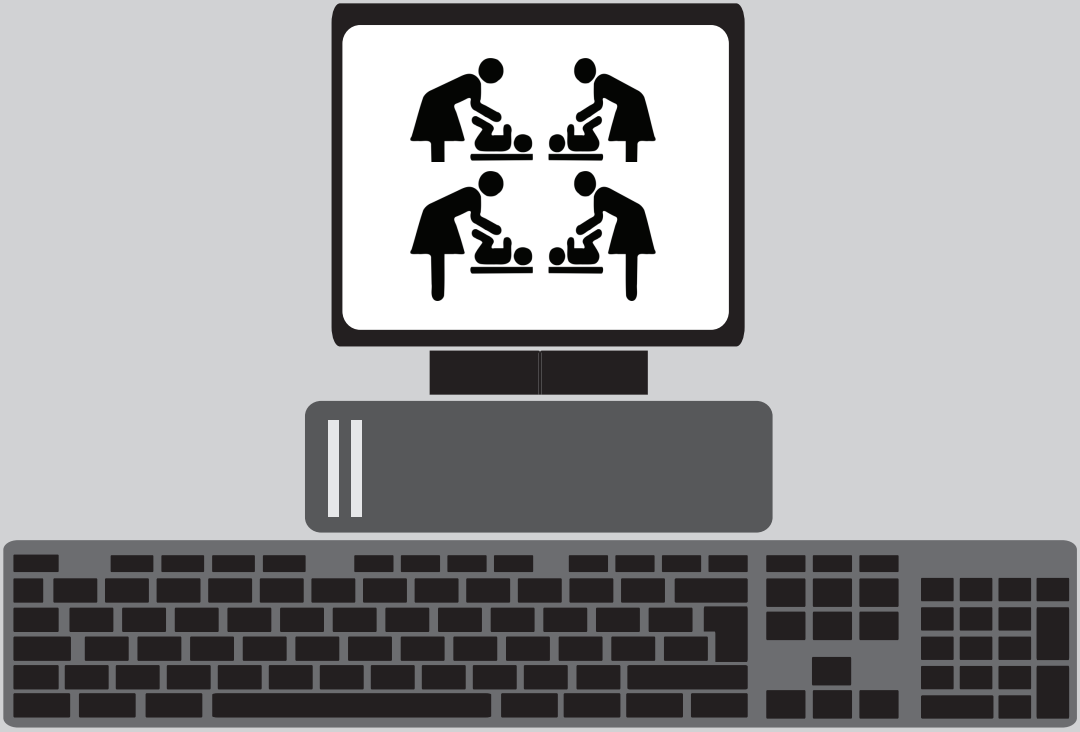
The Republic of Rwanda

Ministry of Health

NISR
NATIONAL INSTITUTE OF STATISTICS OF RWANDA

DEVELOPMENT OF HEALTH ADMINISTRATIVE DATA

PROGRESS ASSESMENT



REPUBLIC OF RWANDA

MINISTRY OF HEALTH

DEVELOPMENT OF HEALTH ADMINISTRATIVE DATA

PROGRESS ASSESMENT

May, 2017

Contents

List of tables and graphs v

0. INTRODUCTION.....vii

Chapter 1: ADMINISTRATIVE STATISTICS IN RWANDA ... 1

Chapter 2: KEY DEFINITIONS..... 3

2. 1. Crude birth rate (CBR) 3
2.2. General fertility rate (GFR) 3
2.3. Age specific Fertility rate (ASFR) 3
2.4. Total fertility rate (TFR) 3
2.5. Gross reproduction rate (GRR) 4

Chapter 3: FERTILITY INDICATORS 5

3.1 Methodology 5
3.2 Crude Birth Rate (CBR); HMIS 2015-16 6
3.3. Percentage of Assisted Births, HMIS, 2015-2016 7
3.4. Fertility indicators: GFR, ASFR, TFR, GRR 8
3.4.2. GFR 8
3.4.3. ASFR and TFR 8

