



Bloomberg
Philanthropies



DATA FOR
HEALTH INITIATIVE

CRVS Fellowship profile

Estimating the completeness
of birth and death registration
in Ecuador

December 2018





Resources available from the University of Melbourne, Bloomberg Philanthropies Data for Health Initiative

CRVS course prospectuses

These resources outline the context, training approach, course content and course objectives for the suite of CRVS trainings delivered through the Bloomberg Philanthropies Data for Health Initiative. Each course focuses on a specific CRVS intervention or concept, and is designed to support countries to strengthen their CRVS systems and data.

CRVS Fellowship reports and profiles

The CRVS Fellowship Program aims to build technical capacity in both individuals and institutions to enhance the quality, sustainability and health policy utility of CRVS systems in Fellows' home countries. *Fellowship reports* are written by Fellows as a component of the program, and document, in detail, the research outcomes of their Fellowship. *Fellowship profiles* provide a summary of Fellows' country context in relation to CRVS, an overview of the Fellowship experiences, the research topic and the projected impact of findings.

CRVS analyses and evaluations

These analytical and evaluative resources, generated through the Initiative, form a concise and accessible knowledge-base of outcomes and lessons learnt from CRVS initiatives and interventions. They report on works in progress, particularly for large or complex technical initiatives, and on specific components of projects that may be of more immediate relevance to stakeholders. These resources have a strong empirical focus, and are intended to provide evidence to assist planning and monitoring of in-country CRVS technical initiatives and other projects

CRVS best-practice and advocacy

Generated through the Initiative, CRVS best-practice and advocacy resources are based on a combination of technical knowledge, country experiences and scientific literature. These resources are intended to stimulate debate and ideas for in-country CRVS policy, planning, and capacity building, and promote the adoption of best-practice to strengthen CRVS systems worldwide.

CRVS country reports

CRVS country reports describe the capacity-building experiences and successes of strengthening CRVS systems in partner countries. These resources describe the state of CRVS systems-improvement and lessons learnt, and provide a baseline for comparison over time and between countries.

CRVS technical guides

Specific, technical and instructive resources in the form of *quick reference guides*, *user guides* and *action guides*. These guides provide a succinct overview and/or instructions for the implementation or operation of a specific CRVS-related intervention or tool.

CRVS tools

Interactive and practical resources designed to influence and align CRVS processes with established international or best-practice standards. These resources, which are used extensively in the Initiative's training courses, aim to change practice and ensure countries benefit from such changes by developing critical CRVS capacity among technical officers and ministries.

Published by the University of Melbourne, Civil Registration and Vital Statistics Improvement, Bloomberg Philanthropies Data for Health Initiative.

Melbourne School of Population and Global Health
Building 379
207 Bouverie Street
Carlton, VIC 3053
Australia

CRVS-info@unimelb.edu.au
www.mspgh.unimelb.edu.au/dataforhealth

**Made possible through funding from
Bloomberg Philanthropies**
www.bloomberg.org

Suggested citation

Andrade, J. *Fellowship profile: Estimating the completeness of birth and death registration in Ecuador*. CRVS Fellowship reports and profiles. Melbourne, Australia: Bloomberg Philanthropies Data for Health Initiative, Civil Registration and Vital Statistics Improvement, University of Melbourne; 2018.

Fellowship profile: Estimating the completeness of birth and death registration in Ecuador

Between August and October 2018, José Andrade, from the Vital Statistics Department of the National Institute of Statistics and Census (INEC) in Ecuador, came to the University of Melbourne to receive support in calculating the completeness of birth and death registration in Ecuador. His fellowship involved using surveys, censuses, and population projections to do so. This *CRVS fellowship profile* documents José's experiences whilst at Melbourne, including what he worked on, what he learned, and what impact this might have on improving the quality of vital statistics in Ecuador.

Country context

The CRVS system of Ecuador

Data quality issues

The fellowship project

Reflections: take-home lessons

Completeness estimates will indicate priorities

More data are needed

Learning from other country experiences

Benefits for CRVS system development in Ecuador

Related resources and readings

Country context

About 37 per cent of Ecuadorians live in rural areas.

