

SYNTHESIS BRIEF

Recording every birth and death during COVID-19: Digital solutions for civil registration service delivery and health surveillance in Africa



INTRODUCTION

Governments worldwide have put strategies in place to reduce the spread of COVID-19 since the first wave hit in early 2020. These range from simple restrictions aimed at containing the virus to locking down and isolating entire cities and regions. Some authorities responsible for civil registration systems have also launched activities to ensure that service continues during and after emergencies like this one, and established safeguards to ensure the safety of their staff and clients alike.

IMPACT ON CIVIL REGISTRATION SYSTEMS

The United Nations Economic Commission for Africa (UNECA), together with the UN Legal Identity Task Force (UNLIA), conducted a survey in April 2020 to assess the impact of COVID-19 on civil registration systems.¹ The survey found that almost 75 percent of civil registration services were impacted by the pandemic, as most civil registration laws and service models require persons to present themselves in front of a registrar to register vital events like births, marriages, or deaths.²

Building better civil registration systems

Strengthening civil registration systems so they are more emergency resilient involves several considerations:

- Reduce the need for interaction with the public in registration premises.
- Work closely with health officials and traditional authorities to electronically notify civil registration offices that a vital event has occurred.
- Set up systems that allow people to submit applications for the registration of vital events online.

1 unstats.un.org/legal-identity-agenda/covid-19

2 crvssystems.ca/sites/default/files/assets/images/COVID-19_Synthesis%20Brief_e.pdf



This synthesis brief looks at the value and advantages of relatively new digital platforms for notifying vital events in Burkina Faso, Mozambique, Namibia, Rwanda, Tanzania, and Uganda. Its overarching aim is to answer the following questions:

- Have the recent digital efforts of African governments made civil registration systems more resilient?
- Have these advances supported the uninterrupted notification of births and deaths during the crisis?
- Have these systems enabled civil registry data to be used for health surveillance during the COVID-19 pandemic?

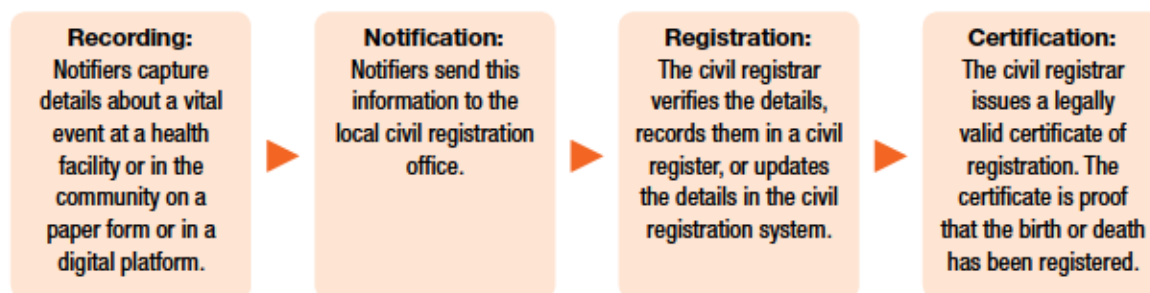
This synthesis brief is based on case studies of the six countries mentioned above; it documents the different systems architectures to serve as inspiration for countries where digitization is still underway.³

RECORDING EVERY BIRTH AND DEATH BEGINS WITH NOTIFICATION

Notification is the first step in a birth or death registration process. Traditionally, it takes four steps to issue a vital event certificate (see Figure 1). The notification is important because

- it is an eyewitness account that a vital event such as a birth or death has occurred;
- civil registration documents are legal source documents, and they must be accurate and trustworthy;
- civil registration authorities must be able to validate key facts about the vital event – place, date, and identities – before creating the legal record; and
- all other institutions rely on accurate records and the civil registry for their business transactions, including ID, travel documents, social protection services, land registration, voting, and more.

