

United Nations Expert Group Meeting on
International Standards for Civil Registration
and Vital Statistics Systems
27 – 30 June 2011
New York

**Collection, compilation and dissemination of official vital statistics at the
international level**

By United Nations Statistics Division¹

¹ The text is presented without formal editing. Prepared by Adriana Skenderi, United Nations Statistics Division.

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 now 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 report will only focus on the collection, compilation and dissemination of vital statistics. The aim of the report is to provide information for discussing ways of improving the processes of United Nations Statistics Division on collection, compilation and dissemination of vital statistics. The report contains six sections: (A) Collection of vital statistics, (B) Analysis of responses, (C) Sources of data, (D) Dissemination programme, (E) Challenges in collection and compilation of vital statistics at international level, and (F) Points for discussion.

A. COLLECTION OF VITAL STATISTICS

The United Nations Statistics Division (UNSD), sends out every year the UN Demographic Yearbook Vital Statistics questionnaire to all National Statistical Offices (NSOs), in order to collect official statistics on vital events. The Vital Statistics questionnaire is one of the several UN Demographic Yearbook questionnaires. For simplicity, it is referred to hereafter as VS questionnaire.

The VS questionnaire has undergone some changes in the past. The section which follows summarizes the content of the current questionnaire and analyzes the data collected via the current questionnaire. The questionnaire is available as a background document.

The VS questionnaire is produced in ‘.xml’ format and is readable in ‘.xls’ format. It is comprised of 35 tabulations for the data requested, two worksheets requesting metadata on the data provided, and other worksheets on instructions, definitions and UNSD contact. The UNSD sends out annually, in electronic form, to every country or area, a customized questionnaire with the existing data and accompanying existing footnotes pre-filled in the lower part of each tabulation, so that the existing data in UNSD Demographic Statistics database can be reviewed and if necessary corrected, and the additional data can be provided. It should be noted that UNSD and EUROSTAT have an agreement for the annual demographic data collection from the countries that are under EUROSTAT purview. As a result of the cooperation, UNSD receives the same content of data without an additional burden to the respective NSOs.

The content of the data tabulations of VS questionnaire is listed below:

Fertility

- Total live births by sex and urban/rural residence (time series)*
- Live births by age of mother and sex of child*
- Total Fertility rate (time series)*
- Live births by sex of child and live birth order
- Live births by age of mother and live birth order
- Live births by plurality
- Live births by marital status of mother
- Live births in wedlock by duration of marriage
- Live births by age of father
- Live births by sex of child and birth weight
- Live births by sex of child and gestational age
- Live births by month of birth

Mortality

General

- Total deaths by sex and urban/rural residence (time series)*
- Deaths by age and sex*
- Life expectancy at birth*
- Deaths by month of death
- Complete life tables for males, females separately
- Abridged life tables for males, females separately

Infant deaths

- Total infant deaths by sex of infant and urban/rural residence of mother (time series)*
- Infant deaths by age and sex*
- Infant deaths by month of death

Foetal deaths

- Late foetal deaths by sex of foetus and urban/rural residence of woman (time series)*
- Late foetal deaths by age of woman
- Foetal deaths by gestational age

Abortions

- Legally induced abortions by urban/rural residence of woman (time series)*
- Legally induced abortions by age and number of previous live births of woman*

Marriage

- Marriages by urban/rural residence (time series)*
- Marriages by age of groom and bride*

- Marriages by marital status of groom and bride
- First marriages by age of groom and bride

Divorce

- Divorces by urban/rural residence (time series)*
- Divorces by age of husband and wife
- Divorces by duration of marriage
- Divorces by number of dependent children

Some of the tabulations request data for the past 11 years. These are usually summary tabulations and are noted in the list above by the writing '(time series)' next to the respective title. Most of the other tabulations are detailed datasets, usually classified by two key relevant variables. In such cases data are requested for the latest 2 or 3 available years, so that if necessary revisions of past detailed data can be provided.

It is important to note that most of the data requested and collected via the VS questionnaire are absolute numbers. They are counts of the respective vital events, and are meant to represent occurrences of such events in the calendar year reported. However, there are two indicators collected directly from NSOs via the VS questionnaire, Total Fertility Rate (TFR) and Life expectancy at birth (e_0). Also NSOs are requested to provide the latest available complete or abridged life tables for males and females separately.

