

CRVS systems are good for your health

This *CRVS summary* is edited from 'Are well functioning civil registration and vital statistics systems associated with better health outcomes?', a *Lancet* publication available at <http://www.thelancet.com/series/counting-births-and-deaths>.

Key messages

- Well functioning civil registration and vital statistics (CRVS) systems directly benefit individuals and policy, and are significantly¹ associated with better health outcomes.
- CRVS performance coincides with good health worldwide, irrespective of income and other factors likely to affect health status.
- Improving CRVS systems acts independently to improve health: it is a stand-alone health intervention, much like an immunisation campaign or increasing service coverage.
- Well functioning CRVS systems generate crucial information for public health policy, and ensure access to services through provision of legal identity to individuals and families.
- Greater investment in CRVS systems should be seen as a driver of human development, not only a result of it.

Are well functioning civil registration and vital statistics systems associated with better health outcomes?

In 2015 the *Lancet* published a series of papers on civil registration and vital statistics (CRVS) systems as part of the special edition on '*Counting births and deaths*', a follow-on from the original series, '*Who counts?*' published in 2007.²

One of the papers, the focus of this *CRVS summary*, asked the seemingly simple question: do investments in CRVS systems lead to better health outcomes?³ The authors also wanted to understand **how** (ie the potential pathways and links between CRVS and health); and to be able to prove that investments in CRVS were in-and-of-themselves responsible for better health outcomes, independently from gains in health due to other means (such as improvements in income or education).

¹ In statistics, 'significance' implies that the observed relationship is a true one (and not due to chance).

² Available at <http://www.thelancet.com/series/who-counts>

³ Phillips DE, AbouZahr C, Lopez AD, et al. Are well functioning civil registration and vital statistics systems associated with better health outcomes? *Lancet* 2015; 386:1386-94.

To answer this question, the authors hypothesized that if such a relationship between CRVS and health exists, it must be measurable. Following a comprehensive literature review on the conceptual basis of the links between CRVS and health, a composite metric of national CRVS performance was selected to represent overall system functioning, and this was compared with three key health outcomes (**Box 1**).

From good CRVS to good health

From the literature review, the authors developed a conceptual outline of the various pathways by which CRVS systems might influence health and social development (**Figure 1**). Overall, CRVS systems have an effect on, and are affected by, social inclusion, equity, identity, access, entitlements, and information.

Essentially, **the registration of vital events** (especially births, deaths, and marriages) **increases access to social services**. Birth registration enables access to rights, entitlements and benefits through the establishment of a legal identity. A birth certificate is a standard requirement for children to attend school in many countries. Individuals with legal identities can also participate in the modern economy, for example by having bank accounts and the ability to purchase property. The registration of a death is usually the first step in family members' being able to claim inheritance, insurance benefits, or spousal compensation entitlements.

In short, the authors summarised, '**birth registration makes individuals more visible, and the state more accountable for provision of health, education, other services, safety nets, and legal protection**'.⁴

The **vital statistics produced by a CRVS system provide health managers, planners, and policy-makers with the necessary information to make evidence-based decisions**.

Mortality and cause of death statistics generated through death registration are able to describe the extent, pattern, and trend in what people are dying from. This information can then be used to target interventions aimed at reducing premature mortality. A well-functioning civil registration system, with accurate certification of cause of death, can differentiate between people dying from, for example, breast or lung cancer: critical information for those responsible in developing and implementing disease control strategies, as the two cancers require different public health interventions.

⁴ Boekle-Giuffrida B, Harbizz M. *Democratic governance, citizenship and legal identity—linking theoretical discussion and operational reality*. Working Paper. Washington, DC, USA: Inter-American Development Bank; 2009.

Box 1: Components in measuring the impact of CRVS on health

Vital statistics performance index

The vital statistics performance index (VSPI) describes the extent to which a CRVS system accurately and completely registers and certifies vital events (ie overall system function). It measures quality, completeness, and timeliness of CRVS-derived mortality data on a continuous scale with six indicators.⁵ The indicators capture different dimensions of the strengths and weaknesses of a CRVS system, and are combined to create a weighted score.⁶

VSPI scores were calculated for all known and available vital statistics data, accounting for 148 countries or territories for each year from 1980 to 2012.