Figure 1: Steps involved in the civil registration of vital events



HOW MOBILE PHONE USE IS DRIVING DIGITAL SOLUTIONS IN AFRICA

Over the past number of years, countries across Africa digitized their notification systems, all with the same goal: to make sure that all births and deaths were recorded immediately after occurrence. Many of these have been designed to address low registration rates and to collect data to produce vital statistics. Most are operated by a variety of notification facilitators, most commonly health authorities, traditional leaders, police, mortuary staff, and others.

With 650 million smartphone users in Africa,⁴ digital technology has a massive opportunity: it can drive the agenda to improve civil registration and vital statistics (CRVS) systems and advance efforts to provide legal identity for all. The reliance on mobile technologies has become a widely used strategy in Africa to swiftly communicate notifications of vital events. With their mobile phones, people in urban, rural, and remote communities – such as local leaders, health workers, and village elders – can serve as notifiers.

Mobile technology solutions make it possible to maintain services, such as identifying and notifying the occurrence of births and deaths, when civil registration centres are not open because of a pandemic, severe weather, conflict, or natural disaster. This very ability for the notification system to continue operating largely impeded contributes to the CRVS system's resilience and ensures continuity during a crisis. Civil registrars can then record and validate the information and issue certificates quickly. In instances where registration is delayed due to government restrictions, illness, or fear of infections, people can return later to registration facilities to register a vital event knowing that an accurate digital record is in place.

DIGITAL NOTIFICATION AND REGISTRATION OF BIRTHS AND DEATHS

The six countries studied — Burkina Faso, Mozambique, Namibia, Rwanda, Tanzania, and Uganda — all have customized approaches to the digital notification and registration of births and deaths. In each case, the notification systems, which are linked to the health sector, collect information about vital events efficiently, accurately, and in a timely manner. Some of the systems are also collecting essential health data, which can be used to monitor maternal and child health.

Based on the practices observed in the six countries studied, it can be observed that countries use one or several of the following approaches to transmit information about births and deaths:

- From computers in maternity wards;
- By a call from a mobile phone, including USSD messages;
- By text message from a mobile phone;
- Using mobile phone apps or voice recognition software; and
- By incorporating it in an online application for registration.

Find out more about e-notification and how it works in the [UNECA and APAI-CRVS technical brief on the subject](#).

⁴ World Bank and African Development Bank.

KEY FINDINGS

Our analysis found that countries with digitized registration systems had fewer, or in some cases, minimal disruptions during COVID-19. In addition, the research underscored that:

- **Health systems and well-functioning civil registration systems can be mutually beneficial.** Countries with strong collaboration between the civil registration and health systems operate more resilient civil registration systems. The e-notification component supports the universal, continuous, permanent, compulsory, and timely recording of vital events. Over time, health systems will directly benefit from contributing to building stronger civil registration systems as it will create better means for identity validation and data surveillance. These systems are mutually beneficial and should not operate in silos.
- **The efficiency of birth and death registration processes is predicated on a strong vital events notification system.** A registration of any event can typically only take place if notification of that event is provided. The registration provides assurance that the captured information on the notification is verified and due legal conditions for the registration have been met. Therefore, improving registration rates is closely linked to a well-functioning notification system. During the COVID-19 crisis, when it was critical to limit gatherings in registration offices, expanding the ways that notifications can be collected and submitted is of particular importance.
- **Governments are increasingly taking steps to communicate information on vital events more easily and making the process less burdensome for citizens.** This represents a departure from traditional thinking where people were responsible for understanding the registration requirements, collecting all required documentation, and contacting registration authorities — often several times and at different locations — until the process is fully completed.

Detailed findings are outlined in the sections below:

- The determinants of a successful e-notification system;
- One-step notification–registration–certification process;
- Long-term planning for e-notification systems;
- Data privacy and protection; and
- Registering every death in a health crisis.

The paper concludes with information on the six country case studies.



