

Reporting of vital statistics from civil registration systems to the UN Statistics Division

Note prepared for the United Nations Expert Group Meeting on evaluation of vital statistics data from civil registration, 3-4 November 2016, New York

Introduction

The United Nations Statistics Division collects, compiles and disseminates every year official demographic and social statistics of all countries and areas. The data are collected via a set of annual and census questionnaires sent to the National Statistical Offices. The traditional form of dissemination is the *UN Demographic Yearbook* collection, published annually since 1948. The *Demographic Yearbook* issues are available online at <http://unstats.un.org/unsd/demographic/products/dyb/dyb2.htm>.

The scope of the demographic and social data collected from the National Statistical Offices and disseminated by the United Nations Statistics Division is very wide. This note will mainly focus on births and deaths statistics, registered at the country level to the civil registration authorities, compiled at the country level, and thereafter reported by the National Statistical Offices (NSOs) of countries or areas to the United Nations Demographic Yearbook published by the United Nations Statistics Division.

Statistics on vital events are collected annually via the Demographic Yearbook Vital Statistics questionnaire¹. This questionnaire is comprised of several tabulations, in order to collect data on a wide range of vital events and respective topics, according to the Principles and Recommendations for a Vital Statistics System².

This note provides an overview of the availability of statistics on births and deaths that are outputs of civil registration systems and related identifiers of quality of such statistics. In this note we denote by “CRVS births” or “CRVS deaths” statistics on births or deaths compiled from the records of civil registration systems. The information presented refers to the data and information available in the Demographic Yearbook database as of mid-October 2016. The data and information analysed encompass the period 1995-2015. A separate section will describe the metadata reported along with the vital statistics which refer to the completeness of the vital events and the methods that are used to evaluate such completeness.

It has to be noted that there may exist, nationally representative vital statistics compiled as outputs of the national civil registration systems that have not been reported to the UN Statistics Division; and therefore the true availability of data could be of a higher level or quality than presented in this note.

Throughout this document, the availability of CRVS births or deaths is measured in terms of the number of countries with reported CRVS births or deaths or percentage of the number of such

¹ <http://unstats.un.org/unsd/demographic/products/dyb/dybquest.htm>

² <http://unstats.un.org/unsd/demographic/standmeth/principles/default.htm>

countries to the total number of countries in the respective continent or World during the period under consideration.

Births and deaths statistics – an overall picture

As part of the vital statistics data collection, NSOs are requested to provide annually the total number of live births and deaths that have occurred during the calendar year in the country (and by sex and urban or rural residence) as well as the datasets for births by age of mother and sex of newborn, and deaths by age and sex.

Figures 1 and 2 of the Annex provide information over time, since reference year 1995, on total births and births by age of mother. Figures 3 and 4 provide the analogous information for total deaths and deaths by age.

The percentage of countries or areas that report the birth or death datasets compiled from civil registration records are distinguished separately as CRVS births or CRVS deaths. The “Other” portion of the bars include countries or areas that have reported the number of births or household deaths, collected for the 12 month period (or any other reference period that was used) before a census, and only five countries with sample vital registration systems or a large demographic survey (India Sample Registration System, Bangladesh Sample Vital Registration System, China National Survey on Population Changes, Pakistan Demographic Survey for selected years and Tukey Population Growth Survey for selected years).

From Figure 1, it can be noted that the availability of total CRVS births for the World, has slightly improved to 75 per cent for the reference years 2000-2004 compared to the previous five years at 71 per cent, continuing with 73 per cent in 2005-2009 and 72 per cent for 2010-2015. This last figure may improve after a few years, because CRVS births in many countries are subject to delayed registration.

Births by age of mother (and sex of child) are a very important dataset. As it can be seen from Figure 2, the availability of CRVS births by age of mother (whether complete or incomplete) is 59 per cent for 2005-2015, at a lower level than the number of countries that could report the total CRVS births. There are wide differences among regions in that respect. In general, countries or areas that can report total CRVS birth figures but not disaggregated by age of mother, do not have fully functional or complete civil registration and related vital statistics systems. In such cases, also the total CRVS births figures are usually incomplete, meaning they do not refer to all the events that could have occurred or that could have been registered. A similar statement is valid for the deaths statistics, or any vital event reported as an aggregate number and by its characteristics.

Many countries that have deficiencies in their civil registration systems are reporting the total births or births by age of mother compiled from the households' census declarations for the 12 months or any other reference period before the census that was used. Some of these countries are: Bhutan 2005, Bolivia 2012, Botswana 2011, DPR Korea 2008, Ghana 2010, Indonesia 2010, Jamaica 2011, Liberia 2008, Malawi 2008, Mali 2009, Namibia 2001 and 2011, Nepal 2011, Samoa 2011, Saudi Arabia 2004, Senegal 2002, State of Palestine 2007, Swaziland 1997 and 2007, Tokelau 2011, and Zambia 2010. There are countries, eg. Botswana, Ghana, Jamaica, Bolivia, that report the recent

births and deaths from censuses, as well as births and deaths from registration systems, in some cases adjusted for incompleteness. The compilation of vital statistics data from both sources (namely censuses and registration system) is very useful for evaluating the completeness in vital registration data and monitoring progress in that regard. It can be seen from Figure 2 that the availability of births by age of mother including the censuses as a source has increased by 6 per cent during the second period from 60 to 66 per cent. This last figure may improve as the reporting of 2010 round of census data is not yet complete. However, as a note of caution, the 66 per cent availability figure includes as well CRVS datasets coded as incomplete.

From Figure 3, the pattern of the availability of CRVS deaths statistics displays improvement during the decade 2000-2009, reaching 74 per cent of all countries/areas, but with a subsequent decrease to 70 per cent during 2010-2015. However, (Figure 4) 59-60 per cent of countries or areas, could report datasets of CRVS deaths by age. Many countries have reported instead datasets of total household deaths or household deaths by age compiled for the 12 month period or any other reference period that used, before the census. Some of these countries are: Bhutan 2005, Bolivia 2012, Botswana 2001 and 2011, China 2010, DPR Korea 2008, Ghana 2010, Indonesia 2010, Jamaica 2011, Malawi 1998 and 2008, Mali 2009, Mozambique 1997, Namibia 2001 and 2011, Nepal 2001 and 2011, Republic of South Sudan 2008, Samoa 2011, Sao Tome and Principe 2012, Saudi Arabia 2004, Sierra Leone 2004, Swaziland 1997 and 2007, Tonga 2006, Zambia 2010 and Zimbabwe 2002.

It is important to note that the countries that have reported recent births or household deaths from censuses do not necessarily lack vital registration altogether, but simply the vital registration is still in development, may not cover the entire area of the country, the civil registration and statistical authorities may not have established the necessary cooperation, etc. UNSD welcomes the reporting of CRVS data, at any level of completeness, along with the reporting of the estimated completeness level and methods used for its evaluation. Reporting of completeness and the methods used will be discussed more at length further in this note.

Births and deaths statistics by region

In what follows the focus will be on births and deaths statistics by region compiled from civil registration records (CRVS births and CRVS deaths) and distinguishing between complete and incomplete statistics. There are remarkable differences among regions in the status of their civil registration systems and their capabilities to produce vital statistics, as well as in the completeness of such statistics.

