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Fellowship report:

Improving the quality of external cause of death data in Brazil

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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.

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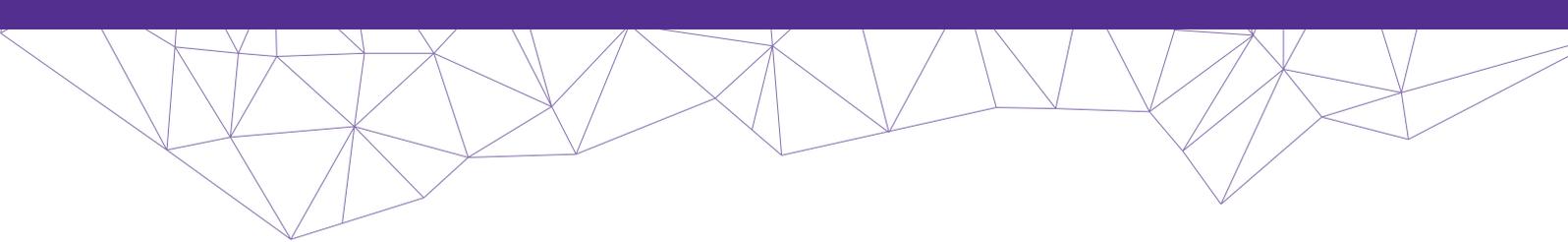
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Fellowship Profile: Improving the quality of external cause of death data in Brazil

From September to November 2019, Adauto Soares Filho from the Brazil Ministry of Health (MOH) undertook a Civil Registration and Vital Statistics (CRVS) Fellowship at the University of Melbourne (UoM), analysing the performance of a new Form for the Investigation of Deaths from External Causes (IDEC form). This profile provides an overview of country context in relation to CRVS, and documents Adauto's personal experiences, outcomes and the broader impact his Fellowship might have on improving the quality of mortality data in Brazil.

Country context

The CRVS system of Brazil

Improving mortality data

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Country context

The North and Northeast regions have some of the worst health outcomes.

In collaboration with the Bloomberg Philanthropies Data for Health (D4H) Initiative, Brazil is engaged in efforts to improve the country's civil registration and vital statistics (CRVS) system. CRVS system-strengthening is crucial for generating reliable and timely vital statistics, which the Government of Brazil can then use to guide health policy and decision-making. By continuing to strengthen its CRVS system, the Government will make sure that its population of 207.7 million¹ is counted and included in policy and planning.

Brazil is an upper-middle income country divided into five administrative regions, twenty-six states, and a Federal District (**Figure 1**).¹ Most of the population lives in urban areas, with São Paulo, Rio de Janeiro, and Salvador constituting Brazil's major cities. Of the country's five regions, the North and Northeast are the poorest, with the worst health outcomes. The South and Southeast regions are the wealthiest and have the best health indicators in the country. The Central-West region has intermediate health indicators.²

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

² United Nations Development Program, Institute of Applied Economic Research and João Pinheiro Foundation. [Atlas of Human Development in Brazil: collection of articles]. Brasília, Brazil: United Nations Development Program; 2015. Available at: <http://www.br.undp.org/content/dam/brazil/docs/IDH/undp-br-PremioAtlasDoDesenvolvimentoHumanoNoBrasil-2016.pdf>

Figure 1. Map of Brazil



Source: 'Regions and states in Brazil', available from: https://www.researchgate.net/profile/Niklas_Danielsson/publication/303946807/figure/fig2/AS:372849299_738626@1465905608419/Regions-and-states-in-Brazil.png

The CRVS system of Brazil

Brazil has spent the past four decades making huge efforts to strengthen its CRVS system and upskill its staff. The CRVS system has several strengths, including a high level of registration completeness, a long history of physician-coded verbal autopsy (VA), and a strong culture of monitoring the quality of cause of death (COD) data.³

The Civil Registrar and Ministry of Health are key CRVS stakeholders.

Key stakeholders in the CRVS system include the Civil Registrar and the Ministry of Health (MOH). The MOH maintains two information systems parallel to those of the Civil Registrar to capture births and deaths: the Live Birth Information System (SINASC), with three million reported live births each year, and the Mortality Information System (SIM), with approximately 1.2 million reported deaths each year.³

These information systems generally capture more births and deaths than the Civil Registrar system, as they actively search non-official cemeteries (cemeteries maintained by poor rural communities), notary registry offices, health centres and Brazil's Family Health Program to pinpoint underreporting of deaths.³

³ Medeiros de Souza, AC. Fellowship profile: Customising ANACONDA and strengthening the quality of mortality data in Brazil. CRVS country perspectives. Melbourne, Australia: Bloomberg Philanthropies Data for Health Initiative, Civil Registration and Vital Statistics Improvement, the University of Melbourne; 2019.



Improving mortality data

Cause of death data is crucial for public health policy and planning.

Accurate and reliable mortality information is essential for public health decision-making. The accuracy of mortality statistics, however, depends heavily on the quality of COD information in death certificates. Nearly 100% of deaths captured by the MOH have a medically certified COD, as all deaths in Brazil are legally required to have medical certification of cause of death (**Box 1**) by a physician using the International Form of Medical Certificate of Cause of Death.