José is from Ecuador, a country that has shown political commitment towards generating reliable vital statistics for health policy and planning by engaging in civil registration and vital statistics (CRVS) system-strengthening activities. In collaboration with the Bloomberg Philanthropies Data for Health (D4H) Initiative, among others, Ecuador is working towards ensuring that its population of 16.6 million – 63 per cent of whom live in urban areas – are counted in the country's civil registration system.^{1,2}

Ecuador is an upper-middle income country of four distinct geographical regions divided into 24 provinces. As of 2013, most of Ecuador's population lives in urban areas with Guayaquil, Quito, and Cuenca constituting Ecuador's major cities.¹ According to the *United Nations Human Development Report 2016*,³ Ecuador's Human Development Index (HDI) was classified as 'high' in 2015. This is in spite of the political instability from 2001 to 2005, characterised by rapid changes in presidents, causing issues in governance which in turn affected the dynamics of the health sector.⁴

1 The World Bank Group. Ecuador country data. 2018. Available at <https://data.worldbank.org/country/ecuador>

2 Ecuador Ministerio de Salud Pública y Registro Civil, Identificación y Cedulación. *Ecuador: Bloomberg Philanthropies Data for Health Initiative Work Plan*. Unpublished; 2016.

3 United Nations. *Human Development Report 2016: Human Development for Everyone*. 2016. Available at http://hdr.undp.org/sites/default/files/HDR2016_EN_Overview_Web.pdf

4 Pan American Health Organization. *Health in the Americas: Volume II – Countries*. 2007. Available at http://www.paho.org/hq/dmdocuments/2010/Health_in_the_Americas_Vol_2_Country_Profiles_2007.pdf

Figure 1 Map of Ecuador

Coverage of birth and death registration has improved over time but varies by region.



Source: On the World Map, available at <http://ontheworldmap.com/ecuador/ecuador-political-map.jpg>

The CRVS system of Ecuador

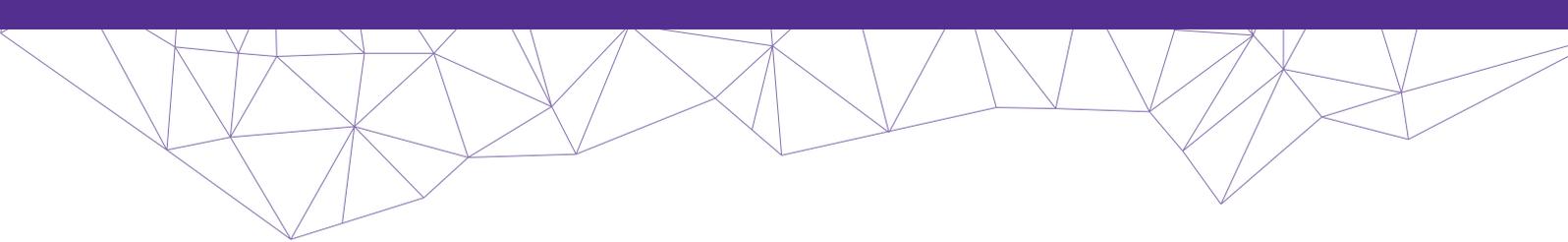
The health sector suffered as a result of political and economic instability.

Ecuador saw three presidents and nine Ministers of Health during the period of political instability from 2001-2005.³ During this time, each Minister enacted their own plans during their tenure, causing the health system to suffer from this lack of administrative consistency. Because of weakened infrastructure, neglect and underinvestment in DIGERCIC (the national civil registry office), Ecuador struggled with under-registration, late registration, and unreliable or fraudulent documentation.²

The decentralised health sector was structured into national, provincial, and cantonal levels under the National Health System Law of 2002, which also decrees the authority of provincial and cantonal health councils over these levels. Moreover, the National Decentralisation Plan outlines that the national level serves as the guiding agency presiding over the health sector as a whole, where health councils maintain technical and coordination efforts.³ To further promote decentralisation and empower governments at the local level, Ecuador was demarcated into seven zones or regions in 2007.

CRVS strengthening has since become a top priority.

