An Assessment of LAC’s Vital Statistics System:
The Foundation of Maternal and Infant Mortality Monitoring

Isabella Danel and Marcelo Bortman

May 2008
AN ASSESSMENT OF LAC’S VITAL STATISTICS SYSTEM:

The Foundation of Maternal and Infant Mortality Monitoring

Isabella Danel and Marcelo Bortman

May, 2008
Health, Nutrition and Population (HNP) Discussion Paper

An Assessment of LAC’s Vital Statistics System:  
The Foundation of Maternal and Infant Mortality Monitoring

Isabella Danel\textsuperscript{a} Marcelo Bortman\textsuperscript{b}

\textsuperscript{a} LCSHH, World Bank, Washington DC, USA. [at the time paper was written and cleared for publication; currently at CDC’s Regional Office for Central America and Panama].  
\textsuperscript{b} LCSHH, World Bank, Washington DC, USA

World Bank, Washington, DC, USA, May 2008  
Financed by HNP Regional Dutch Trust Fund (TF052659), Maternal and Infant Mortality (IO 2040235) and BB budget (IO 2018453).

Abstract:

Vital records, the registration of births, deaths, marriages and divorces, and the vital statistics derived from these records serve two important purposes. Firstly, vital records are legal documents, but the focus of this review, is the role of vital records to create demographic and epidemiological statistics that are used in monitoring trends and developing health policies and programs. Vital statistics are classic “public goods”, and the World Bank is keenly interested in assisting countries in the Latin America region to strengthen their vital statistics systems.

This assessment reviews the status and evolution of vital statistics systems in Latin America and makes recommendations for improving their coverage, quality, and timeliness. The strongest systems in the region on the measures of coverage, quality and timeliness are found in Argentina, Chile, Costa Rica and Uruguay. Coverage of deaths, infant deaths and births is more than 90 percent. But challenges remain. In the second grouping, Brazil, Colombia, Ecuador, Mexico, Panama and Venezuela, coverage of infant deaths, overall deaths and births is between 70 and 80 percent. There are important differences in estimates by source, regional variation and bigger data quality concerns. The largest challenges lie with the third grouping, including Bolivia, the Dominican Republic, El Salvador, Guatemala, Honduras, Nicaragua, Paraguay and Peru. Coverage reaches only 25 to 70 percent with large regional differences.

This review found that countries in Latin America are well ahead of many other regions in the world in developing their vital registration systems. Yet challenges remain before these systems can support results-oriented health programs. Concerted efforts to improve these systems are likely to generate large payoffs in terms of supporting better public policies. Vital statistics should very soon replace surveys in Latin America as the most important primary source of information about births and deaths given their potential to more effectively guide policymaking and monitor results related to the maternal and infant health MDGs.
Keywords: Vital Statistics, vital registration, infant mortality, maternal mortality, perinatal mortality, births, deaths, cause of death, mortality rate, Millennium Development Goals

Disclaimer: The findings, interpretations and conclusions expressed in the paper are entirely those of the authors, and do not represent the views of the World Bank, its Executive Directors, or the countries they represent.

Correspondence Details: Marcelo Bortman, World Bank, 1818 H st NW Washington DC. USA, telephone: (202) 458-9730, fax: (202) 614-0202, Email: mbortman@worldbank.org
# Table of Contents

ACRONYMS ........................................................................................................................ VI

ACKNOWLEDGEMENTS ................................................................................................. VII

EXECUTIVE SUMMARY .............................................................................................. 1

PART I– WHY VITAL STATISTICS? ................................................................. 5

WHY VITAL STATISTICS SHOULD BE PART OF THE WORLD BANK’S AGENDA .......... 9

PART II CURRENT STATE OF MONITORING OF INFANT AND MATERNAL MORTALITY IN LAC ................................................................. 11

COVERAGE OF VITAL STATISTICS: BIRTHS, DEATHS AND INFANT DEATHS .......... 12
Mortality Registration and Cause of Death Attribution: Quality and Timeliness Issues .......................................................................................................................... 16
Maternal mortality – quality of death certification .................................................... 16
Stillbirths and Perinatal Mortality ............................................................................. 17

KEY ISSUES/OBSTACLES, CHALLENGES AND INNOVATIONS ............................. 18
Barriers toward a well functioning vital registration system ......................................... 18
Barriers to improve coverage ................................................................................... 18
Obstacles to improve quality, opportunity and use of vital statistics information ........ 21

Technologies and innovations .................................................................................. 24
Electronic registration – improving coverage, quality and timeliness ......................... 24
Linked files – improving quality and utilization .......................................................... 25
Automation .................................................................................................................. 26

PART III – RECOMMENDATIONS AND CONCLUSIONS .................................. 27

REFERENCES ................................................................................................................ 32

ANNEXES ....................................................................................................................... 35

ANNEX 1. DEFINITIONS OF VITAL EVENTS ............................................................ 35
ANNEX 2. ORGANIZATION OF THE NATIONAL VITAL STATISTICS SYSTEMS .......... 36
ANNEX 3. PREFERRED INFORMANTS FOR VITAL EVENTS .................................... 40
ANNEX 4. RECOMMENDED CONTENT OF STATISTICAL BIRTH, DEATH AND FETAL DEATH RECORDS .......................................................... 41
ANNEX 5. EVALUATION OF COVERAGE OF VITAL EVENTS ................................. 43
ANNEX 6. OTHER SOURCES OF VITAL STATISTICS DATA .................................... 45
ANNEX 7. COUNTRY FACT SHEETS ............................................................... ERROR! BOOKMARK NOT DEFINED.
### ACRONYMS