The following figures displayed on the Annex to this note provide information on the availability of CRVS births and CRVS deaths and their completeness: Figures 5, 5a, 6 and 6a for Africa; Figures 7, 7a, 8 and 8a for America, North; Figures 9, 9a, 10 and 10a for America, South; Figures 11, 11a, 12 and 12a for Asia; Figures 13, 13a, 14 and 14a for Europe; and Figures 15, 15a, 16 and 16a for Oceania.

The availability of CRVS births in Africa, as a percentage of the total number of countries in the continent, has shown improvements during the time period analysed; rising from 29 per cent during 1995-1999, to 34 per cent during 2000-2004, to 36 per cent during 2005 to 2009, and to 39 per cent during 2010-2015. The number of countries in Africa, able to produce births statistics at a level of

completeness of more than 90 per cent (classified as complete) is 11 countries during 1995 to 2004, and 10 countries for reference years 2005 to 2015. Regarding the reporting of CRVS births by age of mother, 9 African countries reported for 1995-2004 (7 complete and 2 incomplete) and 12 reported for 2005-2015 (6 complete and 6 incomplete).

The availability of CRVS deaths reporting in Africa has also shown small improvements, but still remains low. The percentage of countries that can produce complete total numbers of CRVS deaths since year 2000 is 12 per cent (7 countries); whereas the highest percentage of total CRVS deaths reporting (complete and incomplete) is at 37 per cent during 2005-2009. Regarding the reporting of CRVS deaths by age, 11 African countries reported for 1995-2004 (5 complete and 6 incomplete) and 13 reported for 2005-2015 (5 complete and 8 incomplete).

This situation indicates slow progress in strengthening civil registration systems or their capability to produce vital statistics; as well as reliance on censuses of population and surveys on producing fertility and mortality indicators. As mentioned previously in this note, several African countries have reported births and deaths statistics based on population censuses.

The availability of CRVS births and deaths in North America has improved towards the end of the period analysed compared to the beginning of the period. 85 per cent of North American countries have reported CRVS births and 86 per cent have reported CRVS deaths during 2010-2015. Overall, during the period analysed, the percentage of North American countries reporting complete CRVS births is much higher than the percentage reporting incomplete ones, with the complete at 73 per cent, and the incomplete at 12 per cent during the most recent period. The same is true for CRVS deaths, with 71 per cent of countries reporting complete CRVS deaths and 15 per cent incomplete ones.

Most of the countries that have reported total numbers of CRVS births and deaths, have also reported births by age of mother and deaths by age. Out of a total of 41 countries or areas in North America, 29 reported births by age of mother during 1995-2004 (24 complete and 5 incomplete) and also 29 countries or areas during 2005-2015 (25 complete and 4 incomplete). 34 North American countries reported deaths by age during 1995 to 2004 (28 complete and 6 incomplete) and 27 during 2005-2015 (24 complete and 3 incomplete).

In South America, the overall percentage of CRVS births and deaths reporting is 86 per cent or more for the entire period. The issue however is the completeness with 5-6 countries, reporting births and deaths at a level of completeness of less than 90 per cent (incomplete). One of the problems in some South American countries is the incomplete combined with the delayed registration. However, work is being done by recording during registration the year of birth or the age of the individual being registered. Out of 14 countries in South America, 10 have reported CRVS births by age of mother during 1995-2004 (6 complete, 4 incomplete) and 11 during 2005-2015 (6 complete, 5 incomplete). CRVS deaths by age are reported by 12 countries during 1995-2004 (7 complete, 5 incomplete) and 11 countries during 2005-2015 (7 complete, 4 incomplete).

In Asia, the level of CRVS births and deaths reporting has remained almost the same during the entire period analysed, at 74-76 per cent of the number of countries for births and 72-74 per cent for deaths. The percentage of countries reporting complete CRVS births in the latest period is 52 per cent, whereas incomplete ones 22 per cent. The percentage of countries reporting complete CRVS

deaths in the latest period is 50 per cent whereas and incomplete ones 24 per cent. India that provides fertility and mortality rates from a sample registration system and China that provides indicators based on the national survey on population changes are not included in the CRVS numbers. The majority of the countries that have reported total births and deaths, have reported as well births by age of mother and deaths by age. Out of a total of 50 countries or areas, 29 have reported CRVS births by age of mother for 1995-2004 (23 complete and 6 incomplete), and also 29 countries or areas for 2005-2015 (24 complete and 5 incomplete). 26 countries have reported CRVS deaths by age for 1995-2004 (22 complete and 4 incomplete) and 30 countries for 2005-2015 (24 complete and 6 incomplete).

The availability of CRVS births and deaths in Oceania has decreased during the most recent years analysed. Only 62.5 per cent of the Oceania countries (15 countries or areas out of 24) have reported CRVS births during 2010-2015, and also 15 countries have reported CRVS deaths during the same period. Many island nations or areas have not been able to report vital statistics recently. However among the reporting countries or areas, the number that have reported complete CRVS births and deaths, is much higher than the number reporting incomplete ones; with 13 complete and 2 incomplete for births; and 12 complete and 3 incomplete for deaths. 14 countries have reported births by age of mother (12 complete and 2 incomplete), and 15 countries have reported deaths by age (11 complete and 4 incomplete), during 2005-2015.

To summarize this regional review, Figures 17 and 18 display respectively the trends in CRVS total births and deaths reporting by region and for the World, whereas Figures 19 and 20 display respectively the current regional situation of CRVS total births and deaths reporting distinguishing between complete and incomplete statistics.

As evidenced by this analysis, the availability of basic statistics on births and deaths compiled from civil registration systems has remained at more or less the same levels during the period considered, with small improvements in registration and reporting of births in Africa. Also, the more details are required of the basic statistics (such as age of mother and sex for births, and age and sex for deaths) the less is the number of countries able to provide such datasets at the national level. This is even more so, when additional characteristics are required such as live birth order, marital status of mother, place of occurrence of vital event, etc.

Reporting of metadata on vital statistics

The UNSD vital statistics questionnaire contains two spreadsheets to collect metadata on vital statistics that are reported in the same questionnaire. Among others, national statistical offices are requested to provide metadata on completeness of CRVS births, deaths, infant deaths, marriages and divorces, broad groups of methods used to evaluate the completeness at the national level for each vital event, and the reference year(s) of the reported completeness.

Over the past three decades, 131 countries in all regions have provided metadata. The metadata on vital events were consolidated in one single Excel file, preserving identically the structure and content of the metadata received from the NSOs. Subsequently the information was further consolidated for each vital event using an R programme in order to produce a meaningful summary of the information.

The following tabulations display the latest aggregated results of the reported metadata on completeness levels and groups of methods for evaluating completeness for CRVS births and deaths.

