production of vital statistics reports that are essential for informing policies and programs for various purposes. In its place, the need for vital statistics was met by conducting expensive periodic surveys and decennial population censuses; something that produces reliable data but late compared to the CRVS system.

Despite that, an efficiently working CRVS system enables a continuous supply of reliable data on vital events to support informed policymaking, implementation and monitoring of development plans. Also, in the absence of reliable information on causes of death there is no solid basis to determine which diseases have major impacts on the population.

The production of this report adopted the vital statistics report production template, revision 1 jointly developed by Vital Strategies, United Nations Economic Commission for Africa, United Nations Economic and Social Commission for Asia and the Pacific, and Statistics Norway (2020). The template serves as a comprehensive document which provides detailed background information that is useful and recommended by the UN in the preparation of the Vital Statistics Reports.

Vital events that are covered in this report are births, deaths, and marriages that took place in 2021 and reported via the CRVS system. The annual vital statistics report presents a great opportunity to learn from experience in terms of registration of births, deaths and causes of death and evaluate the quality of the available data in the country. This report is also expected to be a benchmark for the next reports and a reference source for further publications in the same scope.

1.2. Objectives, Scope and organization of the report

1.2.1. General Objective

The main objective of producing this vital statistics report is to showcase the current status of vital events registration for informing policies and decisions in this regard, identifying gaps

and strengths within the system, and to track the progress made toward achieving the target set under the CRVS strategic plan elaborated in 2017.

1.2.2. Specific objectives include:

i. To assess the level of completeness of birth and death registration.
ii. To highlight limitations/challenges in the data in terms of coverage, quality and timeliness for registration of civil events.
iii. To assess the level of reliability of demographic indicators obtained from CRVS data through comparison with indicators from other sources.

1.2.3. Scope of the report

The United Nations recommends that countries should register and collect information on the following vital events for civil registration and vital statistics purposes: birth; death; foetal death; marriage; divorce; annulment; judicial separation; adoption; legitimization (acknowledgment); and recognition (judicial declarations of paternity) (UN, 2014). However, foetal deaths and judicial separation are not yet recorded in Rwanda as appearing in UN recommendations, although it remains to be the eventual goal. The African Ministers responsible for civil registration have also recommended the recording of the four vital events. In September 2016, the law No 32/2016/ of 28 August 2016 governing persons and family assigned an order of registration priority by selecting most of the internationally recommended vital events and by dropping some which were considered less important. In line with these recommendations, the scope of the CRVS improvement process has been set to address births, deaths, and marriages. In this regard, the top priority vital events to be recorded are births, marriages, and deaths. Against this background and taking into consideration the relative weight attributed to vital events in terms of policy orientation for our country context, the content of this report is limited to the registration of birth; death and causes of deaths; and marriages that occurred in 2021.

1.2.4. Organization of the report

The report is organized in seven chapters namely (1) Introduction and background; (2) Rwanda's civil registration system; (3) Data quality, timeliness and completeness of registration (4) Births statistics (5) Deaths statistics (6) Cause of deaths statistics and (7) Marriages statistics. Descriptive narratives were made to clarify the results.

- Chapter 1 presents the introduction and the general overview of the role of vital statistics, objectives and scope of the report.
- Chapter 2 describes Rwanda's civil registration system including history, legal background, administrative structure; organizational structure, registration process and the flows of information; organization of vital statistics production and dissemination plan; incentives and disincentives for civil registration and plans for further improvement of CRVS.
- Chapter 3 describes the quality, coverage and completeness of civil registration data.
- Chapter 4 gives statistical data on births, disaggregated in accordance with various aspects and with explanatory narratives.
- Chapter 5 gives disaggregated statistics on deaths with explanatory narratives.

- Chapter 6 gives summary statistics on causes of deaths.
- Chapter 7 gives disaggregated statistics on marriages with explanatory narratives.
- Finally, the appendix showcases references and other informative attachments that are meaningful to the process of vital statistics data collection.

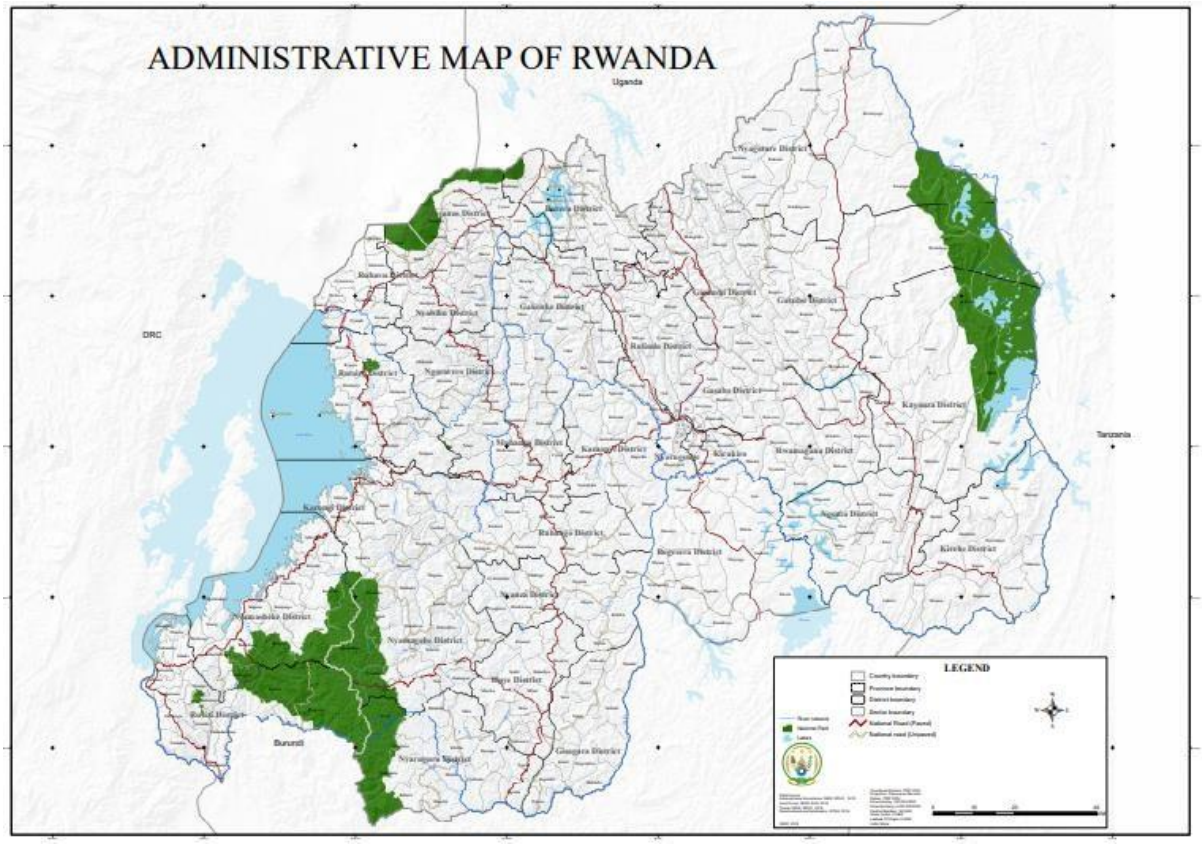
1.3. Country profile

1.3.1. Geography

Rwanda is located in central Africa, immediately in south of the equator between latitude 1°4' and 2°51' S and longitude 28°63' and 30°54' E. The country lies 75 miles South of the Equator in the Tropic of Capricorn, 880 miles 'as the crow flies' west of the Indian Ocean and 1,250 miles East of the Atlantic Ocean - literally in the heart of Africa.

Rwanda is a mountainous country with the lowest point about 950 meters above sea level and the highest point about 4,507 m. The terrain is hilly and the country is often referred to as "the land of a thousand hills". Rwanda has a surface area of 26,338 square kilometers. It is bordered by Uganda to the North, Tanzania to the East, the Democratic Republic of the Congo to the West, and Burundi to the South.

Figure 1: Map of Rwanda by administrative divisions



1.3.2. Business and economy

Rwanda's economy has tremendously recovered over the last two decades. Rwanda's Gross Domestic Product (GDP) has risen from $752 million in 1994 to $10.7 billion in 2021. In 2021, GDP at current market prices was estimated at Frw 10.944 Billion, up from Frw 9.607

Billion in 2020. The services sector contributed 48 per cent of GDP, the Agriculture sector contributed 24 percent of the GDP, and the Industry sector contributed 20 percent of GDP while 8 percent was attributed to adjustment for taxes and less subsidies on products (NISR, 2022)

The country registered an average GDP growth of around 8 percent per year over the last two decades. Despite a decrease in 2020, estimates calculated in 2017 prices show that GDP increased 10.9 percent compared to 2020. This reflects the low spread in public health catastrophe of covid19 compared to 2020. In 2021, the GDP per head in current US Dollars was estimated at 845 from 804 in the previous year of 2020.

Over the last ten years, Rwanda has implemented a successful doing business reform agenda in order to create a favourable and competitive business environment. As a result, Rwanda jumped over 100 places in the World Bank Doing Business Index, today ranking the 2nd in Africa and 38th easiest place to do business globally (Doing Business Report, World Bank 2020). The value of investments registered more than tripled from US$400 million in 2010 to US$2.006 billion in 2018.

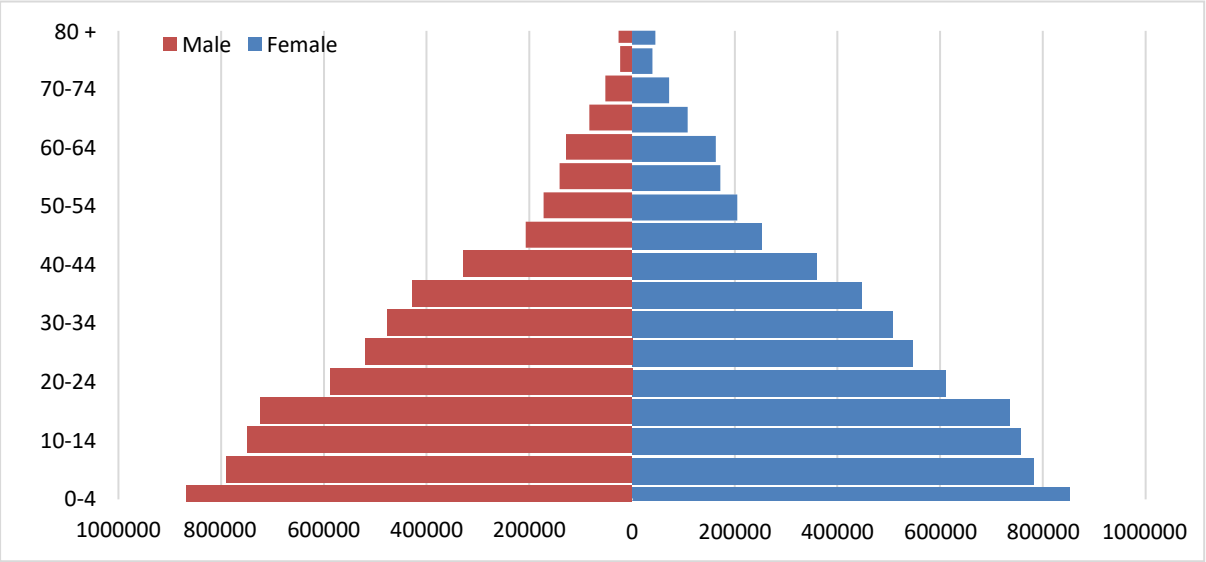
In 2019, Rwanda registered investments worth US$ 2.46 billion, an increase of 22.6% from the previous year. Energy and manufacturing accounted for 75% of all investments registered (45% and 30% respectively). Other sectors that attracted significant investments were construction, agriculture, services including ICT as well as mining.

1.3.3. Country demographic and social profile

The Rwandan population is essentially young, with 43.4 percent of all Rwandans under age 15 according to the RPHC4. According to the 2014/15 Rwanda Demographic and Health Survey, only 86 percent of children under 5 years of age were officially registered.

The fourth population and housing census in 2012 showed that 52 percent and 48 percent of the Rwandan population were female and male, respectively. According to projections, Rwanda's population would grow to 12,955,763 in 2021; the population more than doubled between 1978 and 2012. The increase was essentially due to rapid population growth, which remains high despite the progressive decreases in the natural growth rate and the total fertility rate. In fact, according to census estimates, the natural growth rate was 2.6 percent between 2002 and 2012 and 3.1 percent between 1978 and 1991. The low natural growth rate of 1.2 percent between 1991 and 2002 is due to the high number of deaths caused by the 1994 genocide committed against Tutsi. The population density is high across the country and has increased steadily over the years, up to 500 inhabitants per square kilometer in 2020. The population is largely rural; according to the RPHC4, almost 84 percent of the country's residents live in rural areas.

Figure 2: 5-Years Age-group Population Pyramid (Projected population, 2021)



Source: 4th PHC Population projections, 2021

The illiteracy rate in Rwanda has significantly declined for the past years. As per the fifth Integrated Households Living Conditions Survey (EICV5), men in the older age range (15 years and above) continued to have the highest literacy rate in EICV5 compared to women (78% and 69% respectively). On the contrary, in younger age cohort (15-24 years) females registered again the highest literacy rate in EICV5 (89% for females against 84% for males). Although numerous religions are practiced in Rwanda, the 2012 census showed that Christianity is by far the dominant faith, practiced in some form by 93 percent of the population (44 percent are Catholic, 38 percent are Protestant, and 12 percent are Adventist). The Muslim population remained steady at 2 percent from 2002 to 2012. Only 0.4 percent of the population profess to have no religion. Nearly all Rwandans speak the same language, Kinyarwanda, which is the country's official first language, followed by English and French. Kiswahili, the third most common foreign language, is generally spoken in some areas of the districts bordering other countries where this language is widely spoken, such as the Democratic Republic of the Congo and Tanzania. The sixth RDHS has shown that maternal mortality ratio has declined significantly to 203 deaths per 100,000 live births in 2019/20 down from 1,071 in 2000 while under-five mortality dropped to 45 deaths per 1000 in 2019/20 from 196 deaths per 1000 in 2000.

CHAPTER 2: RWANDA'S CIVIL REGISTRATION SYSTEM

2.1. History and Legal Background

In Rwanda, as in most African countries, registration of vital events started during the colonial period. However, the registration laws were only for the nationals of the colonial powers. The laws which were regulating civil registration in Rwanda evolved in connection with the stages of its political and administrative history. During the colonial period, from 1931 up to the end of 1961, under the decree of May 4, 1895, on the civil code of persons-book one, all Rwandans aged 18 years and above were issued identity cards known as identity booklet or "Ibuku". This card was written in Dutch and Kinyarwanda languages. Information entered into the booklet was a set of characteristics such as names, approximate date of birth, parents' names, sex, and marital status, height, names of descendants, profession and ethnic or clan affiliation (1).

In the early days of independence, the registration of the civil status of the population in Rwanda was governed by the order issued by the Belgian Governor on the 25th of July 1961. This order continued to be used after independence in 1962 with few amendments such as assigning the civil registration responsibilities to the Ministry of Internal Security. From the 27th of October 1988, the order was repealed and replaced by Law Nº 42/1988 which instituted the Preliminary Title and Book One of the Civil Code. This law made registration of vital events compulsory on the Rwandan territory and was in place until the 28th of August 2016 when the new law No 32/2016 governing persons and family was enacted; the same law was amended on 17th February 2020. After the publication of the new law Nº 32/2016 governing persons and family, the mandate of civil registration was transferred from the Ministry of Justice to the Ministry of Local Government (1).

The law No 32/2016 of 28/08/2016 governing persons and family determines the following Presidential and Ministerial orders allowing its implementation namely: 1) the Presidential Order Nº 056/01 of 16/02/2017 determining fees paid for a civil status record 2) Presidential Order **Nº 092/01 of 21/09/2020** determining responsibilities of the Executive Secretary of Cell; 3) Ministerial Order Nº 002/07.01 of 27/07/2020 determining the number, types, formats and use of civil status registers 4) The Ministerial Order Nº 001/07.01 of 17/01/2017 determining modalities and procedures for change of name 4) The Ministerial Order Nº 001/MIGEPROF/2017 of 16/01/2017 determining conditions to be considered in intercountry adoption and the procedure thereof 5) The Ministerial Order Nº 002/MIGEPROF/2017 of 17/01/2017 determining procedures for guardianship of minors by the state 6) Ministerial Order N° 001/07.01 of 27/07/2020 determining the officer of the health facility with powers of civil registrar.

The mandate of civil registration was also transferred to the former National Identification Project which later became the National Identification Agency established by Law N°43/2011 and charged with population registration, civil registration, and issuance of the national identity card.

National Institute of Statistics of Rwanda has been established by law No 09/2005 of 14/07/2005 with the mandate of coordinating activities of the national statistical system among others (Republic of Rwanda, 2013). Concerning the process of strengthening vital statistics

data production system, NIDA and NISR have been working hand-in-hand to improve and strengthen the CRVS systems in Rwanda. Despite the progress achieved concerning civil registration, it is yet to be universal and able to produce reliable and continuous vital statistics. For instance, according to Rwanda vital statistics report 2020, about 15% of births were not registered and about 70 percent of deaths go unrecorded each year. Registration of other civil status is unacceptably low (NISR, May 2021)

From independence until 2006 the lowest office for civil registration was District. With the second phase of the decentralization process in 2006, the responsibilities of civil registration were extended down to the sector level, where the sector Executive Secretary was added to the list of civil registrars in the country to bring most needed services closer to the population.

On 1st January 2015, NISR launched and deployed in all public and private Rwandan health facilities and all sectors and districts, the CRVS web-based application, a system used to collect vital statistics data and to facilitate the transfer of information from health facilities to sector offices under the form of vital event notification with the ultimate purpose of facilitating the regular production of vital statistics reports. In August 2020, NIDA launched NCI-CRVS system to all health facilities to permit official registration of births and deaths subsequent to the recommendation of the CRVS strategic plan elaborated in 2017.

Figure 3: CRVS improvement timeline and key actions

	During colonial period and early days of independence	From early days of independence up to 2016	After 2016	Projects ahead
Year	**Before 1988**	**1988-2016**	**2016 - 2020**	**2021 -2024**
Key Action Taken	1931 up to the end of 1961: under the decree of May 4, 1895, on the Civil Code of persons-book one, all Rwandans aged 18 years and above were issued identity cards known as identity booklet or "Ibuku". In the early days of independence, the registration of the civil status of the population in Rwanda was governed by the order issued by the Belgian Governor on the 25th of July 1961. 1962- 1988 civil registration responsibilities assigned to the Ministry of Internal Security.	1988- 2016: Law nº 42/1988 which instituted the Preliminary Title and Book One of the Civil Code. In 2005: law No 09/2005 of 14/07/2005 establishing NISR. In 2006: The responsibilities of civil registration were extended down to the sector level, where the sector Executive Secretary was added to the list of civil registrars. 2008: Launch of NPR and electronic ID system. 2011: Mandate of CR transferred to NDA, by law 2012: The process of modernizing and strengthening CRVS system undertaken. 2015: Operationalization of CRVS Web-based system to HF and sector level. 2016: Deployment of NPR to 416 sectors	2016: Law No 32/2016 governing persons and family enacted. MINALOC appointed to be the parent ministry for CR. Comprehensive assessment of CRVS system in Rwanda conducted. 2017: Elaboration of CRVS strategic plan 2017/18-2021/22. Undertaking the use of ICD-10 to collect data on cause of deaths within CRVS system. February 2020: Law No 32/2016 governing persons and family amended to allow registration of births and deaths to HFs and cells. Production of the first national vital statistics report. August 2020: Official launch of NCI-CRVS & undertaking official registration of birth and death at health facilities	Strengthening official registration of birth and death at health facilities via NCI-CRVS system; Strengthening official registration of community births and deaths at cells administrative level via NCI-CRVS system; Operationalizing official registration of other events (Marriages, divorces, marriage annulment, recognition, adoption, legitimization etc) at sector level via NCI-CRVS system; Operationalizing official registration of all events at all Rwandan embassies via NCI-CRVS system; Maintaining annual production of vital statistics report.
	Continuous process of modernizing and strengthening CRVS system in Rwanda			

2.2. Legal and Administrative Issues

Rwanda has a decentralized system of governance with 4 provinces and the City of Kigali, 30 districts; 416 sectors; 2,148 cells and 14,837 villages. From independence until 2006 the lowest office for registration was District. With the second phase of the decentralization process in 2006, the responsibilities of civil registration were extended down to the sector level, where

the sector Executive Secretary was added to the list of civil registrars in the country to bring most needed services closer to the population.

As described in the earlier sections, the United Nations recommends that countries should register and collect information on the following vital events for civil registration and vital statistics purposes: birth; death; foetal death; marriage; divorce; annulment; judicial separation; adoption; legitimation (acknowledgment); and recognition (judicial declarations of paternity) (UN, 2014).

Though the amended law catered for some of the legal issues, one the of the persisting legal issues in 2021 is that the law No 32/2016 of 28/08/2016 governing persons and family (amended in 2020) did not provide for the registration of foetal deaths as recommended by UN as only nine events (birth, deaths, marriages, divorces, adoption, recognition, guardianship, legitimization and marriage annulment) are currently declared to the civil registrar (art. 62). Second, though the registration of vital events is free of charge, the certificate is paid for and is provided on demand. Third, the law provides for 30 days for timely birth and death registration, but it is silent on late and delayed registration. The law doesn't provide for penalties for non-compliance to legal registration time but provides for presenting a court judgment before registering a death declared after 30 days of occurrence.

2.3. Organizational structure, registration processes and information flows

2.3.1. Organization structure

The success of the CRVS system in a large measure would hinge on systematic and active coordination among all Ministries and organizations that directly or indirectly support or benefit from the system. Coordination of activities must be built into the CRVS systems from the start. While coordination at the national level is crucial for smooth management and operations of the CRVS system in a country, coordination at various other levels of administration is also important for efficient maintenance of the system.

In Rwanda, the National Identification Agency (NIDA) currently under the Ministry of ICT is mandated to supervise and coordinate the civil registration system at the national level while the National Institute of Statistics of Rwanda (NISR) is concerned with coordinating the collection of vital statistics data and is one of the major beneficiaries of the CRVS system.

