

The COVID-19 Pandemic: Effects on Civil Registration of Births and Deaths and on Availability and Utility of Vital Events Data

Carla AbouZahr, MSc, Martin W. Bratschi, PhD, Emily Cercone, MPH, Anushka Mangharam, MPH, Don de Savigny, PhD, Irina Dincu, MA, Anette Bayer Forsingdal, MA, Olga Joos, DrPH, MPH, RN, Montasser Kamal, PhD, Doris Ma Fat, MSc, Gloria Mathenge, MA, Fatima Marinho, PhD, Raj Gautam Mitra, MSc, Jeff Montgomery, MBA, William Muhwava, MA, Remy Mwamba, MSc, James Mwanza, MSc, Alvin Onaka, PhD, Tanja Brøndsted Sejersen, MSc, Maletela Tuoane-Nkhasi, PhD, Lynn Sferrazza, MSc, and Philip Setel, PhD

 See also Copeland, p. 990.

The complex and evolving picture of COVID-19–related mortality highlights the need for data to guide the response. Yet many countries are struggling to maintain their data systems, including the civil registration system, which is the foundation for detailed and continuously available mortality statistics. We conducted a search of country and development agency Web sites and partner and media reports describing disruptions to the civil registration of births and deaths associated with COVID-19 related restrictions.

We found considerable intercountry variation and grouped countries according to the level of disruption to birth and particularly death registration. Only a minority of the 66 countries were able to maintain service continuity during the COVID-19 restrictions. In the majority, a combination of legal and operational challenges resulted in declines in birth and death registration. Few countries established business continuity plans or developed strategies to deal with the backlog when restrictions are lifted.

Civil registration systems and the vital statistics they generate must be strengthened as essential services during health emergencies and as core components of the response to COVID-19. (*Am J Public Health*. 2021;111:1123–1131. <https://doi.org/10.2105/AJPH.2021.306203>)

In March 2020, the COVID-19 outbreak was officially declared a global pandemic by the World Health Organization. In response, countries introduced public health and social measures aimed at slowing transmission of the virus including school and workplace closures, travel restrictions, and bans on public gatherings.¹ Public services not deemed “essential” were reduced or closed, placing the services they provide out of reach.

In some settings, this disruption also affected the civil registration and vital statistics (CRVS) system. Civil registration is

the “continuous, permanent, compulsory, universal recording of the occurrence and characteristics of vital events pertaining to the population.”^{2(p65)} At the population level, civil registration is a source of vital statistics for national and subnational administrative areas. For individuals, civil registration provides legal recognition and documentation of life events (such as birth, death, marriage, and divorce), and is foundational for individual identity systems. Up-to-date information from CRVS systems are needed to manage population registers and national identification systems as well as sectoral databases

such as electoral registers, tax, and social security, and health, educational, social, and banking services.

Despite its clear importance to individuals and governments, civil registration is far from universal. An estimated 29% of the world’s children younger than 5 years have not had their births registered³; 55% of all deaths remain unregistered.⁴ In this report, we examine the impact of the COVID-19 pandemic on CRVS systems and discuss the implications for decision-makers facing an acute need for timely and reliable data, particularly on mortality.

METHODS

We searched Google Scholar for articles on birth and death registration during the COVID-19 restrictions published between March and November 2020 using the following search terms: “civil/vital registration and vital statistics” + “COVID-19” + “low- and middle-income countries” + “death registration” + “death certificate” + “mortality.” We reviewed Web sites and media articles to identify reports on civil registration during COVID-19 restrictions. We examined responses to the questionnaire issued by the United Nations Legal Identity Agenda (UN LIA) on the status of civil registration and vital statistics during the COVID-19 emergency.⁵ We also drew upon experiences shared directly with the authors and on reports from countries collaborating with the Bloomberg Philanthropies Data for Health Initiative’s CRVS systems improvement program. Our search was conducted primarily in English, French, Spanish, and Portuguese.

As of August 13, 2020, 61 countries responded to the UN LIA questionnaire, which was addressed to national civil registrars. The search of country Web sites generated usable information for several high-income settings. Additional information came through personal contacts in collaborating countries. As shown in [Table 1](#), we found relevant information for a total of 66 countries comprising one third of all countries.

RESULTS

The core elements of the CRVS system are summarized in [Table 2](#), which also provides an overview of disruptions experienced during COVID-19 restrictions. Many countries responding to the UN LIA questionnaire indicated that although civil registration is often

considered essential, few governments have taken the necessary measures to ensure uninterrupted service provision. [Table 3](#) groups countries into 4 categories according to the degree of disruption experienced.