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACME</td>
<td>Automated Classification of Medical. Entities - DATASUS</td>
</tr>
<tr>
<td>BCG</td>
<td>Bacillus Calmette-Guérin</td>
</tr>
<tr>
<td>CDC</td>
<td>Center for Disease Control and Prevention</td>
</tr>
<tr>
<td>CR</td>
<td>Civil Registration</td>
</tr>
<tr>
<td>DATASUS</td>
<td>Ministry of Health - Department of Information Technology</td>
</tr>
<tr>
<td>DHS</td>
<td>Demographic and Health Survey</td>
</tr>
<tr>
<td>DSS</td>
<td>Demographic Surveillance System</td>
</tr>
<tr>
<td>HMN</td>
<td>Health Metrics Network</td>
</tr>
<tr>
<td>HNP</td>
<td>Health Nutrition and Population</td>
</tr>
<tr>
<td>IBGE</td>
<td>Instituto Brasileiro de Geografia e Estadística</td>
</tr>
<tr>
<td>ICD-9</td>
<td>International Classification of Diseases – 9th edition</td>
</tr>
<tr>
<td>ICD-10</td>
<td>International Classification of Diseases – 10th edition</td>
</tr>
<tr>
<td>IMR</td>
<td>Infant Mortality rate</td>
</tr>
<tr>
<td>LAC</td>
<td>Latin America and the Caribbean Region</td>
</tr>
<tr>
<td>MCH</td>
<td>Maternal and Child Health</td>
</tr>
<tr>
<td>MDG</td>
<td>Millennium Development Goals</td>
</tr>
<tr>
<td>MICAR</td>
<td>Mortality Medical Indexing, Classification and Retrieval</td>
</tr>
<tr>
<td>MICS</td>
<td>Multiple Indicator Cluster Survey</td>
</tr>
<tr>
<td>MMR</td>
<td>Maternal Mortality Ratio</td>
</tr>
<tr>
<td>NAPHSIS</td>
<td>National Association for Public Health Statistics and Information Systems</td>
</tr>
<tr>
<td>NCHS</td>
<td>National Center for Health Statistics</td>
</tr>
<tr>
<td>NHS</td>
<td>National Health Service (UK)</td>
</tr>
<tr>
<td>PAHO</td>
<td>Pan American Health Organization</td>
</tr>
<tr>
<td>RAMOS</td>
<td>Reproductive Age Mortality Survey</td>
</tr>
<tr>
<td>TB</td>
<td>Tuberculosis</td>
</tr>
<tr>
<td>TRANSAX</td>
<td>Translation of axes – used to create data appropriate for either record-based analysis or person-based analysis</td>
</tr>
<tr>
<td>UNFPA</td>
<td>United Nations Population Fund</td>
</tr>
<tr>
<td>UNICEF</td>
<td>United Nations Children’s Fund</td>
</tr>
<tr>
<td>US</td>
<td>United States</td>
</tr>
<tr>
<td>VR</td>
<td>Vital Registration</td>
</tr>
<tr>
<td>VS</td>
<td>Vital Statistics</td>
</tr>
<tr>
<td>WDI</td>
<td>World Development Indicators</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organization</td>
</tr>
</tbody>
</table>
ACKNOWLEDGEMENTS

Country data collection and background papers for this report were prepared by Edgar Kestler (Mexico and Central America), Margarita Ronderos (Ecuador, Colombia, Peru and Brazil), and María Cristina Cacopardo (Argentina, Chile, Paraguay and Uruguay. Mary Anne Freedman provided an overview of civil registration and vital statistics and innovations. Helen Saxenian provided invaluable assistance with editing, improving the cohesiveness of the document and incorporating strategic insights. Gisela Garcia reviewed, standardized, and finalized country fact sheets. The Pan American Health Organization provided assistance during the development phase of the paper. Alejandro Giusti, PAHO consultant, provided additional information he collected during an assessment of regional health information systems. Peer reviewers were Eduard Bos, Alejandro Giusti, and Sam Notzon. Additional inputs were provided by Michael Geller and Markus Goldstein. The authors are also grateful to Evangeline Javier and Keith Hansen for their support.

The authors are grateful to the World Bank for publishing this report as an HNP Discussion Paper.
Vital records, the registration of births, deaths, marriages and divorces, and the vital statistics derived from these records serve two important purposes. Firstly, vital records are legal documents needed by the population as proof of the facts surrounding the events (as examples, age, identity and death). Secondly, also the subject of this review, vital records are used to create demographic and epidemiological statistics that are used in monitoring trends and developing health policies and programs. Complete and accurate measures of infant, child and maternal mortality derived from vital statistics are the ideal way to measure baseline levels and progress toward meeting the Millennium Development Goals. But they are equally important in understanding the “new” health challenges of non-communicable diseases, injuries, and violence. Because vital statistics can provide information on health conditions at a local level, they can help support planning, monitoring and evaluation in decentralized health systems. Good vital statistics can help guide efficient resource allocation and programs to address health inequities. They can encourage transparency, inform the public and the media, and give a metric for measuring results. In the absence of strong vital statistics, household surveys have been used by many countries to track key indicators such as infant mortality. These surveys are limited by their periodicity and small sample size.

Vital statistics are classic “public goods”. Businesses, the media, researchers and government offices use vital statistics but vital records and the compilation of such records into vital statistics can only be mandated and funded by the public sector. Every country needs a strong vital statistics system to provide basic legal documents to its inhabitants and to create demographic and epidemiological measures used in policymaking and planning health programs.

For these reasons the World Bank is keenly interested in assisting countries in the Latin America and Caribbean region to strengthen their vital statistics systems through policy work and financial support. It has supported vital statistics system strengthening through loans and credits and is ready to do more.

This assessment reviews the status and evolution of vital statistics systems in Latin America and makes recommendations for improving their coverage, quality, and timeliness. Interviews and a standard questionnaire were used to collect data on the status of vital statistics in each of the countries reviewed. Because of resource limitations, the analysis focuses on the following eighteen countries: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, the Dominican Republic, Ecuador, El Salvador, Honduras, Guatemala, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay and Venezuela. At the conclusion of the paper, standard fact sheets are provided on each country.

The strongest systems in the region on the measures of coverage, quality and timeliness are found in Argentina, Chile, Costa Rica and Uruguay. Coverage of deaths, infant deaths and births is more than 90 percent. But challenges remain. Infant death coverage generally lags behind overall deaths, and there are sub-national differences in coverage, and data quality and timeliness needs to be improved. In the second grouping, Brazil, Colombia, Ecuador, Mexico,
Panama and Venezuela, coverage of infant deaths, overall deaths and births is between 70 and 80 percent. There are important differences in estimates by source, regional variation and bigger data quality concerns. The largest challenges lie with the third grouping, including Bolivia, the Dominican Republic, El Salvador, Guatemala, Honduras, Nicaragua, Paraguay and Peru. Coverage reaches only 25 to 70 percent with large regional differences. Data quality and timeliness are even bigger issues in these countries.