Table 1 below shows the coordination mechanisms of the CRVS system at different administrative levels that provides details of the composition of the committees and their main functions.

Table 1: CRVS organization and coordination mechanism in Rwanda, 2021

Coordination Committee	Composition of committee	Main functions
High-level Coordination Committee on Civil Registration and Vital Statistics	Chaired by Minister of Local Government Members: Minister of Health, Minister of Finance and Planning,	Provide oversight and policy guidance to the work of civil registration and vital statistics

Coordination Committee	**Composition of committee**	**Main functions**
To meet once a year	Minister of Justice, Ministry of gender and family promotion	
National CRVS Steering Committee To meet once every Quarter	Chaired by Permanent Secretary of Local Government Members: PS Ministry of health, PS Ministry of justice, PS Ministry of gender and family promotion, DG/NIDA, DG/NISR, DG/RBC, ES/NCDA and special invitees depending on the nature of the meeting	Resource mobilization, Organize and conduct annual development partners meeting and approve reports from CRVS Core Technical Team.
CRVS Core Technical Team	Technicians in charge of civil registration and vital statistics from MINALOC, MINIJUST, MOH, MIGEPROF, NIDA, NISR, RBC and NCDA	Coordinate the implementation of all policies related to CRVS and advise the CRVS steering committee on all matters related to CRVS.
National mortality technical committee	Chaired by Director General of Clinical and Public Health services in the MoH and Co-Chaired by Chairman of Rwanda Medical and Dental Council. Members: MoH, RBC Heads of programs, RBC Epidemiologists, NISR, NIDA, MINALOC, Senior clinicians from Referral hospitals, WHO, CDC, Epidemiologists from Universities, Rwanda National Police, National Forensic Laboratory of Rwanda.	Coordinate all mortality activities and review mortality reports and ensure high quality of causes of death statistics are reported in compliance with global standards.

Source: NISR, National strategic plan, 2017/18-2021/22

2.3.2. The state of CRVS system in Rwanda as is in 2021

The status of CRVS system in 2021 is characterized by an effort to effectively integrate multiple existing CRVS related systems and a transition from a paper-based registration system to a digitized registration via NCI-CRVS system set for enabling official registration of vital events electronically. By the time, NCI-CRVS system operationalization is extended to the official registration of births and deaths occurring at health facilities and in the community as well as marriages, divorces and annulment of marriage. Effort is being made for strengthening operationalization of deployed modules and undertake operationalization of the remaining modules. It is important to mention here that each module relates to the electronic registration of a particular event.

2.3.2.1. National Centralized and Integrated Civil Registration and Vital Statistics system (NCI-CRVS)

One of the major recommendations from the first National CRVS Strategic plan elaborated in 2017 was to develop a national centralized and integrated CRVS system that will respond to the needs of various institutions in CRVS data collection; to cater for existence of multiple systems working in silos and reduce a related duplication of effort. Thus, to enforce implementation of the strategic plan, a new system (NCI-CRVS) was developed and initiated. This system has indeed the benefit of capturing vital events information on real time and directly at the site of occurrence where official registration of event is done. It quiet reduces the multiple recording of the same events into different systems as it provides for a single data entry point taking into consideration the requirements of other existing systems. The same system is linked to other legacy systems including the national population registry (NPR) for back up of national identity production; CRVS web-based system for vital statistics production; HMIS for public health and epidemiological related needs; and the linkage with Irembo for issuance of certificates is still under process. Operationalization of NCI-CRVS was officially launched on August 10th, 2020, where it started with all public and private hospitals with incremental scale up rollout plan. By end of 2021, the system was operational at all hospitals, health centres, clinics and polyclinics; both public and private, administrative cells and sectors.

2.3.2.2. CRVS paper-based system

Under the transition towards a fully digitized CRVS system, a paper-based system continued to be operational at sector offices to enable a continuous registration of vital events that are not yet captured via NCI-CRVS system. Altogether there are seven registers of civil status (Article 74 of the law Nº 32/2016 of 28/08/2016): 1) Register of birth records; 2) Register of death records; 3) Register of marriage records; 4) Register of guardianship records; 5) Register of acknowledgment of children born out of wedlock; 6) Register of adoption records; and 7) Register of other records. Upon the deployment of each completed NCI-CRVS module, physical related register gets closed within a maximum of 6 months.

2.3.2.3. CRVS web-based application

In Rwanda, reliable vital statistics were mainly available from national census and other demographic and heath surveys that are periodically conducted. Recognizing importance of timely vital statistics and in line with the second National Strategy for the Development of

Statistics (NSDS II), where strengthening the civil registration system as a source of vital statistics was one of its strategic objectives, the NISR initiated a web-based system since 2015 to ease the collection and storage of vital events registration data and enable the production of vital statistics reports. However, with introduction of NCI-CRVS system and under the prevailing transition from a paper-based system to a fully digitized registration system, NISR's CRVS web-based system was linked to NCI-CRVS to facilitate existence of a single data entry point and reduce a duplication of effort to data entry staff. Under the transition period, CRVS web-based system is timely pulling birth and death registrations from NCI-CRVS since December 2020 and is still being used at its own to capture information on vital events other than those captured via NCI-CRVS.

2.3.2.4. Health Management Information System (HMIS)

The Health Management Information System (HMIS) countrywide operates under the management of the Ministry of Health (MoH) to collect technical data for epidemiological and other health related use. With introduction of NCI-CRVS, HMIS is expected to continue capture aggregated information on births and deaths to provide denominators for counter verification of NCI-CRVS records. This will facilitate the monitoring and improvement of both systems.

2.3.2.5. National Population Registry

The national population registry (NPR) was developed by NIDA to facilitate the issuance of the national identity card with 2D technology to those aged 16 years and above as well as hosting electronic population registration forms: first registration, change of marital status, change of address and death registration. Since 2015, the National Population Registry has been decentralized up to the Sector level where all 416 Civil Registration Officers (CROs) access and use it to serve people who need different population registration-related services and capture vital events mentioned above. This system also helps in validating and authenticating identification of recorded people. With the development of NCI-CRVS, the NPR was linked to the civil registration system where each event registered is instantly captured in NPR.

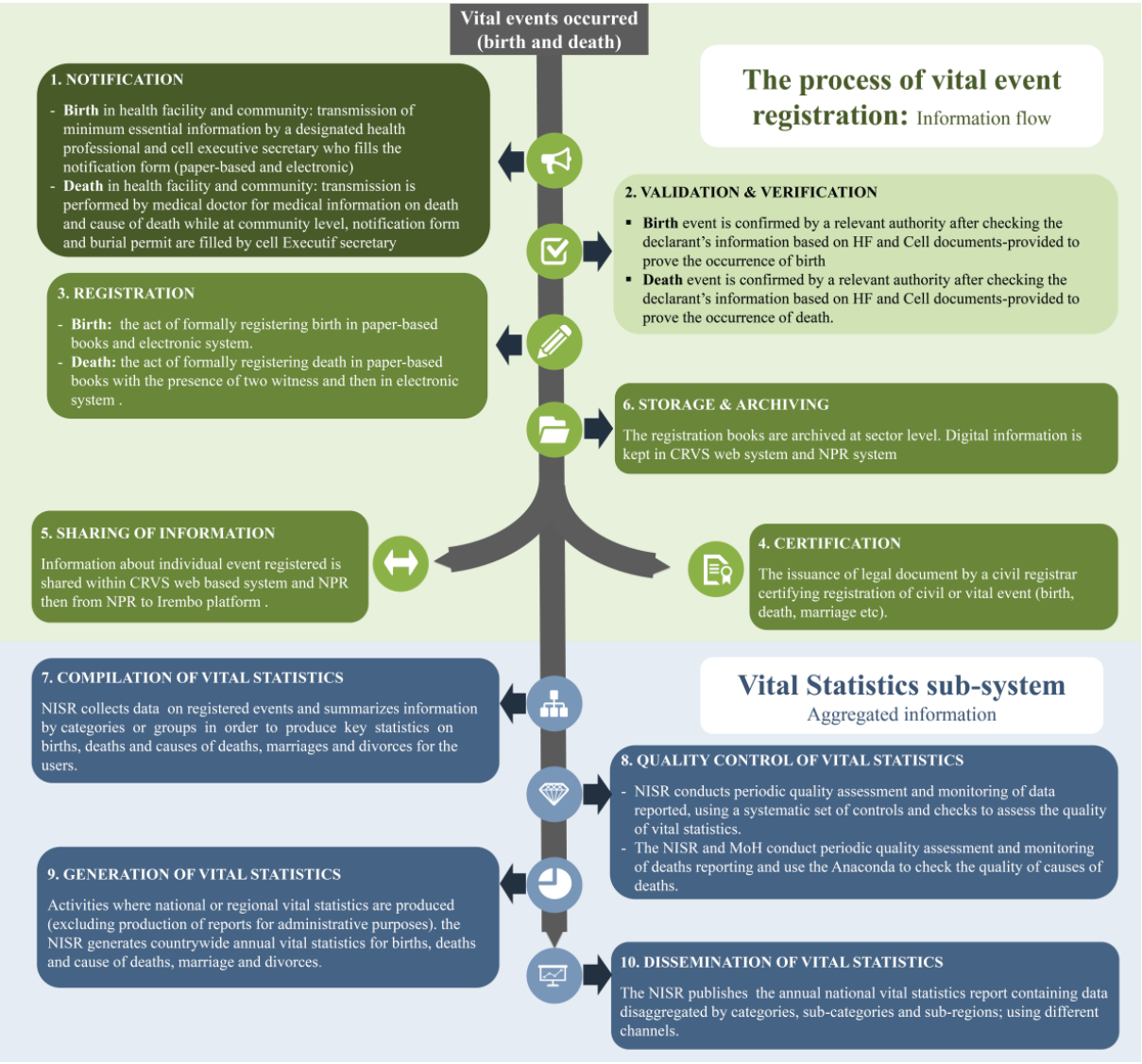
During the transition period to operationalize NCI-CRVS system, some births and deaths were registered in paper-based system and recorded in NPR system. The analysis shows that 318,916 births that occurred in 2021 were recorded in NPR while expected live births are 368,251 as per 2012 population and housing census projections. Hence, the analysis shows that 87% of expected births were recorded in NPR. With regard to deaths, the analysis shows 31,611deaths recorded in NPR from a paper-based system in 2021, including timely, late and delayed death registrations. Due to limitations in the number of variables captured into NPR on deaths, including absence of date of death, the percentage of deaths occurred in 2021 that were recorded in NPR was not calculated.

Following the UN guidelines and recommendations for the production of vital statistics report, births and deaths recorded in NPR could not be considered for calculating birth and death registration completeness as the respective datasets don't capture all the required variables recommended.

2.3.3. Registration processes and information flows

Figure 4 below summarizes registration process and information flow, taking into consideration the 10 milestones[1]

Figure 4: Ten CRVS Milestones' framework with a working definition of each milestone



2.3.4. Timeliness of Registration

According to the law No 32/2016 of 28/08/2016 governing persons and family in Rwanda; that was amended in February 2020, registration of birth and death must be done within 30 days of occurrence (art, 100 and 106). The same law provides for a ministerial order determining modalities for late and delayed registration, but the order is not yet enacted. For reporting purposes, late registration was considered to be an event (birth or death) registered after 30 days of occurrence but without exceeding one year while delayed registration was considered to be an event (birth or death) registered after one year from its occurrence.

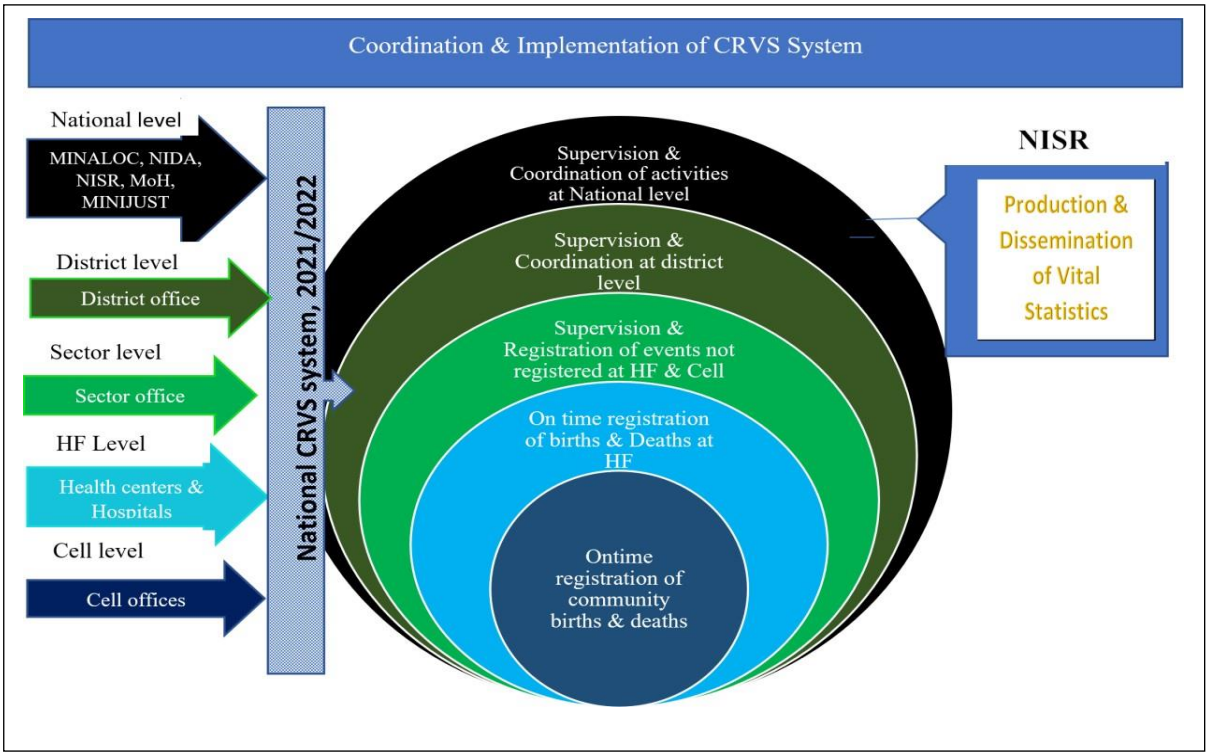
[1] Refer to: https://gh.bmj.com/content/bmjgh/3/2/e000673.full.pdf for more information

By current practice, marriage registration is mostly done at sector office after 20 days of notice made to the public. The consensual cohabitation (unions) and forms of marriages other than those solemnized by a civil registrar (monogamous) are not accepted by law and thus not registered. Nevertheless, such marriages are still taking place, though they are not part of this report.

2.4. Organization of vital statistics production and dissemination

In Rwanda vital statistics are regularly collected via the recording of registered vital events (births, deaths, marriage etc) in a digitized CRVS system. Each year (starting by 2019), countrywide vital statistics report is produced and disseminated through the NISR website and other platforms. More information on CRVS system coordination and implementation with involved stakeholders is displayed in Figure 5 below.

Figure 5: Organization of CRVS system and production of vital statistics, 2021



CHAPTER 3: DATA QUALITY, TIMELINESS AND COMPLETENESS OF REGISTRATION

3.1. Data and methods

3.1.1. Data source

Vital events used in this report are outputs of different sources, but mainly National Centralized and Integrated CRVS (NCI-CRVS) system and CRVS web-based system. The NCI-CRVS system was launched in August 2020 to enable official registration of events via a digitized system. However, as a way of assessing the reliability of CRVS released data and to enable the computation of indicators requiring existence of denominators, systems'-generated data were triangulated with data from other sources including: Second Mortality Assessment Survey (MAS2), and Fourth Rwanda Population and Housing Census (4th RPHC). Due to the under-reporting of deaths, especially community deaths, the low number of deaths was obtained at the national level when compared to expected deaths. In this regard, adjustment techniques were used to estimate country-representative mortality statistics.

Regarding the timeframe, only events that occurred since January to December 2021 were considered for analysis at all the events. The term marriage in this report only refers to legally celebrated marriage as provided for by the law N^{o} 32/2016 of 28/08/2016 governing persons and family in Rwanda as amended in February 2020. The report does not therefore include other forms of unions not recognized by the law as marriage.

3.1.2. Data quality assessment

According to United Nations *Principles and Recommendations,* "The quality of vital statistics is measured according to completeness, correctness or accuracy, availability and timeliness" (UN, 2014). Therefore, quality control measures must be put in place in terms of four quality dimensions mentioned above. In this report, data quality issues observed were mainly duplicates, typing errors on date of occurrence of an event when compared to the registration date, erroneous or missing information, especially on causes of death.

Duplicate entries on births were detected based on mother's ID number. On all datasets, the respective unique identifier was used to check for duplicated entries. Some duplicates were obvious and easy to detect while some others were difficult to detect. All erroneous entries were dealt with in accordance with the nature of errors. For example, missing values were replaced with a word missing or not stated in order to run pivot tables in Excel. However, for the most complex cases to handle, respective records were removed from the datasets.

3.1.3. Desk review

The process of compiling this report was preceded by assembling the materials available regarding the setup and operations of the systems as well as vital statistics reports from other countries. Some of the reports consulted in this regard include but not limited to: Alaska Vital Statistics Annual report 2017, Namibia Vital Statistics Report for data collected from 2011-2015, Philippines Vital Statistics report 2013-2014, Georgia Vital Statistics report 2015, Missouri Vital Statistics Report 2018, U.S National Vital Statistics Reports, Vol. 68, No. 13, November 27, 2019; Maryland Vital Statistics Annual Report 2018; etc. The compilation

indeed conformed to the Rwanda vital statistics report 2020 and consulted the production of vital statistics report: template, revision 1 developed by Vital Strategies et al (2020).

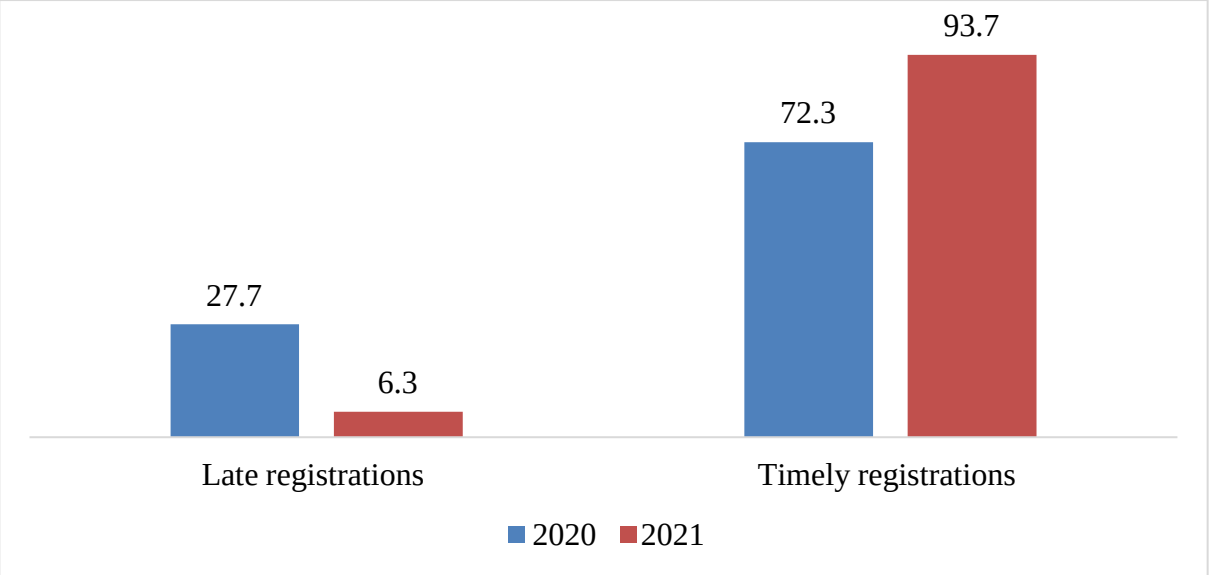
3.1.4. Dialogue with registration officers

CRVS actors at both sectors and health facilities levels were contacted through phone calls to clarify on suspected erroneous records and provide clear information on them or otherwise make corrections whenever possible. The general observation was that most of errors were related to the mistyping of information during data entry and were therefore corrected.

3.2. Timeliness of registration

Figure 6 shows the birth registration timeliness. As per the law governing persons and family, timely registration of birth or death is done within 30 days of occurrence. However, the law is silent on late and delayed registration. For the purpose of reporting, a late registration was considered to be a vital event (birth or death) registered after 30 days of occurrence but without exceeding one year, while delayed registration was considered to be a birth or death registered after one year. The current report shows 310,249 live births registered in 2021 of which 290,759 births (93.7%) were registered within 30 days of occurrence. The comparison with the 2020 results shows an increase in share of timely registered births as a percentage of total registered births, from 72.3% to 93.7% as displayed here below. Hypothetically, this can be attributed to decentralizing registration services to health facilities and cells.

Figure 6: Birth registration timeliness in %, 2020 compared to 2021



Source: Data from CRVS system, 2021

3.3. Completeness of birth and death registration

Calculating the completeness of registration can be used to monitor the performance of the CRVS system in capturing all vital events and allows for adjustment of incomplete data. Completeness is defined as the proportion of actual vital events in a population that are registered, divided by the estimated number of vital events that occurred in the same year.

$$Completeness = \frac{Number\ of\ vital\ events\ registered}{Estimated\ number\ of\ vital\ events} \times 100$$

To compute birth and death registration completeness, the denominators were obtained from the 4th population and housing census projections report (medium scenario). According to that report, the projected CDR in 2021 is 5.8 deaths per 1,000 populations while CBR is 28.4 births per 1,000. The numerators were generated by CRVS system. Table 2 shows the results of 2021 compared to 2020.