Civil Registration Not “Essential”

Civil registration was not classified as an essential service in 11 countries (17%). For example, in India, where civil registration was not designated essential, registration of births and deaths has been severely disrupted.⁶ Elsewhere, although civil registration was not designated as essential, certain registration services continued to function. In Bangladesh, some registration offices operated with distancing measures in place, and the online birth and death registration system received notifications from rural registration offices.⁵ In Sri Lanka, mobile services were introduced for birth registration and procedural simplifications made to facilitate the granting of burial permits by local authorities, thus facilitating death registration.⁵ In Uganda, health services stepped in to notify the civil registration authority of the occurrence of births. Health sector information technology staff ensured ongoing notification of births and deaths in the expectation that registration could take place and certificates could be issued after the lifting of pandemic restrictions.⁷

Civil Registration Limited to Certain Events

To cope with the anticipated service disruption and avert interruptions in the flow of mortality statistics, 5 countries (8%) limited registration to deaths and stillbirths only. In England and Wales,

emergency COVID-19 legislation deprioritized birth registration and put registration of other vital events on hold.⁸ Civil registration offices remained operational for the registration of stillbirths and deaths by telephone only; hospital-based birth and death registration facilities remained closed until COVID-19 restrictions were lifted.⁹

In Angola and Lesotho, limited availability of personal protective equipment led the Ministry of Home Affairs to limit services to registration of deaths.⁵ In Armenia, birth and death registration remained possible but was suspended for all other vital events.⁵ In Azerbaijan, in-person applications for registration continued to be possible for births, marriages, and deaths; all other registrations had to be done electronically.⁵

Services Facing Operational Constraints

Among the 34 countries (51%) classifying registration services as essential, service provision was hampered or scaled down because of travel restrictions and “stay-at-home” orders. Neither registration staff nor their clients were able to travel to the registration office for the in-person encounter needed to register a death and collect a copy of the certificate.

Only 3 of the countries in Central and South America that designated civil registration as an essential service (Chile, Ecuador, and Mexico) continued to operate normally; the remainder totally or partially suspended in-person services.¹⁰ In Argentina, where shift work was arranged and appointments for in-person services could be scheduled, death registration continued, but birth registration ceased in some localities.⁵ In Brazil, access to in-person registration services was partially suspended despite

TABLE 1— Regional Distribution of Countries With Information on Civil Registration and Vital Statistics (CRVS) Systems During the COVID-19 Pandemic

Region	Countries With Information on CRVS Services, No. (%)	Population of Countries With Information on CRVS Services, 1000s (% of Regional Population)
Africa	31 (56.4)	766 667 (57.2)
North and Central America	6 (15.0)	493 746 (78.8)
South America	5 (38.5)	345 397 (81.8)
Asia	15 (31.3)	2 157 508 (46.3)
Oceania	8 (57.1)	42 903 (75.7)
Total	65 (33.5)	3 727 847 (47.4)

Note. The sample size was 65 countries (excluding England and Wales).

ministerial commitments to service continuity.¹¹ In Colombia, civil registration services remained available only in the notaries' offices, not in the civil registration offices, reducing the number of registration outlets available to the public.⁵ In Mexico, although death registration was considered an essential function and state governments were required to streamline registration procedures, decreases in the timely registration of births have been observed because of stay-at-home orders

and measures to avoid overcrowding at registration offices and ensure the protection of registration officials.⁵

In Africa, disruptions to civil registration services were reported in Benin, Burkina Faso, Cameroon, Cabo Verde, Côte d'Ivoire, Ghana, Kenya, Mozambique, Senegal, and Sierra Leone despite the availability of civil registry staff on a rotational basis and the introduction of personal protective measures.⁵ To mitigate disruption, Ghana developed a plan to roll out mobile registration at

community level, working with local leaders and faith-based organizations.⁵ In South Africa, the Department of Home Affairs continued with minimal staff and issued only death certificates, replacement identification cards, and birth certificates during the lockdown.¹²

Health institutions in several countries recorded information on births and deaths so that the civil registrar can be notified when restrictions are lifted. In Namibia, the government temporarily closed hospital-based registration

TABLE 2— Core Elements of the Civil Registration and Vital Statistics (CRVS) Process for Births and Deaths

Component	Definition	Nature of Service Disruption During COVID-19
Notification	The capture and onward transmission of minimum essential information on a vital event by a designated informant, using a CRVS authorized notification form (paper or electronic), with that transmission of information being sufficient to support civil registration and certification of the vital event.	Next of kin (or other informant) unable to travel to registration office to complete notification. Evidence of reductions in numbers of births and deaths occurring in health facilities, with corresponding reductions in health sector notifications, particularly where CRVS system at local level is paper-based and depends on in-person visit.
Registration	The act of registering a vital event at a civil registration office. At this point, details of the event are entered into the official civil registry by the civil registrar.	Civil registrars subject to workplace closures and travel restrictions. Lack of protective equipment at registration offices. Family members (or other informants) unable to travel to registration office to validate information and sign the register.
Certification	The issuance by the civil registrar of a legal document certifying a vital event.	As above. Families (or other informants) unable to travel to pick up a copy of the certificate. No mechanisms in place to permit digital transfer to the family of a copy of the certificate.
Vital statistics	Vital statistics are derived from the compilation and analysis of information on vital events and associated characteristics.	Missed and delayed registrations result in incomplete statistics and deprive decision-makers of timely and reliable data to guide decision-making. Compilation of statistics delayed because of workplace closures and staffing limitations, especially where paper-based systems are commonplace. During the pandemic, effective public health decision-making is reliant on timely and complete mortality statistics.