B. ANALYSIS OF RESPONSES

The present section analyzes varying levels of responses by NSOs to each dataset included in the VS questionnaire, in terms of the number and percentage of countries that have responded, for the period 2001-2010. Such analysis of responses is useful for the reasons that follow. The National Statistical Offices do not complete uniformly all tabulations of VS questionnaire, as some data and indicators may be considered more important than others, or are more available than others. Some National Statistical Offices return their official reports instead of complete the VS questionnaire. An analysis of responses by dataset might also indicate the technical capability of countries to produce each dataset.

Table 1 presents the availability by region of total number of live births, live births by age of mother and total fertility rate for the period 2001-2010. The availability is measured as a number and percentage for each region and for the world. The dataset 'Total live births by sex' has the highest response rate among the births' datasets, with an overall response of 84 per cent. Africa has a much lower response than the other regions, with 57 per cent for total live births and a much lower 22 per cent for live births by age of mother.

TABLE 1. DATA AVAILABILITY IN UNSD FOR THE PERIOD 2001-2010 - MAIN FERTILITY DATASETS

Number of countries and percentage for each region

Dataset	Total		Africa		America North		America South		Asia		Europe		Oceania	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Total live births by sex	198	84	33	57	35	95	13	93	45	88	49	96	23	92
Live births by age of mother and sex	143	61	13	22	30	81	11	79	30	59	45	88	14	56
Total fertility rate	143	61	19	33	21	57	11	79	40	78	44	86	8	32

It is important to note that across all regions, not all the countries that do report the total live births are able to report the live births by age of mother that serve as numerators of age specific fertility rates. The non-reporting is particularly pronounced in Africa, Asia and Oceania, and underscores the difficulties in producing detailed births' data by age of mother at the country level.

In Africa, among 33 countries or 57 per cent that at least once in 2001-2010 reported the total live births, only 13 of them or 22 per cent were able to report live births by age of mother. In Asia, among 45 countries or 88 per cent that reported total live births, 30 of them or 59 per cent reported live births by age of mother; whereas in Oceania among 23 countries or 92 per cent that reported total live births, 14 of them or 56 per cent reported live births by age of mother.

However, it is interesting to note that more countries in Africa and Asia have reported the total fertility rate than the live births by age of mother. Nineteen (19) countries in Africa reported TFR at least once during 2001-2010, whereas only 13 countries have reported live births by age of mother. In Asia, 40 countries have reported the TFR whereas 30 of them have reported live births by age of mother. In these cases TFR is either a projection of previously calculated TFR, or has been calculated from underlying basic data of a census or demographic survey (that are not reported to UNSD).

However, in North America among 30 countries that reported live births by age of mother, only 21 reported TFR, whereas in Oceania among 14 countries that reported live births by age of mother only 8 reported TFR. One reason could be the lack of national population estimates by age and sex for the same year as births by age of mother.

Table 2 below presents the level of reporting of other births' datasets in absolute numbers and percentages. Live births by month of birth have the highest response with 58 per cent of countries having data during 2001-2010, followed by two other datasets that classify live births by birth order, respectively 'live births by age of mother and birth order' with 43 per cent and 'live births by sex and birth order' with 42 per cent. Also for 'live births by marital status of mother', 42 per cent of countries have data available in UNSD Demographic Statistics database for the period 2001-2010.

TABLE 2. DATA AVAILABILITY IN UNSD FOR THE PERIOD 2001-2010 - OTHER DETAILED FERTILITY DATASETS

Dataset	Total	
	Number of countries	Percentage
Live births by month of birth	137	58
Live births by age of mother and birth order	102	43
Live births by sex and birth order	100	42
Live births by marital status of mother	100	42
Live births by plurality	97	41
Live births by age of father	86	36
Live births by sex and birth weight	78	33
Live births in wedlock by duration of marriage	60	25
Live births by sex and gestational age	57	24

It should be noted that the response for all datasets of Table 2 is lower than the response of datasets of Table 1. The datasets of Table 1 and the respective rates are published in every annual issue of *Demographic Yearbook*, whereas the datasets of Table 2 are only published in special fertility issues, except for 'live births by month of birth' which are used to calculate the monthly rates published in the *Monthly Bulletin of Statistics* on a monthly basis.

Table 3 presents the number of countries (and respective percentages) with general mortality data available for the period 2001-2010, by region and for the world. Similarly as for the total live births, data on total deaths by sex are available for 82 per cent of the countries, however the response for Africa is considerable lower than that for the other regions at 50 per cent. The response on deaths by age and sex is consistently lower in all regions compared to the response on total deaths by sex. Especially in Africa, only a quarter (26 per cent) of countries reported on that information.