Problems can occur for many reasons. Under-registration of births is more likely to occur when births are delivered at home or births are in maternity hospitals that do not have a civil registry unit. Parents in remote and isolated areas might have difficulty in getting to civil registry offices, and unofficial fees by civil registrars can act as a barrier. When an infant dies shortly after birth, there might be less incentive by the parents to register the birth (as well as the death).

Under-registration of deaths can occur at all ages, but it occurs particularly for infant and fetal deaths. Cemeteries require death certificates for burial authorization, but illegal cemeteries are widespread in some countries’ rural areas. Oftentimes the only incentive to register a death is for legal/inheritance purposes. Fetal deaths are often not registered even if they occur in hospitals.

Inaccurate cause of death on death certificates is a major problem in many countries. This is especially so for maternal deaths, which are so often missed. Many deaths are placed in catch-all cause categories because of lack of training by the person completing the form and/or the death is not attended by a physician. Even when births and deaths are registered, they might not be forwarded from registrars’ offices to sub-national and national entities in a timely way, and coding errors can be introduced as the vital records are entered as vital statistics. Confusion over the roles and responsibilities of the National Statistics Institute and the Ministry of Health can further delay the processing, data checking, and dissemination of vital statistics.

The strengthening of vital statistics systems will require political support, efficient administration, investment and citizen understanding and participation. Some countries have achieved impressive results in a relatively short time in improving their vital statistics systems, using a variety of policies and programs. Colombia introduced major reforms in its civil registry and vital statistics system in the 1990s after consulting with experts, the institutions involved, and different geographic regions. It streamlined the flow of certificates issued in the health system and clarified roles and responsibilities of the different institutions. Registration offices are being established in major hospitals and clinics. The death certificate was revised and electronic registration was supported. One interesting aspect of Colombia’s system is that birth certificates are needed for participation in some conditional cash transfer programs, which provides an incentive for low-income households to register births. Brazil has also made concerted efforts to improve its vital statistics system. It is establishing civil registry units in maternity hospitals and providing hospitals with a small incentive payment to register births. It is expanding electronic registration. Challenges remain in institutional coordination, both between the states and the national level and at the national level, but the system is improving.
Both the Ministry of Health and the Brazilian Statistical Institute (IBGE) have made birth and death statistics available with a one-year lag on the internet.

**Costs of and Benefits from Vital Statistics.** This paper argues that there is a strong investment case for vital statistics systems in Latin America. Strengthened systems will cost more in terms of infrastructure and communications, salaries for civil registrars, data coders, training and the like. Civil registration systems need adequate resources to support all required functions, including those not directly related to current registration. If the entire civil registration system is not adequately funded, resources will typically be routed to the areas that have the most public impact, such as the certified copy of births, marriage and deaths for legal purposes. In times of limited resources the current registration and data quality functions are the areas that usually suffer. From the viewpoint of policymaking in health, robust vital statistics can yield enormous payoffs. They can guide efficient resource allocation and help avoid costly policy and programmatic mistakes. They serve as a much better tool for monitoring the Millennium Development Goals because they provide yearly estimates. They can better measure health inequities because they can be disaggregated to a local level or to subgroups of the population.

**Recommendations.** This report recommends that countries carry out a thorough assessment of their vital statistics system in order to develop plans for strengthening the system over the short to medium term. For the countries with relatively high coverage of birth and death registration, those could consider assessing their current systems in order to map at how to improve data quality, uniformity and timely release of data. For countries still facing the challenge of increasing coverage, investments will likely have to first focus on coverage. Countries in the grouping with the weakest systems might wish to set a goal of increasing coverage of births and deaths from their current levels of 25 to 70 percent to at least 75 percent within five years. For the countries in the second grouping with current coverage levels of 70 to 80 percent, a reasonable goal could be to increase coverage to over 90 percent within the next five years.

There are broad areas that all country assessments should cover and corresponding actions in each area. These include reviewing and developing recommendations around staffing, equipment, facilities and supply requirements, communication linkages, outreach to local civil registrars and data providers, training programs, public education and outreach, links with international collaborative efforts in vital statistics, and performance monitoring studies. But as a first step, a review of the broad institutional responsibilities/coordination for vital statistics is in order for several countries. In some countries, better bridges need to be built between the state registrars and the health system. Responsibilities of the National Statistical Institute and the Ministry of Health need to be clarified. Similarly, these same responsibilities in some countries require clarification between the states and national government.

As countries improve coverage they can simultaneously support measures to improve data quality. Several countries in Latin America need to standardize forms across subunits of the country and standardize forms by type of vital event. All countries need to support training of medical certifiers and coders to improve cause of death reporting and accuracy of coding.
There are many steps between a vital event and its inclusion in the nation’s vital statistics and its release to the public. Timeliness of data depends on how quickly events are registered, processed and forwarded to the statistical agency, how quickly data is processed and transmitted from sub-national to national statistical offices, and how quickly data is processed, checked and compiled at the national level. Any reporting area can delay the national file. The system in other words is as good as its weakest jurisdiction. Twelve months would be a reasonable goal for the release of data following the end of the year.

Countries in Latin America and the Caribbean are well ahead of many other regions in the world in developing their vital registration systems. Yet challenges remain before these systems can support results-oriented health programs. Concerted efforts to improve these systems are likely to generate large payoffs in terms of supporting better public policies. Vital statistics should very soon replace surveys in Latin America as the most important primary source of information about births and deaths given their potential to more effectively guide policymaking and monitor results related to the maternal and infant health MDGs.
PART I– WHY VITAL STATISTICS?

Infant and maternal mortality are key health indicators used by every country from richest to poorest to measure the health of its people, the performance of its health system, and to monitor health trends and equity gaps. Their importance has been magnified in the last decade because they are two of the eight Millennium Development Goals (Box 1) and they are being followed very closely by several multilateral organizations. In Latin American and Caribbean (LAC) countries, infant and maternal mortality are lower than in other regions. However, the region has some of the highest inequity rates in the world. Reducing infant and maternal mortality, and in particular reducing inequities in these indicators, remain important health goals for every country in the region.