TABLE 3— Countries by Civil Registration System Status During the COVID-19 Pandemic

Status of Civil Registration System During the Pandemic	Countries
Civil registration services not considered essential and no continuity measures in place (n = 11)	Bangladesh, Eswatini, Guinea-Bissau, India, Malawi, Nigeria, Panama, Samoa, Solomon Islands, Sri Lanka, Uganda
Civil registration considered essential but limited to certain vital events (n = 5)	Angola, Armenia, Azerbaijan, England and Wales, Lesotho
Civil registration considered essential and services reorganized but facing operational constraints (n = 34)	Afghanistan, Argentina, Benin, Brazil, Burkina Faso, Cameroon, Colombia, Côte d'Ivoire, Democratic Republic of Congo, Djibouti, Ecuador, El Salvador, The Gambia, Ghana, Hong Kong, Indonesia, Kenya, Lao People's Democratic Republic, Madagascar, Mali, Marshall Islands, Mauritius, Mexico, Mozambique, Namibia, Panama, Philippines, Rwanda, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, Tanzania, Vanuatu
Civil registration considered essential and available without interruption (n = 16)	Australia, Bahrain, Cabo Verde, Chile, Comoros, Cook Islands, Costa Rica, Fiji, Georgia, Guatemala, Iran, Maldives, New Zealand, Republic of Korea, Tunisia, United States

Note. The sample size was 66 countries (England and Wales not included in regional totals).

offices, and births and deaths could be registered only at regional and sub-regional offices of the Ministry of Home Affairs, Immigration, Safety, and Security. However, the continuous e-birth and e-death notification systems through the health sector ensures that information about these events is available to the civil registrar once COVID-19 restrictions are lifted.⁵

In Rwanda, the local registration office is continuously notified of births and deaths in health facilities through an online portal in the expectation that official registration will be completed after the containment period.⁵ In Tanzania, a decentralized model of registration through health facilities is in operation in 16 of the country's 26 regions to enable birth and death registration at health facilities. However, an overall decline in the number of registrations has been observed.⁵

In Afghanistan, COVID-19 restrictions and security concerns mean that services are provided only on an urgent and

emergency basis.⁵ In the Lao People's Democratic Republic, many vital events could not be registered because of COVID-19 travel restrictions, but the Ministry of Home Affairs has instructed local authorities to record vital events and report them to the Ministry of Home Affairs for registration following the lifting of restrictions.⁵ In Tonga, staff worked in split teams to maintain services. However, registration points located in health facilities have been closed to free up resources for critical health needs.

Civil Registration Available Without Interruption

Fourteen countries (24%) reported no disruptions in registration services thanks to measures to facilitate access, including online registration. Costa Rica introduced an online notification system for births and deaths directly from hospitals, enabling appointments with the registrar to be scheduled, thus minimizing the risk of no-shows and

delays.⁵ In Guatemala, services identified as high priority include the issuance of identity documentation and the civil registration of deaths and other vital events. Arrangements were made to guarantee service continuity with provision for online issuance of certificates and measures to enable administrative staff to work from home and travel to the workplace only when on a shift.⁵

In Maldives, services have continued through a combination of online and in-office service provision. Most clients submit their requests electronically via the Web portal.⁵ In New Zealand, civil registration continues uninterrupted; birth and death registration can be completed entirely online, with certificates being sent to families using contactless courier. In Fiji, registration services have continued as usual following the development of business continuity plans, adequately staffed and resourced registration points, and the introduction of measures to maintain physical distancing.⁵

Falling Demand for Birth and Death Certificates

Even when registration facilities continue to function, countries report reduced demand, particularly in settings where an in-person encounter with the civil registrar is required to complete the registration and certification process. In Ghana, although registration offices remained operational with health protection protocols in place, the population was reluctant to attend because of fear of becoming infected at the registration office or on public transport.¹³ In response, the government is streamlining business processes and computer systems, developing an online service portal, and introducing an electronic notification system for deaths that

occur outside health facilities. It is also establishing information-sharing agreements with the health sector, the police, and local cemetery registers, and considering using community-based volunteers to assist families in completing registration forms.

The requirement for a person-to-person service renders CRVS systems vulnerable to nonattendance. Decreased demand, coupled with limited service provision, will inevitably result in registration backlogs, delays, and reduced timeliness and completeness of birth and death statistics. Where problems existed before the pandemic, they would be exacerbated by the crisis. This matters for individuals who need legal documentation testifying to the occurrence of vital events and equally for decision-makers who need an ongoing stream of timely and reliable mortality statistics to understand the trajectory of the disease and the effectiveness of remedial interventions.