TABLE 3. DATA AVAILABILITY IN UNSD FOR THE PERIOD 2001-2010 - General Mortality datasets
Number of countries and percentage for each region

Dataset	Total		Africa		America North		America South		Asia		Europe		Oceania	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Total deaths by sex	194	82	29	50	36	97	14	100	45	88	49	96	21	84
Deaths by age and sex	152	64	15	26	32	86	12	86	32	63	45	88	16	64
Life expectancy at birth	152	64	21	36	25	68	11	79	36	71	41	80	18	72

However, also here, we observe that in Africa, Asia and Oceania, the number of countries that have reported the life expectancy at birth, is higher than the number of countries that have reported the deaths by age and sex. There are countries that have reported the life expectancy at birth but not deaths by age and sex. In these cases, the data reported on life expectancy are either projections or are calculated from basic underlying mortality data of censuses or demographic surveys that were not reported to UNSD.

Table 4 presents the number of countries (and respective percentages) with infant mortality data available for the period 2001-2010, by region and for the world. The overall response for total infant deaths (and by sex) is at 68 per cent, which is comparable with the overall response rate on deaths by age (and sex) at 64 per cent. The overall responses on infant deaths by age and sex and infant deaths by month of death are considerably lower, respectively 46 per cent and 45 per cent. Again Africa has very poor response with only 29 per cent of countries reporting at least once on total infant deaths and by sex during 2001-2010.

TABLE 4. DATA AVAILABILITY IN UNSD FOR THE PERIOD 2001-2010 - Infant Mortality datasets
Number of countries and percentage for each region

Dataset	Total		Africa		America North		America South		Asia		Europe		Oceania	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Total infant deaths by sex	161	68	17	29	32	86	11	79	39	76	46	90	16	64
Infant deaths by age and sex	109	46	7	12	22	59	9	64	24	47	43	84	4	16
Infant deaths by month of death	106	45	8	14	21	57	9	64	26	51	38	75	4	16

Table 5 presents the total number of countries and respective percentages with data on foetal deaths and abortions for the period 2001-2010. The response is the highest for total late foetal deaths (and by sex) at 45 per cent. For the other two datasets, on 'late foetal deaths by age of woman' and 'foetal deaths by gestational age' the response is considerably lower respectively at 33 per cent and 25 per cent. The response on the two abortions' datasets is very low at 27 per cent and 21 per cent for the world.

TABLE 5. DATA AVAILABILITY IN UNSD FOR THE PERIOD 2001-2010 - Foetal deaths and Abortions

Dataset	Total	
	Number of countries	Percentage
Late foetal deaths by sex	106	45
Late foetal deaths by age of woman	78	33
Foetal deaths by gestational age	59	25
Legally induced abortions by urban/rural residence of woman	63	27
Legally induced abortions by age and number of previous live births of woman	49	21

Table 6 presents the total number of countries and respective percentages with data on marriages and divorces for the period 2001-2010. Among the marriage datasets, the response is the highest for total marriages (and by urban/rural residence) at 63 per cent. For 'marriages by age of groom and bride' 47 per cent of countries have reported at least once during 2001-2010, for 'first marriages by age of groom and bride' 36 per cent countries have reported, and finally for marriages by marital status of groom and bride 26 per cent countries have reported at least once during 2001-2010.

TABLE 6. DATA AVAILABILITY IN UNSD FOR THE PERIOD 2001-2010 - Marriage and Divorce

Dataset	Total	
	Number of countries	Percentage
Marriages by urban/rural residence	148	63
Marriages by age of groom and bride	110	47
First marriages by age of groom and bride	85	36
Marriages by marital status of groom and bride	62	26
Divorces by urban/rural residence	133	56
Divorces by duration of marriage	81	34
Divorces by age of husband and wife	77	33
Divorces by number of dependent children	67	28

The response for all the countries of the world on total divorces (and by urban/rural residence) is slightly lower than for total marriages at 56 per cent. The response on the other three divorce datasets collected via the VS questionnaire is much lower. The response for the world on

divorces by duration of marriage is 34 per cent, by age of husband and wife is 33 per cent, and by number of dependent children is 28 per cent.

C. SOURCES OF DATA

This section describes the sources used to derive births' and deaths' data in a country. The analysis below is made based on the information available in UNSD Demographic Statistics Database for the period 2001-2010.

All the countries of North America, South America, Europe that have reported births' and deaths' data for the reference period 2001-2010 have some form of vital registration, with different degrees of completeness.

Several countries of Africa, Asia and Oceania have reported births' and deaths' data to UNSD from vital registration, whereas other countries from other sources as listed below.