A major stumbling block in accelerating achievement of these health goals in LAC is the incompleteness of timely infant and maternal mortality data that provides sufficient information at a local level to permit an effective response. Developed countries register the births and deaths of all their residents and use this data to monitor infant and maternal mortality. Vital statistics of reasonable quality and high population coverage are found in only a handful of countries in LAC. Nevertheless, health systems in LAC countries are sufficiently developed for the implementation of adequate vital statistics systems to be a reasonable immediate goal.

Countries without good vital statistics must fall back on periodic surveys to measure infant mortality. However, while surveys provide national and sometimes sub-national estimates, the information is neither timely nor adequate in a decentralized context such as that found in LAC.

What are Vital Statistics? Vital events include births, deaths, marriages, divorces, fetal deaths (stillbirths, including induced terminations of pregnancy). In most countries these events are recorded through the government’s civil registration system, which creates a permanent record of each event. Vital statistics – the data derived from these administrative records – are one of the most widely used statistical data systems in the world. Vital statistics is a public good and constitutes a key element of monitoring and evaluation, one of the essential functions of public health.

Two primary uses. Vital records have two primary uses. First, they are personal legal documents, needed by citizens as proof of the facts surrounding the events (e.g., age, identity). These records are used to establish family relationships and rights to inheritance; provide proof of age and establish rights based on age (e.g., school entry, driving privileges); provide proof of marriage or divorce and the right to marry; and as evidence of death. Second, the data derived from these records form the basis of the vital statistics system that is at the core of a country’s health information system.

Vital statistics are used to create fundamental demographic and epidemiologic measures needed in public health planning. They are needed to understand the prevalence and distribution of mortality (due to diseases and injury), identify health inequities and priorities, monitor trends
and evaluate the effectiveness of health programs and projects. They are also critical in a wide range of government activities and commercial enterprises (e.g., life insurance, marketing of products).

**Box 1: The Role of Vital Statistics in Measuring Progress towards the Millennium Goals**

The Millennium Development Goals were adopted by 147 heads of state in September 2000. Eight goals, 18 targets, and 48 indicators were adopted. Three goals deal directly with health: reducing mortality in children under five; improving maternal health; and combating HIV/AIDS, malaria, and other diseases. The first two goals are presented below, along with their targets and indicators. They are discussed in this report because measurement of their progress relies ideally on comprehensive vital statistics. The third goal, combating HIV/AIDS, is not discussed in this report simply because the indicators developed for the goal are not related to mortality.

<table>
<thead>
<tr>
<th>Millennium Goals and Targets</th>
<th>Indicators and sources</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Goal: Reduce Mortality in Children under the age of Five</strong></td>
<td>Under-five mortality rate (vital registration, survey data)</td>
</tr>
<tr>
<td>Target: Reduce by two-thirds between 1990 and 2015 the under-five mortality rate</td>
<td>Infant Mortality Rate (vital registration, survey data)</td>
</tr>
<tr>
<td><strong>Goal: Improve Maternal Health</strong></td>
<td>Proportion of one-year old children immunized against measles (vital registration for denominator, health services data for numerator)</td>
</tr>
<tr>
<td>Target: Reduce by three-quarters between 1990 and 2015 the maternal mortality ratio</td>
<td>Maternal Mortality Ratio (vital registration)</td>
</tr>
<tr>
<td></td>
<td>Proportion of Births attended by Skilled Birth Attendants (vital registration, survey data)</td>
</tr>
</tbody>
</table>

Measurement of progress toward the infant/child mortality and maternal health goals rely, ideally, on comprehensive vital statistics or, in their absence, survey data. Survey data has its limitations as discussed in Box 2. Even the immunization and skilled birth attendance indicators require vital statistics, in addition to health statistics, to get the proper denominator (cohort size from births adjusted by infant mortality statistics). The indicator with the weakest baseline and progress data is the maternal mortality ratio because of under-registration and misclassification of cause of death.

One of the strengths of a vital statistics system is that it is a census rather than a survey. Thus, it includes a record of each vital event that occurs in the country. Because all events are included, vital statistics can be used to examine data for smaller geographic areas, detailed demographic subgroups, specific causes of deaths, and rare events. When these files are made available to users in electronic form, they provide a powerful tool for program planning, analysis, surveillance, research, and local interventions.

Complete and accurate measures of infant, child, and maternal mortality are the ideal way to measure baseline levels and progress toward meeting the Millennium Development Goals.

---

1. In the analyses of infrequent events and or in small geographical areas is important to consider that a pool of data can be needed in order to reduce the random error.
They are critical for addressing and monitoring inequities in these outcomes. But they are equally important in understanding the “new” health challenges of non-communicable diseases, injuries, and violence. Because vital statistics can provide information on health conditions at a local level, they support planning, monitoring and evaluation in a decentralized health systems.

Birth certificates can provide a wealth of information for monitoring maternal, infant and child health. They can provide information about prenatal care and the place and type of birth attendance, a key maternal health indicator. They can also provide information about newborns, in particular, birth weight, a critical factor in the causal pathway for malnutrition (another MDG) and infant mortality. Birth counts are important not just for statistics, UNICEF considers the official recording of a birth as a fundamental human right – an essential means of protecting a child’s right to an identity.

In addition, vital statistics data is reported year after year and is generally calculated and reported in a consistent way over time, facilitating data analysis and measurement of trends.

Box 2: Limitations of Surveys

Without robust vital statistics, other tools, such as surveys and indirect estimation techniques in combination with censuses, must be used to calculate key measures, such as infant, child, and maternal mortality. But these tools have limitations:

- Unless survey size is very large (and costly), surveys are not useful in monitoring indicators at a local level or identifying health disparities among anything but the broadest subgroups in the population.
- The information provided is not timely making opportune interventions impossible. For instance infant mortality data are for deaths up to five years before the survey. The ‘average’ IMR reported is thus about two-three years old. Data analysis and report writing takes time so the reported IMR is usually three-four years old by the time the report is published.
- While surveys can be useful over the short term to provide intermittent information about infant and child mortality where no other data are available, over the long term, there is no substitute for a vital statistics system with high coverage that includes all population subgroups and local level information.
- Surveys designed to measure national or regional IMR or MMR have very limited use in impact evaluations. Specially designed surveys are required for this purpose.