DISCUSSION

The major limitation of this study is the paucity of information on national CRVS system functioning during the pandemic. The initiative of the UN LIA is an important step, but only one third of the world's countries responded, with none from the region of Europe. We were unable to identify relevant civil registration information in countries with large populations, such as China, Egypt, Ethiopia, Pakistan, and Russia. Details of registration service restrictions are not always widely publicized, and, because services are locally administered, there can be significant in-country variation in service delivery. Media reporting fills some gaps—for example, on experiences of individuals and families in seeking to access registration services.¹⁴

However, the impact of lockdowns and travel restrictions on numbers and timeliness of birth and death registration may well not be quantifiable for some time. Furthermore, although cause-of-death determination is an important component of death registration, this was not specifically addressed in the UN LIA survey.

Surging Data Needs

Demand for reliable and timely mortality data has surged in all countries during the pandemic, accompanied by a realization of the need to strengthen CRVS systems. Some countries have relied on hospital reporting of deaths among patients identified as being infected with COVID-19. However, these data are often incomplete because they do not include those who died outside hospitals—for example, at home or in a social care institution.^{15,16} The CRVS system can generate more complete mortality data because it is designed to capture all deaths, wherever they occur.

During a pandemic, decision-makers require timely data. Where death registration is compulsory within a specified (short) time frame, the individual records can rapidly be compiled to produce total mortality from all causes. By comparing these numbers with data on total deaths recorded in previous years over the same period, “excess mortality” can be calculated.¹⁷ Provisional all-cause mortality data can be produced within 1 or 2 weeks of occurrence. By contrast, cause-of-death data take weeks or even months to statistically code, compile, and disseminate.¹⁸ Weekly death counts therefore offer “the most objective and comparable way of assessing the scale of short-term mortality elevations across countries and time.”¹⁹

Where timely CRVS data are not available or death registration is incomplete, rapid all-cause mortality surveillance systems can be established to accelerate CRVS reporting processes or leverage data from other facility- and community-based methods to measure the burden and spread of the epidemic.^{20,21} Mortality surveillance could build upon existing health information or surveillance platforms—for example, those for severe acute respiratory illnesses and influenza-like illness—or the integrated disease surveillance and response system, although this potential has not yet been demonstrated in practice.²¹ Such systems cannot substitute for a fully functional CRVS system, but they can potentially serve as an “on-ramp” to civil registration processes.²²

Civil registration allows for granular data across administrative areas. Even where national data are lacking, mortality data can be produced for defined areas, such as cities, as shown by excess mortality in Istanbul (Turkey) and Jakarta (Indonesia).²³ Although these data cannot be generalized to the country as a whole, they nonetheless offer insights about local risks and behaviors that need to be addressed, such as congested public travel, high-density living arrangements, poverty, street living, and large gatherings.

Disaggregation of all-cause mortality is essential to identify relative risks by age,²⁴ sex,²⁵ ethnicity,²⁶ and social and economic status and, thus, introduce appropriate remedial interventions.²⁷ The United Nations recommends that death registration systems should routinely collect information on age, sex, place of occurrence, and place of usual residence. Additional information on education, occupation, citizenship, and ethnicity can be provided by informants

or family members of the decedent but may not always be available. Surges in COVID-19 infections among migrant laborers in Singapore and Germany highlight the importance of monitoring cases, deaths, and causes of death in particularly vulnerable populations.^{28,29}

Mortality data can also be linked with records of confirmed COVID-19 cases to identify COVID-19–related deaths and calculate infection–fatality ratios and case–fatality ratios, indicators that are crucial inputs to decision-making about resource allocation and are used to guide policy decisions regarding the allocation of scarce medical resources.^{30,31}

Added Value of Cause-Specific Mortality Data

While all-cause mortality data are important for near-real-time tracking of the trajectory of the COVID-19 pandemic, cause-specific data analyses provide insights to guide the response. Where the registration of death is accompanied by medical certification of cause of death, analysts have drawn attention to increased mortality attributable to both COVID-19 and non–COVID-19 causes.³² Such trends can arise from changes in health-seeking behaviors because of fears of becoming infected, reluctance to add to the burden on health care services, or delays in the provision of care for non–COVID-19 conditions because of pressure on hospitals. They may also reflect shifts in the pattern of causes of mortality, such as increases in external causes of death such as suicide or domestic violence during extended periods of lockdown measures.

The World Health Organization and national health and statistics agencies have provided guidance on the medical certification and coding of causes of

death in relation to COVID-19.^{33,34}

However, there is considerable variability in the implementation of these standards. In some settings, even if COVID-19 is mentioned on the medical certificate of cause of death, deaths are classified as COVID-19–related only if the decedent had tested positive for coronavirus before death, which may substantially underestimate mortality in places with limited access to testing. Variations in cause-of-death certification practices can be reflected in stark differences between statistics on COVID-19 deaths and all-cause mortality.³⁵

Maintaining Civil Registration Operational Capabilities

The UN LIA has issued recommendations for civil registration authorities to ensure operational continuity during COVID-19 and allow for the continued production of comprehensive vital statistics.³⁶ These include contingency plans to meet postpandemic demand for registration services, working with the legislative branch to mitigate late registration penalties, interventions to deal with backlog, and formulating “business continuity plans” for the continuation of registration during disruptions. These should set out the requirements of minimum essential services, including how to protect the workforce. At the same time, it is important to provide support to health facilities, long-term-care homes, and funeral agencies that have key roles to play in the notification of deaths and in collecting information required for registration while facing high workloads and operational challenges during the pandemic.