Table 1 - Live births: Number of reporting countries by continent and percentage of completeness

	Completeness 90% or more	Completeness 75 – 89%	Completeness 50 – 74%	Completeness less than 50%
	96	6	6	1
Africa	4	1	2	1
America, North	21	2	1	0
America, South	5	2	2	0
Asia	20	0	0	0
Europe	43	1	0	0
Oceania	3	0	1	0

Table 2 - Live births: Number of reporting countries by continent and broad groups of methods of completeness evaluation

	Demographic analysis	Dual record check	Census	Surveys	Other	No evaluation
	26	21	7	4	18	8
Africa	5	0	0	1	2	0
America, North	4	7	1	0	1	3
America, South	2	2	1	0	0	0
Asia	5	3	1	2	6	2
Europe	8	8	3	0	7	3
Oceania	2	1	1	1	2	0

Table 3 - Live births: Number of reporting countries by reporting period and broad groups of methods of completeness evaluation

	Demographic analysis	Dual record check	Census	Survey	Other	No evaluation
	26	21	7	4	18	8
Reporting period						
< 2000	0	0	0	0	0	0
2000 - 2004	3	2	1	1	4	0
2005 - 2009	3	3	1	1	2	2
2010 +	20	16	5	2	12	6

Table 4 - Deaths: Number of reporting countries by continent and percentage of completeness

	Completeness 90% or more	Completeness 75 – 89%	Completeness 50 – 74%	Completeness less than 50%
	96	5	5	2
Africa	5	0	1	2
America, North	21	1	2	0
America, South	8	0	1	0
Asia	16	3	0	0
Europe	43	1	0	0
Oceania	3	0	1	0

Table 5 - Deaths: Number of reporting countries by continent and broad groups of methods of completeness evaluation

	Demographic analysis	Dual record check	Census	Surveys	Other	No evaluation
	26	21	3	2	13	9
Africa	5	0	0	1	1	0
America, North	3	7	1	0	0	3
America, South	3	1	0	0	0	1
Asia	6	3	0	0	4	2
Europe	7	9	1	0	6	3
Oceania	2	1	1	1	2	0

Table 6 - Deaths: Number of reporting countries by reporting period and broad groups of methods of completeness evaluation

	Demographic analysis	Dual record check	Census	Survey	Other	No evaluation
	26	21	3	2	13	9
Reporting period						
< 2000	0	0	0	0	0	0
2000 - 2004	3	2	1	1	4	0
2005 - 2009	3	3	0	0	0	3
2010 +	20	16	2	1	9	6

Observations:

- 109 countries have reported their completeness on CRVS births statistics; 96 complete and 13 incomplete as of the latest reference year reported;
- 108 countries have reported their completeness on CRVS deaths statistics; 96 complete and 12 incomplete as of the latest reference period reported;
- Demographic analysis followed by dual record check are the most commonly used methods of completeness evaluation for CRVS births and deaths statistics among the reporting countries, with 26 and 21 respectively;
- Most reporting countries have reported completeness evaluation methods since year 2000.

This is a reflection of improvements in reporting to UNSD, or increase in the number of countries that use the several completeness evaluation methods, or both. This is a very encouraging development.

As a final remark, by updating periodically this report on international reporting of CRVS data and metadata through the UN Demographic Yearbook system, we hope to provide evidence on continuous improvements that are being made regarding timeliness and quality of the vital statistics data and metadata at the international level.

ANNEX

Figure 1: Availability of total births reported to Demographic Yearbook, percentage of countries/areas

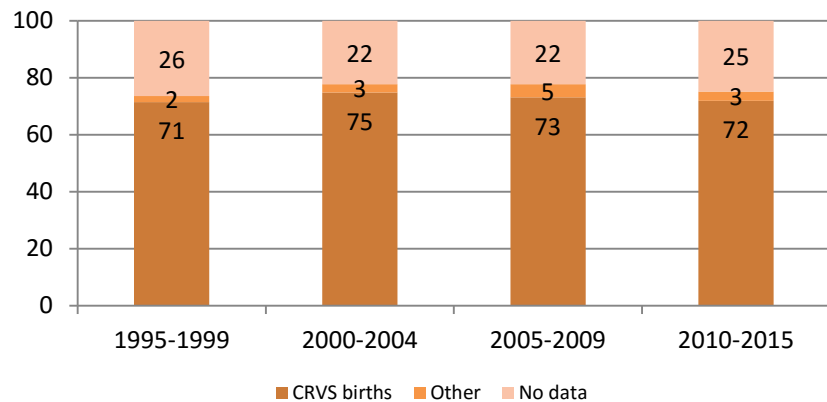


Figure 2: Availability of births by age of mother reported to Demographic Yearbook, percentage of countries/areas

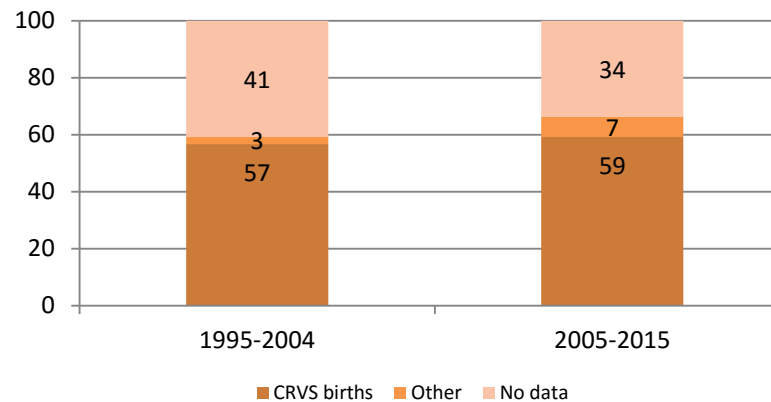


Figure 3: Availability of total deaths reported to Demographic Yearbook, percentage of countries/areas

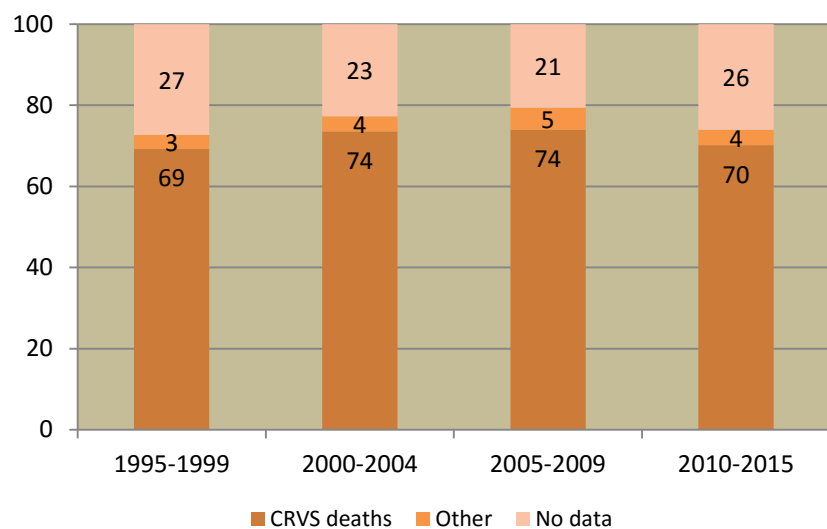


Figure 4: Availability of deaths by age reported to Demographic Yearbook, percentage of countries/areas