As recent work in Brazil has shown, with decentralization of health management to the municipal level, municipal-level vital statistics can help delineate trends for policymakers in infant, neonatal, and post-neonatal mortality by socioeconomic areas within municipalities (Goldani et al., 2001). This is something that could never be achieved with periodic national surveys because of sample size limitations.

A basic premise of vital statistics is that every event occurring to the population must be registered for legal and statistical purposes. Less than full coverage creates several problems. First, under-registration is usually not uniform across the population. It might be reflected more in rural areas, in poorer groups, or in specific types of events. Typically, out-of-hospital births and deaths, deaths occurring shortly after birth, and deaths from specific causes are
underreported. When this happens, the data is not representative and will not produce accurate statistics without adjustments. Late registration of certain types of events also affects coverage. For example, homicides, suicides, accidents and maternal deaths are often registered late and can be omitted from statistics in this way.

This paper reviews the status and evolution of vital statistics systems in Latin America with suggestions for improving the coverage, quality, timeliness and utilization of vital statistics data. The emerging utilization of electronic registration is presented. Interviews and a standard questionnaire were used to collect data on the status of vital statistics in each of the countries reviewed. Due to resource limitations, not every country in the region could be included. The analysis focuses on the following eighteen countries: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, the Dominican Republic, Ecuador, El Salvador, Honduras, Guatemala, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay and Venezuela. Fact sheets on each country are presented at the conclusion of the report.

Vital statistics systems can be evaluated on three key areas: coverage, data quality (accuracy and completeness of information), and timeliness.

1. The strongest systems on these measures are found in Argentina, Chile, Costa Rica, and Uruguay. Coverage of deaths, infant deaths, and births is 95 percent or greater. But challenges remain. Infant death coverage generally lags behind overall deaths, there are regional differences in coverage, and data quality needs to be improved.

2. In the second grouping, including Brazil, Colombia, Ecuador, El Salvador, Guatemala, Mexico, Panama, and Venezuela, coverage of deaths and births is between 70 and 90 percent. However, there are important differences in estimates by source, regional variation, and bigger data quality concerns.

3. The largest challenges are in the third grouping, including Bolivia, the Dominican Republic, Honduras, Nicaragua, Paraguay and Peru. Coverage reaches only 25 to 70 percent with large regional differences. Data quality is an even bigger issue in these countries.

Establishing a well functioning vital registration system is a long-term process. All countries in Latin America and the Caribbean have vital statistics systems but progress is uneven toward the goal of achieving systems strong enough to be useful in monitoring and evaluation. Most of the vital statistics systems in Latin America have significant problems of underreporting, inaccurate cause of death classification, and problems with timely flow of information. Household surveys can serve as a partial substitute to complete and accurate vital statistics over the short run. But household surveys neither provide timely information nor information that can be used to monitor trends at the local level. The Latin America Region is at the stage where greater investments in vital statistics systems are warranted to make them a useful tool in monitoring, planning and policymaking. Improvement in Latin America’s vital statistics systems will require strong political support, efficient administration, and citizen understanding and participation.
WHY VITAL STATISTICS SHOULD BE PART OF THE WORLD BANK’S AGENDA

Vital statistics are, in the World Bank’s terminology, a classic “public good”. Businesses, the media and government offices use vital statistics but vital records and the compilation of such records into vital statistics can only be mandated and funded by the public sector. The World Bank is committed to working with countries to build their statistical and monitoring capacity. It is also committed to measuring the results of its own development assistance at the country level.

Over the last several years the World Bank has increasingly emphasized the importance of focusing on results, particularly those related to the MDGs. The new HNP strategy emphasizes the measurement of results in the health sector. This makes it imperative to improve vital statistics. Vital statistics not only provide information about maternal and infant mortality but also low birth weight, birth defects and perinatal complications, all important results indicators and predictors of future well-being.

A robust vital statistics system is needed to:

- Measure progress towards the MDGs;
- Provide disaggregated information to enable policy-making at the local level, and in this way, support the process of decentralization;
- Help guide efficient resource allocation;
- Develop programs and policies that can address health inequities, because vital statistics can go so much farther than survey data in pinpointing inequities;
- Provide information not only on patterns of mortality from communicable diseases, but also on chronic diseases and injuries;
- Identify emerging health problems;
- Provides information for monitoring results and impact evaluations;
- Encourage transparency, improve public knowledge, and inform the media about health programs and progress to meeting health challenges.

The Health Metrics Network. The World Bank joined with WHO and many other international partners to found the Health Metrics Network, a partnership with a $50 million grant from the Bill and Melinda Gates Foundation and other donors. The Health Metrics Network (HMN) was launched in May 2005. The Network’s goal is to create a framework and standards for health information systems, to provide technical and financial assistance to strengthen country systems, and to provide incentives for the dissemination and application of health information at the global, country and local level. HMN recognizes vital statistics as “an essential input for policy-making and planning in human development”. (WHO 2006)

Support from World Bank Loans and Credits. The World Bank also uses its own loans and credits to support vital statistics strengthening. In the Latin America Region, the
World Bank has helped finance surveillance systems in Argentina, Brazil, and Uruguay. It has financed vertical information systems, for example for HIV/AIDS, in Argentina, Brazil, and Central America. And it is supporting vital statistics system strengthening in Argentina, Brazil, and Uruguay.

The World Bank is itself a frequent user of vital statistics systems. Several World Bank projects justified their design using information from vital statistics (e.g. Argentina, Guatemala). Better vital statistics can improve project design by enhancing identification of maternal and child health priorities and target population. They will also improve project monitoring and evaluation.