Some national civil registration systems have experienced declines in revenues generated from services such as the issuance of identity cards and copies

of certificates, which may hinder their ability to recover quickly from the effects of the lockdown.⁵ There are fears of reduced support from international cooperation partners who may direct limited funds toward other health interventions. Governments, donors, and development partners should therefore work together to provide continuing support so that CRVS systems are better positioned to respond to the challenges of future emergencies.

Tracking the Impact on Vital Statistics

After the pandemic, national statistics offices will have an important responsibility to evaluate the impact of the crisis on the availability and quality of vital statistics derived from civil registration. Records of vital events among hard-to-reach and marginalized populations are typically poor in quality and completeness even under normal circumstances. In a pandemic, this could be exacerbated, especially in areas where the system is manual and requires personal interactions. Statistical methods should be used to identify gaps in registration completeness, especially in remote areas, among marginalized and vulnerable populations and those particularly hard-hit by the pandemic. National statistical offices will need to review their performance during and in the aftermath of the current pandemic and be well prepared to meet future challenges.³⁷

An important lesson learned during the pandemic is that CRVS systems have the potential to be more responsive and dynamic to meet the data demands that accompany any health emergency. While producing national vital statistics reports with detailed geographic and socioeconomic disaggregation is

inevitably time consuming, especially in high-population countries, the potential of digital systems to accelerate the issuance of provisional or “predicted” statistics—for example, on all-cause or excess mortality—should be seized, thus increasing the policy relevance of CRVS.

Enhancing System Resilience

Looking to the future, countries and development partners must develop strategies for improving access to civil registration services and reducing vulnerability to shutdowns and service limitations during emergencies. Experience during this crisis has amply demonstrated that vulnerability is increased where registration is dependent on multiple in-person meetings between the civil registrar and family members to ensure that the information provided is accurate. While the need for in-person validation of information in registration records is important because these are legal documents that will be used on multiple occasions, it risks becoming a major barrier to registration. Validation by way of links across government databases could be explored as an alternative.

Strengthening Intersectoral Links

Some countries are establishing closer links between civil registration authorities and the health sector by officially designating health agents to notify civil registrars of births and deaths, thus reducing or eliminating the number of in-person visits required and alleviating the burden on families having to travel to civil registration offices. This “active” notification strategy can also improve the capture of events that are more likely to be missed

by some civil registration systems, such as deaths in infancy and among females.

The health sector can also assist families and communities to catch up on missed registrations—for example, when birth registration services were temporarily deprioritized during the pandemic. This is critical because children whose births remain unregistered may be unable to access essential services. Should a child die before its birth has been registered, both the birth and the death will be missed in the national statistical system, resulting in incomplete statistics upon which to base policy decisions.

Advantages of Digital Systems

There is growing use of digital systems to speed up the production of mortality and cause-of-death statistics, reduce duplicate registrations, and share mortality data between jurisdictions to improve tracking of risks and outcomes. New Zealand is using the online death notification and medical certificate of cause of death to track daily deaths.³⁸ Provisional mortality information is available within hours of death rather than the 2 or more weeks it takes to receive the full death registration data. This allows the COVID-19 response team to monitor death rates and make real-time decisions on when to increase (or decrease) the government’s response to the pandemic. In Hawaii, the electronic death registration system can link the causes of death listed on the medical certificate of cause of death to laboratory testing results, thus greatly improving the speed and accuracy of information on mortality related to COVID-19.³⁹

Country experiences during the pandemic have shown that digitalization of

CRVS systems could transform them from slow, passive, and reactive systems that depend on in-person attendance to systems that are resilient, proactive, and agile, without compromising quality standards, individual privacy, and confidentiality.

Conclusions

The COVID-19 pandemic has heightened the importance of country statistical systems for generating the data needed to monitor its dimensions and direction at local and national levels. Mortality data are critical not only from a health perspective but also from an economic one. As Glassman observes, “measuring deaths completely, accurately, and quickly is an essential prerequisite to better economic and public health policies during COVID-19 and beyond.”⁴⁰ One-hundred-seventy years ago, the Shattuk Report’s analysis of birth and death records laid the foundation for the development of health and social policies in the United States.⁴¹ The COVID-19 pandemic has exposed the inadequacy of these basic systems in large parts of the world, especially in low-income countries. Addressing these shortcomings calls for political will and the ongoing support of local, regional, and global partners.