Table 2: Completeness of birth and death registration, 2021 compared to 2020

Indicator	2019	2020	2021
Registered live births (number)	313,398	312,678	310,249
Males	158,826	158,450	157,615
Females	154,572	154,228	152,634
Expected live births (number)	360,388	364,342	368,251
Males	182,857	184,863	186,847
Females	177,531	179,479	181,404
Registration completeness (%)	87	85.8	84.2
Males	*86.9*	*85.7*	84.4
Females	*87.1*	*85.9*	84.1

Source: Data from CRVS system and 4th RPHC projections, 2021 (NISR)

3.4. Adjustment for incomplete registration

3.4.1. Fertility statistics

Achieving complete vital registration remains a challenge. As mentioned via Table 2 above, births registration completeness stands at 84.2% in 2021 at country level with insignificant difference between males and females. For the sake of minimizing the effect of low birth registration completeness rate on the resulting fertility indicators, the numbers of registered births were first adjusted before computation of indicators such as ASFR, TFR, GFR, CBR. Based on denominators sourced from 4th PHC, medium scenario projections 2021 that helped in finding out birth registration completeness rate, adjusted birth numbers were obtained by dividing existing numbers by the completeness rate. However, due to unavailability of census estimates at subnational levels, data adjustment was not performed at any subnational level. The following table 3 demonstrates an example.

Table 3: Adjustment for fertility statistics

Mothers' age groups	Projected Female population	Unadjusted, 2021		Adjusted, 2021	
		Number of Births	ASFR	Number of births	ASFR
10-14	756,740	181	0.24	215	0.3
15-19	735,406	23,353	31.76	27,735	37.7
20-24	610,824	71,480	117	84,893	139
25-29	545,762	76,976	141	91,420	167.5
30-34	507,405	67,003	132.1	79,576	156.8
35-39	446,487	48,929	109.6	58,110	130.1
40-44	359,518	18,906	52.59	22,454	62.5
45-49	251,342	2,060	8.2	2447	9.7
50-54	205,143	120	0.58	143	0.7

Source: CRVS system and 4th PHC projections, 2021

By considering information here above mentioned in Table 3, and with prior knowledge of denominators from 4th PHC projections 2021 where the total population number is estimated to be 12,955,763 and given available information on the number of females aged 15-49 by 5 years age groups; adjusted TFR and GFR becomes 3.5 and 106 respectively (up from 3.0 and 89.3 when unadjusted) while adjusted CBR becomes 28.4 (up from 23.9 when unadjusted).

3.4.2. Mortality statistics

There exist several methods used in determining total population estimates in the presence of under-reporting. This report uses one of the non-parametric methods used by Maina et al. (2017) to estimate the number of deaths and enable the calculation of approximately country representative indicators as the reporting completeness is low (26.2%). The adjustment can be expressed as follows (Maina et al 2017):

$$n\left(adjusted\right) = n + n\left(\frac{1}{c} - 1\right) * k \qquad (1)$$

Where:

n = is the output number
c = reporting completeness
k = the adjustment factor

k is between 0 and 1. If we assume that deaths occurred at the same rate in the reporting and non-reporting incidences then, k = 1. On the other hand, if the non-reporting means that no deaths occurred, then k=0 in that case and so no adjustment is required. The selection of the most likely value of k is done through a comparison of CRVS data with the survey results (MAS), and by selecting a value of k that brings the adjusted CRVS statistic close to the survey statistic. A k of 0.7 was considered and used. Reporting completeness was computed as:

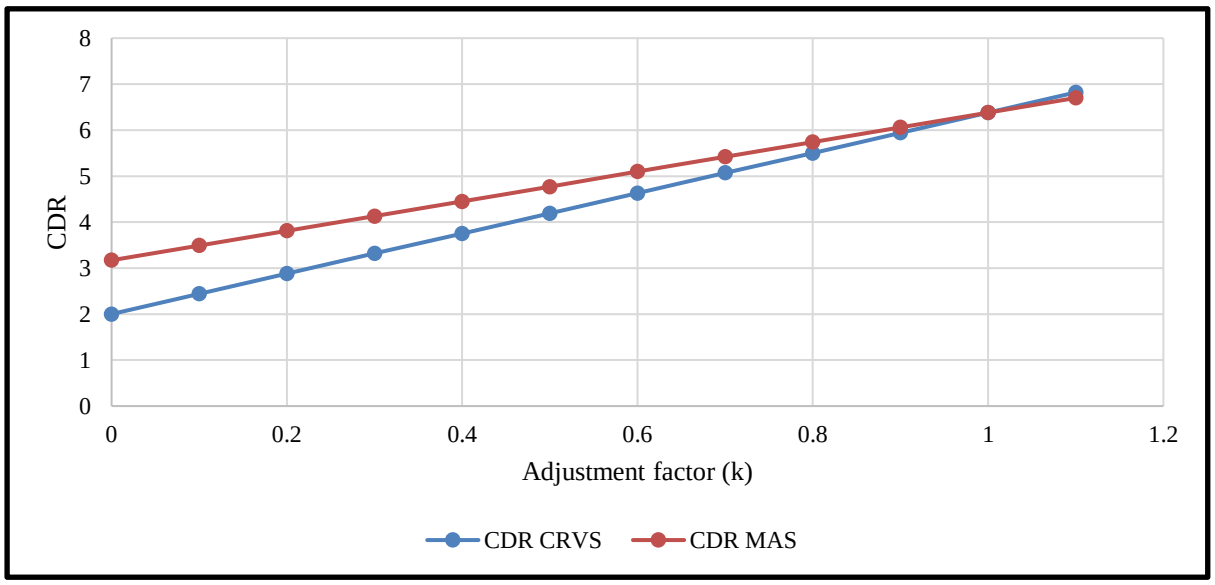
$$Unreported\ deaths\ (\%) = \frac{Census\ \ estimate - CRVS\ \ statistic}{Census\ estimate} \times 100\% \qquad (2)$$

And therefore:

$$reporting\ \ completeness\ \ (c) = 100\% - unreported\ \ \ deaths\ (\%) \qquad (3)$$

The choice of adjustment factor (k) was made by applying formula (1) to the CDR results from 2 sources; namely MAS2 and CRVS 2021 and then, the results were plottedon a graph, as shown in Figure 7. The k value was thereby determined by the coordinates that are very close to the intersection between the resulting two lines of the scatter plot giving a kvalue of 0.95 as here below displayed.

Figure 7: Trends of CDR from CRVS and MAS under different values of k



By applying aforementioned technique (non-parametric method) to the CRVS results (with k=0.95), the adjusted CDR becomes the here below shown in Table 4. Due to limitation in data available on populations estimates, subnational mortality indicators in 2021 were not calculated.

Table 4: Adjusted values of CDR

Indicator	2019	2020	2021
Estimated population[2]	12,374,397	12,663,116	12,955,763
Registered deaths (number)	23,771	22,634	19,797
Adjusted number of deaths	70,518	75,570	75,561
Adjusted CDR (per 1000)	5.9	6.0	5.8

Source: Data from CRVS system and 4th PHC Projections, 2021

3.5. Comparison with data from other sources

As a way of assessing the reliability of CRVS data, the results were compared with indicators from other sources. Table 5 shows the comparisons for selected mortality indicators.

[2] Figures mentioned in table 5 were sourced from 4th RPHC projections.

Table 5: Comparing CRVS death indicators (adjusted) with the results from other sources

Indicator	CRVS			RDHS 2019/20	RDHS 2014/15	MAS 2018	4th PHC (Proj. 2021)
	2021	2020	2019				
Crude death Rate	5.6	6.0	5.9	-	-	3.2	6.0
Neonatal (0-27 completed days)	23.7	23.0	23.5	19	20	14.1	-
Infant mortality rate (0-<1 year)	31.6	30.0	31.5	33	32	23.3	38.4
Under five mortality rate	37.4	37.1	38.5	45	50	32.3	53.8

Source: Data from CRVS system 2021 and MAS, 2018 & RDHS 2014/15

CHAPTER 4: BIRTH STATISTICS

Following the law governing persons and family in Rwanda, all live-born infants should be registered and counted as such, irrespective of gestational age or whether alive or dead at the time of registration. This chapter gives an in-depth analysis of data on registered live births that occurred from January to December 2021. Table 6 gives a summary of statistics on births obtained. The same table shows a decline on the completeness of birth registration in 2021 compared to 2020. Hypothetically, that decrease may be attributed to the effect of COVID-19 prevention measures and the effect of a transition from a paper-based registration to a digitized registration system that started in August 2020 in compliance with amended law governing persons and family.

Table 6: Summary statistics on births

Indicator	2019	2020	2021
Registered live births (number)	313,398	312,678	310,249
Males	158,826	158,450	157,615
Females	154,572	154,228	152,634
Expected live births (number)	360,388	364,342	368,251
Males	182,857	184,863	186,847
Females	177,531	179,479	181,404
Registration completeness (%)	87.0	85.8	84.2
Males	*86.9*	*85.7*	*84.4*
Females	*87.1*	*85.9*	*84.1*
Sex ratio at birth	103	103	103
Adjusted Crude birth rate (per 1,000 population)	29.1	28.8	28.4
Total fertility rate (births per woman)	3.8	3.7	3.5

Source: Data from CRVS system and 4th PHC Projections, 2021

4.1. Completeness of birth registration

The current report considers officially registered births (numerator) which were compared with the projected number of live births sourced from the 4th population and housing census conducted in 2012 (denominator) to obtain the completeness. As shown in table 7, the completeness of birth registration was found to be 84.2% with an insignificant difference between males and females (84.4% and 84.1%, respectively). Further disaggregation regarding completeness of birth registration was not made as the sub-national data (province, district, urban/rural etc) on the population projections are not available.

Table 7: Birth registration completeness (in %) by sex, 2021

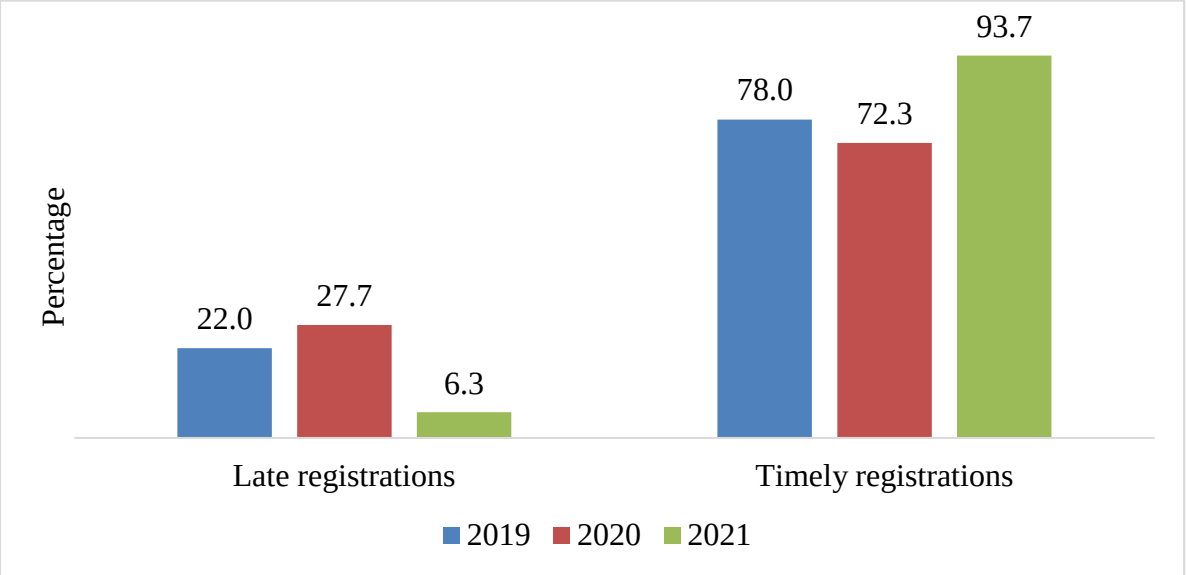
Live births	Registered number	Expected number	Registration Completeness
Both sexes	310,249	368,251	84.2
Male	157,615	186,847	84.4
Female	152,634	181,404	84.1

Source: Data from CRVS system and 4th PHC Projections, 2021

4.2. Timeliness of birth registration

By the law currently in force, birth registration must be done within 30 days of occurrence and, this was timely registration in this report. However, the law is not specific on definition of late registration. For reporting purpose, late registration was a birth registered after 30 days but before exceeding one year. As the report considers registered live births whose year of occurrence is 2021, delayed registrations were excluded from analysis. The comparison of registered births taking into consideration registration timeliness shows an increase in the shares of timely registered births in 2021 compared to 2020, from 72.3% to 93.7%, something that may indicate a positive impact of decentralizing registration services to health facilities and cells. Figure 8 below gives a picture.

Figure 8: Timeliness of birth registration in %, 2019 to 2021



Source: CRVS system, 2021

4.3. Live births registered by residence of mothers

As presented in Table 8 below, there has been diversity in numbers of births registered taking into consideration their mothers' residence districts whereby a high number of births is observed in Rusizi and Nyamasheke districts while low numbers are observed in Nyarugenge and Kicukiro districts.

Table 8: Live births registered by mothers' residence districts

District	Number of livebirths			Sex ratio at birth
	Both sexes	Female	Male	
Rwanda	**310,249**	**152,634**	**157,615**	103
Rusizi	15,003	7,394	7,609	103
Nyamasheke	14,137	6,989	7,148	102
Gicumbi	12,974	6,327	6,647	105
Gatsibo	12,257	6,067	6,190	102
Gasabo	11,298	5,507	5,791	105
Nyagatare	11,270	5,656	5,614	99
Kirehe	11,156	5,508	5,648	103
Bugesera	11,014	5,406	5,608	104
Gisagara	10,963	5,389	5,574	103
Gakenke	10,926	5,229	5,697	109
Nyamagabe	10,772	5,303	5,469	103
Rubavu	10,747	5,340	5,407	101
Nyaruguru	10,665	5,361	5,304	99
Ngoma	10,175	4,978	5,197	104
Musanze	9,959	4,876	5,083	104
Huye	9,686	4,738	4,948	104
Rutsiro	9,533	4,679	4,854	104
Karongi	9,385	4,566	4,819	106
Ruhango	9,269	4,555	4,714	103
Kayonza	9,236	4,551	4,685	103
Kamonyi	9,224	4,519	4,705	104
Nyabihu	9,166	4,494	4,672	104
Ngororero	9,090	4,416	4,674	106
Burera	9,069	4,441	4,628	104
Muhanga	9,000	4,458	4,542	102
Rulindo	8,559	4,211	4,348	103
Nyanza	8,444	4,181	4,263	102
Rwamagana	8,404	4,172	4,232	101
Kicukiro	6,216	3,039	3,177	105
Nyarugenge	6,070	3,013	3,057	101
Foreign	27	15	12	80
Not stated	6,555	3,256	3,299	101

Source: CRVS system, 2021

4.4. Registered births by place of occurrence and by the usual residence of mothers

Table 9 shows the level of variations between the place of birth occurrence and the usual residence of mothers across districts where the results show that for 64.2% of all registered births, the place of birth occurrence and the place of mothers' usual residence are the same.

Across districts, high shares of births that occurred in in places other than their mothers' usual residence districts are observed in Nyarugenge and Kicukiro districts (51.2% and 64.5% respectively) while the low shares are observed in Rusizi and Kirehe districts (22.5%; 21.0%) The following table displays more details.

Table 9: Registered live births by place of occurrence and by place of usual residence of mothers, 2021

District of birth occurrence	Place of usual residence of mother (counts)			Place of usual residence of mother (%)		
	Same as place of occurrence	Other location	Total births	Same as place of occurrence	Other location	Total births
Rwanda	199,303	110,946	310,249	64.2	35.8	100.0
Bugesera	8,480	2,534	11,014	77.0	23.0	100.0
Burera	5,936	3,133	9,069	65.5	34.5	100.0
Gakenke	6,634	4,292	10,926	60.7	39.3	100.0
Gasabo	5,718	5,580	11,298	50.6	49.4	100.0
Gatsibo	9,328	2,929	12,257	76.1	23.9	100.0
Gicumbi	9,483	3,491	12,974	73.1	26.9	100.0
Gisagara	7,878	3,085	10,963	71.9	28.1	100.0
Huye	5,987	3,699	9,686	61.8	38.2	100.0
Kamonyi	4,707	4,517	9,224	51.0	49.0	100.0
Karongi	6,407	2,978	9,385	68.3	31.7	100.0
Kayonza	6,641	2,595	9,236	71.9	28.1	100.0
Kicukiro	2,207	4,009	6,216	35.5	64.5	100.0
Kirehe	8,816	2,340	11,156	79.0	21.0	100.0
Muhanga	5,004	3,996	9,000	55.6	44.4	100.0
Musanze	7,307	2,652	9,959	73.4	26.6	100.0
Ngoma	7,581	2,594	10,175	74.5	25.5	100.0
Ngororero	5,436	3,654	9,090	59.8	40.2	100.0
Nyabihu	5,050	4,116	9,166	55.1	44.9	100.0
Nyagatare	8,606	2,664	11,270	76.4	23.6	100.0
Nyamagabe	6,888	3,884	10,772	63.9	36.1	100.0
Nyamasheke	9,181	4,956	14,137	64.9	35.1	100.0
Nyanza	4,968	3,476	8,444	58.8	41.2	100.0
Nyarugenge	2,965	3,105	6,070	48.8	51.2	100.0
Nyaruguru	6,776	3,889	10,665	63.5	36.5	100.0
Rubavu	7,931	2,816	10,747	73.8	26.2	100.0
Ruhango	5,262	4,007	9,269	56.8	43.2	100.0
Rulindo	5,261	3,298	8,559	61.5	38.5	100.0
Rusizi	11,628	3,375	15,003	77.5	22.5	100.0
Rutsiro	6,184	3,349	9,533	64.9	35.1	100.0
Rwamagana	5,053	3,351	8,404	60.1	39.9	100.0
Foreign	0	27	27	0.0	100.0	100.0
Not stated	0	6,555	6,555	0.0	100.0	100.0

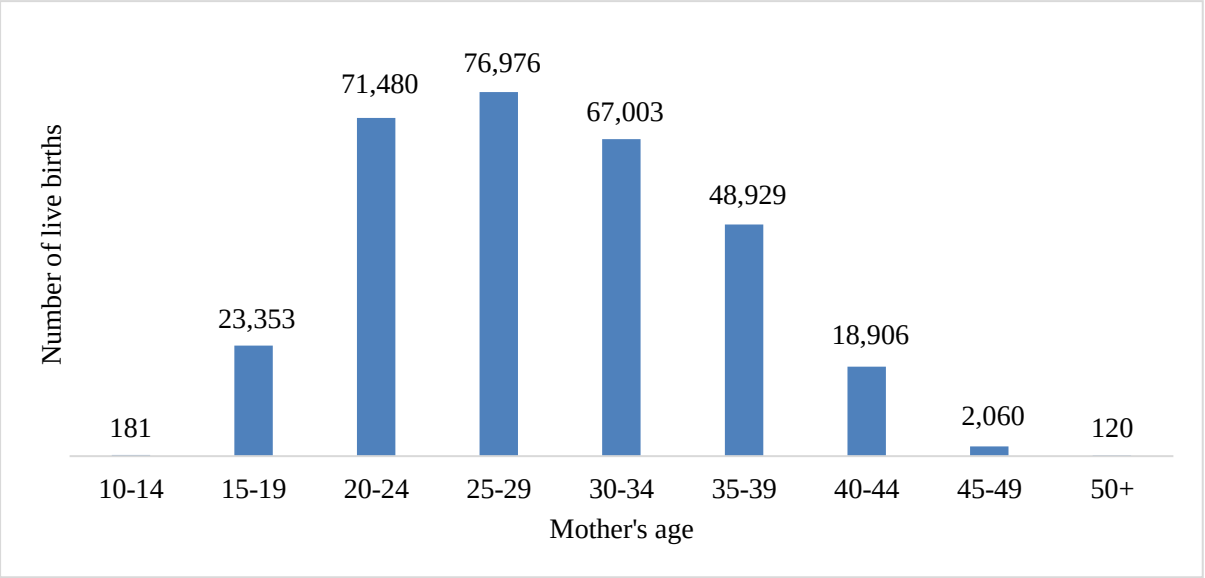
Source: Data CRVS system, 2021

4.5. Registered live births by age group of mothers

CRVS system released data show variations in the number of births registered per age groups of mothers. The number of registered births has been high among females aged 25-29 compared

to the remaining ages and low among females aged 50 and above or less than 15. More details are displayed in Figure 9.

Figure 9: Registered live births by age of mothers



Source: CRVS system, 2021

4.6. Registered live births by type of pregnancy

CRVS system-generated data were analyzed to find out the rate of multiple births and the results revealed that out of 310,249 live births registered only 4,130 (1.3%) were multiple births (twins, triplet, etc) while the remaining share was singleton births. Across age groups, the rate of multiple births is high to females aged 30-34 while the rate of single birth is high to females aged 25-29. Table 10 below shows the frequency of single and multiple births across age groups of mothers.