The Costs to Support the Vital Statistics System. Investment is required to strengthen vital statistics systems. Its sustainability will require regular maintenance and occasional upgrading, especially as technologies improve to create systems that are multi-purpose and linked. A strong system with timely, good quality data will require investing in human resources and technology, and might have higher recurrent costs than many of the systems at present in Latin America. The budget needed to finance a fully functioning vital statistics system will vary depending on its current status, but will be always significant. While investment in vital statistics might be seen as an expensive “luxury”, one can also argue that there are much larger economic and social costs from not having good statistics. Resources can be misallocated and programs can be designed poorly if they are based on incomplete and inaccurate statistics. Furthermore, the alternative to vital statistics also is expensive. International surveys became the dominant mode of collecting health data in the 1980s and 1990s. One estimate is that the Demographic and Health Surveys (DHS) could cost upward of US$150 per household interviewed (WHO, Issues in Heath Information 5).
Table 1 shows infant and maternal mortality information (WDI) for eighteen countries in Latin America. The sources of data vary. Infant mortality comes either from vital statistics or from surveys. Countries using vital statistics have more recent information and are able to track results annually. Where data comes from surveys, the estimate is for approximately the midpoint for the years that infant mortality was collected. As survey estimates become old, the World Bank interpolates and extrapolates based on past trends from a variety of data sources. So, for instance, the last survey in Guatemala, done in 2002, estimated infant mortality during the five-year period 1997-2002 to be an average of 39 per 1000 live births. Based on past trends the WDI estimate for 2004 is 33.

<table>
<thead>
<tr>
<th></th>
<th>Infant Mortality Rate*</th>
<th>IMR Data Source [IMR / 5 year period]</th>
<th>Maternal Mortality Ratio**</th>
<th>MMR Data Source</th>
<th>MMR Report PAHO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina</td>
<td>16</td>
<td>VS (2004)</td>
<td>82</td>
<td>VS 2000 adj.</td>
<td>44</td>
</tr>
<tr>
<td>Bolivia</td>
<td>54</td>
<td>DHS (1994-98)</td>
<td>420</td>
<td>Model</td>
<td>230</td>
</tr>
<tr>
<td>Brazil</td>
<td>32</td>
<td>DHS ‘86; DHS ‘96</td>
<td>260</td>
<td>DHS est. for ‘86</td>
<td>73</td>
</tr>
<tr>
<td>Chile</td>
<td>8</td>
<td>VS (2002)</td>
<td>31</td>
<td>VS 2000 adj.</td>
<td>13</td>
</tr>
<tr>
<td>Colombia</td>
<td>18</td>
<td>DHS (1996-2000)</td>
<td>130</td>
<td>VS 1995 adj.</td>
<td>84</td>
</tr>
<tr>
<td>Dominican Rep.</td>
<td>27</td>
<td>33 / DHS (99-02)</td>
<td>150</td>
<td>Model 2000</td>
<td>75</td>
</tr>
<tr>
<td>Ecuador</td>
<td>23</td>
<td>29 / DHS (99-04)</td>
<td>130</td>
<td>VS 1997 adj.</td>
<td>78</td>
</tr>
<tr>
<td>El Salvador</td>
<td>24</td>
<td>35 / DHS (93-98)</td>
<td>150</td>
<td>Model 2000</td>
<td>173</td>
</tr>
<tr>
<td>Guatemala</td>
<td>33</td>
<td>39 / DHS (97-02)</td>
<td>240</td>
<td>DHS est. for ‘92</td>
<td>153</td>
</tr>
<tr>
<td>Honduras</td>
<td>31</td>
<td>34 / DHS (96-01)</td>
<td>110</td>
<td>RAMOS</td>
<td>108</td>
</tr>
<tr>
<td>Mexico</td>
<td>19.7</td>
<td>VS (2004)</td>
<td>83</td>
<td>VS 2000 adj.</td>
<td>65</td>
</tr>
<tr>
<td>Nicaragua</td>
<td>31</td>
<td>40 / DHS (93-98)</td>
<td>230</td>
<td>Model 2000</td>
<td>83</td>
</tr>
<tr>
<td>Panama</td>
<td>15.2</td>
<td>VS (2003)</td>
<td>160</td>
<td>VS 2000 adj.</td>
<td>68</td>
</tr>
<tr>
<td>Paraguay</td>
<td>21</td>
<td>29 / DHS (99-04)</td>
<td>170</td>
<td>VS 1994 adj.</td>
<td>174</td>
</tr>
<tr>
<td>Peru</td>
<td>24</td>
<td>33 / DHS (96-00)</td>
<td>410</td>
<td>DHS est. for ‘96</td>
<td>185</td>
</tr>
</tbody>
</table>

Note: * per 1000 live births. ** per 100,000 live births; estimates come from WHO, UNICEF, UNFPA (WHO 2004).

Accurate data on maternal mortality is even harder to come by. While the identification of an infant death requires only an accurately reported age, something that is fairly simple, the identification of a maternal death requires that the cause of death is accurately reported. For this reason there is underreporting even in countries with good coverage of vital statistics. Using the previous international disease classification (ICD-9) the under-reporting was estimated to be around 50 percent. However, with the new ICD-10, the identification of maternal deaths has
improved. Routine DHS-type surveys are used to report the prevalence of skilled birth attendance. However, the methodology they use to estimate maternal mortality (sisterhood method) provides an estimate ten years prior to the survey. In the case of the estimates provided by WHO and used in the World Development Indicators, some of the estimates have a time location in the 1980s (Brazil, Nicaragua, Peru). Needless to say they are not very helpful for monitoring trends. RAMOS studies (Reproductive Age Mortality Surveys), done where death registration is still low, as well as to estimate under-reporting of maternal deaths thru vital statistics, are considered a gold standard for estimating maternal mortality.

The data in Table 1 is being used to monitor the infant and maternal mortality MDGs. Much of the data is very old and unhelpful for this purpose. Improved data are unquestionably necessary not just to monitor outcomes, but for use in developing and targeting interventions. Since countries are at different stages of VR development, strategies will need to vary.

**Coverage of Vital Statistics: Births, Deaths and Infant Deaths**

<table>
<thead>
<tr>
<th>Table 2. Estimated coverage of death and birth records</th>
</tr>
</thead>
<tbody>
<tr>
<td>Births</td>
</tr>
<tr>
<td>--------</td>
</tr>
<tr>
<td>Argentina†</td>
</tr>
<tr>
<td>Bolivia</td>
</tr>
<tr>
<td>Brazil†</td>
</tr>
<tr>
<td>Chile†</td>
</tr>
<tr>
<td>Colombia†</td>
</tr>
<tr>
<td>Costa Rica†</td>
</tr>
<tr>
<td>Dominican Republic†</td>
</tr>
<tr>
<td>Ecuador</td>
</tr>
<tr>
<td>El Salvador†</td>
</tr>
<tr>
<td>Guatemala</td>
</tr>
<tr>
<td>Honduras</td>
</tr>
<tr>
<td>Mexico†</td>
</tr>
<tr>
<td>Nicaragua</td>
</tr>
<tr>
<td>Panama†</td>
</tr>
<tr>
<td>Paraguay</td>
</tr>
<tr>
<td>Peru</td>
</tr>
<tr>
<td>Uruguay†</td>
</tr>
<tr>
<td>Venezuela†</td>
</tr>
</tbody>
</table>

*Note:* † Infant death estimates from Giusti.