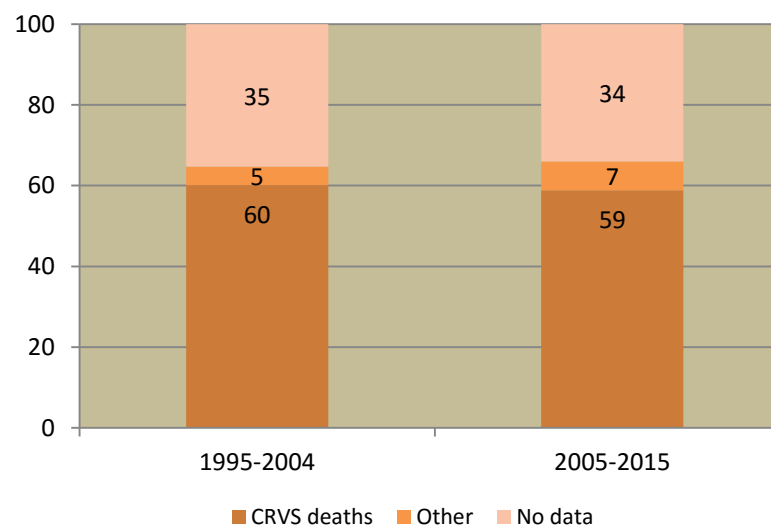


Figure 5: Africa, total CRVS births, number of countries/areas

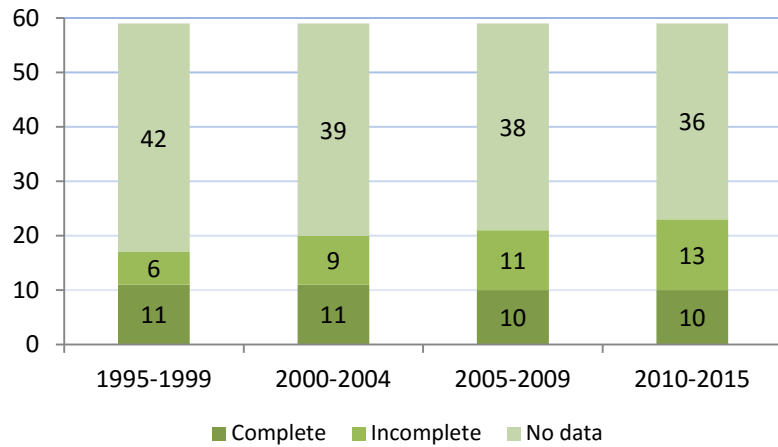


Figure 5a: Africa, total CRVS births, percentage of countries/areas

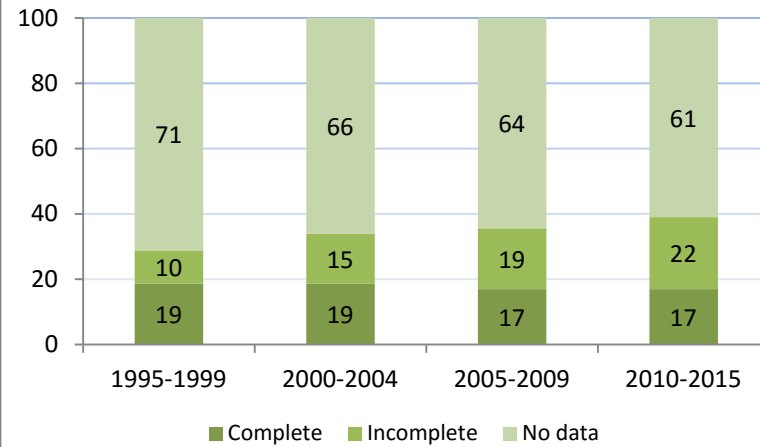


Figure 6: Africa, total CRVS deaths, number of countries/areas

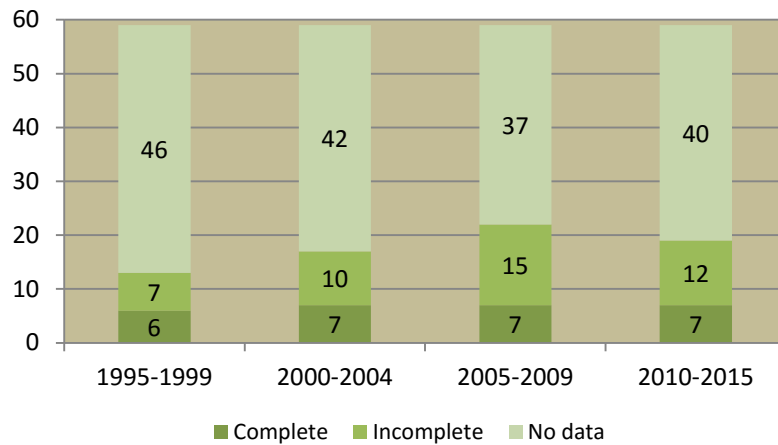


Figure 6a: Africa, total CRVS deaths, percentage of countries/areas

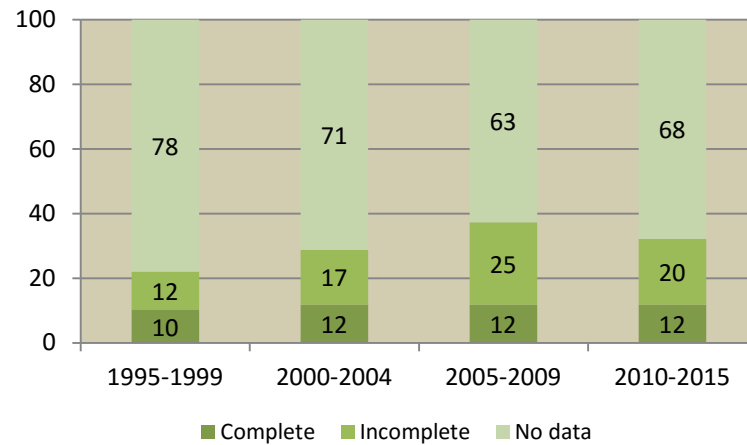


Figure 7: North America, total CRVS births, number of countries/areas

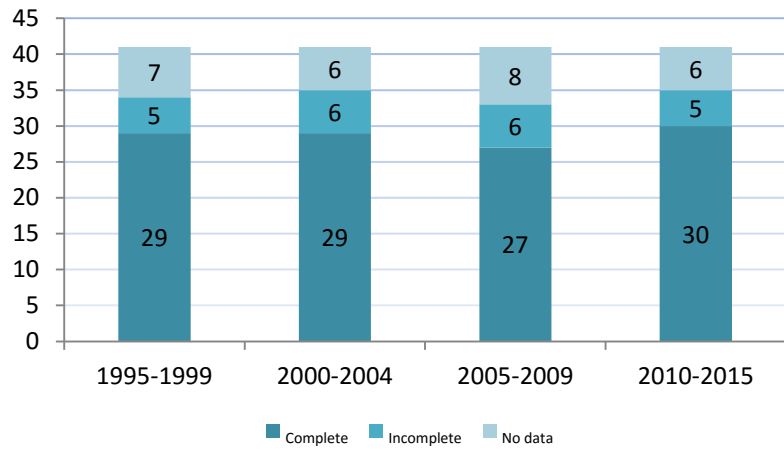


Figure 7a: North America, total CRVS births, percentage of countries/areas