Table 10: Registered live births by age of mothers and pregnancy type

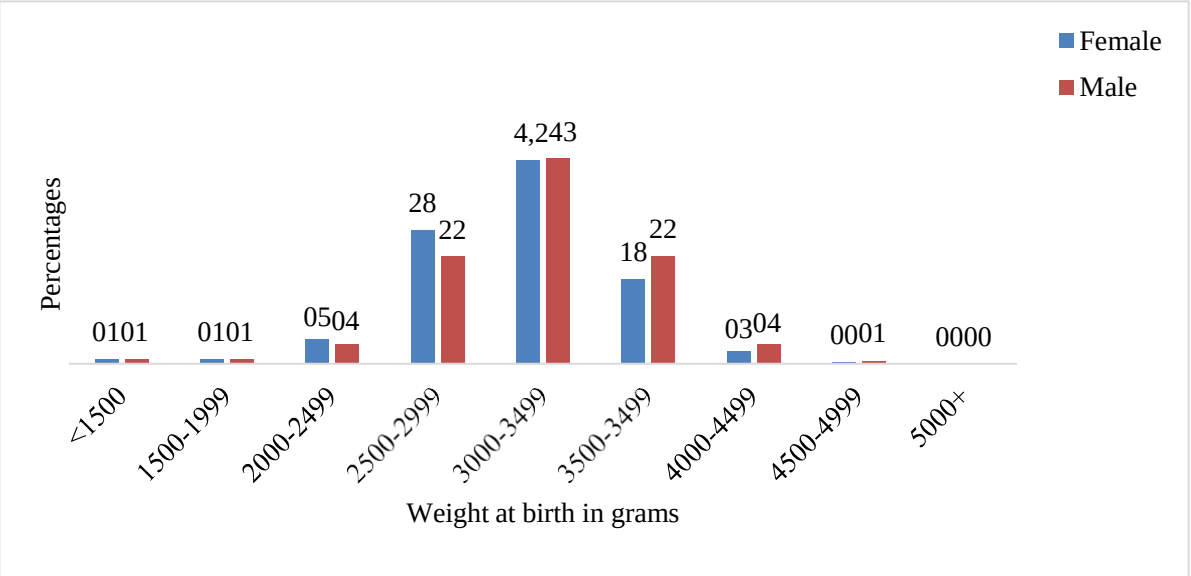
Mother's Age group	Counts			Percentages		
	Single birth	Multiple birth	Total	Single birth	Multiple birth	Total
10-14	180	1	181	0.1	0.0	0.1
15-19	23,245	108	23,353	7.6	2.6	7.5
20-24	70,813	667	71,480	23.1	16.2	23.0
25-29	75,943	1,033	76,976	24.8	25.0	24.8
30-34	65,893	1,110	67,003	21.5	26.9	21.6
35-39	48,043	886	48,929	15.7	21.5	15.8
40-44	18,615	291	18,906	6.1	7.0	6.1
45-49	2,039	21	2,060	0.7	0.5	0.7
50+	118	2	120	0.0	0.0	0.0
Not stated	1,230	11	1,241	0.4	0.3	0.4
Total	306,119	4,130	310,249	100.0	100.0	100.0

Source: CRVS system, 2021

4.7. Registered live births by weight at birth

Weight at birth is a meaningful indicator on the health status of live-born infant. Figure 10 shows variations in the weights of the newborns by weight ranges where in 2021, the weight range with a high number of births was the 3000- 3499 grams. The same range contains an average. The percentage of low birth weight (<2500 grams) and very low birth weight (<1500 grams) were relatively small (6.5% and 1.0%, respectively) while the average weight at became 3112.0 grams. By sex, females are predominant in the age ranges that are below 3000-3499 grams while males are predominant in the weight ranges that are grater or equal to 3000-3499.

Figure 10: Registered live births by weight at birth and sex

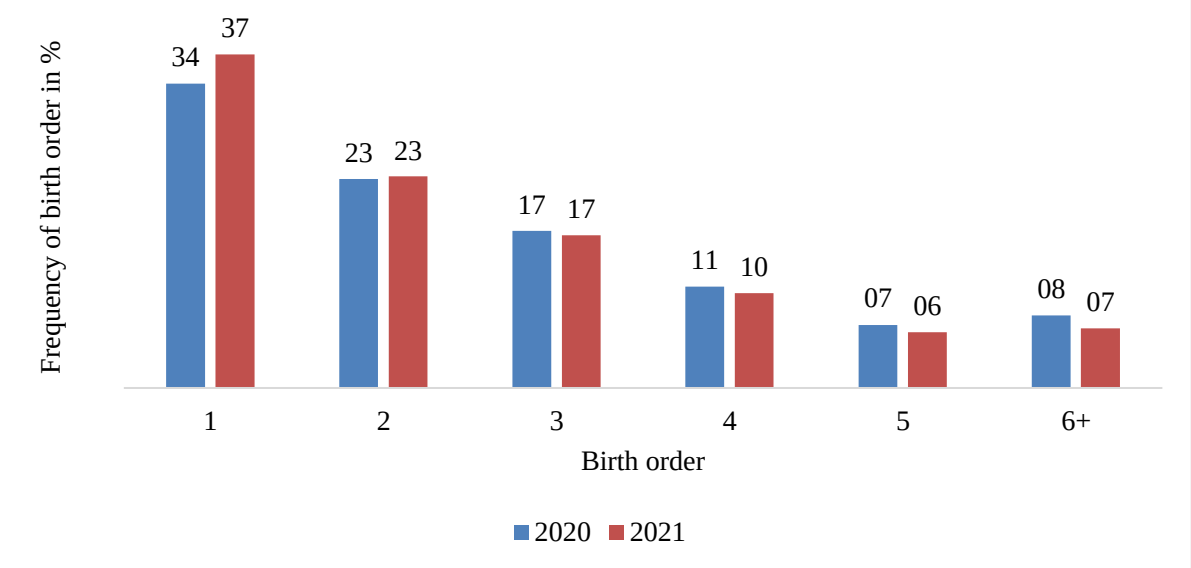


Source: CRVS system, 2021

4.8. Registered live births by birth order

Birth order refers to the order a child is born in the family; first-born and second-born are examples. Birth order is often believed to have a profound and lasting effect on psychological development. To some extent, it may play an impactful role in orientation and initiation of family planning related policies and laws. CRVS system generated data show insignificant differences in birth order among live birth registered in 2021 compared to 2020, except for the first child. Figure 11 below shows the comparison.

Figure 11: Frequency of birth order (%) in 2020 compared to 2021



Source: Data from CRVS web-based system, 2021

4.9. Key fertility indicators

This section shows fertility indicators computed using CRVS system-generated data in 2021 including: crude birth rate (CBR), sex ratio at birth, general fertility rate (GFR) and total fertility rate (TFR). Some indicators like CBR, TFR and GFR were computed based on adjusted data as the completeness of birth registration in 2021 is not good enough. Moreover, in order to assess the reliability of indicators computed from CRVS data, a comparison with data from other sources was performed. Table 11 provides a summarized situation.

Table 11: Summary comparison of fertility indicators from CRVS with other sources

Indicator	CRVS			MAS	RDHS
	2019	2020	2021	2018	2019/20
TFR	3.7	3.7	3.5	3.7	4.1
GFR	110.8	108.7	106	108.7	134
CBR	29.1	28.8	28.4	27.6	31.8
Sex ratio at Birth	103	103	103	102	-
Average weight at birth in grams	3100	3108	3112	-	-
Low birth weight (%)	7.4	7.1	6.5	-	-

Note: sex ratio at birth and birth weight related indicators are based on unadjusted data.

4.9.1. Sex ratio at birth

The sex ratio at birth is the number of male live births for a specific area during a specified period divided by the number of resident female live births for that area and period multiplied by 100. In the human species the ratio between males and females at birth is slightly biased towards the male sex. The natural “sex ratio at birth” is often considered to be around 105. This means that at birth on average, there are 105 males for every 100 females. A sex ratio that is less than 100 means that male births are less than female births something that doesn’t often happen. CRVS system-generated data show the sex ratio at birth equivalent to 103 in 2021 something implying 103 new males born for every 100 new females born. Details regarding sex ratio by districts are displayed in Table 8.

4.9.2. Crude birth rate (CBR)

The crude birth rate is the number of live births occurring among the population of a given geographical area during a given year, per 1,000 mid-year total population of the given geographical area during the same year. The crude birth rate is called "crude" because it does not take into account age or sex differences among the population. However, the indicator is widely used to indicate the overall effect of fertility and that it could be estimated easily with minimum data requirements. When combined with the crude death rate and net migration, crude birth rates can tell us how much our population is increasing or decreasing. They can also help with planning and resource allocation by providing important information such as how many infants will require vaccinations and child health care, how many will be entering school in the coming years, or how many adults will be entering the workforce. The calculationof crude birth rate requires having both the number of live births within a specific period and the total population located in the area under consideration for a period of time under

consideration. Usually, the mid-year population is used as an estimate of the total population. CRVS system-generated data show adjusted CBR of 28.4‰ in 2021 something implying 28.4 live births per 1,000 population annually, regardless of age and sex differentials. More details are here below displayed in Table 12.

Table 12: Unadjusted and Adjusted crude birth rate, 2019-2021

Year	Unadjusted		Adjusted	
	Total registered live births	**CBR (Per 1,000 population)**	**Total estimated live births**	**CBR (Per 1,000 population)**
2021	310,249	23.9	368,251	28.4
2020	312,678	24.7	364,427	28.8
2019	313,398	25.3	360,228	28.4

Source: CRVS system & 4th PHC Projections, 2021

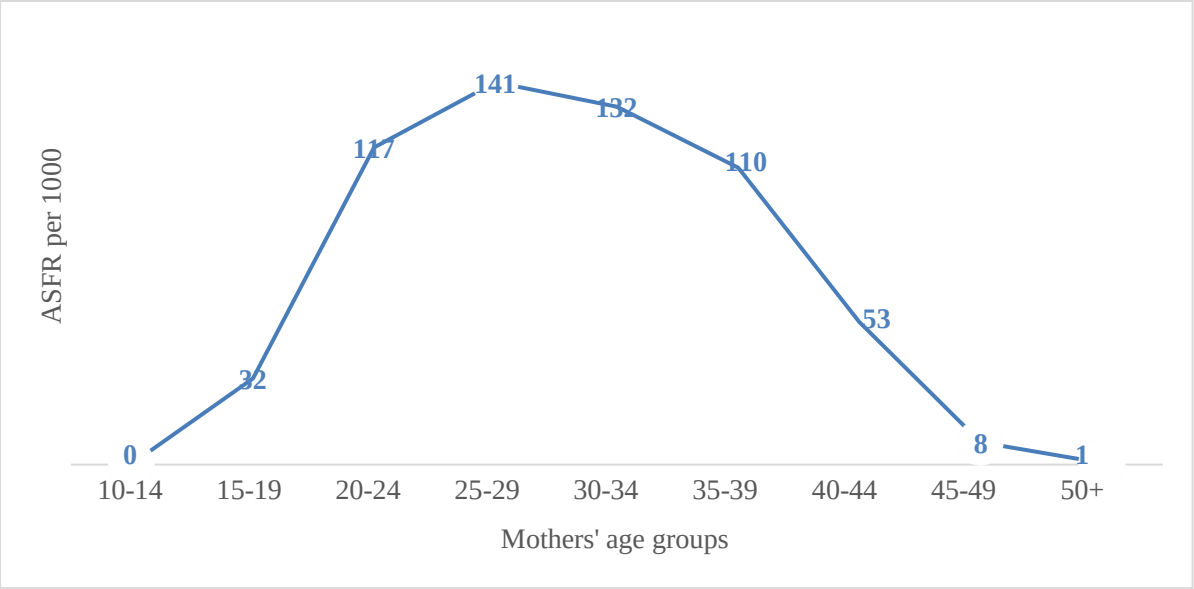
4.9.3. General fertility rate

The general fertility rate is the number of live births for a specific area during a specified period divided by the female population aged between 15 and 49 years (usually estimated at mid-year) for the same area and period multiplied by 1,000. CRVS system-generated data show that the adjusted value of GFR was 106.0 in 2021, something implying 106 live births for every 1,000 women in childbearing age (15-49) annually.

4.9.4. Age-specific birth rate (ASFR)

The age-specific birth rate is the number of live births to women in a specific age group for a specific area during a specified period divided by the total population of women in the same age group for that area and period multiplied by 1,000. As shown in figure 12, ASFRs is high to mothers aged 25-39 at the national level. Shares of births occurring from females aged under 15 and females aged 50 and above are relatively small.

Figure 12: Age Specific Fertility Rate per 1,000 women



Note: population data were sourced from 4th PHC projections, 2021

4.9.5. Total fertility rate (TFR)

TFR represents the number of children who would be born per woman (or per 1,000 women) if she/they were to pass through the childbearing years bearing children according to a current schedule of age-specific fertility rates. The computation of TFR is the sum of the age-specific birth rates (usually for 5-year age groups between 15 and 49) for female residents of a specific area during a specified period multiplied by 5 (where the age-specific birth rates are 5-year birth rates). It can also be calculated as the sum of a 1-year age-specific birth rate for females aged between 15 and 49. TFR is also interpreted as the average number of children a hypothetical cohort of women would have at the end of their reproductive period during their lifetime if they were subject to experiencing the ASFRs of a given period. CRVS system generated data (adjusted) in 2021, showed a TFR equivalent to 3.5. Details on computation of TFR are displayed in Table 3.

CHAPTER 5: DEATHS STATISTICS

5.1. Background

Rwanda adopted the United Nations Sustainable Development Goals (SDGs) that are also founded on leaving no one behind in health. Goal three of the SDGs aims to improve maternal and child health outcomes. end infectious diseases. reduce premature mortality from non-communicable diseases and injuries and ensure universal health coverage by 2030. The Africa Agenda 2063 envisages a continent characterized by universal access to healthcare, zero communicable deaths, zero maternal deaths, zero child deaths and countries capable of mobilizing domestic funding for preventing, detecting and responding to public health threats such as non-communicable diseases, health needs of the youth population and malnutrition by 2063.

Information on the number of deaths and their causes is invaluable in evaluating and tracking progress towards the national, regional and international goals. The information on the mortality levels, trends and differentials is important for the identification of emerging diseases and conditions, formulation of evidence-based health policies and tracking of the population health status.

Mortality data are generated from the civil registration system that permit the production of mortality statistics continuously and contribute to the understanding of the burden of diseases at national and sub national levels.

This vital statistics report contains registration of both community and health facility deaths registered and the cause of death that are reported by the hospitals via the CRVS system. Due to under reporting of deaths, mortality statistics produced in this report must be used with caution. Only 19,797 deaths were found registered in civil registration and thus, as a single source for vital statistics data, that number was considered for analysis of mortality data in this report. It is important to mention that Health facility deaths are electronically notified and registered in presence of declarant. Since August December 2020, all health facilities adopted the use of a digital registration system known as National Centralized and Integrated CRVS system (NCI-CRVS) for official registration of births and deaths at place of occurrence to improve both registration completeness and service delivery.

5.2. Death registration

5.2.1. Completeness of death registration

As noted in section 3.3 of this report, knowing about the completeness of death registration is essential for several reasons. From a civil registration perspective, knowing completeness of death registration is important for improvement of the system. From a statistical perspective, estimating registration completeness enables adjustments to be made when calculating mortality rates and computing demographic indicators such as population projections, age-and-sex-specific mortality rates and population dynamics.

As shown in Table 13, death registration completeness is 26.2% at national level. The computation is based on the number of deaths registered (19,797 deaths) divided by expected deaths from the projection of the recent Rwanda population and housing census that gives a total of 75,603 deaths in 2021. Given this relatively low level of completeness, it would be

close to worthless to use registration data directly to calculate key mortality indicators and therefore, adjustments were made to estimate the key indicators. Adjustment for incompleteness is a common practice and a guidance from the UN Principles and Recommendations for a Vital Statistics System (2014) as described in section 3.3. Table 13 shows registered deaths and adjusted values for key mortality indicators. For further information on adjusted mortality indicators see chapter 3; section 3.4.

Table 13: Summary statistics on mortality

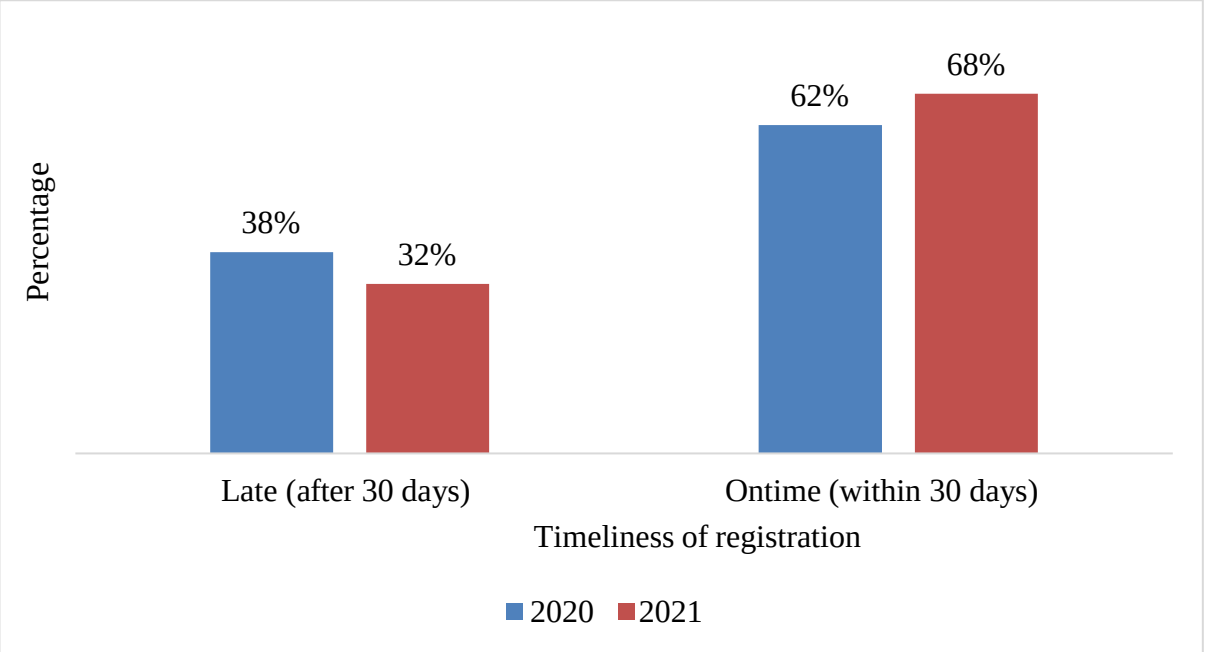
Indicator	2019	2020	2021
Registered deaths (number)	23,791	22,634	19,797
Male	13,188	12,659	10,792
Female	10,603	9,975	9,005
Expected deaths (number)	75,712	75,624	75,603
Male	38,760	38,803	38,866
Female	36,952	36,821	36,737
Death registration completeness (%)	31.4	29.9	26.2
Male	34	32.6	27.8
Female	28.7	27.1	24.5
Crude death rate per 1,000 (Adjusted)	5.9	6	5.8
Under-5 mortality rate per 1,000 live births (Adjusted)	38.5	37.1	39.8
Sex ratio at death	124	124.1	119.8

Source: Data from CRVS system and 4th PHC (NISR), 2021

5.2.2. Timeliness of death registration

By the law currently in force, death registration must be done within 30 days of occurrence, and this was timely registration in this report. As the current report considers deaths whose year of occurrence is 2021, delayed registrations of deaths are not mentioned in this section. For reporting purposes, late registration was a death registered after 30 days but before exceeding one year. Figure 13 below shows that 68% of the total registered deaths were registered within 30 days of occurrence (timely registration) while the remaining share was registered after 30 days of occurrence. The same figure indicates an increase in shares of timelyregistered deaths, from 62% in 2020 to 68% in 2021.

Figure 13: Timeliness of death registration in %, 2020-2021



Source: Data from CRVS system, 2021

5.2.3. Registered Deaths by place of usual residence

Table 14 shows the numbers of deaths registered in civil registration system by province of usual residence in comparison with estimated total number of populations residing in that province. The high numbers of deaths were registered in the Southern followed by the Western province whereas the lowest were found in the city of Kigali. Given the low completeness of death registration, information regarding the numbers of registered deaths is to be used with caution as much efforts are still being vested to raise up the completeness.

Table 14: Registered deaths by provinces with estimated population and by decedent 'sex

Province	Estimated population[3]	Both sexes	Female	Male	Sex ratio at death
Rwanda	12,955,768	19,792	10,098	12,536	119.8
Eastern Province	3,334,269	3,905	1,682	2,223	132.2
Kigali city	1,538,288	2,157	945	1212	128.3
Northern Province	2,089,981	3,577	1,651	1926	116.7
Southern Province	3,010,237	5,471	2,500	2,971	118.8
Western Province	2,982,994	4,682	2,225	2,457	110.4

Source: Data from CRVS system, 2021

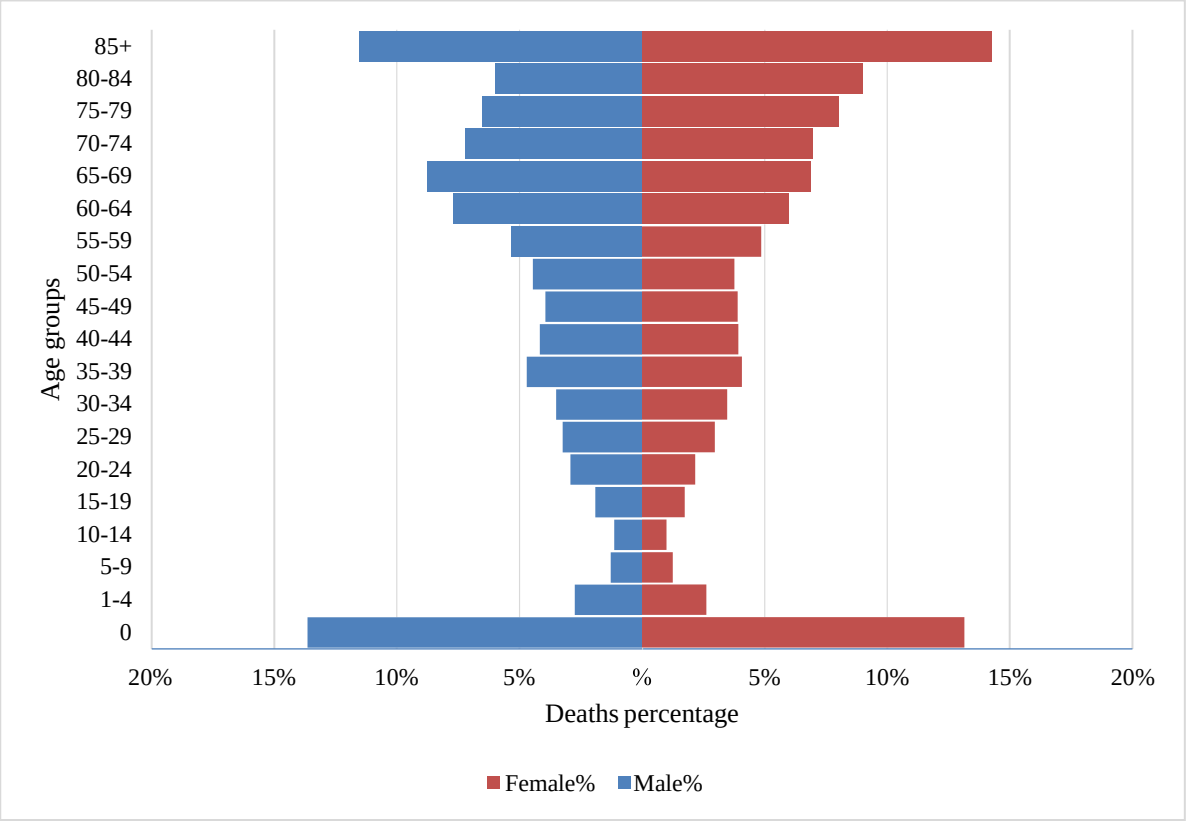
5.2.4. Deaths registered by age and sex

Figure 14 shows the distribution of registered deaths by sex and age groups. Given the large proportion of young children in Rwanda's population and high risk of death at early ages of

[3] Estimated numbers of population by provinces were obtained by multiplying the respective proportion of resident populations reflected under MAS2 by the number of projected populations in 2021 as per 4th PHC

birth, it is not surprising that most deaths occur in the under 5-year-old age group. Despite high females' proportion among the total population compared to males (51.4% against 48.6% respectively), the number of registered deaths is high among males compared to females across all age groups except at too old ages (75+). It is important also to mention here that a high number of infant male deaths compared to female deaths was observed. Despite low completeness of reporting, the figures indicated here portrays the mortality structure with respect to age and sex.