Box 1. What is medical certification of cause of death (MCCOD)?

When a patient dies in a hospital or health facility, a medical certificate of cause of death (COD) should be completed.⁴ The medical death certificate is usually completed by a physician who attended to the patient or a physician who is familiar enough with the patient's medical history to confidently ascertain the COD.⁵ 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.

Although Brazil has made progress in improving the completeness of its mortality data, around one-third of all recorded deaths in Brazil are being assigned an unusable or insufficiently specified underlying cause, commonly referred to as a 'garbage code' (**Box 2**).⁶

Box 2. What are garbage codes?

Garbage codes (also referred to as insufficiently specified and unusable codes) have no use in informing public health policy, as the related underlying cause of death (UCOD) is too vague or simply impossible.⁷ Garbage codes bias the true pattern of mortality in a country, as it is unlikely they would be equally or proportionally distributed across the disease categories used in analysing COD data. Hence, the data will not represent the true health status of the population.⁸

Unspecified external causes of death remain an issue in Brazil.

In 2016, Brazil recorded over 1.3 million deaths.⁹ Of these deaths, 33.6% had some type of garbage code, and among external causes (due to accident or violence), 15.4% were unknown or unspecified.⁷ External causes have been the third leading COD in Brazil since the early 2000s, but death certificates from external causes often lack complete information on the specific circumstances (like the type of accident or violence) that caused the death.¹⁰ In 2012, for instance, 21% of 150,000 external causes analysed were found to be of undetermined intent or incomplete diagnosis.¹⁰

- 4 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.
- 5 Lomas HD, Berman JD. Diagnosing for administrative purposes: some ethical problems. *Social Science and Medicine* 1983; 17:241-244.
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- 7 Mikkelsen L, et al. Redefining 'garbage codes' for public health policy: report on the expert group meeting, 27–28 February 2017. CRVS technical outcome series. Melbourne, Australia: University of Melbourne, Civil Registration and Vital Statistics Improvement, and Bloomberg Philanthropies Data for Health Initiative; 2018. Available from: <https://crvsgateway.info/file/9816/276>
- 8 Naghavi M, et al. Algorithms for enhancing public health utility of national causes-of-death data. *Population Health Metrics* 2010; 8:9.
- 9 Soares Filho, AM et al. Improvement of the unspecified external causes classification based on the investigation of death in Brazil in 2017. *Revista Brasileira de Epidemiologia* 2019; 22(Suppl 3):1-14.
- 10 Soares Filho, AM et al. Review of deaths correction methods and quality dimensions of the underlying cause for accidents and violence in Brazil. *Ciência & Saúde Coletiva* 2016; 21(12).



The CRVS Fellowship project

At the Brazil MOH, Adauto works as a nurse, information technologist, and database analysis specialist. His main duties include treating, organising, and analysing health data, with a focus on deaths due to external or unnatural causes – specifically causes to do with injuries and violence – and the quality of this mortality data.

For his Fellowship in Melbourne, Adauto undertook a project analysing the performance and suitability of the Form for the Investigation of Deaths from External Causes (IDEC form), with the goal of improving the quality of Brazil's mortality data. Developed by the death surveillance team at the MOH of Brazil in 2018, with the support of the Graduate Program in Public Health of the University of Brasilia and Federal University of Minas Gerais, the IDEC form was devised to be prospectively used across the country for garbage code investigations for external causes. The IDEC form was developed to address issues in the pre-existing standard form, which did not contain enough specific questions on the circumstances of injury deaths to accurately ascertain COD.

Reflections: take-home lessons

Challenges with qualifying information on external causes

Adauto came across several challenges and surprises throughout his Fellowship.

Adauto mentioned that he came across some challenges during his Fellowship, particularly to do with selecting the most appropriate questions for qualifying data on deaths by unspecified external causes, such as injuries. Throughout fieldwork, to ensure that the questions were appropriate, researchers using the IDEC form provided regular feedback to Adauto who then adjusted the form accordingly.

Data can be used to improve health and wellbeing

Whilst undertaking research for this project, Adauto noticed the wide range of stakeholders involved in the CRVS field. He noted that in Brazil, there are two separate fields of knowledge that work with information related to external causes of death: the police and forensic institutes, and health services and ministries. Although the fields of epidemiology and forensics are different, both depend on access to accurate, timely mortality data in order to make effective public health decisions and to secure rights.

New skills and knowledge

The Fellowship gave Adauto an opportunity to develop highly specific skills and knowledge. Adauto learned how death records from various sources can be useful for qualifying deaths by external causes; for example, whereas a police report might detail circumstances of how a death occurred, an autopsy report by a forensic specialist may contain a completely different set of information needed to qualify an underlying COD.

Benefits for CRVS system development in Brazil

Adauto plans to share his findings so that Brazil can continue to improve its mortality data.

Upon his return to Brazil, Adauto plans to work together with his colleagues to publish the results of his work. Publishing the results from the validation and evaluation of a new form to investigate deaths with unspecified external causes means that stakeholders in Brazil will have a standard reference instrument available for use. In addition, the findings of Adauto's work will be useful for other countries that have a high proportion of garbage codes by injuries, both in the Latin American region and elsewhere.

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:



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