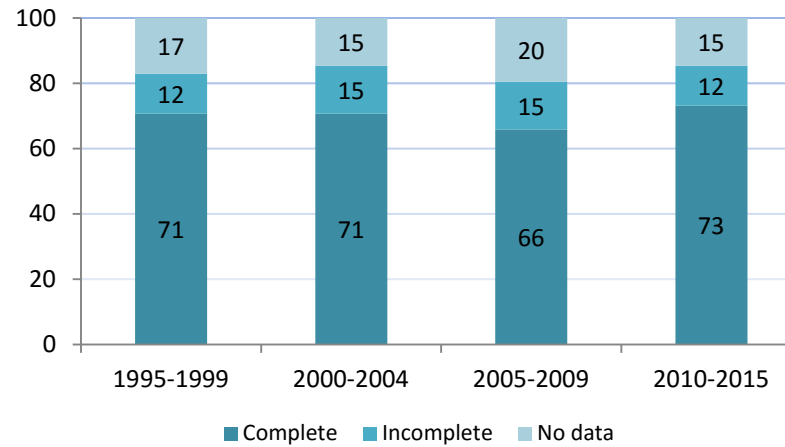


Figure 8: North America, total CRVS deaths, number of countries/areas

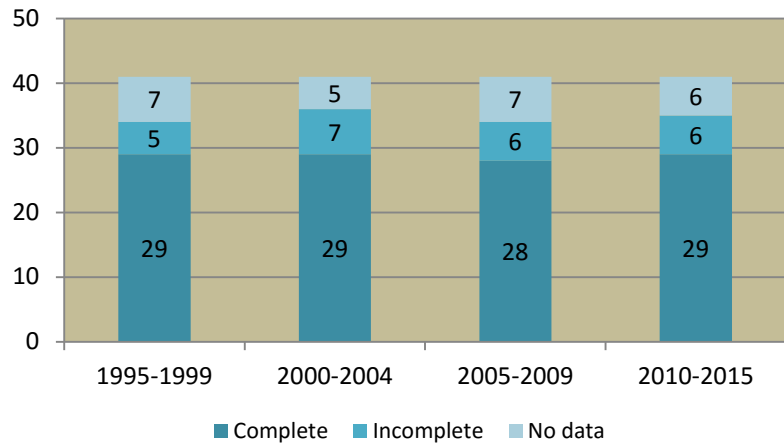


Figure 8a: North America, total CRVS deaths, percentage of countries/areas

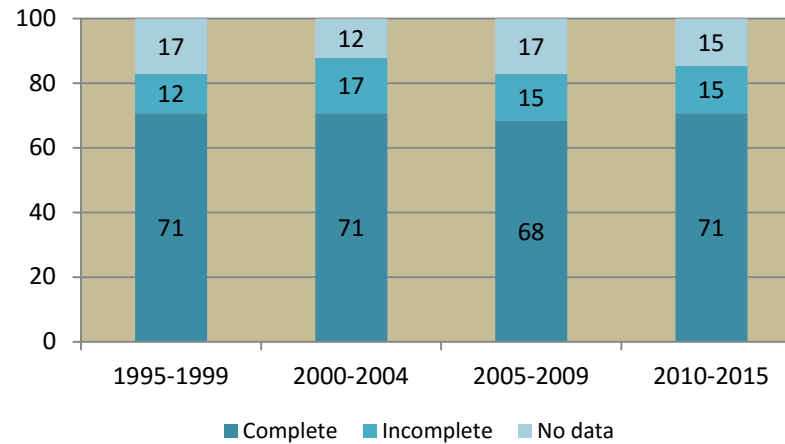


Figure 9: South America, total CRVS births, number of countries/areas

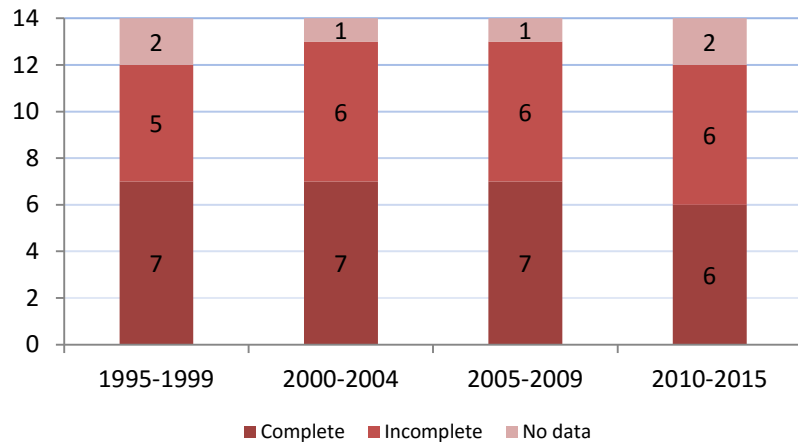


Figure 9a: South America, total CRVS births, percentage of countries/areas

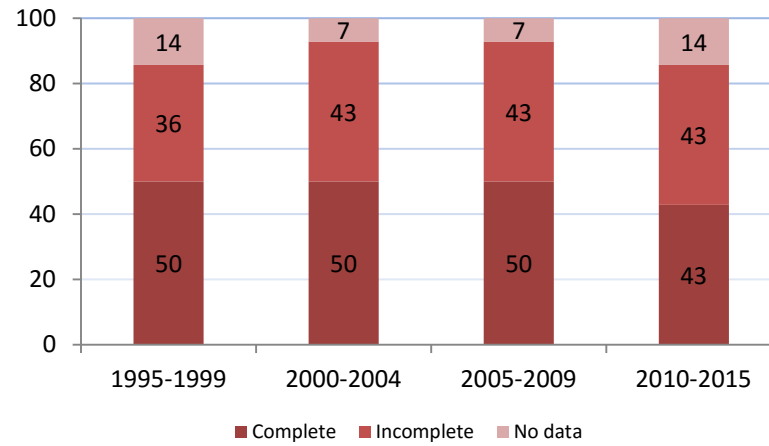


Figure 10: South America, total CRVS deaths, percentage of countries/areas

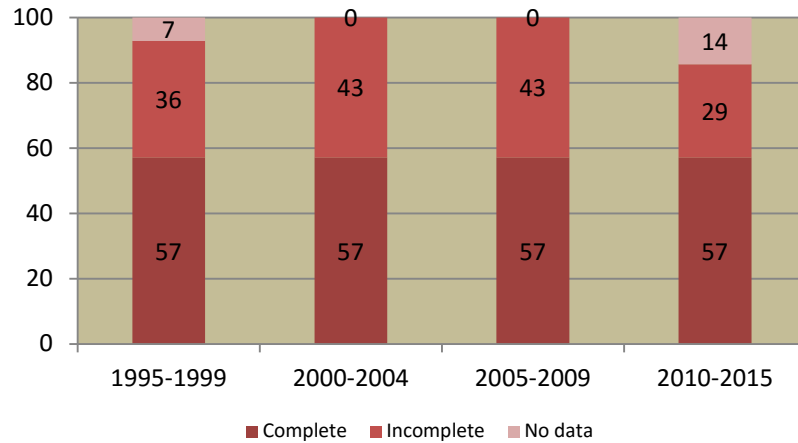