The Committee on the Rights of the Child and the United Nations have called on member states to protect the rights of children during the COVID-19 pandemic, including maintaining “the provision of basic services for children including healthcare, water, sanitation and birth registration.”⁴² Now, more than ever, people need access to legal documents as evidence of identity, civil status, and family relations. Civil registration systems and the vital statistics

they generate must be strengthened as core components of the response to COVID-19. Building resilience into CRVS systems will be essential to enable them to better function during future health shocks. Unless civil registration is recognized as essential, we stand to lose the gains in birth and death registration made in recent decades and the records of these vital events may be lost with serious implications for both individuals and governments. *AJPH*

ABOUT THE AUTHORS

Carla AbouZahr is with Vital Strategies/Bloomberg Philanthropies Data for Health Initiative, Geneva, Switzerland. Martin W. Bratschi, Anushka Mangharam, Fatima Marinho, Raj Gautam Mitra, James Mwanza, and Philip Setel are with Vital Strategies, New York, NY. Emily Cercione and Olga Joos are with the National Foundation for the Centers for Disease Control and Prevention, Inc, Atlanta, GA. Don de Savigny is with Swiss Tropical and Public Health Institute, Basel, Switzerland. Irina Dincu and Anette Bayer Forsingdal are with Centre of Excellence for Civil Registration and Vital Statistics Systems, International Development Research Centre, Ottawa, Ontario. Montasser Kamal is with the International Development Research Centre, Ottawa. Doris Ma Fat is with the World Health Organization, Geneva. Gloria Mathenge is with The Pacific Community, Noumea, New Caledonia. Jeff Montgomery is with New Zealand Department of Internal Affairs, Pacific Civil Registrars Network, Wellington, New Zealand. William Muhwava is with the African Centre for Statistics, Economic Commission for Africa, Addis Ababa, Ethiopia. Remy Mwamba is with UNICEF, New York, NY. Alvin Onaka is with State Registrar of Vital Statistics and Chief of the Office of Health Status Monitoring, Hawaii Department of Health, Honolulu, Hawaii. Tanja Brøndsted Sejersen is with United Nations Economic and Social Commission for Asia and the Pacific, Bangkok, Thailand. Maletela Tuwane-Nkhasi is with Global Financing Facility, The World Bank, Washington, DC. Lynn Sferrazza is with Global Health Advocacy Incubator, New York.

CORRESPONDENCE

Correspondence should be sent to Carla AbouZahr, 20B, chemin du Château, 1806 Saint-Légier, Switzerland (e-mail: abouzahr.carla@gmail.com). Reprints can be ordered at <http://www.ajph.org> by clicking the "Reprints" link.

PUBLICATION INFORMATION

Full Citation: AbouZahr C, Bratschi MW, Cercione E, et al. The COVID-19 pandemic: effects on civil registration of births and deaths and on availability

and utility of vital events data. *Am J Public Health*. 2021;111(6):1123–1131.

Acceptance Date: January 19, 2021.

DOI: <https://doi.org/10.2105/AJPH.2021.306203>

CONTRIBUTORS

C. AbouZahr, M. W. Bratschi, and P. Setel conceptualized the idea for the article and developed the first draft with initial inputs from the rest of the group. All authors provided feedback and additional and new inputs and suggestions and reviewed the final article.

ACKNOWLEDGMENTS

Bloomberg Philanthropies supported the contribution of the authors employed by Vital Strategies.

Note. Bloomberg Philanthropies did not exert any role in relation to data collection, analysis, or interpretations.

CONFLICTS OF INTEREST

C. AbouZahr, M. W. Bratschi, A. Mangharam, F. Marinho, R. Mwamba, J. Mwanza, and P. Setel are employed by Vital Strategies.

HUMAN PARTICIPANT PROTECTION

This study was exempt from institutional board review because no human participants were involved.

REFERENCES

- Hale T, Angrist N, Kira B, Petherick A, Phillips T, Webster S. Variation in government responses to COVID-19. Version 6.0. Blavatnik School of Government Working Paper. May 25, 2020. Available at: <https://www.bsg.ox.ac.uk/covidtracker>. Accessed July 28, 2020.
- United Nations Department of Economic and Social Affairs, Statistics Division. Principles and Recommendations for a Vital Statistics System, Revision 3. 2014. Available at: <https://unstats.un.org/unsd/demographic/standmeth/principles/M19Rev3en.pdf>. Accessed March 20, 2020.
- UNICEF. Birth registration for every child by 2030: are we on track? 2020. Available at: <https://data.unicef.org/resources/birth-registration-for-every-child-by-2030>. Accessed March 23, 2020.
- GBD 2016 Disease and Injury Incidence and Prevalence Collaborators. Global, regional, and national incidence, prevalence, and years lived with disability for 328 diseases and injuries for 195 countries, 1990–2016: a systematic analysis for the Global Burden of Disease Study 2016. *Lancet*. 2017; 390(10100):1211–1259. [https://doi.org/10.1016/S0140-6736\(17\)32154-2](https://doi.org/10.1016/S0140-6736(17)32154-2)
- United Nations, Department of Economic and Social Affairs, Statistics Division. Legal Identity Agenda. 2020 impact of COVID-19. 2020. Available at: <https://unstats.un.org/legal-identity-agenda/covid-19>. Accessed July 31, 2020.
- Gupta A. COVID-19 and the importance of improving civil registration in India. Center for the Advanced Study of India. April 13, 2020. Available

at: <https://casi.sas.upenn.edu/it/aashishgupta>. Accessed April 13 2020.