**Births.** Eleven of the countries have more than 90 percent of deliveries attended by skilled birth attendants, almost exclusively in hospitals. These countries also tend to have higher
coverage for birth registration, though there are significant exceptions. Guatemala has a very low skilled birth attendance rate (41 percent, 2002), nevertheless it has a high coverage for birth registration. On the other hand, Brazil, the Dominican Republic and Venezuela have relatively low birth registration rates despite high skilled birth attendance.

As part of its ‘Rights Start to Life’ campaign, UNICEF has published results of birth registration coverage estimates using data from either its household surveys (MICS) or DHS. (Table 3) A comparison shows that while vital registration coverage estimates are similar for several countries, they also vary by more than 15 percentage points for Bolivia, Colombia and Peru. If VR coverage is to be monitored more robust data sources will need to be developed.

<table>
<thead>
<tr>
<th></th>
<th>World Bank study*</th>
<th>UNICEF MICS or DHS**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bolivia</td>
<td>65</td>
<td>82</td>
</tr>
<tr>
<td>Colombia</td>
<td>76</td>
<td>92</td>
</tr>
<tr>
<td>Dominican Rep.</td>
<td>83</td>
<td>75</td>
</tr>
<tr>
<td>Guatemala</td>
<td>95</td>
<td>97</td>
</tr>
<tr>
<td>Nicaragua</td>
<td>85</td>
<td>81</td>
</tr>
<tr>
<td>Peru</td>
<td>55</td>
<td>93</td>
</tr>
<tr>
<td>Venezuela</td>
<td>85</td>
<td>92</td>
</tr>
</tbody>
</table>

*This study. **UNICEF 2005.

Hospitals can provide an easy point of contact for birth registration. Several countries in Latin America, including Argentina, Bolivia and Uruguay have registry offices in maternity hospitals. Brazil’s coverage of birth registration is approximately 76 percent. In 2003, less than 1 percent of maternity hospitals in Brazil had registry offices. Recognizing that this could be a problem for vital registration, the Ministry of Health created an incentive of US$5 for each birth that maternities register. Colombia has a plan to establish registration offices at major hospitals and clinics. In Latin America, the percentage of births in a hospital is increasing rapidly in many countries. This should make it easier to increase the coverage of birth registration as long as there are incentives and resources for hospitals to carry out this task.

Table 4 shows other determinants of birth registration: it tends to be higher in urban areas, though Bolivia and Peru are notable exceptions; it increases with mother’s education (tertiary not listed); it tends to be higher among the wealthy, though disparities vary and are surprisingly low in some countries (and even reversed in Bolivia).
### Table 4. Percentage Children Under 5 registered according to socio-demographic variables*

<table>
<thead>
<tr>
<th>Country</th>
<th>Residence</th>
<th>Mother’s education</th>
<th>Wealth index</th>
<th>Skilled attendance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rural</td>
<td>Urban</td>
<td>None</td>
<td>Primary</td>
</tr>
<tr>
<td>Bolivia</td>
<td>79</td>
<td>83</td>
<td>80</td>
<td>78</td>
</tr>
<tr>
<td>Colombia</td>
<td>84</td>
<td>95</td>
<td>76</td>
<td>86</td>
</tr>
<tr>
<td>Dominican Rep.</td>
<td>66</td>
<td>82</td>
<td>52</td>
<td>67</td>
</tr>
<tr>
<td>Nicaragua</td>
<td>73</td>
<td>90</td>
<td>63</td>
<td>81</td>
</tr>
<tr>
<td>Peru</td>
<td>92</td>
<td>93</td>
<td>90</td>
<td>91</td>
</tr>
<tr>
<td>Venezuela</td>
<td>----</td>
<td>----</td>
<td>79</td>
<td>92</td>
</tr>
</tbody>
</table>

*Source:* UNICEF household surveys (MICS).

*Note:* ---- not available.

Some countries have other sorts of barriers to birth registration. In Ecuador, the family must show a BCG\(^2\) vaccine certificate for the infant in order to register the birth that can be a problem if the delivery was at home and the family has not been able to coordinate with the local clinic for the vaccination. Other barriers that are reported in Ecuador include: fines if the registration takes place more than 30 days after birth; the child is not recognized by the father; parents lacking identification; and lack of or unavailability of the civil registrar in the local area.

**Fees.** Birth registration is free in many countries. However, several charge a fee if the birth is registered late, i.e. after 30 days. The effectiveness of this type of disincentive to delayed birth registration is not studied. A concern is that it might be a barrier, particularly in rural areas.

**Additional data from birth certificates.** Birth certificates provide a wealth of additional information that is very useful for routine monitoring. This includes birth weight (to identify low birth weight babies), gestational age (to identify preterm births), mother’s age and education, multiple births (twins etc), and birth complications among others. These factors are determinants of infant mortality and are often used by MCH departments to monitor infant health outcomes.

**Deaths.** Table 2 also summarizes estimated coverage for deaths, as well as specifically for infant deaths. Death registration coverage tends to follow the same pattern as birth registration. Five countries have coverage rates of over 90 percent. In these countries it will be important to focus on the quality of the information provided. In almost all countries examined, infant deaths have the lowest coverage of the three indicators. Only in Argentina, Chile, Costa Rica, and Uruguay is infant death coverage estimated at more than 90 percent. For infant mortality, several studies have shown that under-registration is highest for early neonatal deaths. Under-registration also tends to be higher among the poor. One recommendation for improving coverage is to better capture hospital deaths. Active follow-up of obstetric hospital admissions can help determine whether early infant deaths (those occurring prior to maternal discharge) and fetal deaths are being registered. Educational campaigns targeting hospital personnel can be used to improve the registration of infant deaths and stillbirths that occur in hospitals. The effort should emphasize the importance of this data for setting national public health priorities and

---

2. Bacille Calmette-Guérin is a vaccine for tuberculosis (TB) disease, generally given at birth.
encourage the complete reporting of these events to the vital registration system.