As the new constitution was ratified in 2008, the national government became stabilised and highlighted CRVS system strengthening as a key priority. Declaring a civil registration 'state of emergency', the Government of Ecuador – supported by the Inter-American Development bank – formed a modernisation plan for its CRVS system. A development model by the name of 'Buen Vivir' guided changes in public policy to increase investment in the social sector, particularly in education, health, and social determinants of health.²



Currently, there are three main stakeholders in Ecuador's civil registration and vital statistics (CRVS) system: the Ministry of Health (MSP); Registro Civil, Identificación y Cedulación (DIGERCIC), which oversees the civil registration function; and Instituto Nacional de Estadística y Censos (INEC), the national statistics office. Stakeholder cooperation is managed by an interagency steering committee.²

Data quality issues

According to an international study based on data from 2012, Ecuador's Vital Statistics Performance Index (VSPI) was marked as 'medium', indicating that its CRVS system is operational but that significant disparities in subnational coverage and mortality data quality persist (**Box 1**).^{2,5}

Box 1: The Vital Statistics Performance Index

The Vital Statistics Performance Index (VSPI) is a summary measure of the performance of vital statistics systems in generating reliable mortality data. VSPI scores range from 1 (excellent) to 0 (very poor). It includes six dimensions of system performance as measured through:

- Quality of cause of death reporting
- Quality of age and sex reporting
- Internal consistency
- Completeness of death reporting
- Level of cause-specific detail
- Data availability/timeliness.⁶

COD data is largely unreliable due to several factors, including barriers to accurate death certification.

One such area in need of improvement is Ecuador's cause of death (COD) data, which is relatively unreliable.² This is because the MSP does not receive health facility data until the end of the calendar year, limiting the MSP's ability to monitor data quality. Instead, hospitals and other health facilities send their discharge and mortality data directly to INEC, which then shares the data with MSP at the end of the year. Moreover, although all deaths require medical certification of cause of death by a physician using the International Standard Form of Death Certificate and ICD-10 disease classification (**Box 2**), there are several factors contributing to poor quality COD data. These factors include the fact that over 30 per cent of deaths occur outside of health facilities, geographic barriers for medical certification in rural populations, and poor certification practices in some areas.

⁵ Mikkelsen L, et al. A global assessment of civil registration and vital statistics systems: monitoring data quality and progress. *The Lancet* 2015; 386(10001): 1395-1406.

⁶ Phillips DE, Lozano R, Naghavi M, et al. A composite metric for assessing data on mortality and causes of death: the vital statistics performance index. *Population Health Metrics* 2014; 12:14.



Box 2: What is medical certification of cause of death?

When a patient dies in a hospital or health facility, a medical certificate of COD should be completed.⁷ The medical death certificate is usually completed by the physician who attended to the patient or a physician who is familiar enough with the patient’s medical history to confidently ascertain the COD.⁸ To certify a death, the physician must first identify the disease or injury leading directly to death, and then trace back the sequence of events to determine the underlying COD.⁸

Completeness of death registration is lower than that of births.

After recent CRVS improvement efforts, completeness of registration of births by DIGERCIC is high (90 per cent completeness at the national level in 2014), although completeness continues to vary from region to region (**Box 3**). As for deaths, completeness of registration is lower (80 per cent completeness at the national level in 2011) due to the fact that around 30 per cent or more deaths occur in the community where there is no physician to certify the COD.²

Box 3: What is registration completeness?

The completeness of registration is defined as the percentage of actual births or deaths in a population that are registered. It is the number of registered births or deaths divided by the actual number of births or deaths in a population.⁹

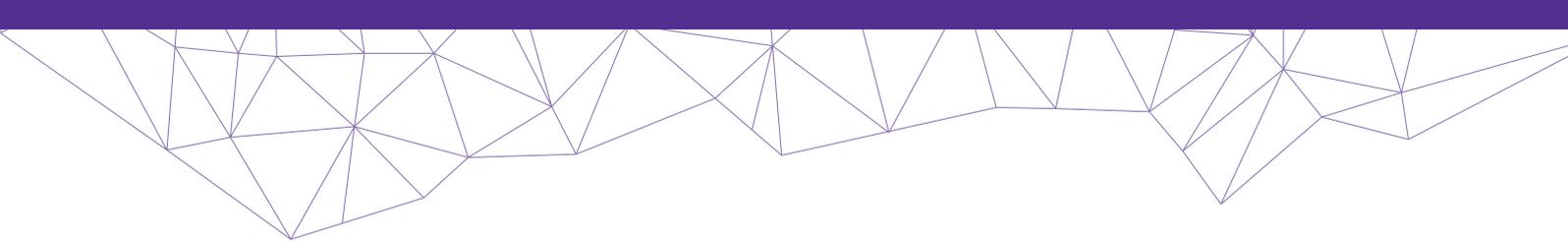
$$\text{Completeness of death registration (\%)} = \frac{\text{number of registered deaths}}{\text{actual number of deaths}} \times 100$$

Completeness of registration is an integral aspect of CRVS system-strengthening.