The determinants of a successful e-notification system

Our analysis found that three factors contribute to the success of a notification system:

- Decentralized notification systems;
- Digitized notification systems; and
- Online registration services.

Decentralized notification systems

Decentralization in Mozambique, Tanzania, and Uganda resulted in more actors being involved in the notification of vital events. This approach was particularly successful with health facilities because most births and deaths occur at health facilities. When these facilities were provided with a user-friendly way to capture information for births and deaths, it led to an increase in the number of events captured through notifications.

During COVID-19, the high priority governments put on health services directly benefited the civil registry. The capturing of birth and death information was uninterrupted, although some countries reported fewer notifications because fewer women gave birth at health facilities.

Similar results could be observed with notifications completed by local community officials, but to a lesser extent than health facilities.

Digitized notification systems

The digitization and automation of notification systems in Burkina Faso, Mozambique, Namibia, Rwanda, Tanzania, and Uganda proved beneficial. Each country's notification system showed resilience and information was shared swiftly.

Once information is captured digitally, it can be processed more efficiently, and it allows for vital events to be captured and stored digitally even if the conditions to complete the registration are not in place. This has been especially important during the COVID-19 restrictions. Once the service is restored in its full capacity, all notifications that have been stored will be dealt with quickly. It also provides a full picture of the number of unregistered events. To date, none of the countries have made use of the data collected for health surveillance during the pandemic.

Digitization also allows countries to continuously innovate in how they capture and communicate vital events data. New opportunities are emerging to leverage mobile technologies for data capture and communication. These technologies are being increasingly used to stay in contact with informants to tell them when the registration has been completed or when the certificate is ready to be collected. However, new needs are likely to emerge — such as mobile network-based verification of registered vital events — that in turn would change the established perception of the value of a paper registration certificate.

The COVID-19 crisis revealed yet another distinct advantage of digitization. Offices no longer need to be the central place for vital events capturing or registration. Today, in some countries, authorized notifiers and registration agents can complete notification and registration forms from their homes using their computers; and take advantage of web-based registration applications for notification and registration. This is a distinct advantage of the e-notification and registration system. It shows that the system can remain operational in times of crisis or emergency.

Online registration services

The global pandemic also accelerated the introduction of online services for citizens who can now complete applications directly through dedicated web platforms in some of the countries studied. New systems have already rolled out in Rwanda and Tanzania. When a person scans and uploads all documentary evidence to the online registration platform, processing takes place without the need to interact with registration agents. This includes verifying the validity of submitted documents and completing the actual registration.

One-step notification–registration–certification process

Our analysis found that Tanzania and Rwanda determined that the legal aspects of the registration process can be delegated to appointed registration agents, such as health practitioners, through decentralization. In other words, they decided that notification, registration, and certification could be combined into a one-step process. In Tanzania, the registration certificate is issued right after the event is recorded on the registration form. In Rwanda, the birth certificate can be accessed through Irembo. The form is then archived, and the data digitized in the central civil register.

In Tanzania, meeting legal requirements requires only that the

- medical certificate of the event has been verified;
- parents' identity data has been copied from the ID documents they presented; and
- relevant data has been accurately transferred to the registration form.

This approach proved to be very successful in eliminating many barriers to registration and driving up birth registration rates. However, it relies on the premise that persons applying for registration and registration agents genuinely follow the procedures.

It's important to consider that in most countries birth registration determines a person's nationality status or access to specific social allowances. As the population becomes increasingly aware that the registration unlocks access to specific entitlements, the attempts to defeat the system and fabricate events will likely increase. In such cases, countries should place greater weight on the consideration of administrative controls. For this reason, a birth certificate issued as part of the one-step process in Tanzania is not deemed as proof of nationality.

The four-layered registration process most other countries follow allows for higher administrative controls (Figure 1). The source data collected must be trusted by other government institutions to be valued. Yet, the four-layered process has proven to be less effective in countries that offer little incentive for parents to register a birth.