Figure 14: Age-Sex structure of deaths registered, 2021

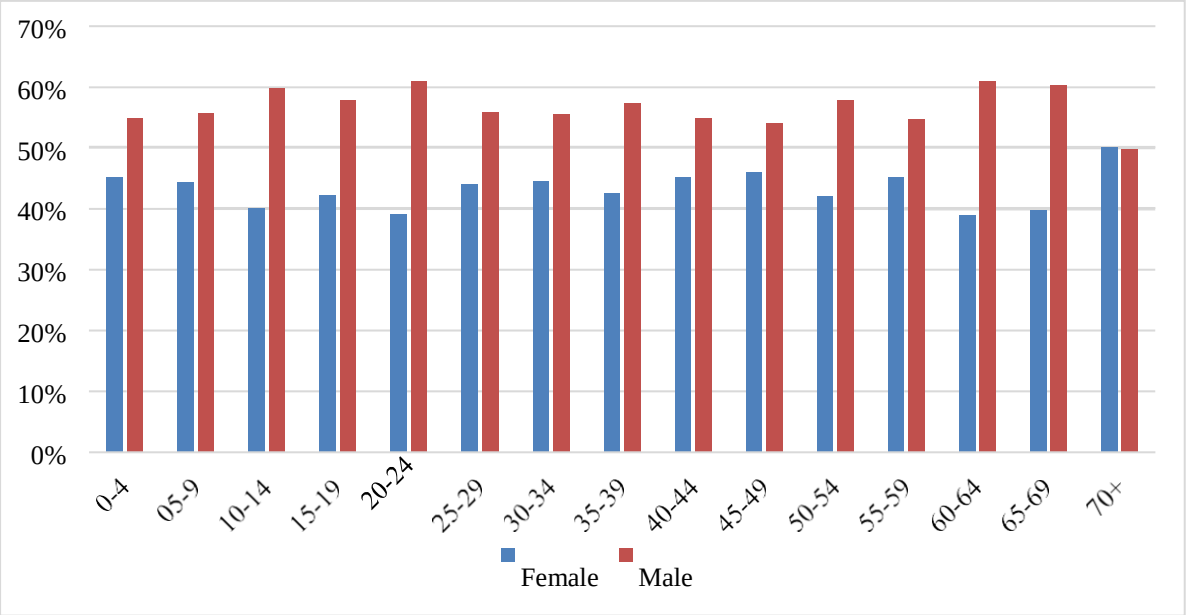


Source: Data from CRVS system, 2021

5.2.5. Age-sex distribution of registered deaths by place of residence

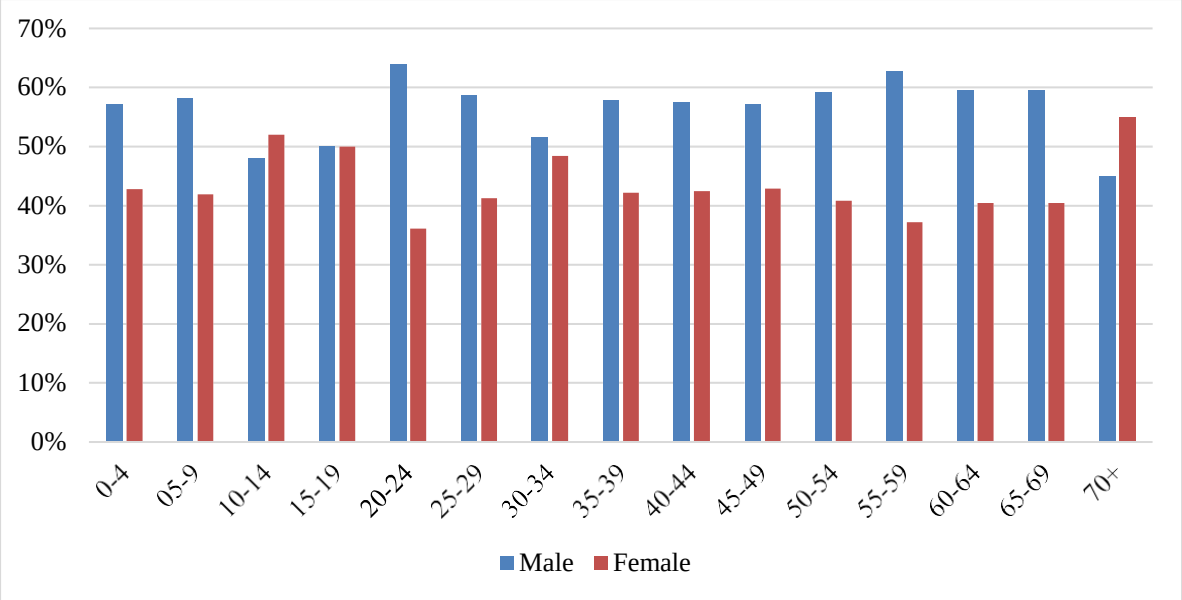
The patterns of age-sex distribution across age groups differ slightly in urban areas compared to rural areas as displayed on figure 15 and 16. The small difference is observed at old ages where the share of males' deaths is higher than females' deaths in urban areas while in rural areas, the share of males' deaths is proximally the same at the that age range.

Figure 15: Shares of registered deaths in rural areas by age and sex



Source: Data from CRVS system, 2021

Figure 16: Shares of registered deaths in urban areas by age and sex



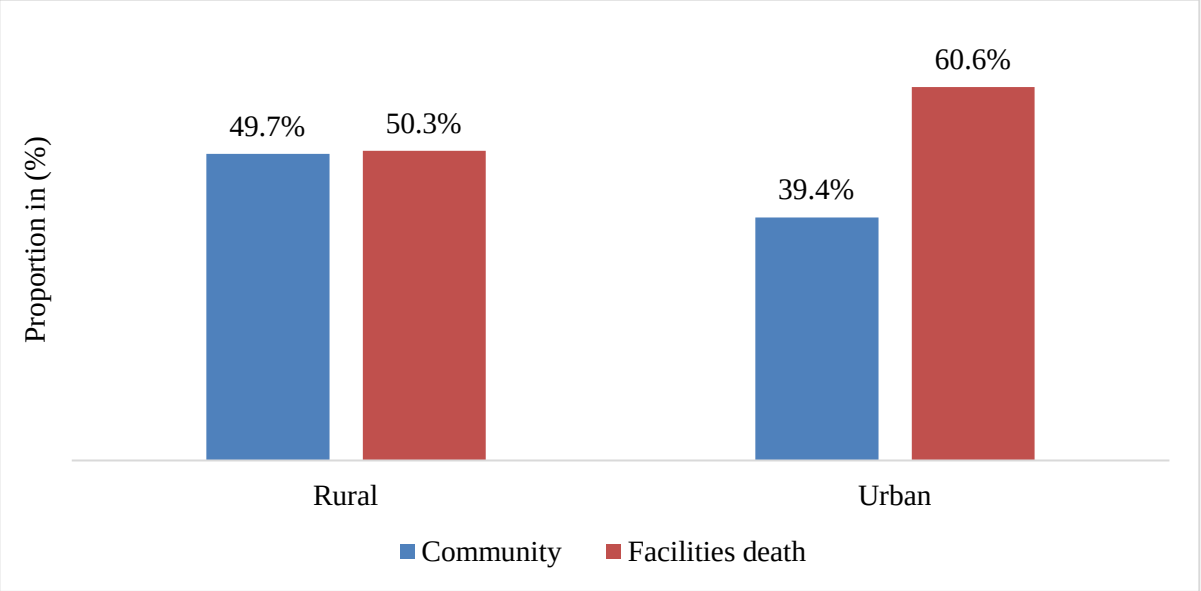
Source: Data from CRVS system, 2021

5.2.6. Registered deaths by place of death and place of residence

The CRVS system generated data show a high percentage of deaths occurring in community compared to deaths occurring at health facilities. The share of community deaths occupies 51.4% of the total registered deaths in 2021 (down from 60.6% in 2020) while health facilities' deaths represent 48.6% (up from 39.4% in 2020). This may be a result of decentralizing death registration to health facilities via NCI-CRVS and calls for more effort to cater for community death registration completeness. The disaggregation of registered deaths based on place of occurrence and place of residence of decedent shows that in rural areas, the share of community

deaths and health facilities is almost the same (50.3% Vs 49.7%, respectively); while in urban areas, the share of deaths occurring in health facilities is higher than community deaths' share (60.6% Vs 39.4%). More effort in improving community deaths reporting is to be put in rural areas. Figure 17 shows details.

Figure 17: Deaths registered by place of residence (urban and rural) and place of occurrence



Source: Data from CRVS web-based system, 2021

5.3. Key mortality indicators

Vital statistics on deaths provide reliable source of mortality indicators such as crude death rates, infant and under-five mortality rates, and age- and sex-specific mortality rates. These data permit the calculation of life expectancy at birth and at other ages. Due to low completeness in death registration, adjustment techniques were used in this report to enable the computation of more accurate indicators as described in section 3.3. Table 16 compares key mortality indicators derived from unadjusted registration records and following adjustment; and then shows results obtained with a comparison with the data from other sources.

Table 15: Comparison of key mortality indicators from CRVS (adjusted) with indicators from other sources

Indicator	CRVS 2021	CRVS 2020	CRVS 2019	RDHS 2019/20	MAS 2018	PHC (Proj. 2021)
Crude death rate (per 1,000)	5.8	6.0	5.9	-	3.2	5.9
Neonatal mortality rate (0-27 completed days)	23.7	23	23.5	19	14.1	-
Post neonatal mortality rate (28-364 completed days)	7.9	7	8.1	14	9.2	-
Infant mortality rate (0-<1 year)	31.6	30	31.5	33	23.3	37.2
Under five mortality rate	37.4	37.1	38.5	45	32.3	51.8

Source: Data from CRVS system, 4th PHC projection, MAS, and DHS, 2021

5.3.1. Crude death rate

The crude death rate (CDR) is the simplest measure of mortality that can provide insights into the health status of a population over time. In addition, the CDR provides a useful indicator of possible problems with the completeness of mortality data. The CDR is a measure of the number of deaths relative to the size of the population at a given point in time, usually at the mid-year. It is expressed in numbers of deaths per 1,000 populations per year.
The CDR is called a 'crude' rate because it does not take into consideration the age and sex structure of the population. In practice, the risk of death in each population group varies according to age and sex as well as patterns of socioeconomic status, and environmental and other factors. For example, populations with a large proportion of young children – as is the case in Rwanda – or a high proportion of elderly people – as in Japan – will, other things being equal, have relatively higher CDRs. This is because mortality risks are highest at youngest and the oldest ages. In general, mortality rates are higher among males than females as illustrated in figure 14 above.

The CDR can also be indicative of registration data quality, as in a system where not all deaths are registered, the CDR will underestimate the true level of mortality. The calculated CDR using the observed data from CRVS was close to 2 deaths per 1000 population in 2021; as a result of low death registration completeness. However, the literature shows that CDR very rarely falls below 4 per 1000 populations even in populations with very high life expectancy. Against this background, adjustment techniques described under chapter 3 of this report were adopted to produce a more accurate estimate of CDR where the adjusted value of CDR at national level became 5.8 per 1,000 populations.

5.3.2. Infant mortality rate

Infant mortality rate represents the number of infant deaths (deaths before one year of age) per 1,000 live births in a given population and at a specific period, usually a year. The IMR calculated using the CRVS system-generated data showed a value of 10 per 1000, a small value due to low completeness. By adjusting observed data, the IMR became 33.6 infant deaths per 1,000 live births, a value that is close to the IMR value obtained under RDHS 2019/20 (33 per 1000). Refer to chapter 3, section 3.4. For details on adjustment techniques used.

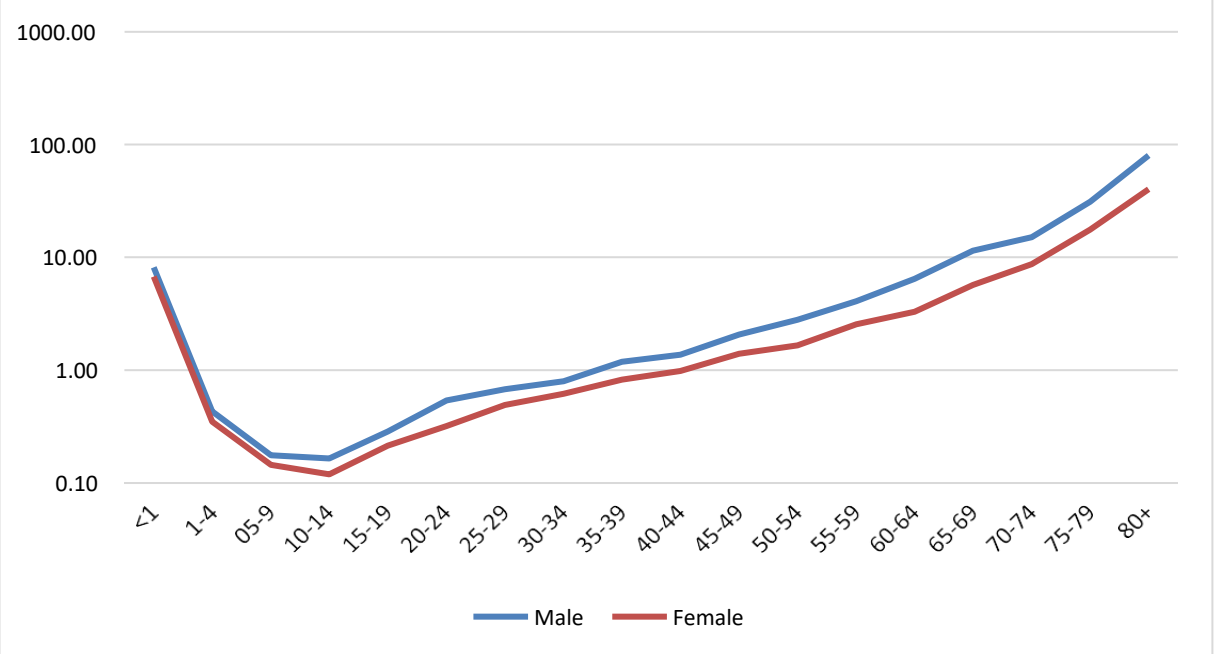
5.3.3. Under-five mortality rate

Under-five mortality rate represents the number of deaths occurring among children before reaching the age of 5, per 1,000 live births in a given population during a specific period (usually a year). The UMR computed using CRVS system-generated data returned a value of 13 deaths per 1,000 live births in 2020. The adjusted CRVS data showed UMR equivalent to 39.8 deaths per 1000 live births, a low value when compared to RDHS 2019/20 results of 45 deaths per 1000 live births. Refer to chapter 3, section 3.4. For details on adjustment techniques used.

5.3.4. Age-specific death rate

The age-specific death rate (ASDR) is the number of deaths for a specific age or age group in a specific area during a specified period divided by the population of the same age or age group in the same area. The ASDR is a specific indicator of deaths among a given population that reflects mortality behavior across different age ranges. Figure 19 shows the death rates in Rwanda according to the data recorded via the CRVS which generally shows high death rates among males compared to females. A small exception is observed to young children aged under 5 where death rates for males and females are almost the same.

Figure 18: Distribution of age specific death rates for registered deaths by sex, 2021



Source: Data from CRVS system, 2021

CHAPTER 6: CAUSE OF DEATH STATISTICS

6.1. Background

Prior to October 2017, medical doctors in Rwanda had not been trained on certifying causes of death according to international standards. The 2016 World Health Organization's (WHO) International Medical Certificate of Cause of Death (MCCoD) was not used in health facilities and the quality of cause of death data was poor with many deaths attributed to ill-defined causes which are of little utility for public health decision making.

In response, the Ministry of Health issued a ministerial order to all health facilities requesting them to correctly certify and report deaths using the MCCoD form, in line with the International Classification of Diseases (ICD), 10th Revision. Since 1st January 2018, this has been the standard reporting of diseases and health conditions that enables the comparison and sharing of health and mortality information. The WHO has recommended the countries to use the standardized tools in District Health Information System (DHIS2) mortality module that has been linked to the CRVS system for better reporting and comparability with other mortality statistics.

Recording cause of death is the subset of mortality module in the civil registration system in Rwanda. According to the amended law N° 001/2020 of 02/02/2020 replacing law N° 32/2016 governing persons and family, the declaration of death is done at sector office, at health facility, at Cell administration level and other designated registration points upon presentation of death notification form (other than MCCoD). The national centralized and integrated CRVS system is used to collect, transmit and store death and causes of death information to be used in the production of vital statistics.

The use of the ICD coding facilitates storage, retrieval and analysis of data and enables the systematic and standardized recording, analysis, interpretation comparison and sharing of morbidity and mortality data within a population and across countries.

ICD-10 causes of death are organized into 21 chapters covering three broad groups of causes:

- Group 1: Infectious and parasitic diseases (i.e. tuberculosis, pneumonia, diarrhoea, malaria, measles); maternal/perinatal causes (i.e. maternal haemorrhage, birth trauma); and malnutrition.
- Group 2: Non communicable diseases (i.e. cancer, diabetes, heart disease, stroke); and mental health conditions (i.e. schizophrenia).
- Group 3: Injuries (i.e. road accidents, homicide, and suicide).

6.2. Medical certification of cause of death

To improve the quality of causes of death statistics in Rwanda, the government initiated two major interventions namely: the introduction of verbal autopsy to gain a better understanding of the patterns of causes of death when people die out side health facility where there is no physician to certify death (see section 6.3.2); and the integration of Medical Certification of Causes of Death (MCCoD) and International Classification of Disease (ICD 10) 2016 Edition into Health care settings to determine underlying causes of death that occur in Health facilities.

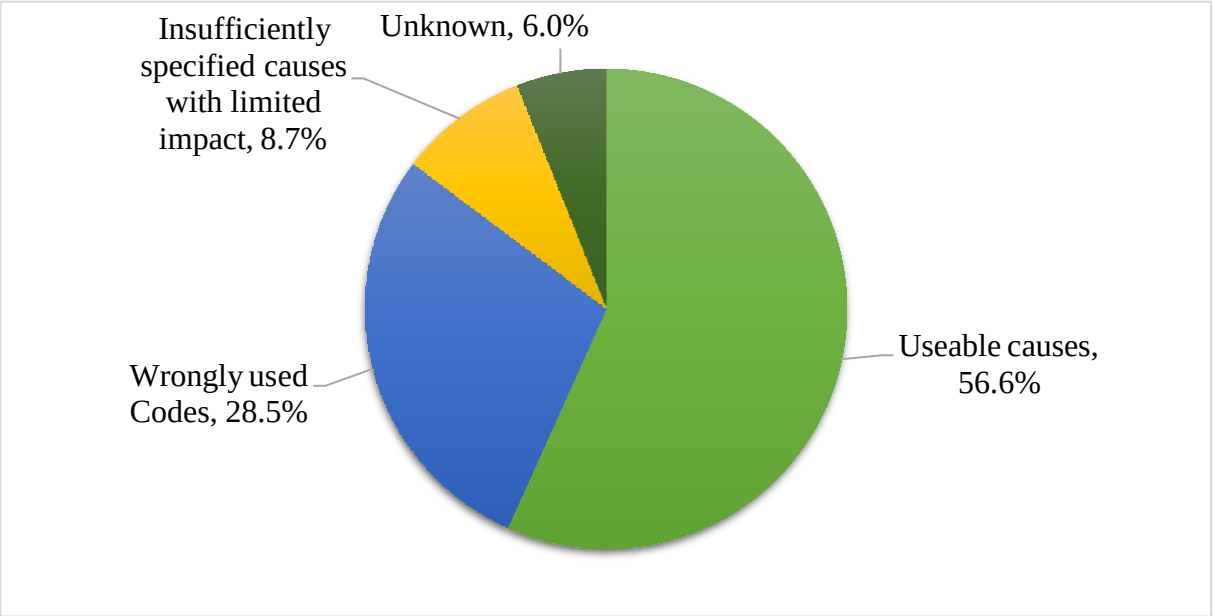
In this report, cause-of-death statistics are compiled from the civil registration system using the ICD-10 full list to record the underlying cause of death (UCOD) that were reported by trained physicians on medical certification of causes of death (MCCD) for deaths occurring in Health facilities. Currently, all hospitals and clinics certify causes of death using the standardized MCCoD form and statistical coding according to the ICD-10 coding system. In 2021; 8,218 deaths were reported using standardized WHO tools in the NCI-CRVS system. In principle, every death should have a medically defined cause. However, when the quality of medical certification is imperfect, some deaths will be assigned to ill-defined causes of limited value for public health purposes (sometimes designated as "unusable" or "garbage" codes). For this report, ANACONDA version 5.0.0 (Analysis of National Causes of Death for Action) and ANACoD version 3.0 (Analyzing mortality levels and causes of death) tools were used to perform a comprehensive and systematic analysis of mortality and cause of death data.

6.2.1. Data quality and usability

The current year of experience in medical certification of cause of death according to international standards shows that quality improvements continue to be required. It is important to continue the capacity building of certifiers using WHO standardized tools and quarterly MCCoD quality assessment on individual death certificate using the death certificate quality assessment tool (Appendix 3) to improve the quality of causes of death reported. To improve the quality of causes of death, the Ministry of health in collaboration with Rwanda Medical and Dental Council established MCCoD eLearning course for practicing medical doctors as a part of Continuous Professional Development (CPD) credits required for annual licensure. Over 90% of the medical doctors completed MCCoD online course in the licensing period of 2021/2022.