Registration completeness is important for governments to ensure that all, or at least most, births and deaths are registered so that they can then make planning and policy decisions with confidence, based on the knowledge that vital registration data are unbiased and complete. It is key that governments account for the bias that may arise from incomplete death registration, as unregistered deaths may have a different COD profile than registered deaths.

These COD differences may be due to varying socioeconomic circumstances of people who are not counted by civil registration systems, and also due to the types of deaths (such as those occurring in hospitals) that are more likely to be registered. In short, registered deaths provide a partial glimpse at the true COD profile of a population, and completeness of death registration must thus be routinely measured at the national and subnational levels.⁹

7 The University of Melbourne. *Strategies for improving the quality of cause of death data in hospitals*, CRVS development series. Melbourne, Australia: Bloomberg Philanthropies Data for Health Initiative, Civil Registration and Vital Statistics Improvement, The University of Melbourne; 2017.
8 Lomas HD, Berman JD. Diagnosing for administrative purposes: some ethical problems. *Social Science and Medicine* 1983; 17:241-244
9 The University of Melbourne. *A new method for estimating the completeness of death registration*, CRVS summaries. Melbourne, Australia: Bloomberg Philanthropies Data for Health Initiative, Civil Registration and Vital Statistics Improvement, The University of Melbourne; 2018.



The fellowship project

The National Institute of Statistics and Census (INEC) in Ecuador is a key CRVS stakeholder. José is the head of the Vital Statistics Department of INEC, and his main activities include managing the production of statistical data from birth and death records. The focus of José's fellowship in Melbourne was around calculating the completeness of birth and death registration at the subnational and national levels using indirect demographic methods, like data from surveys, censuses, and population projections.

One of the main products of José's fellowship is a report on birth and death registration completeness. Given that INEC is the entity responsible for the official dissemination of vital statistics, José's report on completeness will be published every year together with Ecuador's vital statistics. This is important for policymakers – in particular, the Ministry of Health – who rely on reliable data to drive policy decisions and interventions.

Reflections: take-home lessons

Completeness estimates will indicate priorities

José was able to calculate the completeness of death registration at the subnational level, highlighting areas in need of targeted assistance.

CRVS stakeholders in Ecuador are undertaking a range of CRVS strengthening activities. Working on completeness of registration will indicate areas that stakeholders need to address first in order to decide priorities for health projects and programs. For example, one of the main results of José's fellowship was the estimation of death registration at the subnational level. José was able to identify several provinces with low completeness of death registration: the provinces of Esmeraldas, Cotopaxi, and Zamora Chinchipe all had completeness estimates under 75 per cent.

More data are needed

Learning from other countries was a valuable component of the fellowship program.

A main challenge in computing completeness of registration is the availability of data from sources like surveys. José remarked that this issue faces not only Ecuador, but other countries in the region, and that there are methods to overcome these gaps and obtain reliable estimates. José stated that surveys like the Demographic and Health Survey (DHS) are helpful for computing registration completeness, and that INEC is currently working on future surveys so that these completeness estimates can be updated.

Learning from other country experiences

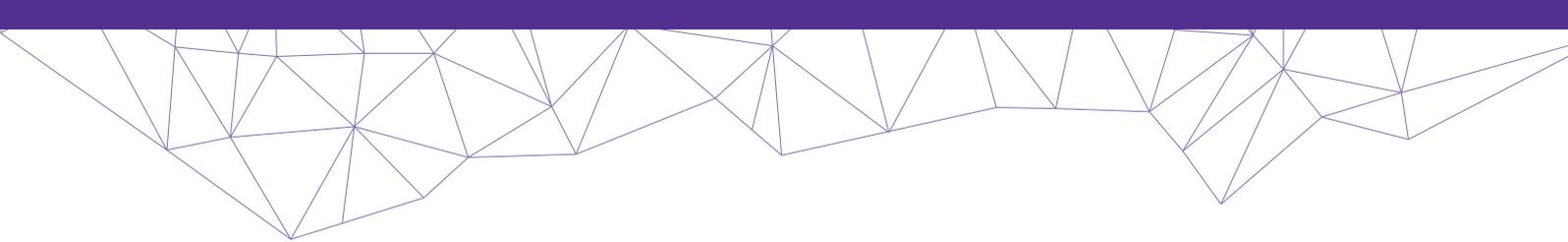
The fellowship, José remarked, was a chance for him to share knowledge and experience with fellows from Brazil, as well as from other countries. Being able to discuss birth and death registration completeness with others was particularly enriching as fellows could learn from the experiences of other countries. One opportunity for sharing knowledge came in the form of a mini boot-camp at the University of Melbourne, where fellows and staff discussed several CRVS topics. José learned that some of the other countries encountered similar problems as Ecuador and were able to solve these problems using specific implementation strategies.