One of the greatest dilemmas when building or redesigning civil registration processes is how to set up trusted and thorough processes without affecting the rates of registration and issuance completeness. What do you weigh the highest – the consideration of administrative controls and accuracy or service delivery? When there are more steps and there is a division of powers, there is a greater likelihood of creating barriers that will prevent registration, certification, or the

final collection of the vital event certificates. On the other hand, unvalidated civil registration and identity data obtained through the one-step process could potentially have little value for stakeholders and jeopardize the integrity of the system. It is our view that the data generated by the conventional four-step process is likely to be of higher quality than data generated by the one-step process.

That said, the one-step process can be still successfully implemented with all guarantees in place if the system allows, as part of the one-step process, the storing of digital copies of the presented medical certificate, IDs and marriage certificates presented, or a proof that the digital verification of the presented documents was done.

Long-term planning for e-notification systems

The system architecture and processes must be continuously strengthened over time. All countries studied had customized their notification systems based on the country context and funds available. In planning such systems, it's important for countries to

- plan to improve systems over time for better data trust and accuracy, efficiency, service delivery, and level of digitization;
- reevaluate and re-engineer the system architecture on a continuous basis;
- adapt to new technologies, network coverage, and environmental changes; and
- introduce a trusted digital signature to eliminate the need for people to present themselves in front of a registrar.

In planning these systems, it is impossible to think through all potential future scenarios. All models examined in this paper can be improved over time. Digitization will not in itself guarantee a well-functioning civil registration system. The system must be built on a strong legal framework that includes institutions and staff capacity to operate them.

Data privacy and protection

The countries studied collected different sets of data in their notification systems. In some of the countries studied, a stronger legal framework is needed to ensure data privacy and protection.

Data privacy and protection must be at the core of plans to digitize systems. A country's legal framework must stipulate how to handle the production and use of data. With a protocol in place, frontline workers can be trained to properly handle data.

As systems become digitized, registrars will have easier access to large amounts of data. They will come under increasing pressure from other authorities, private entities, and the public who may want to access personal information, such as marital status, family relationships, and addresses. Function creep is the phenomenon of continuously expanding the use of personal data once data is collected and stored. In order to mitigate these risks, a sound legislative framework should be in place that guarantees that data collected and processed digitally is used only for the purpose that is defined by the law.

Registering every death in a health crisis

COVID-19 has highlighted the challenges related to notifications of death events in the context of a health crisis. Not all confirmed COVID-19 patients are hospitalized.

Significant strain on the health system during the pandemic has resulted in many deaths taking place outside of health facilities. Given the already weak death registration systems in most of the countries studied, not all deaths are recorded, including those resulting from COVID-19. Only Namibia and Rwanda did not see a drop in death registrations.

For the time being, there are several barriers to notifying deaths in the countries studied:

- The complex process to legally certify that a death has occurred in the community;
- The lack of a framework to determine the cause of death in such instances; and
- The fact that health facilities often lack knowledge to accurately codify cause of death, which was amplified by the problem of determining how to reflect the deaths of patients with or without a medically confirmed COVID-19 infection.

Some countries like Namibia and Rwanda are collecting a nearly complete set of death registration data, however, these are not being used for health surveillance. In both countries, the data will be analyzed and published by the national statistics authorities.

Data produced by health authorities must be used for health surveillance, and continuously compared with data in the civil registration system (death register). None of the countries studied were using this rich data to release death data related to COVID-19. This is an area that needs further attention.