Figure 10a: South America, total CRVS deaths, number of countries/areas

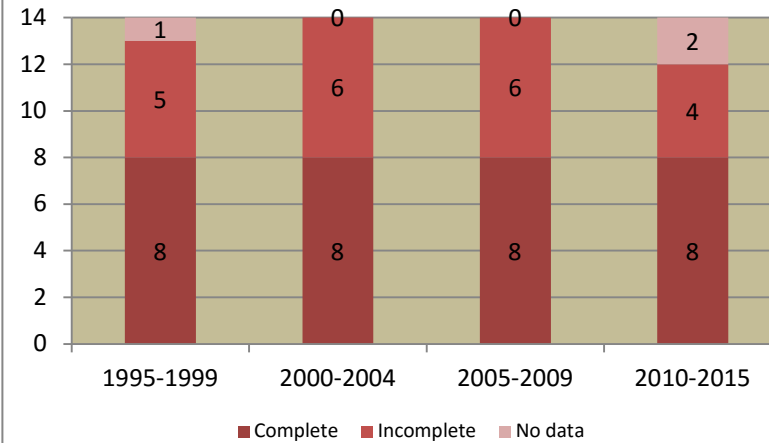


Figure 11: Asia, total CRVS births, number of countries/areas

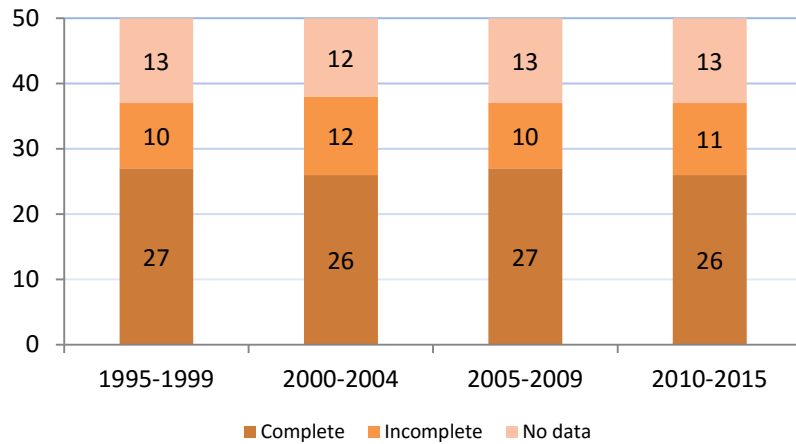


Figure 11a: Asia, total CRVS births, percentage of countries/areas

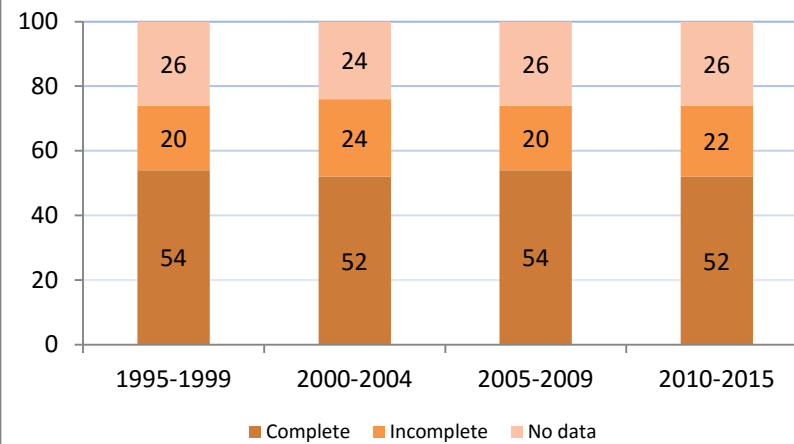


Figure 12: Asia, total CRVS deaths, number of countries/areas

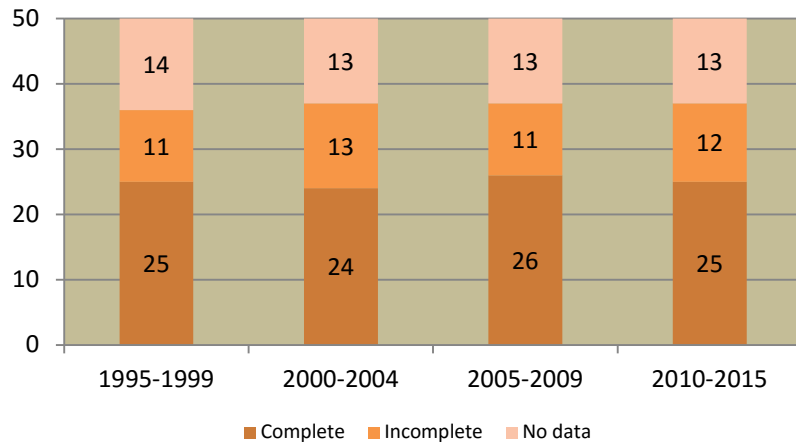


Figure 12a: Asia, total CRVS deaths, percentage of countries/areas

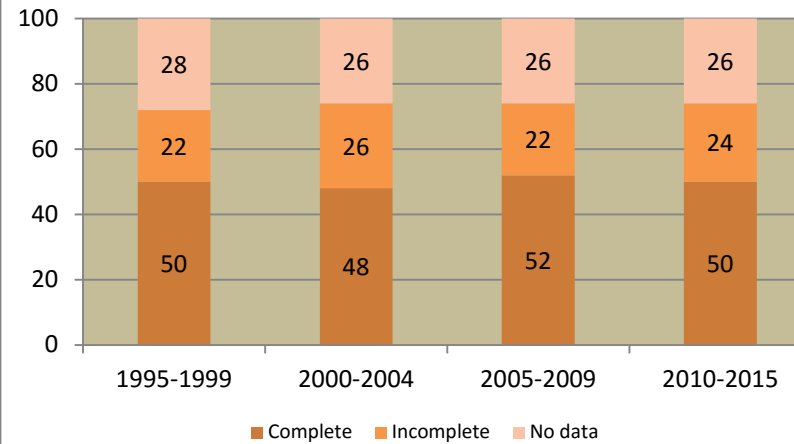


Figure 13: Europe, total CRVS births, number of countries/areas

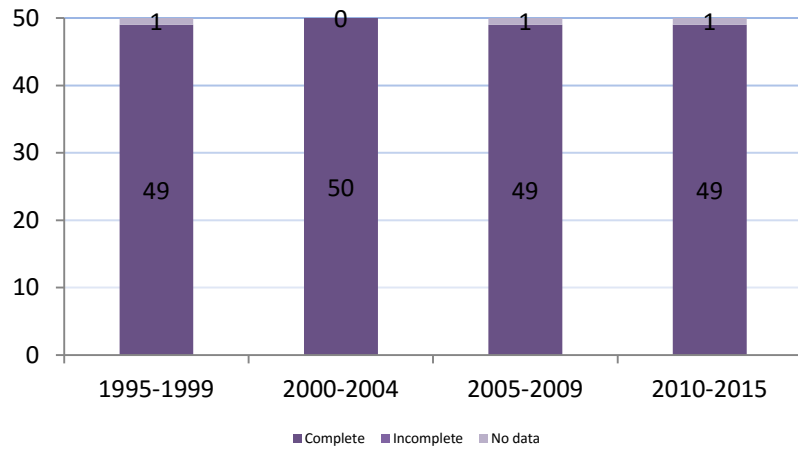