Benefits for CRVS development in Ecuador

Jose believes that well-informed decisions based on statistics will have good outcomes. If Ecuador has complete, reliable birth and death registration data, policymakers can make better health policy and planning decisions. José plans to share all he has learned in his fellowship with his colleagues in order to spread knowledge about estimates of completeness, so that over time, CRVS stakeholders will be able to ensure sustainable and reliable estimates of completeness.

José notes that it is important to distinguish national and subnational level data given that statistics vary from level to level. As CRVS stakeholders in Ecuador calculate these estimates at the subnational level, they will be able to pinpoint those provinces with lower completeness of registration. Having access to subnational completeness estimates is key for identifying gaps and challenges in the CRVS system, and for improving the quality of vital statistics data. In this way, improved CRVS data – and the CRVS system as a whole – will ensure that all of Ecuador’s population is counted, and that no one is left behind.



Related resources and products

University of Melbourne, D4H Initiative, CRVS Knowledge Gateway: Library

<https://crvsgateway.info/library>

A new method for estimating the completeness of death registration. CRVS summaries.

CRVS country overview: Ecuador. CRVS summaries.

Handbook for physicians on cause of death certification. CRVS resources and tools.

Intervention: Medical certification of cause of death. CRVS summaries.

Strategies for improving the quality of cause of death data in hospitals. CRVS development series.

Training and education on medical certification of cause of death: Effective strategies and approaches. CRVS development series.

University of Melbourne, D4H Initiative, CRVS Knowledge Gateway: Learning Centre

<https://crvsgateway.info/learningcentre>

Topic 4: Cause of death in CRVS.

Topic 5: Improving quality and presentation of vital statistics.

University of Melbourne, D4H Initiative, CRVS Knowledge Gateway: Courses

<https://crvsgateway.info/courses>

Estimating the completeness of birth and death registration.

Medical certification of cause of death.

Further reading

Adair T, Lopez AD. Estimating the completeness of death registration: An empirical method. *PLoS ONE* 2018; 13(5):e0197047.

Mikkelsen L, Phillips DE, AbouZahr C, Setel PW, de Savigny D, Lozano R, Lopez AD. A global assessment of civil registration and vital statistics systems: monitoring data quality and progress. *The Lancet* 2015; 386(10001): 1395-1406.

Phillips DE, Lozano R, Naghavi M, Atkinson C, Gonzalez-Medina D, Mikkelsen L, Murray CJL, Lopez AD. A composite metric for assessing data on mortality and causes of death: the vital statistics performance index. *Population Health Metrics* 2014; 12:14.

**Bloomberg
Philanthropies**

 **DATA FOR
HEALTH INITIATIVE**



Australian Government
Department of Foreign Affairs and Trade

The program partners on this initiative include: The University of Melbourne, Australia; CDC Foundation, USA; Vital Strategies, USA; Johns Hopkins Bloomberg School of Public Health, USA; World Health Organization, Switzerland.

Civil Registration and Vital Statistics partners:



For more information contact:

CRVS-info@unimelb.edu.au
crvsgateway.info

CRICOS Provider Code: 00116K

Version: 1218-01

Copyright

© Copyright University of Melbourne December 2018.

The University of Melbourne owns the copyright in this publication, and no part of it may be reproduced without their permission.

Disclaimer

The University of Melbourne has used its best endeavours to ensure that the material contained in this publication was correct at the time of printing. The University gives no warranty and accepts no responsibility for the accuracy or completeness of information and the University reserves the right to make changes without notice at any time in its absolute discretion.

Intellectual property

For further information refer to: unimelb.edu.au/governance/statutes