- United Nations Economic Commission for Africa. E-notification of vital events: innovations adaptable for business continuity of civil registration in emergency situations. Centre of Excellence for Civil Registration and Vital Statistics Systems. Available at: <http://apai-crvs.org/sites/default/files/public/Technical%20brief%20no.3.pdf>. Accessed December 14, 2010.
- United Kingdom National Archives. Health protection (coronavirus, restrictions) (England) regulations. UK Statutory Instruments 2020 No. 350. March 26, 2020. Available at: <http://www.legislation.gov.uk/uksi/2020/350/regulation/1/made>. Accessed May 1, 2020.
- Oxfordshire County Council, Registration Offices. Services and events affected by coronavirus (COVID-19). April 2020. Available at: [https://www.oxfordshire.gov.uk/residents/community-and-living/births-deaths-and-ceremonies/registration-offices?utm_term=nil&utm_content="](https://www.oxfordshire.gov.uk/residents/community-and-living/births-deaths-and-ceremonies/registration-offices?utm_term=nil&utm_content=). Accessed April 13, 2020.
- Omaña Peñaloza R. Universal Civil Identity Program in the Americas. Latin America's responses to COVID-19, Organization of American States. Presentation to: Webinar on Maintaining Civil Registration During COVID-19. March 31, 2020. Available at: <https://www.bloomberg.org/program/public-health/data-health>. Accessed May 20, 2020.
- Franca EB, Ishitani LH, Teixeira RA, et al. Deaths due to COVID-19 in Brazil: how many are there and which are being identified? *Rev Bras Epidemiol*. 2020;23:e200053. <https://doi.org/10.1590/1980-549720200053>
- Government of South Africa, Department of Home Affairs. Office hours during South Africa's lockdown. Available at: <http://www.dha.gov.za/index.php/statements-speeches/1334-office-hours-during-south-africa-s-lockdown>. Accessed March 31, 2020.
- Botchway EN. Impact of COVID-19 on births & deaths registration in Ghana. Presentation to Vital Strategies Webinar on Maintaining Civil Registration. May 20, 2020. Available at: <https://www.bloomberg.org/program/public-health/data-health/#overview>. Accessed May 20, 2020.
- Connor D. 4,000 babies not registered due to Covid-19 restrictions, prompting move online. RTE News. April 17, 2020. Available at: <https://www.rte.ie/news/2020/04/17/1132190-baby-registration>. Accessed April 17, 2020.
- Privitera G. The silent massacre in Italy's nursing homes. *Politico*. April 30, 2020. Available at: <https://www.politico.eu/article/the-silent-coronavirus-covid19-massacre-in-italy-milan-lombardy-nursing-care-homes-elderly>. Accessed June 12, 2020.
- Lau-Ng R, Caruso LB, Perls TT. COVID-19 deaths in long term care facilities—a critical piece of the pandemic puzzle. *J Am Geriatr Soc*. 2020;68(9): 1895–1898. <https://doi.org/10.1111/jgs.16669>
- Leon D, Shkolnikov VM, Smeeth L, Magnus P, Pechholdová M, Jarvis CI. COVID-19: a need for real-time monitoring of weekly excess deaths. *Lancet*. 2020;395(10234):e81. [https://doi.org/10.1016/S0140-6736\(20\)30933-8](https://doi.org/10.1016/S0140-6736(20)30933-8)
- US National Center for Health Statistics. Technical notes. Provisional death counts for coronavirus disease (COVID-19). May 13, 2020. Available at: https://www.cdc.gov/nchs/nvss/vsrr/covid19/tech_notes.htm. Accessed May 31, 2020.