CONCLUSION 13

List of tables and graphs

Table 1: Projected number of Annual Births and Population 2012-2016..... 6
Table 2: % of assisted births, HMIS 2015-2016..... 7
Table 3: Distribution of notified births by age group of their mothers and ASFR (col.5) 9

Graph 1: Age specific Fertility Rate..... 10

0. INTRODUCTION

There are three primary sources of statistics: censuses, administrative systems including vital statistics systems, and surveys. Administrative data refers to information collected primarily for administrative (not research) purposes. This type of data is collected by government departments and other organizations for the purpose of registration, transaction and record keeping, usually during the delivery of a service.

Administrative statistics are the products of large scale administrative systems. Administrative statistics play a key role in day-to-day function of the institution or a sector, including regular monitoring and evaluation of the sector. For instance, a well-functioning system of registration of vital events would enhance the efficiency and effectiveness of the management and delivery of government services, including health and social welfare benefits to the people. It is also the source of reliable, current and continuous information on vital events that would support informed decision at all levels.

The advantage of administrative statistics is much worth as it offers a good opportunity to get data at a cheaper cost compared to Censuses and sample surveys. Administrative statistics are also very

essential to calculate some important demographic measures for instance health administrative statistics such as crude birth rate, general fertility rate, Age specific fertility rate, total fertility rate, gross reproduction rate, net reproduction rate, crude death rates, marriage and divorce rates,…under the condition that they are complete and accurate.

Chapter 1: ADMINISTRATIVE STATISTICS IN RWANDA

In Rwanda, government departments, including the Ministry of Education (MINEDUC), Ministry of Health (MoH) and National Identification Agency (NIDA)…. are the main (although not exclusive) purveyors of large administrative databases, including health and educational record systems, such as Health Management and Information System (HMIS), School Data Management System (SDMS). These datasets are used to produce official statistics to inform policy-making processes.

The National Institute of Statistic of Rwanda (NISR) together with NIDA and key stakeholders as Ministry of Health (MoH), Ministry of Local Government (MINALOC) and Ministry of Justice (MINIJUST) in its program of strengthening civil registration and vital statistics in Rwanda, has developed a Civil Registration and Vital Statistics Systems (CRVS), a web based application system for recording vital events in order to boost quality and coverage in data capture and management of vital statistics.

This web system will provide a better and direct way of collecting, storing and producing civil registration and vital statistics reports on births, deaths and cause

of death, marriage and divorce using an online registration at sector and health facilities levels.

An effective registration and vital statistics system provides essential data, rates and other quantitative measures for the accurate planning of programmes designed to promote the well-being of the citizens.

The data collected from vital events registration are essential to planning for social development, including the design and implementation of public health measures, maternal and child care, family planning, social security, education, housing and economic development.

The following will focus on the health administrative statistics collected from the Health Management Information System (HMIS) and the Civil Registration and Vital Statistics Systems (CRVS).

Chapter 2: KEY DEFINITIONS

2. 1. Crude birth rate (CBR)

It is the number of live births during a year divided by the number of mid-year population.

2.2. General fertility rate (GFR)

It is the number of live births of women in reproductive age (15-49 years) during a year divided by number of mid-year women in that age group of that year.

2.3. Age specific Fertility rate (ASFR)

It is the number of live births during a year for specific age or age group of women divided by the number of mid-year females of that age or age group in that year. It is conventionally calculated for females in the seven five-year age groups from age group 15-19 years to age group 45-49 years.

2.4. Total fertility rate (TFR)

Theoretically it is defined as the average number of births per woman to a cohort of women born in the same date and survive up to the end of the reproductive period. Practically it is calculated as the

sum of age specific fertility rates. It is usually calculated as a sum of five year age specific fertility rates multiplied by 5.

2.5. Gross reproduction rate (GRR)

As for the TFR, theoretically it is defined as the average number of female births per woman to cohort of women born in the same date and survive up to the end of the reproductive period. Practically and approximately it is calculated by multiplying TFR with the proportion of female births relevant to total births.