Figure 13a: Europe, total CRVS births, percentage of countries/areas

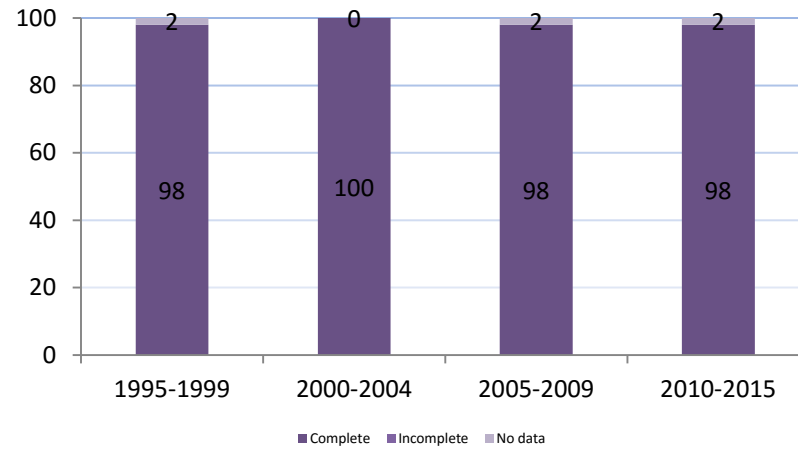


Figure 14: Europe, total CRVS deaths, number of countries/areas

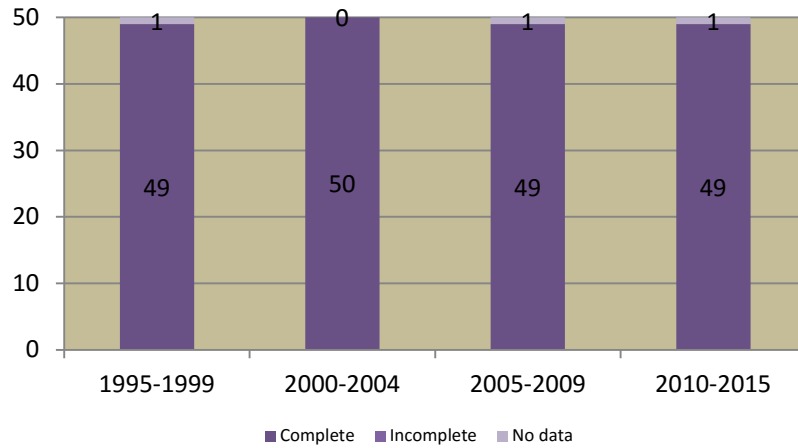


Figure 14a: Europe, total CRVS deaths, percentage of countries/areas

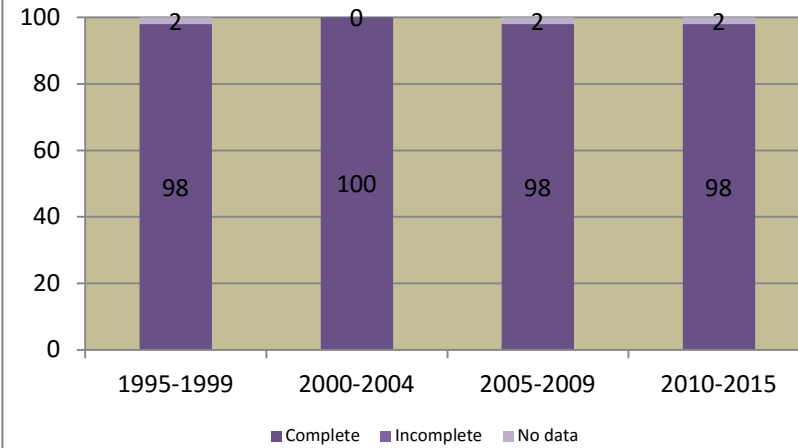


Figure 15: Oceania, total CRVS births, number of countries/areas

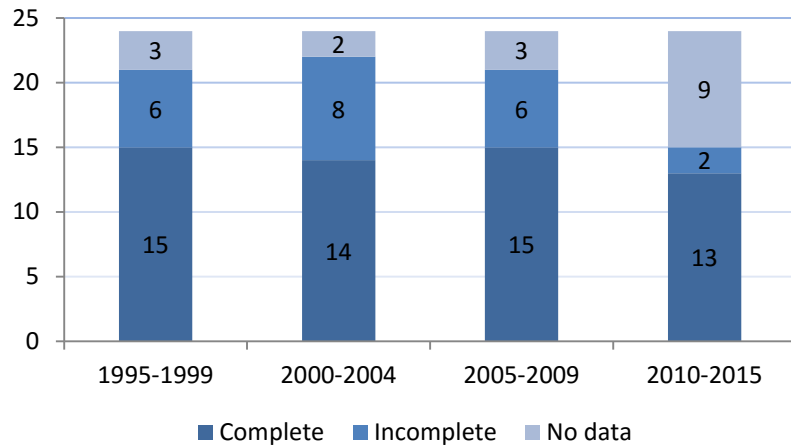


Figure 15a: Oceania, total CRVS births, percentage of countries/areas

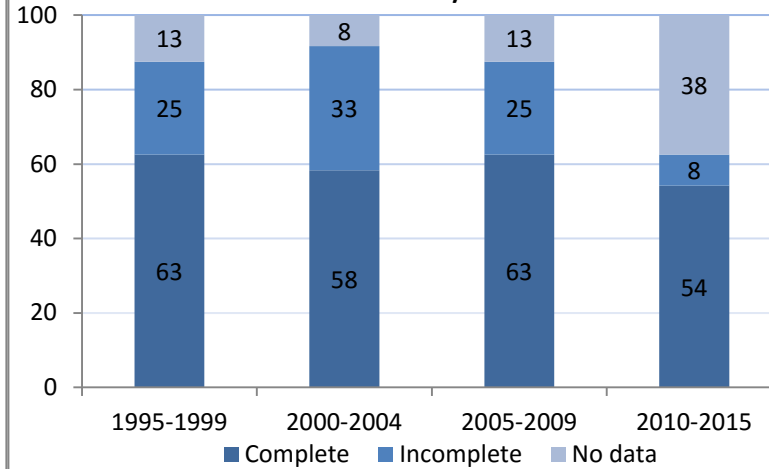


Figure 16: Oceania, total CRVS deaths, number of countries/area

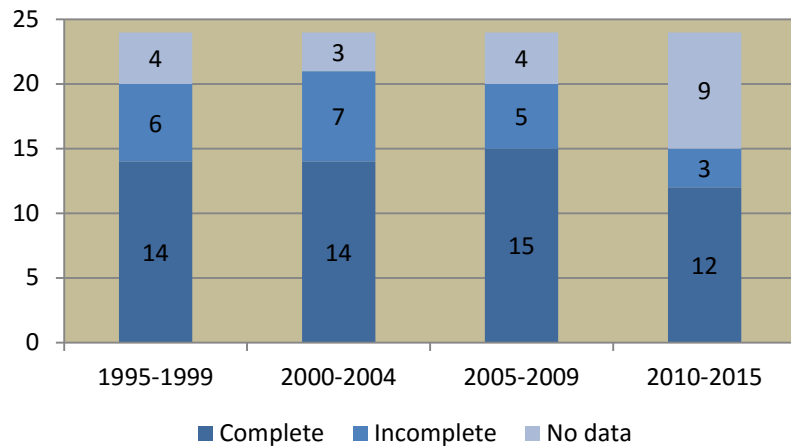