COUNTRY BEST PRACTICES

Burkina Faso	
<p>About the notification system</p>	<p>Innovation in vital events notification – iCivil</p> <ul style="list-style-type: none"> ● Introduced in 2019 as an integrated solution to bring innovation in the way vital events are notified; ● Computerized the civil registration system to address challenges in meeting certain registration coverage goals; ● Provides systematic and secure registration of civil events, from birth until death; and ● Platform is based on the protected unique identification code stored on an iCivil hospital bracelet. <p>National Digital Registry of Civil Status General Directorate for the Modernization of Civil Status (DGMEC)</p> <ul style="list-style-type: none"> ● A mobile app transfers vital events to a DGMEC-operated national digital registry of civil status; and ● Each citizen in the country can obtain a copy of their civil status documents in any registration centre, embassy, and consulate.
<p>COVID impact and response</p>	<p>Impact</p> <ul style="list-style-type: none"> ● The first case of COVID-19 was identified on 9 March 2020; ● The government introduced lockdown measures and declared civil registration an essential service; and ● Health measures and quarantining resulted in fewer staff at registration offices and fewer users of civil registration services. <p>Response</p> <ul style="list-style-type: none"> ● In Burkina Faso, the civil registration system was not affected by the COVID-19 pandemic.
<p>Key lessons learned</p>	<p>During the COVID-19 pandemic, the iCivil system has allowed for</p> <ul style="list-style-type: none"> ● continued recording of vital events; ● ongoing data on births and deaths; and ● avoiding physical contact between agents and users of civil status services.






Mozambique ⁵	
About the notification system	<p>Registration process and central electronic database</p> <ul style="list-style-type: none"> ● Created an elaborate network of 543 registration points to capture birth and death data on registration forms after the event; ● Forms are processed and the informant receives a text message that the registration certificate is ready to pick up; ● Key information from the completed registration forms can be transmitted to the central registration authority, National Directorate of Registries and Notaries, over a mobile operator network; and ● Information is stored in a central electronic database.
COVID impact and response	<p>Impact</p> <ul style="list-style-type: none"> ● In response to the spread of COVID-19, the country's civil registration authority reduced operations and provided minimum services. Registration offices were closed; ● The outbreak resulted in a drop of 31 percent of the total number of legal registrations of births between March and July 2020; and ● COVID-19 reduced the capacity to process registration forms in a timely manner. <p>Response</p> <ul style="list-style-type: none"> ● Mozambique's registration agents in local communities remained operational during COVID-19 and completed a higher number of birth registration forms in comparison to 2018 (the year when the system started operating); and ● The registration process for death registrations was not dramatically affected and increased steadily.
Key lessons learned	<p>During the COVID-19 pandemic, the reformed death registration services showed that even in times of a health crisis,</p> <ul style="list-style-type: none"> ● registration processes can be sustained; ● continuous and universal registration can take place; ● data sharing can inform the health system when there is an increase in the number of deaths; and ● the generation of data for health surveillance can mitigate the impact of a crisis on the CRVS system's performance.

⁵ See the full technical brief, [Maintaining civil registration resilience amid the COVID-19 crisis: Mozambique's vital events notification system](#).



Namibia ⁶	
About the notification system	<p>E-notification system</p> <p>In Namibia, birth and death e-notification systems are fully implemented and timely data is received on an hourly basis.</p>
COVID impact and response	<p>Impact</p> <ul style="list-style-type: none"> ● On 17 March 2020, a state of emergency was declared to limit the spread of COVID-19; ● Civil registration services remained partially open; ● 22 birth and death registration offices at health facilities were closed; and ● Late registration services for births and deaths and the issuance of duplicate certificates were suspended. <p>Response</p> <p>There was a significant drop in birth registrations as only children below age 1 were registered. There was also a slight drop in death registrations, however, Namibia's highly efficient e-notification system mitigated the decrease so it was not significant.</p> <ul style="list-style-type: none"> ● e-births: The system continued to notify the national population register (civil registration and identity) electronically when a birth occurred at a hospital, allowing parents to delay the registration of births if they were unable to reach a registration office; and ● e-deaths: The notification system was able to collect data that can be used to conduct rapid mortality surveillance and track excess numbers of deaths during the COVID-19 pandemic. Health authorities are able to code causes-of-death.
Key lessons learned	<p>During the COVID-19 pandemic, the e-notification system has remained resilient by</p> <ul style="list-style-type: none"> ● recording all events that occur at health facilities; ● allowing parents to delay registrations, if needed; ● providing civil registration authorities with an overview of locations where children are not registered; ● monitoring and producing accurate mortality statistics and vital statistics; and ● establishing a trusted legal identity from birth.