Health outcomes

Three health outcomes were examined:

1. Healthy life expectancy (HALE)
2. Maternal mortality ratio (MMR)
3. Probability of death before age five (5q0).

Each outcome was estimated at the country-year level as part of the Global Burden of Disease Study 2010.⁷ The health outcomes were selected to represent global health and development priorities (such as maternal and child health), or capture morbidity and mortality in a population (healthy life expectancy).

Confounding factors

The authors controlled for four confounding factors: income, urban development, health system strength, and contraceptive prevalence. These factors were measured by gross domestic product (GDP) per capita, proportion of the population in urban areas, a composite health system access measure, and contraceptive prevalence. The selected factors were chosen as they are most likely to confound (potentially disrupt, distort or bias) the relationship between well functioning CRVS systems and health outcomes. For example, wealthy countries are more likely to have increased access to good-quality health services, and as such better health outcomes, quite separate from any impact of their CRVS system.

Measuring the impact

As described (**Box 1**), the authors used the vital statistics performance index (VSPI) to measure the overall performance of national CRVS systems, and compared this with national estimates of healthy life expectancy (HALE), the maternal mortality ratio (MMR), and under-five mortality rate (5q0).

Overall, a **modest but strong and consistent relationship between the VSPI and health** outcomes across country-years was found. As shown in **Figure 2**, as the VSPI score increases, so does the number of healthy years a person would expect to live for. If, for example, worldwide CRVS performance was high (VSPI = 0.9), rather than where it currently is (0.6); on average, people around the globe would **gain one extra year of healthy life expectancy**. The authors also found that countries with high VSPI scores had low rates of maternal and under-five mortality.

This is a significant finding in regards to the **independent impact strong CRVS systems have on health outcomes**. Researchers in 2012, for example, were able to demonstrate that between 1990 and 2010, global HALE increased by about four years.⁸ These gains were primarily due to intensive and sustained public health campaigns aimed at reducing risk factors. In this context, strengthening CRVS systems should be seen as a 'health intervention' in its own right, much like an immunisation campaign or increased service coverage for cancer treatment.

As described in Box 1, the authors controlled for the potentially confounding affects of other factors, like income (measured through a country's GDP). Their results show that the relationship between CRVS and health is likely a true one. As remarked, **'These ecological analyses⁹ show that CRVS performance coincides with good health worldwide, irrespective of income and other factors'**.

5 Mikkelsen L, Phillips DE, AbouZahr C, et al. A global assessment of civil registration and vital statistics systems: monitoring data quality and progress. *Lancet* 2015; published online May 11.

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.

7 Available at <http://www.thelancet.com/gbd/2010>

8 Salomon J, Wang H, Freeman M, et al. Healthy life expectancy for 187 countries, 1990-2010: A systematic analysis for the Global Burden of Disease Study 2010. *Lancet* 2012; 380:2144-62.

9 An ecological analysis is a way for researchers to look at the large-scale impact of specific interventions on public health (in this instance, the impact of CRVS systems on health outcomes)