Population census as a source: Benin, Bhutan, Burkina Faso, Democratic People's Republic of Korea, Ethiopia, Liberia, Malawi, Namibia, Nepal, Sierra Leone, Swaziland, Zimbabwe, Tonga. Some of these countries have reported both births and deaths during the 12 month period preceding the census; others have reported only the births or only the deaths.

Sample surveys as a source: Bangladesh – reports crude birth and death rates obtained from the Sample Vital Registration System of Bangladesh; China – births' and deaths' estimates based on National Sample Survey on Population Changes; India – reports crude birth and death rates obtained from the Sample Registration System of India which is a large demographic survey; Pakistan – estimates of births and deaths from the Pakistan Demographic Survey.

Botswana reports births and deaths from health statistics reports, and Niger has reported deaths from hospital records. There are also countries that report for some years national projections of births and deaths, e.g. Benin, Burkina Faso, Malawi, Namibia, Senegal.

Some of these countries, and specifically the ones that collect the births and deaths during the 12 month period preceding census have also reported deaths by age and sex (Botswana, Namibia, Sierra Leone, Swaziland, Zimbabwe, DPR Korea, Bhutan, Nepal).

It is important to note that the countries that have reported data from censuses or demographic surveys or projections do not necessarily lack vital registration altogether, but simply the vital registration is still in development, or is not complete, etc. Examples are Liberia, Malawi, Senegal, etc.

However, there are many countries that have reported incomplete vital registration data, and such data are coded accordingly. For these countries, it is also important that current births and deaths counted during a census (normally for the 12 months preceding the census) be reported, as such data could help to evaluate the completeness and quality of vital registration data. For that purpose we have included two tabulations in the Census Questionnaire on General Characteristics to collect 'live births and by age of mother and sex of child' and 'deaths and by age and sex' as counted during a population census for the 12 months period (or any other period specified by the country) prior to the census date. The purpose is to systematically collect such data, and not only when countries report them in the absence of vital registration data.

D. DISSEMINATION PROGRAMME

The UN Statistics Division sends out every year to National Statistics Offices the Population Estimates and Vital Statistics questionnaires. The Migration questionnaire was discontinued for a few years but was resumed recently and will also be sent out annually to NSOs. A set of Census questionnaires is also sent out to a country after a census is conducted.

The official demographic data collected from all countries and areas via these questionnaires are processed and stored in the UNSD Demographic Statistics database. The data have been published in an annual basis in the *UN Demographic Yearbook*. The Yearbook has been published every year since 1948. This has been and remains the traditional form of dissemination.

Some of the summary demographic data have also been traditionally published and continue to be published in the *Population and Vital Statistics Report*. Both publications, *UN Demographic Yearbook* and *Population and Vital Statistics Report* are also published online, and more details are provided below.

In the past two and a half years or so, an increasing amount of datasets from the UNSD Demographic Statistics database, are being disseminated online via the UNdata portal <http://data.un.org/>.

Since the focus of this report is on vital statistics, the above publications and websites will be discussed below as they relate to the publication and dissemination of vital statistics only, described in Section A. COLLECTION OF VITAL STATISTICS.

UN Demographic Yearbook

The datasets denoted with an asterisk (*) in the listing of Section A, are published in every annual issue of *UN Demographic Yearbook*. Along with the counts of vital events, also the respective rates are published in the Yearbook.

Therefore every issue of the *UN Demographic Yearbook* includes:

- total births by sex and urban/rural residence and crude birth rates for the latest five years, live births by age of age of mother and sex of child, general and age-specific fertility rates for the latest available year, total fertility rates for the latest five years;
- total deaths by sex and urban/rural residence and crude death rates for the latest five years, deaths by age and sex and age-specific mortality rates for the latest available year, life expectancy at birth for the latest five years as well as life expectancy at every fifth age for the latest available year;
- total infant deaths by sex and urban/rural residence and infant mortality rates for the latest five years, infant deaths and infant mortality rates by age and sex for the latest available year;
- late foetal deaths and late foetal death ratios for the latest five years;

- legally induced abortions for the latest ten years and legally induced abortions by age of woman and number of previous live births for the latest available year;
- total marriages and by urban/rural residence and crude marriage rates for the latest five years, marriages by age of groom and bride for the latest available year;
- total divorces and by urban/rural residence and crude divorce rates for the latest five years;

Live births by month of birth and deaths by month of death are used every month in the Monthly Bulletin of Statistics publication.

The datasets that do not carry an asterisk (*) in the listing of Section A have been mostly published on Special Issues of *Demographic Yearbook* or Special CD-s, devoted more in depth to the particular topic such as Fertility, Mortality, Nuptiality, etc.