⁶ See the full technical brief, [Building resilient civil registration and vital statistics systems amid COVID-19: Namibia as a good practice](#).



Tanzania ⁷	
About the notification system	Redesigned CRVS system <ul style="list-style-type: none"> • The country now uses one-step registration; a child is issued a birth certificate at the health facility right after registration is completed; • Registration is provided for babies born in health facilities and for unregistered children born in the community when they get their immunizations; and • In regions where the decentralized model is not yet in place, health facilities continue to issue birth and death notifications; informants later use these to register the events at district registration offices.
COVID impact and response	Impact <ul style="list-style-type: none"> • The first case of COVID-19 in Tanzania was recorded on 16 March 2020; and • The government introduced a range of measures to contain and slow the spread of the virus, banning all public gatherings and sports activities and closing schools for 30 days. Response <p>Civil registration services were modified to respond to new circumstances. Registration assistants were introduced and</p> <ul style="list-style-type: none"> • appointed by the Registration, Insolvency and Trusteeship Agency (RITA) and trained at the district council level; • placed in ward (local community) executive offices and in hospitals and health clinics, enabling children to be registered at birth or during scheduled immunizations for delayed registrations; and • enabled to register the births of children and issue birth certificates in a one-step process that takes place during one visit.
Key lessons learned	<p>During the COVID-19 pandemic, the one-step digitized registration process</p> <ul style="list-style-type: none"> • allows the system to operate with limited capacity to respond to needs for birth registration in communities; • has ensured that clients' needs to make fewer trips to crowded registration centres at a time where it's important to avoid contact and gather in public; and • means that information can now be shared in an automated environment, requiring less human intervention.

⁷ See the full technical brief, [Maintaining civil registration resilience amid the COVID-19 crisis: Tanzania's one-step birth and death registration processes](#).

Rwanda	
<p>About the notification system</p>	<p>New National Centralized and Integrated CRVS (NCI-CRVS) system</p> <ul style="list-style-type: none"> ● Launched on 10 August 2020 as part of the Africa CRVS Day celebrations; ● Interoperable with the National Population Register (NPR) using a unique identification number assigned at birth; ● Functional in major hospitals and will be extended to all health facilities across the country, including some of the lowest administrative points of contact (cells) with the population; ● Allows for notification by nurses and declaration by the mother or the person accompanying her; and ● Registration is done at the health facility; once registration is completed, the informant receives a message with the national registration number.
<p>COVID impact and response</p>	<p>Impact</p> <ul style="list-style-type: none"> ● The first case of COVID-19 landed in the country on 13 March 2020; ● Full lockdown was first imposed on 20 March 2020; and ● The government took preventive measures to respond to the spread of the pandemic and its impact on the health and safety of the population. <p>Response</p> <p>Rwanda responded to COVID-19 with the new NCI-CRVS system by</p> <ul style="list-style-type: none"> ● registering some events online without any human contact; ● producing and issuing certificates online; ● having local registrars process applications online for the registration of births and deaths, and certification of all vital events; and ● providing notification services for events occurring in healthcare facilities online.
<p>Key lessons learned</p>	<p>During the COVID-19 pandemic, the NCI-CRVS system has allowed for:</p> <ul style="list-style-type: none"> ● monitoring and encouraging registrations through advocacy to increase registration rates; ● different stakeholders to access the statistical reports; and ● continued recording of vital events, providing data on births and deaths, and avoiding physical contact between agents and users of civil status services.