The ANACONDA tool provides a detailed information about the quality of cause-of-death information from the health-related information system. This indicates that the proportion of causes of death assigned to usable causes increased from 43.8% in 2020 to 56.6% in 2021. The significant increase of quality of causes of death is partly attributed to majority of in-service medical doctors who completed MCCoD eLearning course as a part of Continuous professional development (CPD) credits required for annual licensure. However, more efforts are required to improve the quality of causes of death through regular data quality checks and adopting IRIS ICD coding tool for automated, interactive mortality coding system, which codes multiple causes of death and helps to select the correct underlying cause of death according to the ICD-10 rules for statistical tabulation. Figure 19 shows details.

Figure 19: Distribution of causes of death by usability, 2021

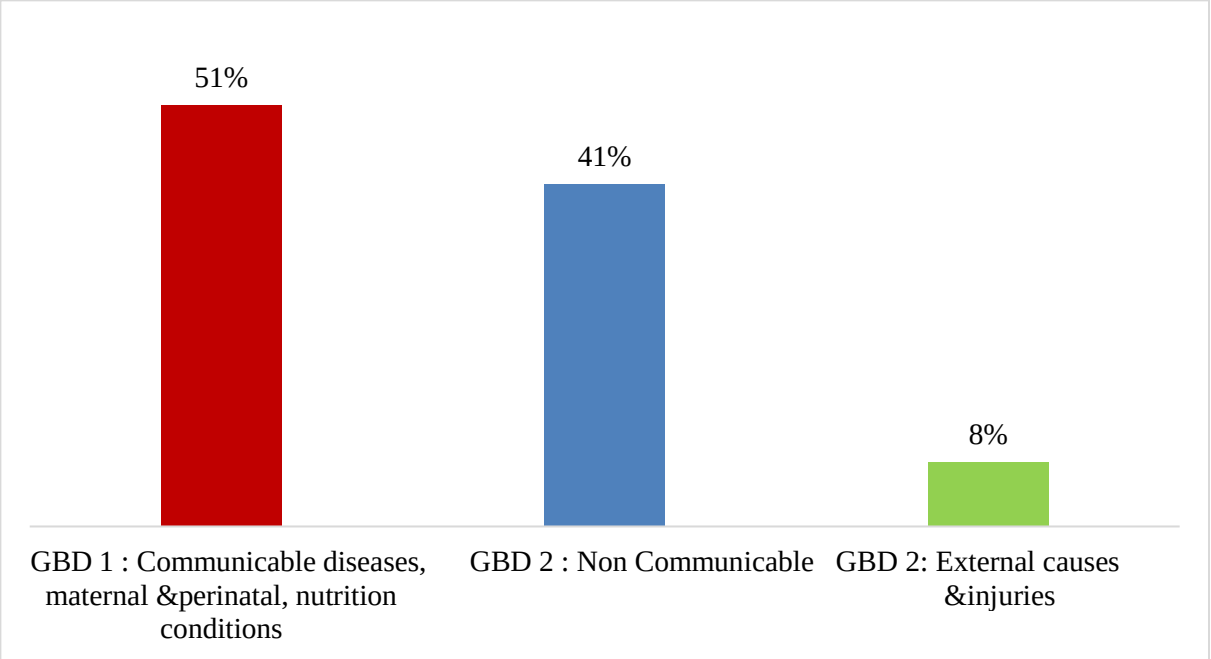


Source: Data from CRVS system, 2021

6.2.2. Distribution of usable death causes by three broad groups

Considering the distribution of usable codes in three broad groups as shown in figure 20, the causes of death are dominated by communicable diseases with 51% down from 62.3% in 2020, followed by non-communicable diseases with 41% upward from 34.9% in 2020 and group of injuries and external causes with 8% upward from 3.0% in 2020.

Figure 20: Distribution of usable causes of deaths by three broad groups

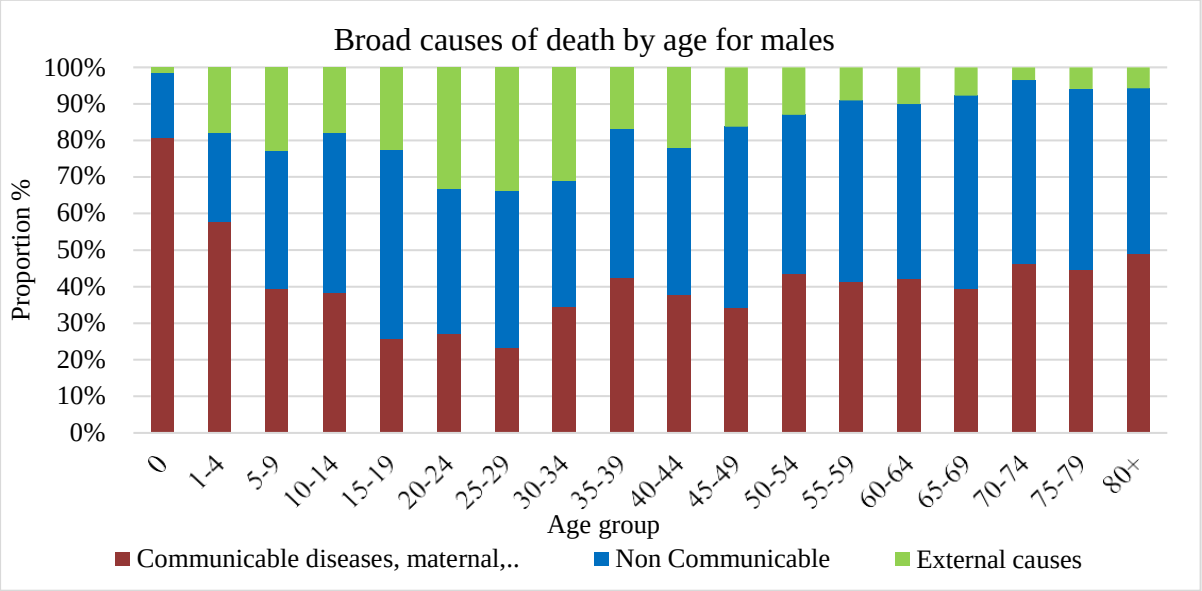


Source: Data from CRVS system, 2021

6.2.3. Distribution of deaths with defined causes in three broad groups by age and sex

The three main groups (Global Burden of Diseases groups) of causes of deaths were considered for the reported data with causes of death in broad groups namely the group of communicable diseases, maternal and perinatal, nutrition conditions; the group of non-communicable conditions/diseases and the group for all other external causes and injuries. Mortality due to these groups was tracked across the age groups for both males and females. At the early stages of life, most of death causes are due to the group of communicable diseases while the group of non-communicable takes over after the age of 55 for males and age 50 for females. The external causes and injuries were also predominant among males than females but lower than expected, possibly due to the wrongly used codes. More details are found in the figures 21 and 22 below and annexes.

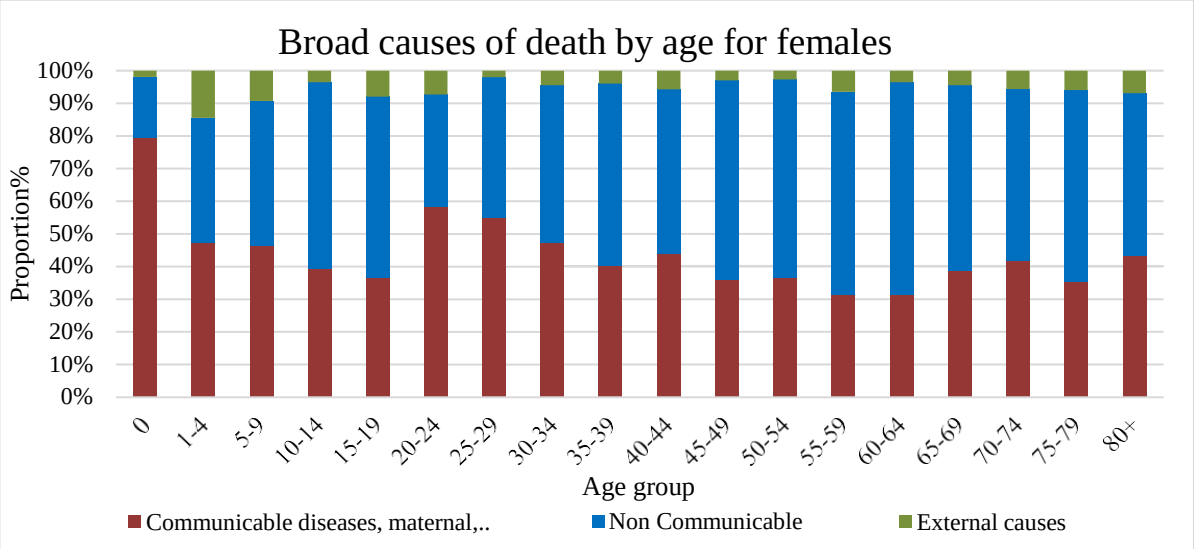
Figure 21: Death causes in broad groups by age of males



Source: Data from CRVS system, 2021

In Figure 22; communicable diseases, perinatal and nutrition conditions is high until age of 9 and low thereafter. Non communicable diseases are predominant after age of 10 to 14 years old age while the high at the old adult age for male from 55 years and at young age in 25 to 29years. The external causes more frequently appear among the young children at school age butvery low in general for females compared to males.

Figure 22: Death cause in broad groups by age of females



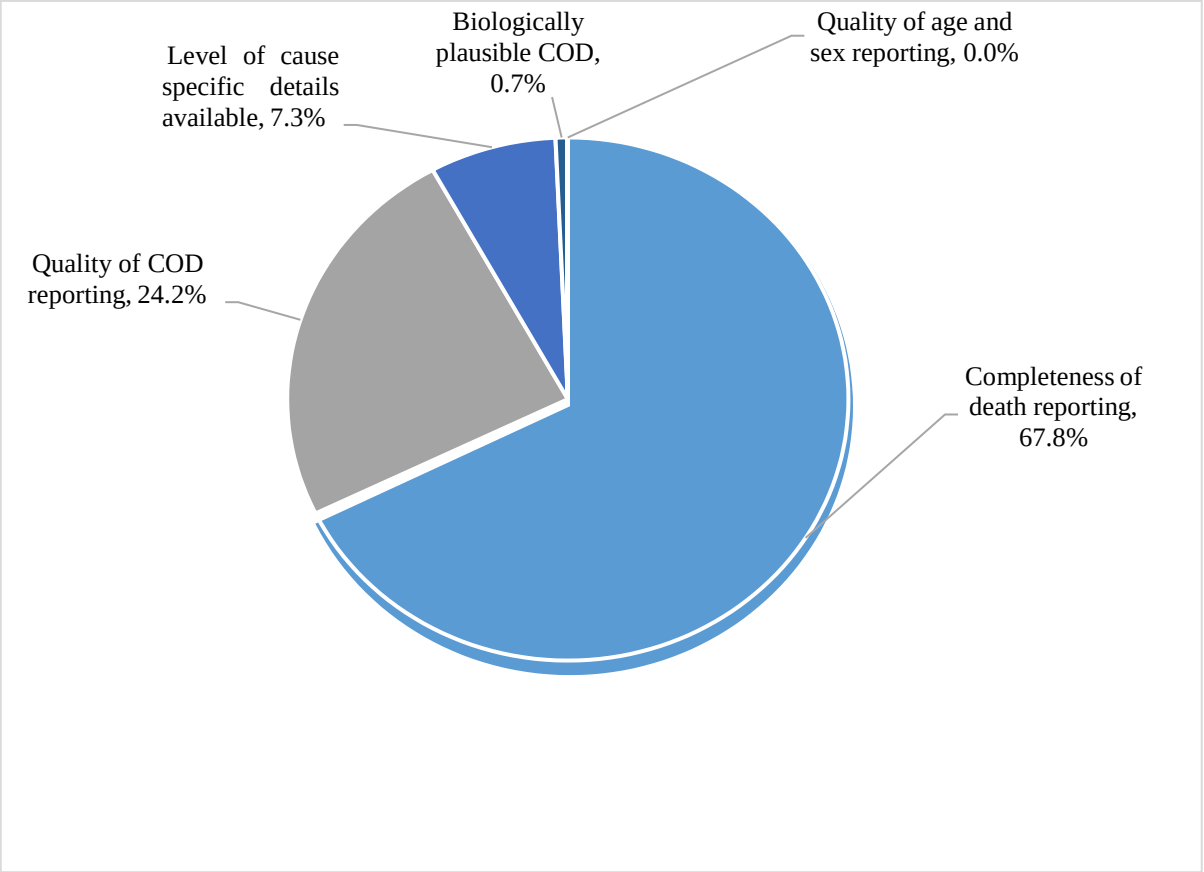
Source: Data from CRVS system, 2021

6.3. Priorities for action improvements

6.3.1. Data quality for institutional deaths

According to the results, a great percentage of causes of death coding were 56.6% of useable causes of death, 28.5% of garbage codes ,8.7% insufficiently specified causes with limited impact and 6% of unknown codes. Nevertheless, there is a significant improvement of quality of causes of death compared to previous years, there is need for continuous quality improvement through regular monitoring of deaths certification and reporting at health facility level. Figure 23 illustrates priority policy actions for improving the quality of causes of death according to the ANACONDA tool. Efforts are required to improve completeness of cause of death reporting for community deaths where causes of death are not reported, and there is high ranking of garbage codes dominated by ill-defined conditions and low level of cause specific details available for external causes which shows the need for improving the quality of causes of deaths reported in CRVS system. Efforts are currently underway to implement verbal autopsy to address the gap in terms of cause of death information for community deaths to improve completeness.

Figure 23: Priority action areas for improving data quality, 2021



Source: Data from CRVS system, 2021

In response, the Government of Rwanda is focusing on key priority actions to improve the completeness of mortality and cause of death reporting in the national centralized and integrated civil registration and vital statistics (NCI-CRVS) system, as shown in Figure 23. A major effort will be directed to improving death registration completeness to permit calculation of key mortality indicators. In addition, ongoing capacity development will be supported to improve the quality of causes of death determination.

6.3.2. Verbal autopsy for community death notification in CRVS system

It has been realized that a large number of deaths occur outside health facilities and are often not notified and recorded in CRVS system in a timely way, resulting in under-reporting of deaths and causes of death and incomplete vital statistics on mortality. As a solution to this, the regulation allows cell civil registrar to register community deaths and conduct verbal autopsy for deaths that occurred outside hospitals where there are no physicians to certify death using MCCOD form. The cell civil registrars were trained to register community deaths in the NCI-CRVS system end November 2021 national wide. There are ongoing efforts to train verbal autopsy interviewers (Cell executive secretaries) on how to conduct verbal autopsy for community deaths to achieve the universal civil registration and quality vital statistics. Boosting the reporting of community deaths and probable causes of death using internationally recognized verbal autopsy techniques will improve death registration completeness for informed policies and decisions.

CHAPTER 7: MARRIAGE STATISTICS

This section provides details on marriages registered by sectors from January to December 2021. The main data source in this regard is CRVS web-based system. As in our country context, only legal marriages are registered, other forms of consensual unions are not covered within the content of this section. This report did not manage to release divorce statistics as the system that could provide accurate information on divorces is under revision.

7.1. Legal marriages registered

Marriage is the act, ceremony and process by which the legal relationship of spouses is constituted. The legality of the union may be established by civil, religious or other means as recognized by the laws of each country. By current law in force in Rwanda, marriage is officiated by a civil registrar at sector office, district office or Rwandan embassy. The CRVS web-based system shows a slight increase in the number of marriages registered in 2021 compared to 2020, from 30,859 to 33,809 marriages implying 9.6% increase. However, despite observed increase, the number of marriages registered in 2021 is still below the 2019 reported number probably because of COVID-19 measures where many forms of social gatherings. including marriage celebration ceremonies were sometimes prohibited to reduce the spread of the pandemic.

Table 16: Registered marriages, 2019-2021

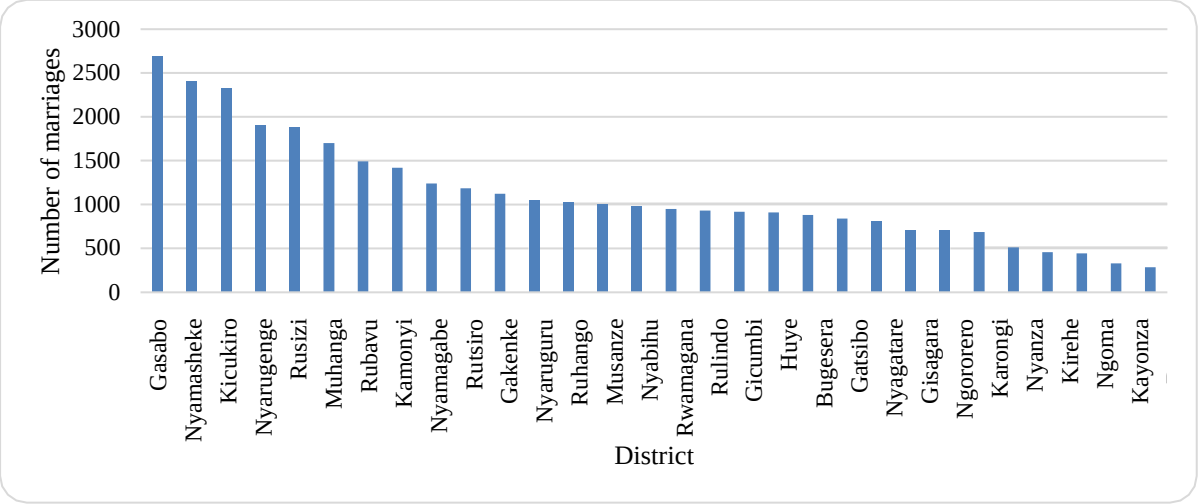
Year	Number of marriages	Population	Crude marriage rate (0/00)
2019	48,526	12,374,398	3.9
2020	30,859	12,663,116	2.4
2021	33,809	12,955,763	2.6

Source: data from CRVS web-based system (NISR), 2021.

7.2. Marriages registered by districts

CRVS web-based system-generated data show a total of 33,809 marriages registered in 2021. The same data show high numbers of marriages celebrated in Gasabo (2,695) and Nyamasheke (2407) districts. Low numbers were observed in Kayonza (329) and Burera (284) districts.

Figure 24: Marriages registered by districts

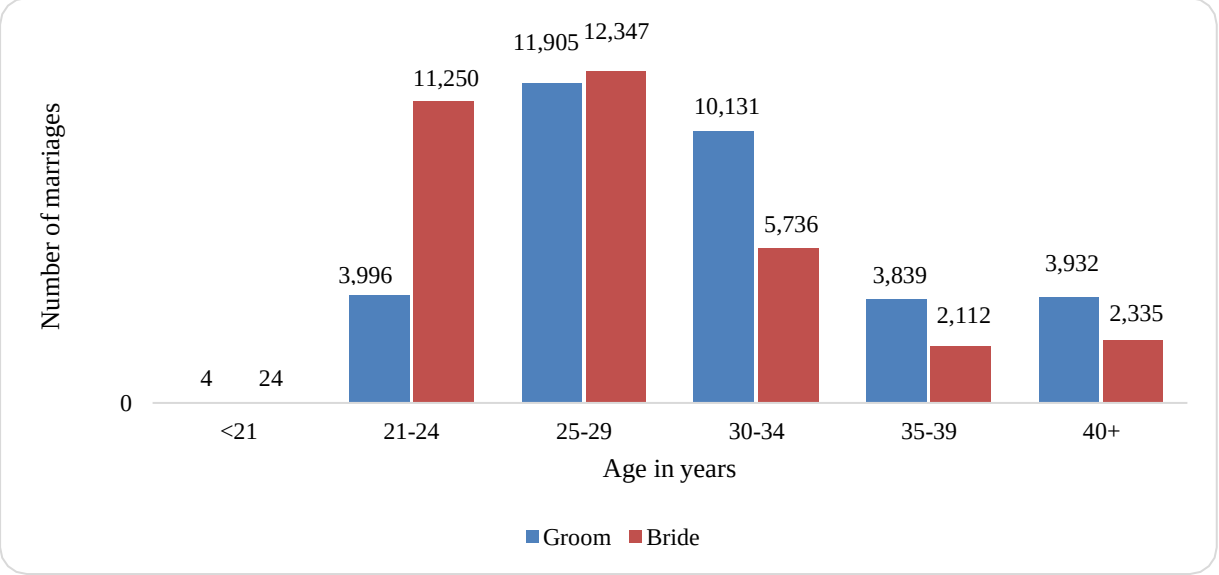


Source: Data from CRVS web-based system (NISR), 2021.

7.2.1. Marriages registered by age of bride and groom

CRVS web-based system-generated data show variations in marriage registrations across ages of brides and grooms at marriage date. In the age interval of 21–29 years, the number of brides is higher than the number of grooms. while data show a reversed situation at age of 30 and above. The following Figure 25 gives the picture.

Figure 25: Marriages registered in 2021 by age of bride and groom



Source: Data from CRVS web-based system (NISR), 2021.

CRVS Web based system generated data were also used to correlate the age of brides to age of grooms to depict the picture of age differences among married partners. The resulting matrix shows that the age range with high number of marriages for both females and males is the 25-29 age group. The numbers of marriages are also high between males aged 25-29 and females aged 21-24 and between males aged 30-34 and females aged 25-29. Generally, the numbers of

marriages are high among males aged 25-34 on one side, as well as among females aged 21-29 on the other side.

Table 17: Groom and Bride age relationship at marriage date

Age of Grooms	Age groups	Age of Brides							Total
		<21	21-24	25-29	30-34	35-39	40+	Not stated	
	<21	0	3	1	0	0	0	0	**4**
	21-24	5	2,660	1,001	230	73	27	0	**3,996**
	25-29	16	5,340	5,089	1,135	239	84	2	**11,905**
	30-34	3	2,488	4,577	2,475	440	147	1	**10,131**
	35-39	0	571	1,224	1,229	647	168	0	**3,839**
	40+	0	188	455	666	713	1,908	2	**3,932**
	Not stated	0	0	0	1	0	1	0	**2**
	Total	**24**	**11,250**	**12,347**	**5,736**	**2,112**	**2,335**	**5**	**33,809**

Source: Data from CRVS web-based system (NISR), 2021.