Chapter 3: FERTILITY INDICATORS

3.1 Methodology

For the calculation of fertility indicators, we have used two sources of administrative statistics: HMIS and CRVS.

The Health Management Information System (HMIS) has collected the aggregated number of births in 2015 and 2016. For the corresponding years, the Civil Registration and Vital Statistics system (CRVS) has collected the number of births by the age of their mothers at the time of birth. To calculate fertility indicators like ASFR, TFR, and GRR, we need the number of births tabulated according to age of their mothers at birth.

Since the number of births registered in HMIS is close to expectation vis-à-vis the expected annual birth, we have computed fertility indicators using HMIS data and these data have been imputed following the births distribution by age of the mothers (15-49) from the CRVS assuming that the same distribution of births according to the age of their mothers applies.

3.2 Crude Birth Rate (CBR); HMIS 2015-16

According to the 2016 HMIS data, 338,784 births have been recorded. By the same year, the projected number of the population is 11,533,446; thus, the crude birth rate is about **29.4** births per 1,000 people compared to **29.3** births per 1000 people in 2015 (329, 483 births in 2015, while the population projections in 2015 is: 11,262,564).

The comparison with the projected Population from the 2012 Census' CBR (30.1 per 1000 people) and RDHS' CBR (32.6 per 1000 people in DHS 2015) shows that the HMIS's calculated CBR is reasonable. This gives confidence to future prospects of the administrative system as we develop it.

Table 1: Projected number of Annual Births and Population 2012-2016

Year	**Projected annual births**	**Population**	**CBR/1000 Pop**	**Births HMIS**	**CBR/ HMIS**
2012	321,506	10,482,641	30.7	-	-
2014	338,281	10,996,891	30.8	-	-
2015	343,077	11,262,564	30.5	329,483	29.3
2016	347,628	11,533,446	30.1	338,784	29.4

Source: NISR, 2012, Population Projections, Medium scenario; HIMIS 2015-16

3.3. Percentage of Assisted Births, HMIS, 2015-2016

Since every pregnancy may be subjected to complications, women are advised to deliver their babies in a health facility so that they access emergency services if needed during labor, delivery and post-delivery. To avoid the risk of complications and maternal deaths, women should be assisted during delivery by personnel who have received training in childbirth and who are able, if needed, to diagnose, treat, and refer complications on time.

The table 2 below shows estimates of assistance during delivery in 2015 and 2016.

Table 2: % of assisted births, HMIS 2015-2016

Year	Assisted births/ HMIS	Projected births	% Assisted Births
2015	318,001	343,077	92.7
2016	328,419	347,628	94.5

Source: NISR, 2012, Population Projections, Medium scenario and HMIS 2015-16

3.4. Fertility indicators: GFR, ASFR, TFR, GRR

3.4.2. GFR

According to the 2016 HMIS data, 338,784 births were recorded. The total number of women in reproductive age (15-49) was projected to be 2,964,688 (4th PHC, population projections), thus the GFR is equal to 338,784/2,964,688*1000= 114.3 births per 1,000 women in reproductive age. Comparing this figure with DHS, the General Fertility rate in 2014-15 was 142 per 1,000 women in reproductive age (15-49).

3.4.3. ASFR and TFR

Most of the fertility indicators like ASFR, TFR, and GRR are calculated to women aged 15-49. In Table3 column (1) shows number of live births notified in the CRVS born to women (15-49), column (2) Percentage distribution of births to women (15-49), column (3) redistribution of HMIS births and (4) total number of women (15-49).