Uganda ⁸	
About the notification system	Registration system <ul style="list-style-type: none"> ● Birth event information is recorded on the notification form that health practitioners complete at registration offices in health facilities or designated officials complete in local communities. ● A vital event can be registered when it is recorded in the Mobile Vital Records System, then verified and approved by the registrar at the National Identification and Registration Agency (NIRA) head office or at designated NIRA district offices.
COVID impact and response	Impact <ul style="list-style-type: none"> ● A nationwide 14-day lockdown was imposed on 31 March 2020; ● Initially, CRVS was considered a non-essential service; ● Civil registration services across the country at all district civil registration offices closed; and ● In hard-to-reach areas and underserved communities, civil registration activities came to a halt. Response <p>Although offices were closed, registration of vital events continued during lockdown by supporting</p> <ul style="list-style-type: none"> ● registration officers to work from home with a mobile internet data plan to register all notified events electronically; ● a call centre to answer inquiries and to provide information; and ● continuous collection of birth notifications.
Key lessons learned	<p>During the COVID-19 pandemic, a functional registration system ensures that</p> <ul style="list-style-type: none"> ● vital events will be captured and registered at a later date; ● contingency plans maintain essential levels of services, with online notification and registration of births and deaths; ● online meetings helped to coordinate and to strengthen the relationship between the civil registry office and the Ministry of Health; ● registration officials can complete registration forms on their computers; and ● digital processing and sharing of registration information continues while reducing the need for in-person interactions.

⁸ See the full technical brief, [Maintaining civil registration amid the COVID-19 crisis: Uganda's mobile notification system](#).

CONCLUSION

We are writing this while COVID-19 continues to cause tremendous hardships and impact lives around the world. Civil registration is an essential service, and each and every vital event must be recorded to ensure the rights of individuals and to track each life lived for statistical purposes.

The COVID-19 crisis showed how CRVS systems can be part of the solution, in all the phases — from prevention to response to recovery. Civil registration serves as a backbone for government operations to allow governments to respond to and recover from emergencies. This study has shown how digital notification systems linked to the health sector make civil registration systems more resilient during a health crisis. It has also demonstrated that a country's health and CRVS systems can be mutually beneficial. Each of the countries studied was able to continue capturing civil registration data and issuing vital events certificates despite national lockdowns. However, none of the countries studied were using this data for health surveillance.

Moreover, the study showed that progress is possible and feasible. Impressively, many countries accelerated their civil registration projects in the midst of the pandemic:

- In Namibia, the National Population Registration System served as the enabler for the emergency grant;
- In Tanzania, the government introduced an online system for late registration; and
- Rwanda launched its new NCI-CRVS system.

Overall, the COVID-19 emergency emphasized to policymakers how essential these digital systems are, and how critical it is to implement new and more resilient solutions for future crises.

ABOUT THIS SERIES

This synthesis brief is one of a series of briefs summarizing the key findings of nine technical papers about CRVS systems and COVID-19 in Africa.

The United Nations Economic Commission for Africa, the APAI-CRVS Secretariat, and the Centre of Excellence for CRVS Systems have partnered to support the development of this technical brief series on innovative, good practices facilitating the continuous and universal registration of vital events in Africa. This includes the generation of data for health surveillance during a health crisis, which has consequently mitigated the impact of COVID-19 on the performance of the civil registration systems. The overarching purpose of this technical paper series is to provide inspiration and policy guidance for CRVS programming in the African region in the midst of a global health crisis, such as the COVID-19 pandemic.

This paper was prepared by Zoran Đoković, Anette Bayer Forsingdal, Hosea Mitala, and William Muhwava.



This work was carried out with financial and technical assistance from the Centre of Excellence for CRVS Systems. Housed at the International Development Research Centre (IDRC), it is jointly funded by Global Affairs Canada (GAC) and IDRC.

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