7.2.2. Marriages registered by matrimonial regime

By the law currently in force, there are three types of matrimonial regimes in Rwanda. The ***community of property***: a contract by which the spouses opt for marriage settlement based on joint ownership of all their property-movable as well as immovable and their present and their future charges; it is also a primary-default-regime. The ***limited community of property***: a contract by which spouses agree to pool their respective properties owned on the day of marriage celebration, to constitute the basis of the acquests as well as the property acquired during marriage by a common or separate activity, donation, legacy or succession. The ***separation of property*** which is a contract by which spouses agree to contribute to the expenses of the household in proportion to their respective abilities while retaining the right of enjoyment, administration, and free disposal of their personal property.

The CRVS web-based system-generated data show that most of couples in Rwanda choose "community of property" as their matrimonial regime as it represents 98.5% of marriages registered in 2021. Refer to the following Table 18 for more details.

Table 18: Registered marriages by matrimonial regime

Marriage regime	Count	Percentage
Grand Total	33,809	100.0
Community of property	33,304	98.5
Limited community of property	427	1.3
Separation of property	78	0.2

Source: Data from CRVS web-based system (NISR), 2021.

7.2.3. Marriages by previous marital status of the bride and groom

The law currently in force doesn't allow for simultaneous marriage contracts per one individual. CRVS web-based system-generated data show disparities in the numbers of married persons in accordance with their previous marital status. As hereunder described in table 19;

99.6% of the brides married in 2021 were previously single while this percentage was 98.6% for grooms. The shares of previously divorced and widowed ladies and gents were relatively quite small.

Table 19: Marriages registered by previous marital status

Previous marital status	Counts		Percentages	
	Grooms	Brides	Grooms	Brides
All	33,809	33,809	100.0	100.0
Single	33,352	33,659	98.6	99.6
Widow(er)	284	64	0.8	0.2
Divorced	172	84	0.5	0.2
Not stated	1	2	0.0	0.0

Source: Data from CRVS web-based system (NISR), 2021.

Looking at the previous marital status by age of groom. the results show that among grooms who were previously single, marriages are most frequent among those aged 25-34; while among widows, marriages are most frequent to those aged 65 and above. High number of marriages among previously divorced grooms occurred among those aged 35-44. Generally, the more people's age goes up, the little the number of marriages among grooms who were previously single is observed. In contrast, the more the people get aged, the greater number of grooms who were previously widowed is observed. More details are displayed in Table 20.

Table 20: Marriages by age of groom and previous marital status

Age groups	Previous marital status				
	Single	Widowed	Divorced	Not stated	Grand Total
<21	4	0	0	0	4
21-24	3,993	2	1	0	3,996
25-29	11,891	9	5	0	11,905
30-34	10,106	10	15	0	10,131
35-39	3,792	19	28	0	3,839
40-44	1,408	18	37	0	1,463
45-49	668	26	23	0	717
50-54	433	34	20	0	487
55-59	348	35	23	0	406
60-64	267	23	9	0	299
65-69	185	44	6	0	235
70+	255	64	5	1	325
Not sated	2	0	0	0	2
Grand Total	**33,352**	**284**	**172**	**1**	**33,809**

Source: Data from CRVS web-based system (NISR), 2021.

The status of previous marital status against their respective age at marriage date looks a little bit different among brides when compared to their counterpart grooms as among brides who were previously single, marriages are most frequent to those aged 21-29 while among those who were previously widowed, marriages are most frequent to those aged 35-39 and 44-49.

While 64 grooms who were previously widowed were observed at age 70 and above; only 1 bride who was previously widowed was observed at that age. Previously divorced brides are most frequent among those aged 25-44. More details are shown in Table 21.

Table 21: Marriages by age of bride and previous marital status

Age groups	Previous marital status				
	Single	**Widowed**	**Divorced**	**Not stated**	**Grand Total**
<21	24	0	0	0	24
21-24	11,240	5	5	0	11,250
25-29	12,331	4	12	0	12,347
30-34	5,712	3	21	0	5,736
35-39	2,079	11	21	1	2,112
40-44	916	6	12	0	934
45-49	463	13	4	0	480
50-54	307	8	6	0	321
55-59	215	7	1	0	223
60-64	1,66	4	2	0	172
65-69	92	2	0	0	94
70+	110	1	0	0	111
Not stated	4	0	0	1	5
Grand Total	**33,659**	**64**	**84**	**2**	**33,809**

Source: Data from CRVS web-based system (NISR), 2021.

7.3. Crude marriage rate

The crude marriage rate is the number of marriages occurring among the population of a given geographical area during a given year, per 1,000 mid-year total population of the given geographical area during the same year. Crude marriage rate was 2.6‰ in 2021 slightly up from 2.4‰ in 2020. Despite an increase, crude marriage rate in 2021 is below the 2019 result (3.9‰) something that may be attributed to the effect COVID-19 prevention measures regarding temporally restrictions of many types of ceremonies including marriage celebrations.

Conclusion

Births statistics:

The findings show a decrease of birth registration completeness from 85.8% in 2020 to 84.2% in 2021. Hypothetically, this decrease in completeness can be attributed to anti COVID-19 measures and the effect of transition from a paper-based system to a digital registration system. On the other side, timely registered births increased from 72.3% in 2020 to 93.7% in 2021 something that may indicate an effect of decentralizing registration services to health facilities and cells. To raise both the completeness and timeliness of registration, there is a need for enhancing a continuous awareness and strengthen operationalization of registration services at decentralized levels. Additionally, there is a need for raising demand creation as one of related incentives.

Death statistics:

The findings show a very low completeness of death registration in addition to undergoing a downward shift (from 31.4% in 2019 to 26.2% in 2021). Additionally, the share of timely registered deaths is still low, despite an observed upward shift (from 62.0% in 2020 to 68% in 2021). Further analysis of deaths registered shows a reduction in percentage of community deaths registered (from 60.6% in 2020 to 51.4% in 2021) despite current expectation to have more community deaths than health facilities deaths. This informs on two important things. First, there is strong need for a sustained effort to boost the completeness of death registration nationwide focusing more on community deaths by strengthening aligned initiatives including verbal autopsy and official registration of community deaths at cells offices. Second, there is a need to raise public awareness on death registration practice focusing more on the time prescribed by the law. Creating demand for death registration also may have a crucial role in boosting both the completeness and timeliness of death registration.

Cause-of-death statistics:

Analysis of causes of death data shows a significant data quality issue among institutional deaths reported as many deaths are ascribed to vague and ill-defined causes where only 56.6% of cases have a cause of death that is sufficiently informative to be used to guide health policies and decisions. Indeed, cause of death data shows that only 8,218 deaths (i.e., 41.5% of registered deaths) were reported with respective causes.
Given the low completeness of death registration and low rate of the cause of death reporting, there is a need for vesting more effort in boosting death and cause of death registration focusing on both the quality and number of deaths reported with respectively well-defined causes. Strengthening a sustainable training framework for in-service and pre-service medical doctors (death certifiers) and data managers (cause of death coders) on the cause of death certification using MCCoD could be a solution to cater for data quality issues.

Marriages statistics:

The findings show high frequency of marriages among person aged 21 to 34, something inspiring the need to plan taking into consideration the implications of potential new families founded in this regard.

References

1. **NISR.** Rwanda CRVS Systems, CRVS comprehensive assessment final report. Kigali : NISR. November 2016.

2. **Republic of Rwanda (2013).** Official Gazette no Special of 16/06/2013. Retrieved from http://statistics.gov.rw/sites/default/files/Official_Gazette_no_Special_of_16.06.2013.pdf.

3. **Murray. CJL and Lopez. AD (eds).** The Global Burden of Disease. A comprehensive assessment of mortality and disability from diseases, injuries, and risk factors in 1990 and projected to 2020. Boston : Harvard School of Public Health on behalf of the World Health Organization and The World Bank, 1996.

4. **Mikkelsen, Lene and Lopez, Alan D.** Guidance for assessing and interpreting the quality of mortality data using ANACONDA. Melbourne : University of Melbourne, 2017.

5. **United Nations** (2014). Principles and Recommendations for a Vital Statistics System - Revision 3. Statistics Division. Statistical Papers, Series M No. 19/Rev.3. http://unstats.un.org/unsd/demographic/standmeth/principles/M19Rev3en.pdf

6. **Government of Rwanda,** (2008). Rwanda Five-Year Decentralization Implementation Programme, (March 2004), 2004–2008.

7. **Government of Rwanda,** (2016). Rwanda Demographic Health Survey, Retrieved from http://www.statistics.gov.rw/publication/demographic-and-health-survey-20142015-finalreport.

8. **NISR** (2012). National Strategy for the Development of Statistics 2014/15-2018/19, Kigali.

9. **NISR** (2012). Fourth Population and Housing Census, Rwanda, 2012. Rwanda, 226 (4676), p.782.

10. **UN Department of Economic and Social Affairs - Statistics Division** (2014). Principles and Recommendations for a Vital Statistics System - Revision 3. Available at: http://unstats.un.org/unsd/Demographic/standmeth/principles/M19Rev3en.pdf.

11. **UNECA et al.** (2014), Civil Registration and Vital Statistics Systems in Africa Report. (October).

12. **UNECA et al.** (2012). Africa Programme on Accelerated Improvement of Civil Registration and Vital Statistics. Second Conference of African Ministries Responsible for Civil Registration.

13. **UNECA& AfDB.** (2012). Africa Programme on Accelerated Improvement of Civil Registration and Vital Statistics. Second Conference of African Ministries Responsible for Civil Registration. (September).

14. **UN Department of Economic and Social Affairs - Statistics Division** (2014). Principles and Recommendations for a Vital Statistics System - Revision 3. Available at: http://unstats.un.org/unsd/Demographic/standmeth/principles/M19Rev3en.pdf.

15. **World Health Organization** (2014). Improving Mortality Statistics as part of Strengthening Civil Registration and Vital Statistics Systems Background Discussion Paper for a Technical Meeting. November 4-5. 2014. Geneva.

16. **World Health Organization and University of Queensland (WHO/UQ),** 2010. Improving the quality and use of birth. death and cause-of-death information: guidance for a standards-based review of country practices, Queensland, Australia.

17. **National Statistics Office of Georgia – GEOSTAT.** (2012). Vital Statistics Report (2015). Tbilisi 2017.

18. **Maryland Department of Health Vital Statistics Administration,** (2018). Maryland Vital Statistics Annual Report 2018. 4201 Patterson Avenue. 5th Floor. Baltimore, Maryland 21215.

19. **Missouri department of health & senior services.** (2018). Missouri Vital Statistics 2018. Jefferson City. 65102-0570. BEVS PUBLICATION NO. 4.66.

20. **Republic of Rwanda** (2016). Nº32/2016 of 28/08/2016. Law governing persons and family. Official Gazette nº37 of 12/09/201. Kigali.

21. **National Institute of Statistics of Rwanda (NISR)** (2018). Mortality Assessment Survey report 2015. July 2018. Kigali.

22. **State of Alaska. Department of Health and Social Services.** (2018). Alaska Vital Statistics 2017 Annual Report. Juneau. Alaska 99811-0675.

23. **Philippine statistics authority.** (2016). Vital statistics report. 2013-2014. Quezon City.

24. **Namibia statistics Agency.** (2017). Namibia Vital Statistics Report - Registered Births. Deaths and Marriages for the period 2011 – 2015. Windhoek. Namibia.

25. **National Institute of Statistics of Rwanda (NISR)** (2018). The Fifth Integrated Household Living Conditions Survey. EICV5. 2016/17. EICV5. Thematic Report Education. Kigali.

26. **Maina et al.** (2017). Using health-facility data to assess subnational coverage of maternal and child health indicators. Kenya.

27. **Cobos Muñoz. D.. C. Abouzahr and D. de Savigny** (2018). "The 'Ten CRVS Milestones' framework for understanding Civil Registration and Vital Statistics systems." BMJ Global Health 3 (2).

28. **National Institute of Statistics of Rwanda (NISR)** (2020). Rwanda vital statistics report 2019. Kigali.

29. **Vital Strategies. United Nations Economic Commission for Africa. United Nations Economic and Social Commission for Asia and the Pacific. and Statistics Norway** (2020). Production of a Vital Statistics Report: Template. NY. Vital Strategies.
30. **World Bank Group** (2020). Doing Business Report 2020.
31. **National Institute of Statistics of Rwanda (NISR)** (2021). Gross domestic product-2020. Kigali

ANNEXES

Annex 1: Top 20 most preferred baby's kinyarwanda names in 2021 by sex[4]

Rank	Male		Female	
	Child's Name	**Counts**	**Child's Name**	**Counts**
1	ISHIMWE	7,731	INEZA	6,867
2	MUGISHA	3,906	ISHIMWE	5,578
3	IRAKOZE	3,334	IRAKOZE	3,810
4	HIRWA	2,680	IGIRANEZA	2,867
5	IGIRANEZA	2,406	IRADUKUNDA	2,337
6	IRADUKUNDA	2,292	IRASUBIZA	1,633
7	INEZA	2,244	NIYOGUSHIMWA	1,025
8	KWIZERA	2,125	NIYOGISUBIZO	1,008
9	GANZA	2,068	IZIBYOSE	800
10	IRASUBIZA	1,926	IZERE	794
11	IRANZI	1,684	IGANZE	791
12	MANZI	1,534	IHIRWE	776
13	IZIBYOSE	1,394	CYUZUZO	654
14	BYIRINGIRO	1,388	MUNEZERO	510
15	NIYONKURU	1,347	DUSHIMIMANA	491
16	NIYOGISUBIZO	1,245	NIYOKWIZERWA	463
17	IGANZE	1,205	MANISHIMWE	424
18	BYISHIMO	1,000	TUYISHIMIRE	411
19	NSHIMIYIMANA	983	IRANZI	404
20	NDAYISHIMIYE	957	MUGISHA	384

[4] The names mentioned in this annex table relate to births that occurred from 1st January 2021 to 31st December 2021, from the dataset of births who were officially registered in 2021.

Annex 2: Top 20 leading causes of death all ages

Top 20 Leading COD, Male,all ages			Top 20 Leading COD, Female,all ages		
Rank	**Cause**	**%**	**Rank**	**Cause**	**%**
1	Prematurity and low birth weight	8.3	1	COVID-19	8.9
2	COVID-19	7.8	2	Prematurity and low birth weight	7.4
3	Other infectious diseases	7.3	3	Other cardiovascular diseases	7.2
4	Ill-defined injuries/accidents	4.8	4	Other infectious diseases	6.9
5	Other cardiovascular diseases	4.7	5	Other conditions arising in perinatal period	3.3
6	Birth asphyxia and birth trauma	3.8	6	Birth asphyxia and birth trauma	3.1
7	Other conditions arising during the perinatal period	3.7	7	Other digestive diseases	2.7
8	Other digestive diseases	2.5	8	Cerebrovascular disease	2.6
9	Nephritis and nephrosis	2.4	9	Nephritis and nephrosis	2.5
10	Human immunodeficiency virus [HIV] disease	1.9	10	Diabetes mellitus	2.2
11	Other unintentional injuries	1.8	11	Human immunodeficiency virus [HIV] disease	2.1
12	Other respiratory diseases	1.8	12	Ill-defined injuries/accidents	2
13	Cerebrovascular disease	1.8	13	Other respiratory diseases	1.5
14	Lower respiratory infections	1.5	14	Other neuropsychiatric disorders	1.4
15	Diabetes mellitus	1.5	15	Other neoplasms	1.4
16	Other neuropsychiatric disorders	1.4	16	Endocrine disorders	1.3
17	Tuberculosis	1.3	17	Other Congenital anomalies	1.3
18	Hepatitis C	1.1	18	Hepatitis C	1.3
19	Hepatitis B	1.1	19	Hypertensive disease	1.2
20	Heart failure, unspecified	1	20	Family history of asthma and other chronic diseases	1.2

Annex 3: Top 20 leading causes of death for under five years

Top 20 Leading COD, Male,0 -4 Years			Top 20 Leading COD, Female,0 -4 Years		
Rank	**Cause**	**%**	**Rank**	**Cause**	**%**
1	Prematurity and low birth weight	24.8%	1	Prematurity and low birth weight	19%
2	Birth asphyxia	10.2%	2	Birth asphyxia	8%
3	Hypoxic ischaemic encephalopathy of newborn	4.5%	3	Hypoxic ischaemic encephalopathy of newborn	4%
4	Preterm newborn not specified	3.8%	4	Preterm newborn not specified	3%
5	Respiratory distress syndrome of newborn	2.5%	5	Severe birth asphyxia	3%
6	Gastroschisis	2.5%	6	Pneumonia in other diseases classified elsewhere	2%
7	Severe birth asphyxia	2.4%	7	Other bacterial sepsis of newborn	2%
8	Pneumonia in other diseases classified elsewhere	2.2%	8	Other specified sepsis	2%
9	Other specified sepsis	1.7%	9	Sepsis, unspecified	2%
10	Bacterial sepsis of newborn, unspecified	1.4%	10	Gastroschisis	2%
11	Extremely low birth weight	1.2%	11	Bacterial sepsis of newborn, unspecified	2%
12	Sepsis, unspecified	1.1%	12	Respiratory distress syndrome of newborn	1%
13	Other bacterial sepsis of newborn	1.1%	13	Other and unspecified premature depolarization	1%
14	Respiratory distress of newborn, unspecified	1.1%	14	Respiratory disorders in other diseases classified elsewhere	1%
15	Fetus and newborn affected by premature rupture of Membranes	0.9%	15	Fetus and newborn affected by premature rupture of membranes	1%
16	Congenital heart block	0.8%	16	Birth asphyxia not classified	1%
17	Septic shock	0.8%	17	Personal history of medical treatment, unspecified	1%
18	Chromosomal abnormality, unspecified	0.8%	18	Gastroenteritis and colitis of unspecified origin	1%
19	Unknown and unspecified causes of morbidity	0.7%	19	Respiratory distress of newborn, unspecified	1%
20	Encephalopathy, unspecified	0.7%	20	Encephalopathy, unspecified	1%

Annex 4: Top 20 leading causes of death for young children aged 5-14

Top 20 Leading COD, Male,5 -14 Years			Top 20 Leading COD, Female,5 -14 Years		
Rank	**Cause**	**%**	**Rank**	**Cause**	**%**
1	Other specified sepsis	7%	1	Other specified sepsis	6%
2	Unspecified confirmed malaria	4%	2	Sepsis, unspecified	5%
3	Unspecified severe protein-energy malnutrition	3%	3	Unspecified confirmed malaria	4%
4	Pneumonia in diseases classified elsewhere	3%	4	Rheumatic heart disease, unspecified	3%
5	Chronic kidney disease, unspecified	3%	5	Septic shock	3%
6	Unspecified injuries due to transport	2%	6	Other tetanus	2%
7	Other specified disorders of brain classf elsw	2%	7	Acute myeloid leukaemia with abnormality	2%
8	Dilated cardiomyopathy	2%	8	Other specified disorders of brain classf elsw	2%
9	Septic shock	2%	9	Nephrotic syndrome, unspecified	2%
10	Chronic kidney disease, stage 5	2%	10	Chronic kidney disease, unspecified	2%
11	Bacterial foodborne intoxication, unspecified	2%	11	Unspecified injuries due to transport	2%
12	Amoebic brain abscess	1%	12	Open wound of unspecified body region	2%
13	Gastroenteritis and colitis of unspecified origin	1%	13	Toxic effect of organophosphate	2%
14	Other tetanus	1%	14	Sequelae of unspecified injury of head	2%
15	Meningococcal meningitis	1%	15	COVID-19 virus identified	2%
16	Other streptococcal sepsis	1%	16	Fall from a height	2%
17	Sequelae of unspecified injury of head	1%	17	Foodborne staphylococcal intoxication	1%
18	Fall from a height	1%	18	Advenced pulmonary tuberculosis	1%
19	Chronic viral hepatitis C	1%	19	Sepsis due to streptococcus, group A	1%
20	Malaria confirmed	1%	20	Streptococcal sepsis, unspecified	1%

Annex 5: Top 20 leading causes of death for young and adults

Top 20 Leading COD, male,15 -59 Years		
Rank	**Cause**	**%**
1	COVID-19 virus identified	7%
2	Human immunodeficiency virus [HIV]	4%
3	Pneumonia in other diseases classified elsewhere	3%
4	Sepsis, unspecified	3%
5	Severe hypertension	2%
6	Septic shock	2%
7	Cirrhosis of the liver	2%
8	Advenced pulmonary tuberculosis	1%
9	Adult respiratory distress syndrome	1%
10	Person injured in unspecified traffic accident	1%
11	Chronic kidney disease, unspecified	1%
12	Acute hepatitis B	1%
13	Toxic effect of organophosphate	1%
14	Heart failure, unspecified	1%
15	Unspecified injuries due to transport	1%
16	Sequelae of intracranial injury	1%
17	Meningitis in other specified infectious	1%
18	Congestive heart failure	1%
19	Unspecified diabetes mellitus	1%
20	Cardiomyopathy in diseases classified elsewhere	1%

Top 20 Leading COD, Female,15 -59 Years		
Rank	**Cause**	**%**
1	COVID-19 virus identified	10.6
2	Human immunodeficiency virus [HIV] disease	3.7
3	Diabetes and unspecified diabetes mellitus	3.6
4	Other specified sepsis	3.0
5	Pneumonia in other diseases classified elsewhere	3.0
6	Severe hypertension	2.4
7	Cirrhosis of the liver	2.2
8	Heart failure, unspecified	2.0
9	Congestive heart failure	1.9
10	Chronic kidney disease, unspecified	1.8
11	Postpartum haemorrhage (atonic)	1.8
12	Unknown and unspecified causes of morbidity	1.8
13	Septic shock	1.7
14	Advenced pulmonary tuberculosis	1.7
15	Unspecified confirmed malaria	1.7
16	Eclampsia	1.6
17	Hypovolaemic shock	1.6
18	Cardiomyopathy in other diseases classified elsewhere	1.4
19	Malignant neoplasm cervix uteri, unspecified	1.4
20	Peritonitis, unspecified	1.4