Figure 1 Pathways of influence from CRVS to health outcomes

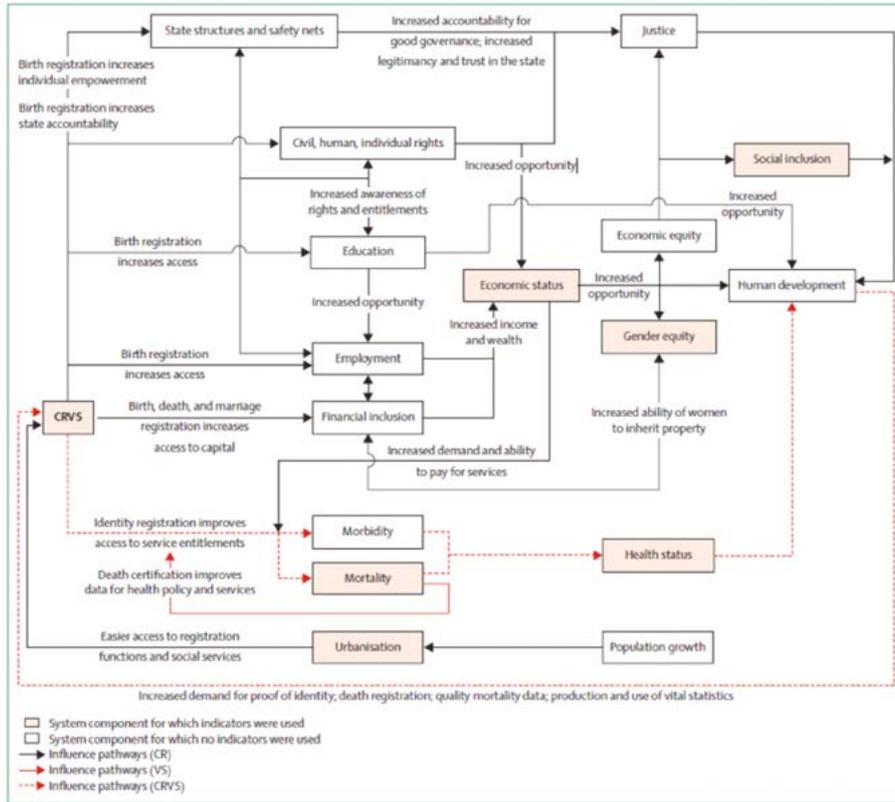
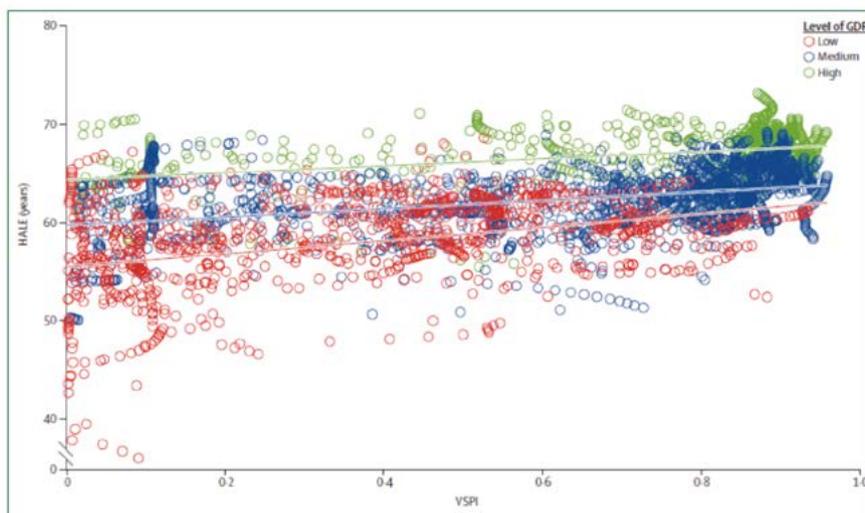


Figure 2 Healthy life expectancy (HALE) compared with the vital statistics performance index (VSPI), by gross domestic product (GDP)



Summary

'On the basis of CRVS data and health outcome measurements for 144 countries during the past 33 years, [the authors showed] that well performing CRVS systems consistently co-occur with improved health, irrespective of a population's wealth, level of urbanisation, health system coverage, or contraceptive prevalence. [They] likewise expect CRVS performance to have a measureable association with future health outcomes, and [they] show that ecological data are consistent with these expectations'.

The registration of vital events promotes human rights and sustainable development through granting access to social services. The vital statistics produced through registration provide essential information to ensure evidence-based policy making and resource allocation. Working together, these two components of a CRVS system can improve health and development.

Overall, the authors concluded that well functioning CRVS systems not only have direct benefits for individuals and policy-making, they also have an impact on improved health outcomes. As such, greater and more urgent investments in CRVS systems should be a key feature of all development efforts, and not just a characteristic of them.

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