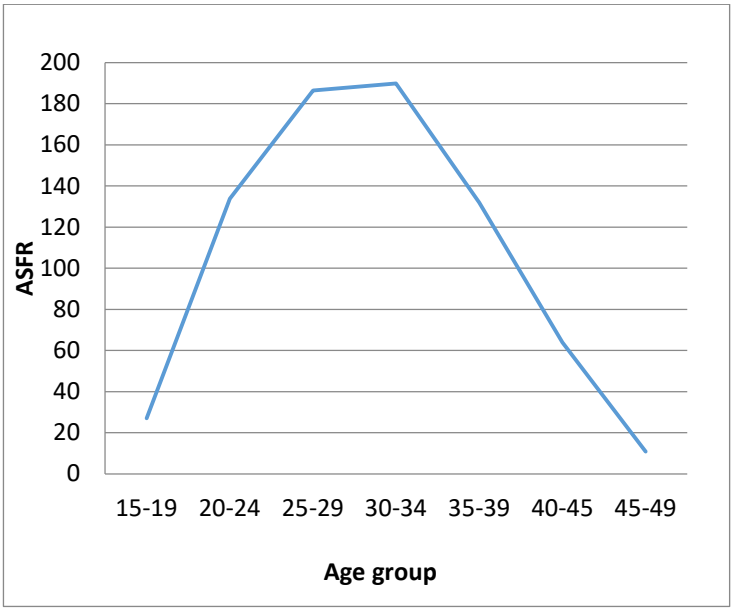
Table 3: Distribution of notified births by age group of their mothers and ASFR (col.5)

Age Group	(1) Number of live births notified CRVS born to women (15-49)	(2) % distribution of Births to women (15-49)	(3) Redistribution of HMIS Births	(4) No of women (15-49)	(5) ASFR
15-19	11,281	4.91	16,622	615,675	26.99807
20-24	50,050	21.77	73,746	551,185	133.7961
25-29	64,915	28.23	95,649	513,108	186.4116
30-34	58,275	25.35	85,866	452,087	189.9315
35-39	32,717	14.23	48,207	365,249	131.984
40-45	11,127	4.84	16,395	256,517	63.91439
45-49	1,560	0.68	2,299	210,867	10.90066
Total	**229,925**	**100**	**338,784**	**2,964,688**	**743.9363**

Source: NISR, 2012, Population Projections, Medium scenario, CRVS 2016 and HMIS 2016

ASFR is obtained by dividing the number of births to the number of women in the same age group (column 5). Graph1 illustrates it further.

Graph 1: Age specific Fertility Rate



The TFR is computed by multiplying the sum of ASFR by five, thus, the estimated TFR is equal to **5*743.9363= 3719.6813 ie 3719.6813** births per 1,000 women in reproductive age or 3.7 children per a woman in reproductive age 15-49 compared to 4.2 per a woman obtained in DHS-2014-15.

3.4.4 The GRR

The GRR is calculated by using the proportion of female in total births (sex ratio of 102 and the female proportion is equal to 100/(100+102)= 0.49505) multiplied by TFR, thus, GRR= **0.49505*3719.6813=**

1841.4 (ie 1841 baby girls per 1000 women in reproductive age or 1.8 baby girls per woman in reproductive age).

CONCLUSION

We are still developing a functional administrative system in the health sector to provide quick and real time indicators for policy making in health sector.

A combination of sources of data is needed to be able to compute the indicators stated above. In this case we are using the Health Management Information System (HMIS), Civil Registration and Vital Statistics (CRVS) web based application and Population Projection to do that. We are using the 4th Rwanda Population and Housing Census conducted in 2012 and Rwanda Demographic and Health Survey (RDHS) conducted in 2014/15 to benchmark on expectations and achievements for now.

The administrative system is still under development and hence these are not official Statistics. The Demographic and Health Survey and the Census remain the official statistics for now until the system is functional properly and officially endorsed for that purpose.

References:

1. Jacob S. SIEGEL & David A. SWANSON; The Methods and Materials in
   Demography, second Edition, 2004;
2. NISR, Rwanda compendium of statistical concepts and definitions, June, 2016;
3. NISR, 4th PHC, Population Projections, 2014;
4. Notes, Cairo Demographic Center (CDC) - Egypt, Fertility and Reproductive Health, 2012.