Annex 6: Top 20 leading causes of death for old aged people

Top 20 Leading COD, Male,60 Years and above		
Rank	**Cause**	**%**
1	COVID-19 virus identified	23%
2	Pneumonia in other diseases classified elsewhere	5%
3	Severe hypertension	5%
4	Other specified sepsis	2%
5	Unknown and unspecified causes of morbidity	2%
6	Malignant neoplasm of prostate	2%
7	Chronic viral hepatitis C	2%
8	Cirrhosis of the liver	2%
9	Sepsis, unspecified	2%
10	Brain stem stroke syndrome	2%
11	Hypertensive heart disease	1%
12	Adult respiratory distress syndrome	1%
13	Septic shock	1%
14	Chronic kidney disease, unspecified	1%
15	Acute hepatitis C	1%
16	Malignant hypertension	1%
17	Stroke, not specified as haemorrhage or infarction	1%
18	Respiratory disorders in other diseases classified Elsewhere	1%
19	Human immunodeficiency virus [HIV] disease	1%
20	Heart failure, unspecified	1%

Top 20 Leading COD, Female,60 Years and above		
Rank	**Cause**	**%**
1	COVID-19 virus identified	17%
2	Severe hypertension	5%
3	Pneumonia in other diseases classified elsewhere	4%
4	Sepsis, unspecified	2%
5	Septic shock	2%
6	Other specified sepsis	2%
7	Unknown and unspecified causes of morbidity	2%
8	Acute hepatitis C	1%
9	Congestive heart failure	1%
10	Cerebellar stroke syndrome	1%
11	Cirrhosis of the liver	1%
12	Chronic viral hepatitis C	1%
13	Adult respiratory distress syndrome	1%
14	Heart failure, unspecified	1%
15	Hypertensive heart disease	1%
16	Stroke, not specified as haemorrhage or infarction	1%
17	Brain stem stroke syndrome	1%
18	Malignant hypertension	1%
19	Chronic kidney disease, unspecified	1%
20	Family history of asthma and other chronic lower respiratory diseases	1%

Annex 7: Number of births reported at health facilities by weight at birth and by age of mothers

Mother's age	<1500	1500-1999	2000-2499	2500-2999	3000-3499	3500-3499	4000-4499	4500-4999	5000+	Not stated	Grand Total
10-14	5	2	15	65	62	28	2			2	181
15-19	222	250	1,290	7,379	10,009	3,500	360	44	11	288	23,353
20-24	636	688	3,591	20,366	31,158	12,196	1,482	187	22	1,154	71,480
25-29	780	678	3,182	18,892	33,341	15,871	2,568	301	41	1,322	76,976
30-34	679	609	2,735	15,045	28,600	14,864	2,765	418	68	1,220	67,003
35-39	497	572	2,146	11,027	20,160	10,836	2,176	364	55	1,096	48,929
40-44	217	265	909	4,312	7,595	4,132	829	147	23	477	18,906
45-49	19	34	103	460	862	407	81	11	2	81	2,060
50+	3	2	6	19	47	22	5	2		14	120
Total	**3,078**	**3,115**	**14,034**	**77,895**	**132,343**	**62,116**	**10,300**	**1,482**	**224**	**5,662**	**310,249**

Annex 8: Projections of the total population in 2021 according to the medium projections scenario

5 year age Group	2021		
	Both sexes	**Male**	**Female**
0-4	1,718,786	867,664	851,122
5-9	1,571,179	789,801	781,377
10-14	1,505,954	749,213	756,740
15-19	1,458,627	723,221	735,406
20-24	1,199,152	588,329	610,824
25-29	1,065,549	519,788	545,762
30-34	983,226	475,821	507,405
35-39	874,697	428,210	446,487
40-44	687,596	328,078	359,518
45-49	458,383	207,041	251,342
50-54	377,427	172,284	205,143
55-59	312,991	140,690	172,301
60-64	292,277	128,658	163,620
65-69	191,339	82,539	108,801
70-74	123,969	51,617	72,352
75-79	63,070	23,291	39,779
80 +	71,543	26,183	45,360
Total	**12,955,763**	**6,302,425**	**6,653,338**

Annex 9: Projection of urban and Rural populations in 2021 according to medium projections scenario

5 year age Group	2021		
	Both sexes	**Male**	**Female**
0-4	348,948	165,437	183,511
5-9	288,312	136,139	152,173
10-14	291,805	134,555	157,250
15-19	341,805	150,633	191,171
20-24	351,668	170,800	180,868
25-29	320,574	163,381	157,193
30-34	275,431	143,207	132,224
35-39	230,380	123,068	107,312
40-44	161,243	85,776	75,467
45-49	92,680	47,077	45,603
50-54	64,134	32,579	31,555
55-59	48,651	23,880	24,771
60-64	43,455	20,428	23,027
65-69	28,629	12,483	16,145
70-74	17,458	7,081	10,378
75-79	9,198	3,140	6,058
80 +	10,391	3,106	7,285
Total	**2,924,764**	**1,422,772**	**1,501,991**

Annex 10: Persons who contributed to the production of the Rwanda Vital statistics (V.S) Annual report, 2021

National overall coordinators

- MURANGWA Yusuf, Director General of NISR
- MURENZI Ivan, Deputy Director General of NISR

National technical coordinators

- NDAKIZE Michel, Director of demographic and social statistics - NISR
- NILINGIYIMANA Faustin, CRVS Team Leader - NISR

V.S Report 2021 data analysis and report writing

- NILINGIYIMANA Faustin, CRVS Team Leader – NISR
- NSHIMIYIMANA Patrick, CRVS statistician – NISR
- NGOBOKA Godfrey, CRVS coordinator – RBC
- NGOMITUJE Xavier, Statistician – NISR
- NDAGIJIMANA Valens -RBC

V.S Report 2021 proofreading, design and layout

- NILINGIYIMANA Faustin, CRVS Team Leader – NISR
- NSHIMIYIMANA Patrick, CRVS statistician – NISR
- NGOMITUJE Xavier, Statistician - NISR
- NGOBOKA Godfrey, CRVS coordinator – RBC
- MAZIMPAKA Jean Claude, Statistician – NISR
- GAKUBA Stephen - NIDA
- BUGINGO Stephen - NIDA
- NYIRIMANZI Jean Claude – NISR
- KABERA Jean Luc - NISR

APPENDIX

1. MCCOD FORM USED IN HEALTH FACILITIES

REPUBLIC OF RWANDA

MINISTRY OF HEALTH

MEDICAL CERTIFICATE OF CAUSE OF DEATH

Name of the deceased:……File N°:……Health Facility::……
National Identification Number/Passport Number :……Nationality:……Residence:
District……Sector……Cell……Village……
Marital status: …… Sex …… Place of Death:…… Date of Birth:……
Date of Birth unknown (Estimated age)……Date of Death: …… Time of Death ……p.m/a.m

Frame A: **Medical data: Part 1 and 2**			
I Report disease or condition directly leading to death on line a Report chain of events 'due to' (b to d) in order (if applicable) State the underlying cause on the lowest used line		Cause of death	Time interval from onset to death
	a		
	b	Due to:	
	c	Due to:	
	d	Due to:	
II Other significant conditions contributing to death (time intervals can be included in brackets after the condition)			

Frame B: **Other medical data**										
Was surgery performed within the last 4 weeks?			☐ Yes	☐ No	☐ Unknown					
If yes please specify date of surgery			D D	M M	Y Y Y Y					
If yes please specify reason for surgery (disease or condition)										
Was an autopsy requested?			☐ Yes	☐ No	☐ Unknown					
If yes were the findings used in the certification?			☐ Yes	☐ No	☐ Unknown					
Manner of death:										
☐ Disease	☐ Assault		☐ Could not be determined							
☐ Accident	☐ Legal intervention		☐ Pending investigation							
☐ Intentional self-harm	☐ War		☐ Unknown							
If external cause or poisoning:		Date of injury	D D	M M	Y Y Y Y					
Please describe how external cause occurred (If poisoning please specify poisoning agent)										
Place of occurrence of the external cause:										
☐ At home	☐ Residential institution	☐ School, other institution, public administrative area			☐ Sports and athletics area					
☐ Street and highway	☐ Trade and service area	☐ Industrial and construction area			☐ Farm					
☐ Other place (please specify):					☐ Unknown					
Fetal or Infant Death										
Multiple pregnancy			☐ Yes	☐ No	☐ Unknown					
Stillborn?			☐ Yes	☐ No	☐ Unknown					
If death within 24h specify number of hours survived			Birth weight (in grams)							
Number of completed weeks of pregnancy			Age of mother (years)							
If death was perinatal, please state conditions of mother that affected the fetus and newborn										
For women, was the deceased pregnant?			☐ Yes	☐ No	☐ Unknown					
☐ At time of death			☐ Within 42 days before the death							
☐ Between 43 days up to 1 year before death			☐ Unknown							
Did the pregnancy contribute to the death?			☐ Yes	☐ No	☐ Unknown					
Referred from (level of care)		Parity		Mode of delivery	☐ SVD	☐ Assisted	☐ Caesarean			
Place of Delivery	☐ Health Facility	☐ Home	☐ In transit	☐ Don't Know	Delivered by skilled attendant	☐ Yes	☐ No	☐ Don't Know		

Declaration
I hereby certify that (*tick as appropriate*)

a) I attended the deceased before death
b) I examined the body after death
c) I conducted the post mortem of the body
d) Other (specify) ……

Medical Doctor's Name: ……

Signature …… Date……

2. DEATH CERTIFICATE FORM USED BY HEALTH FACILITIES FOR NEXT OF KIN/DECLARANT OF DECEASED

REPUBLIC OF RWANDA

MINISTRY OF HEALTH

N°.....	**INYANDIKO MPINE Y'UWAPFUYE/ DEATH CERTIFICATE/ ATTESTATION DE DECES N°.....**
	Itariki y'urupfu/ Date of death / Date de décès : ...../...../..... Jyewe/ I / Moi : .... Umuganga wemewe na leta ufite nimero/Certified Medical Doctor with Registration number of / Médecin enregistré sous le numéro N° .....(Mu Rugaga rw'Abaganga n'Abaganga b'Amenyo mu Rwanda/Ordre de Médecins et Dentistes du Rwanda/ Rwanda Medical and Dental Council), ukorera mu bitaro bya /Working at hospital/Travaillant à l'hôpital de ..... Ndemeza urupfu rwa / Certify the death of/ Atteste le décès de:.....
	Igitsina/ Sex /Sexe : ..... Itariki yavukiyeho/ Date of birth/ Date de naissance :...../...../..... Irangamimerere ye/ Marital status/ Status matrimonial: ..... Nomero y'ibyangurangaga/ Identity Card, Passport number/ Numéro de la Carte d'identité, du Passeport: ..... Ubwenegihugu / Nationality/ Nationalité:..... Icyateye urupfu/ Cause of death /Cause de décès:..... .... Aho yari atuye/ Place of domicile / Domicile : Akarere, Umurenge, Akagari, Umudugudu/ District, Sector, Cell, Village /District, Secteur, Cellule, Village: ...../..... ...../.....
	Umenyekanishije/ Declarant/ Déclarant: ..... Nomero y'ibimuranga/ Identity Card, Passport number/ Numéro de la Carte d'identité, du Passeport: ..... **Isano bafitanye/ Relationship/ Lien de parenté:** .....
	..... **Umukono na kashe by'Umuganga/** **Signature and Stamp of the Medical doctor/ Signature et cachet du Médecin**

3. DEATH CERTIFICATE QUALITY ASSESSMENT TOOL

REPUBLIC OF RWANDA

MINISTRY OF HEALTH
P.O. BOX 84 KIGALI
www.moh.gov.rw

DEATH CERTIFICATE QUALITY ASSESSMENT TOOL V1.2

A correctly filled-in death certificate has none of the following errors. Please indicate whether the death certificate has:

No.	Error Type	Yes*	No
1	Date of birth missing		
2	Date of death missing		
3	Time of death (a.m./p.m.) missing		
4	Sex of the deceased not specified		
5	Multiple causes of death per line		
6	Missing time interval from onset to death		
7	Abbreviations used in certifying cause of death		
8	Blank lines within chain of events leading to death		
9	Incorrect or clinically improbably chain of events leading to death		
10	Incorrect injuries or illnesses listed as contributory causes of death		
11	**Ill-defined condition(s) entered as the underlying cause of death**		
If yes, was the ill-defined condition:			
11.1	*Assigned impossible underlying cause of death i.e. signs and symptoms*		
11.2	*Mode of dying entered as underlying cause of death e.g. respiratory/ heart arrest*		
11.3	*Intermediate cause entered as underlying cause of death eg Septicaemia*		
11.4	*Unspecified causes within a larger death category entered as underlying cause of death*		
12	If surgery was performed, it is not indicated in Frame B		
13	For deaths as a result of neoplasms, additional details were missing		
14	For deaths due to external causes, additional details were missing		
15	For fetal or infant deaths, additional details were missing		
16	For deaths of women, additional details were missing		
17	Illegible hand writing		
18	The form is not signed by the medical doctor		

*** Whenever there is "*Yes*" response, clarify with certifying Medical doctor.**

4. BIRTH ACT FORM USED FOR REGISTRED BIRTH

INYANDIKO Y'IVUKA/BIRTH ACT/ACTE DE NAISSANCE N°……

REPUBLIKA Y'U RWANDA **IBIRO BY'IRANGAMIMERERE BYA/** **CIVIL REGISTRAR'S OFFICE OF /** **BUREAU DE L'ETAT CIVIL DE** **……** **……** **IGITABO CYA/** **VOLUME** **……**	Itariki y'imenyekanisha/Date of declaration/Date de déclaration : …… …… …… …… Jyewe/ I/Moi: …… Umwanditsi w'Irangamimerere wa/Civil Registrar of /Officier de l'état civil de: …… Nakiriye imenyekanisha ry'ivuka/Receive the declaration of birth/Reçois la déclaration de naissance: **UMWANA/CHILD/ENFANT**: Izina ry'umwana/Name of the child/ Nom de l'enfant: …… Itariki yavukiyeho/Date of birth/Date de naissance: …… …… …… …… Aho yavukiye/Place of birth/Lieu de naissance: …… …… Igitsina/Sex /Sexe: …… **ABABYEYI /PARENTS/PARENTS:** Izina rya se/Father's name/Nom du père: …… Imyaka ye/Age/Age: …… …… Aho atuye, aba/ Domicile,Residence/ Domicile, Résidence: …… …… Ubwenegihugu/Nationality/Nationalité: …… Nomero y'ibimuranga/ Identity card, Passport number/ Numéro de la Carte d'Identité, Passeport: …… …… Izina rya nyina/Mother's name/Nom de la mère: …… …… Imyaka ye/Age/Age: …… …… Aho atuye, aba/ Domicile,Residence/ Domicile, Résidence: …… …… Ubwenegihugu/Nationality/Nationalité: …… Nomero y'ibimuranga/ Identity card, Passport number/ Numéro de la Carte d'Identité, Passeport : …… …… **Umenyekanishije/ Declaring person/ Déclarant:** …… **Isano bafitanye/ Relationship/ Lien de parenté:** …… Icyemezo cya muganga cyo ku wa/ Medical birth certificate of/ Attestation médicale du: …… …… …… …… ……(1) Ikigo cy'Ubuzima/ Health establishment/Etablissement de santé : …… …… …… …… (2) Icyemezo cy'ubuyobozi cyo ku wa/ Authority certificate of/Attestation de l'autorité du: …… …… …… …… Ubuyobozi bwagitanze/Issuing authority/Autorité ayant délivré l'attestation …… …… Iyi nyandiko isomewe uwamenyekanishije ivuka n'abatangabuhamya/This Act is read to the person declaring the birth and witnesses/ Lecture du présent Acte est faite au déclarant de la naissance et aux témoins: …… …… **Umukono w'umenyekanishije** **Umukono na kashe by'Umwanditsi w'Irangamimerere** **Signature of the declaring person** **Signature and stamp of the Civil Registrar** **Signature du déclarant** **Signature de l'Officier de l'état civil**

5. DEATH ACT FORM FOR REGISTERED DEATH

INYANDIKO Y'UWAPFUYE /DEATH ACT /ACTE DE DECES N°……

REPUBULIKA Y'U RWANDA

IBIRO BY'IRANGAMIMERERE BYA/

CIVIL REGISTRAR'S OFFICE OF / BUREAU DE L'ETAT CIVIL DE
……

……

IGITABO CYA/

VOLUME
…….

Itariki y'imenyekanisha/Date of declaration/Date de déclaration : ……
……
……
……

Jyewe/ I / Moi: ……
Umwanditsi w'irangamimerere wa/ Civil Registrar of /Officier de l'état civil de ……
Nakiriye imenyekanisha ry'urupfu/Receive the death declaration/ Reçois la déclaration de décès:

UWAPFUYE/ DECEASED/ DECEDE :

Izina ry'uwapfuye/ Names of the deceased/Nom du défunt: ……
……
Itariki yapfiriyeho / Date of death /Date de décès: ……
……
……
……
Aho yapfiriye/ Place of death/ Lieu de décès:……
Aho yari atuye; yabaga/ Domicile, residence/ Domicile, résidence: ……
……
Igitsina/ Sex /Sexe :……
Icyateye urupfu/ Cause of death /Cause de décès:……
……

ABABYEYI/ PARENTS/ PARENTS:

Izina rya se/ Father's name/ Nom de père : ……
Imyaka ye/Age/Age: ……
……
Aho atuye; aba/domicile; residence /domicile; résidence : ……
……
Ubwenegihugu/ Nationality/ Nationalité:……
Nomero y'ibimuranga/ Identity Card; passport number/ Numéro de la carte d'identité; passeport: ……

Izina rya nyina/ Mother's name / Nom de la mère: ……
Imyaka ye/Age/Age: ……
……
Aho atuye; aba/domicile; residence /domicile; résidence : ……
……
Ubwenegihugu/ Nationality/ Nationalité:……
Nomero y'ibimuranga/ Identity Card, passport number/ Numéro de la carte d'identité, Passeport ……

Umenyekanishije/ Declaring person/ Déclarant: ……
Isano bafitanye/ Relationship/ Lien de parenté: ……

Icyemezo cya muganga cyo ku wa/ Medical certificate issued at/ Attestation médicale du …… (1)
……
……
……
Ikigo cy'Ubuzima/ Health establishment/ Etablissement de santé: ……

Icyemezo cy'ubuyobozi cyo ku wa/Authority certificate of/Attestation de l'autorité du ……(2)
……
……
……
Ubuyobozi bwagitanze/Authority name / Autorité ayant délivré l'attestation :
……

Iyi nyandiko isomewe umenyekanishije urupfu n'abatangabuhamya/This Act is read to the person declaring the death and witnesses / Lecture du présent Acte est faite au déclarant du décès et aux témoins:

…… ……

Umukono w'uwamenyekanishije
Signature of declaring person/
Signature du déclarant

Umukono na kashe by'Umwanditsi w'Irangamimerere
Signature and stamp of the Civil Registrar
Signature et cachet de l'Officier de l'état civil

Imikono y'abatangabuhamya/Signatures of witnesses/ Signatures des témoins:

1. ……

2……

6. MARRIAGE ACT FORM FOR LEGALIZED MARRIAGE

INYANDIKO Y'ISHYINGIRANYWA/MARRIAGE ACT/ACTE DE MARIAGE N°……..……

REPUBULIKA Y'U RWANDA **IBIRO BY'IRANGAMIMERERE BYA/** **CIVIL REGISTRAR'S OFFICE OF/ BUREAU DE L'ETAT CIVIL DE :** **……** **…** **……** **IGITABO CYA/** **VOLUME** **……**	Itariki y'imenyekanisha/Date of declaration/Date de déclaration : …… …… …… …… Jyewe/ I / Moi: …… Umwanditsi w'irangamimerere wa/Civil Registrar of /Officier de l'état civil de …… Nakiriye imenyekanisha ry'ishyingiranywa/ Receive the declaration of the marriage/ Reçois la déclaration de mariage
	ABASHYINGIRANYWE/SPOUSES/EPOUX
	Izina ry'uwashyingiwe/ Name of the spouse/ Nom de l'époux: …… Itariki yavukiyeho/ Date of birth/ Date de naissance: …… …… …… …… Aho atuye; aba/domicile; residence /domicile; résidence : …… Igitsina/ Sex/ Sexe: …… Ubwenegihugu/ Nationality/ Nationalité: …… Nomero y'ibimuranga/ Identity Card; passport number/ Numéro de la carte d'identité/Passeport …… Izina rya se/ Father's name / Nom du père: …… Izina rya nyina/ Mother's name/ Nom de la mère: ……
	Na/and/et
	Izina ry'uwashyingiwe wundi/ Name of the other spouse/ Nom de l'autre époux: …… Itariki yavukiyeho/ Date of birth/ Date de naissance: …… …… …… …… Aho atuye, aba/domicile, residence /domicile, résidence : …… …… Igitsina/ Sex/ Sexe: …… Ubwenegihugu/ Nationality/ Nationalité: …… Nomero y'ibimuranga/ Identity Card, passport number/ Numéro de la carte d'identité, Passeport …… …… Izina rya se/ Father's name / Nom du père: …… Izina rya nyina/ Mother's name/ Nom de la mère: ……
	Uburyo bw'icungamutungo bahisemo / Matrimonial regime/ Régime matrimonial: …… …… Ibyemezo byatanzwe nk'uko amategeko abiteganya/Certificates submitted as provided for by the law/Attestations déposées tel que prévu par la loi : 1. …… 2. …… 3. ……
	Iyi nyandiko isomewe abamenyekanishije ishyingirwa, abahagarariye imiryango n'abatangabuhamya/This Act is read to the spouses declaring the marriage, family representatives and witnesses/Lecture du présent Acte est faite aux époux déclarant le mariage, aux représentants des familles et aux témoins. Imikono y'abashyingiranywe/ Signatures of spouses/Signatures des époux : 1. …… 2. …… …… **Imikono y'abahagarariye imiryango** **Signatures of family representatives** **Signature des représentants des familles** **Umukono na kashe by'Umwanditsi w'Irangamimerere** **Signature and stamp of the Civil Registrar** 1. …… **2.** …… **Signature et cachet de l'Officier de l'état civil** **Imikono y'abatangabuhamya** **Signatures of witnesses** **Signatures des témoins**

National Institute of Statistics of Rwanda