19. Shkolnikov V, Barbieri M, Wilmoth J. The Human Mortality Database. Available at: <https://www.mortality.org>. Accessed April 24, 2020.
20. Setel P, AbouZahr C, Atuheire EB, et al. Mortality surveillance during the COVID-19 pandemic. *Bull World Health Organ*. 2020;98(6):374. <https://doi.org/10.2471/BLT.20.263194>
21. World Health Organization. WHO e-consultation to adapt influenza sentinel surveillance systems for including COVID-19. Available at: https://www.who.int/influenza/gip/e-consultation_influenza_covid/en. Accessed November 20, 2020.
22. Vital Strategies, World Health Organization. Revealing the toll of COVID-19: a technical package for rapid mortality surveillance and epidemic response. May 2020. Available at: https://preventepidemics.org/wp-content/uploads/2020/05/RMS_Report.pdf. Accessed June 1, 2020.
23. Tracking COVID-19 excess deaths across countries. *The Economist*. July 15, 2020. Available at: <https://www.economist.com/graphic-detail/2020/07/15/tracking-covid-19-excess-deaths-across-countries>. Accessed December 19, 2020.
24. Onder G, Rezza G, Brusaferro S. Case-fatality rate and characteristics of patients dying in relation to COVID-19 in Italy. *JAMA*. 2020;323(18):1775–1776. <https://doi.org/10.1001/jama.2020.4683>
25. Joe W, Kumar A, Rajpal S, Mishra U, Subramanian SV. Equal risk, unequal burden? Gender differentials in COVID-19 mortality in India. *J Glob Health Sci*. 2020;2(1):e17. <https://doi.org/10.35500/jghs.2020.2.e17>
26. Webb Hooper M, Nápoles AM, Pérez-Stable EJ. COVID-19 and racial/ethnic disparities. *JAMA*. 2020; 323(24):2466–2467. <https://doi.org/10.1001/jama.2020.8598>
27. United Kingdom Office for National Statistics. Deaths involving COVID-19 by local area and socioeconomic deprivation: deaths occurring between 1 March and 17 April 2020. May 1, 2020. Available at: <https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/bulletins/deathsinvolvingcovid19-bylocalareasanddeprivation/deathsoccurringbetween1marchand17april#main-points>. Accessed May 5, 2020.
28. Smith N. How Singapore went from leading global COVID-19 efforts to having the most cases in South-East Asia. *The Telegraph*. April 21, 2020. Available at: <https://www.telegraph.co.uk/news/2020/04/21/singapore-went-leading-global-covid-19-efforts-having-cases>. Accessed April 23, 2020.
29. Parkin B, Dursin M. German meat plant ordered shut after coronavirus outbreak. *Bloomberg*. June 17, 2020. Available at: <https://www.bloomberg.com/news/articles/2020-06-17/german-meat-plant-ordered-shut-after-surge-in-coronavirus-cases>. Accessed June 20, 2020.
30. World Health Organization. Estimating mortality from COVID-19. Scientific brief. August 4, 2020. Available at: <https://www.who.int/news-room/commentaries/detail/estimating-mortality-from-covid-19>. Accessed August 20, 2020.
31. Pearce N, Vandenbroucke JP, VanderWeele TJ, Greenland S. Accurate statistics on COVID-19 are essential for policy guidance and decisions. *Am J Public Health*. 2020;110(7):949–951. <https://doi.org/10.2105/AJPH.2020.305708>
32. Appleby J. What is happening to non-COVID deaths [erratum in *BMJ*. 2020;369:m1809]? *BMJ*. 2020;369:m1607. <https://doi.org/10.1136/bmj.m1607>
33. World Health Organization. International guidelines for certification and classification (coding) of COVID-19 as cause of death based on ICD. April 20, 2020. Available at: https://www.who.int/classifications/icd/Guidelines_Cause_of_Death_COVID-19.pdf. Accessed May 5, 2020.
34. US National Center for Health Statistics. Vital Statistics Reporting Guidance. Report no. 3. Guidance for certifying deaths due to coronavirus disease 2019 (COVID-19). April 2020. Available at: <https://www.cdc.gov/nchs/data/nvss/vsrg/vsrg03-508.pdf>. Accessed May 13, 2020.
35. Tsvetkova M. Russian excess deaths over summer outstrip COVID toll by more than 3 to 1. *Reuters*. September 14, 2020. Available at: <https://www.reuters.com/article/us-health-coronavirus-russia-mortality-idINKBN2652CO>. Accessed September 20, 2020.
36. United Nations Department of Economic and Social Affairs. UN Legal Identity Agenda. Impact of COVID-19: maintaining civil registration and vital statistics during the COVID-19 pandemic. April 9, 2020. Available at: <https://unstats.un.org/legal-identity-agenda/documents/COVID-19-Guidelines.pdf>. Accessed May 10, 2020.
37. Cook L, Gray A. Official statistics in the search for solutions for living with COVID-19 and its consequences. *Stat J IAOS*. 2020;36(2):253–278. <https://doi.org/10.3233/SJL-200671>
38. Government of New Zealand. Death documents: the digital tool to securely and easily complete and view the Medical Certificate of Cause of Death and Cremation Forms. COVID-19: resources for health professionals. April 15, 2020. Available at: <https://deathdocs.services.govt.nz/welcome>. Accessed May 31, 2020.
39. Hawaii State Department of Health. Hawaii Department of Health receives 2016 Digital Government Achievement Award. September 16, 2016. Available at: <https://governor.hawaii.gov/newsroom/latest-news/doh-news-release-hawaii-department-of-health-receives-2016-digital-government-achievement-award>. Accessed May 31, 2020.
40. Glassman A. What matters most for COVID-19 policy now: better mortality data. September 25, 2020. Available at: <https://www.cgdev.org/blog/what-matters-most-policy-now-better-mortality-data>. Accessed December 10, 2020.
41. Shattuk L. *The Shattuck Report*. 1850. Available at: <https://biotech.law.lsu.edu/cphl/history/books/sr>. Accessed December 10, 2020.
42. UNICEF. The Committee on the Rights of the Child warns of the grave physical, emotional and psychological effect of the COVID-19 pandemic on children and calls on states to protect the rights of children. April 8, 2020. Available at: https://www.unicef.nl/files/INT_CRC_STA_9095_E.pdf. Accessed April 25, 2020.