Figure 16a: Oceania, total CRVS deaths, percentage of countries/areas

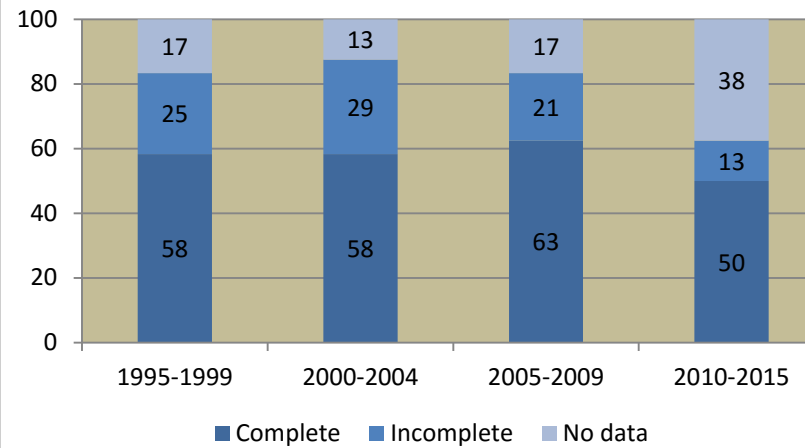


Figure 17: Availability of total CRVS births, by period and region, percentages

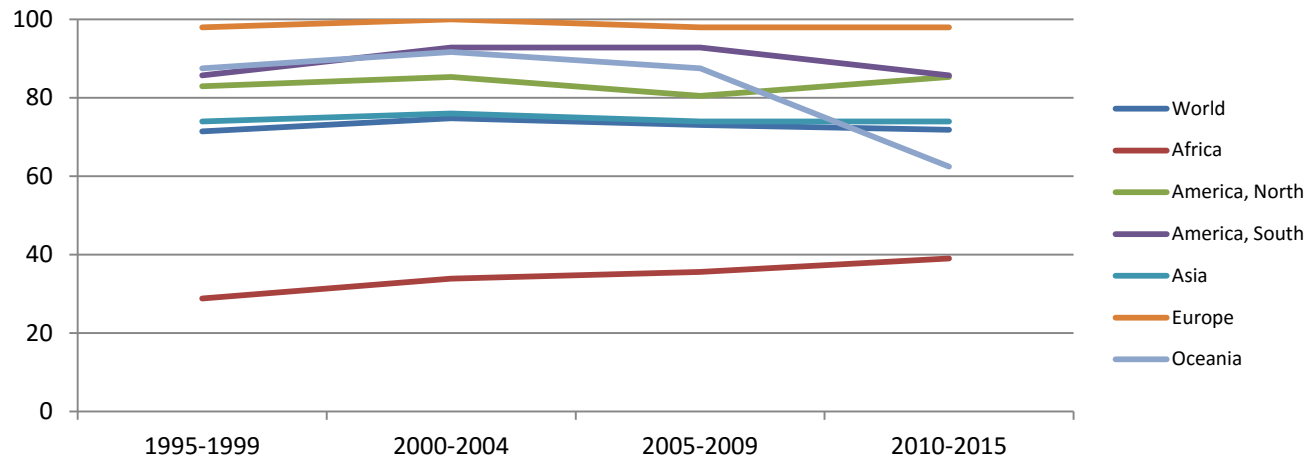


Figure 18: Availability of total CRVS deaths by period and region, percentages

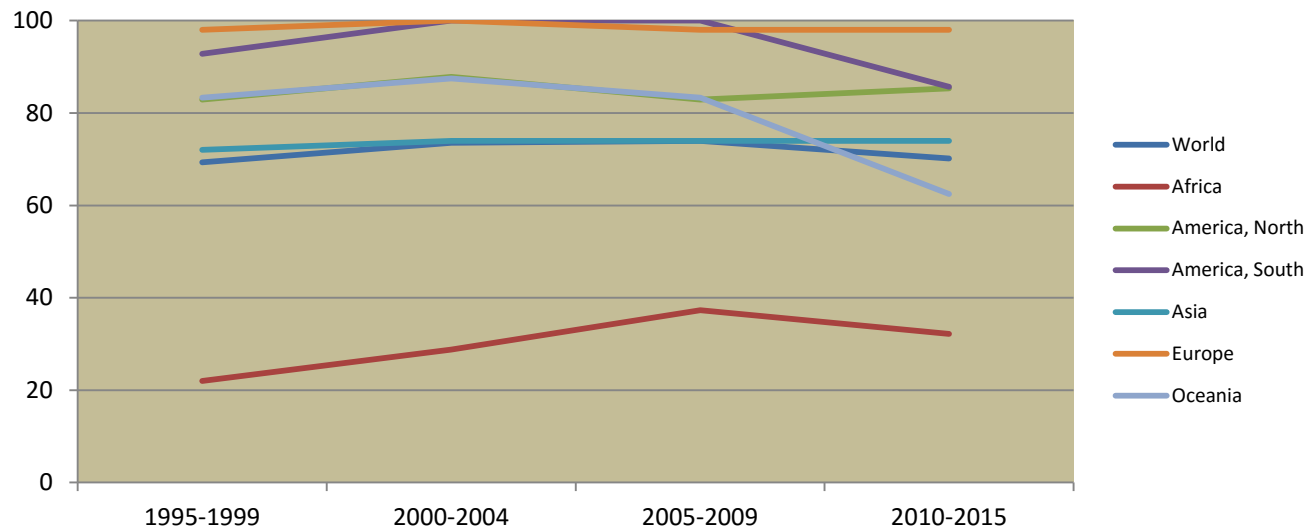


Figure 19: Availability of total CRVS births, by completeness status and region, 2010-2015, percentage of countries/areas

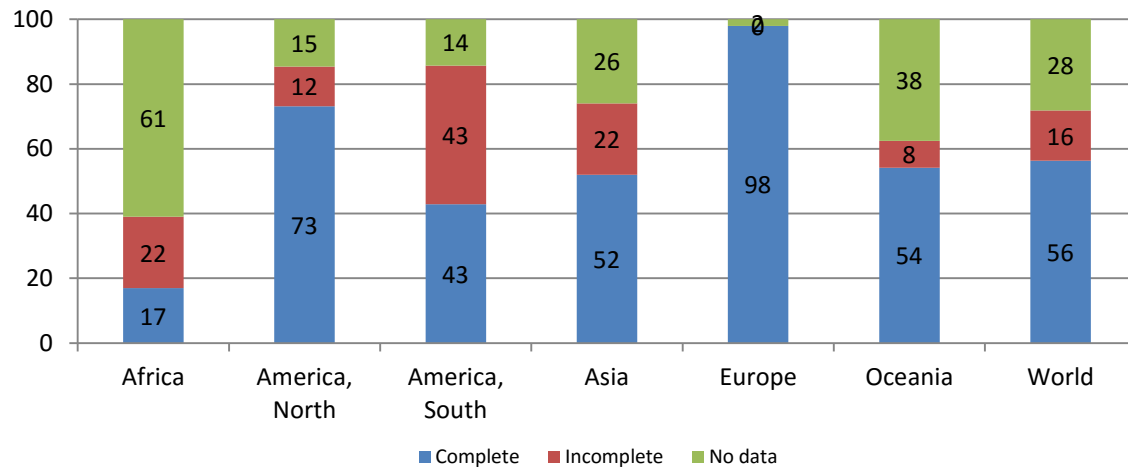


Figure 20: Availability of CRVS deaths by completeness status and region, 2010-2015, percentage of countries/areas