However, this does not mean that certain datasets that have not been published every year in the past issues of *Demographic Yearbook*, will not be published every year in its future issues. For example probabilities of dying as per the official life tables of countries and areas, were published in the 1996 Special Mortality Issue of *Demographic Yearbook*. The next issue after that featuring this dataset was the issue, *UN Demographic Yearbook 2008*.

The UNSD, is collecting every year the latest complete and abridged life tables of countries and areas, and will continue to publish the probabilities of dying, and probably other life table functions such as survivors, every year. It is to be noted that life expectancy was always collected and published every year.

The tables of *UN Demographic Yearbook* are published online as Excel and PDF files as soon as the *UN Demographic Yearbook* is sent to press. The website of the latest yearbook is <http://unstats.un.org/unsd/demographic/products/dyb/dyb2008.htm>. The main website of the *UN Demographic Yearbook* collection, where all issues of the *Yearbook* can be found is <http://unstats.un.org/unsd/demographic/products/dyb/dyb2.htm>.

Population and Vital Statistics Report

This publication includes for all countries and areas, as available, the total births, deaths and infant deaths as well as the respective crude rates for the latest available year during the most recent 15 year period.

Currently this publication will be issued in print only once a year. However, the publication and its tables as PDF files are updated online every two weeks at <http://unstats.un.org/unsd/demographic/products/vitstats/default.htm>. This website gives a quick overview of the most recent summary data on births, deaths and infant deaths reported to UN Statistics Division.

UNdata portal – <http://data.un.org>

Selected datasets of the UNSD Demographic Statistics database, are increasingly being published online in UNdata portal. The direct link to UNdata of UNSD Demographic Statistics is <http://data.un.org/Explorer.aspx?d=POP>.

Most of the datasets published in UNdata are census data on several demographic and social characteristics collected during the last two rounds of censuses (1995 to present), however, some of the datasets published pertain to vital statistics. Among them, there are several datasets that are not published every year in the *Demographic Yearbook*, but were published only in special issues in the past. Therefore, UNdata provides a useful tool to publish also these datasets in a recurrent manner.

In UNdata are published in record form live births by age of mother, deaths by age and sex, etc, which are published every year in the *Demographic Yearbook*, but also live births by birth weight, live births by gestational age, live births in wedlock by duration of marriage, etc, which in the past were only published in special issues of *Demographic Yearbook*.

E. CHALLENGES IN COLLECTION AND COMPILATION OF VITAL STATISTICS AT INTERNATIONAL LEVEL

Some of the challenges in collecting and compiling vital statistics from all countries and areas are addressed in this section.

First of all, it should be underscored that UNSD relies on the full cooperation of the National Statistical Offices of all countries and areas. The amount of data UNSD collects owes to the continuous commitment and cooperation of National Statistical Offices.

When data are provided, sometimes we discover problems with the data due to non-agreement between datasets referring to the same topic. For example the time series of the total live births are revised, whereas the more detailed datasets such as live births by age of mother are not revised for the respective years. Another problem arises when the numerators and denominators needed for the rates of vital events do not refer to the same population group. Eg, there are islands that are very popular destinations for marriages. In such cases the number of registered marriages refers mostly to non-residents and therefore the rates are artificially inflated.

The UNSD tries to resolve these issues through close follow-up with the staff responsible in National Statistical Offices. If discrepancies are observed and can not be corrected, we ask NSOs to provide metadata and explanations so that the data published can be annotated accordingly with footnotes or explained in technical notes.

However the major problem with vital statistics remains their varying degree of completeness which is a direct reflection of the degree of completeness of civil registration, or of the extent of capabilities of the countries to produce vital statistics from civil registration records or other registration records.

We urge the national statistical offices to complete the metadata worksheets of the Vital Statistics questionnaire as much as possible, and to provide in the notes box of the respective tabulations as many methodological notes and explanations as necessary. It is important for UNSD to publish the most accurate degree of non-completeness of the official data provided, or the methodological explanations related to the data, so that the users of the official data can be alerted of any possible shortcomings of the counts of vital events and the respective vital rates.

F. POINTS FOR DISCUSSION

The participants of the Expert Group may wish to raise any issues pertaining to this report. Some possible points for discussion are listed below:

- How does the vital statistics data collection programme of UNSD compare with the reality of data availability in your countries?
- Are there any particular datasets that you would consider necessary for addition or removal to the data collection programme of vital statistics?
- Are there any suggestions to UNSD to help improve the process of data collection of vital statistics at the international level?
- Do you have any suggestions for improvement of the current demographic data dissemination programme of UNSD?