Table 5 shows differences between infant mortality rates reported by vital statistics and surveys. These differences provide an idea of the gap in coverage for infant death registration. As coverage rates improve, the differences will grow smaller.

Table 5. Comparison of IMR using DHS and Vital Statistics. What is the gap?

<table>
<thead>
<tr>
<th>Year</th>
<th>IMR using VS</th>
<th>IMR using survey</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dominican Rep.</td>
<td>2000</td>
<td>30.5</td>
</tr>
<tr>
<td>Ecuador</td>
<td>2001</td>
<td>24.9</td>
</tr>
<tr>
<td>Guatemala</td>
<td>1999</td>
<td>36.5</td>
</tr>
<tr>
<td>Nicaragua</td>
<td>1995</td>
<td>45.2</td>
</tr>
<tr>
<td>Paraguay</td>
<td>2001</td>
<td>19.8</td>
</tr>
<tr>
<td>Peru</td>
<td>1998</td>
<td>44.1</td>
</tr>
</tbody>
</table>

Cause of death is not needed to identify an infant death since it is determined solely by age at the time of death. The timing of the death (neonatal v. post-neonatal) provides important clues about the cause and provides some guidance for preventive interventions. Nevertheless, particularly as the IMR becomes smaller (as in most LAC countries) an accurate cause of death becomes more important to channel resources efficiently and to have a greater impact on infant health outcomes.

As noted previously, an advantage of vital statistics is that it provides IMRs for small areas and for sub-populations. This means that interventions can be targeted to very specific geographic areas, or specific sub-populations, where IMRs are high. Figure 1 shows the differences in IMR by canton in Costa Rica. Such data is essential for effective policymaking and planning. It makes resource allocation more cost-effective and is particularly important in Latin America where average IMRs are low compared to other regions of the world. Well-targeted resource allocation is critical to improving infant outcomes equitably in this setting.

Figure 1. Infant Mortality Rate by Cantons, Costa Rica 2000

Source: Vital Statistics system

---

3. An infant death is any death before the first birthday.
4. A limitation of statistics for small geographic areas is that as the number of deaths decreases the confidence interval widens. If an area or population has less than 20 deaths the rate is unreliable and is usually not reported.
MORTALITY REGISTRATION AND CAUSE OF DEATH ATTRIBUTION: QUALITY AND TIMELINESS

ISSUES

From a legal perspective, death registration is important for purposes of inheritance. From a health perspective, it provides key information about the causes of burden of disease, and when complete, provides critical information about health inequities. As the coverage of death registration improves, the quality and timeliness of the reporting become issues. This is particularly important for maternal mortality (as discussed below). An indicator of the quality identified by PAHO is the percentage of causes of death inaccurately or poorly defined. (Table 6)

Maternal mortality – quality of death certification

The reduction of maternal mortality is an MDG that has major problems related to its measurement. This is because the identification of a maternal death requires not only a death certificate, but one that is filled out accurately enough so that it is clear the death was related to a pregnancy. So the measurement of maternal mortality is affected not only by low coverage, but widened further by the poor quality of cause of death reporting. This happens even in developed countries where 100 percent of deaths are reporting. Improvement in maternal mortality measurement requires other actions to assure that maternal deaths are identified. Nevertheless, the process starts with death registration.

A variety of steps have been taken to improve the identification of maternal deaths.

- Death coding is updated every 10 years, and the latest classification (ICD-10

5

), introduced in the mid-90s, has increased the identification of maternal deaths by 30 percent in the US, and probably other countries.

- Several countries in LAC (Ecuador, Nicaragua, Honduras) have included check boxes on death certificates to increase the identification of women who died while pregnant or post-partum.6

- Hospital and municipal or sub-national maternal mortality committees have been established in several countries to foster the investigation of deaths of women who died during pregnancy, childbirth or post-partum and determine whether they were related to the pregnancy or not (as opposed to, for instance, trauma from a motor vehicle collision).

5. 10th International Classification of Diseases
6. A maternal death is defined as the death of a woman during pregnancy or within 42 days of the end of a pregnancy from causes related to the pregnancy or its management, but not from fortuitous causes.
As noted with infant mortality, when coverage is complete and the quality of data reasonable, vital statistics permit the identification of geographic areas or sub-populations with particularly high maternal mortality so that they can be targeted with whatever resources might be necessary to improve maternal health outcomes.

Compared to infant mortality, there are fewer alternatives to vital statistics for measuring maternal mortality, even national trends. DHS-like surveys use the sisterhood method and do not measure recent maternal mortality. (The reported MMR is usually for a point in time 10 years prior to the survey). Special Reproductive Age Mortality Surveys (RAMOS) are required when vital statistics are limited. Such surveys have been done in Guatemala, Honduras, El Salvador and for capital cities in Brazil. Table 7 shows the very large difference between WHO estimates for 2000 (based on modeling or adjustments to data from the sisterhood method) and RAMOS findings (In Honduras, RAMOS was carried out in 1990 and in 1998 and those are the findings reported by WHO). In Africa, Demographic Sentinel Surveillance has been established, and India uses sample-based registration. However, vital statistics coverage in LAC is high enough, and the advantages of using vital statistics is great enough that to move toward DSS or sample registration system would be a step backward. RAMOS should be carried out periodically to assess the gap in coverage with vital statistics.

The MDG indicator for maternal mortality includes “the percentage of women receiving skilled attendance during birth” and some consider this a proxy for maternal mortality. However, the correlation between maternal death and skilled attendance is weak, particularly in LAC where most countries have 60 percent or higher hospital birth rates, and MMRs are comparatively low (very few countries MMRs higher than 150 per 100,000 live births).

### Stillbirths and Perinatal Mortality.

Registration of stillbirths is low in all Latin American countries. Full coverage also has not yet been reached in many developing countries. Nevertheless, it is important to begin tackling this issue, particularly in countries where the vital statistics system is reasonably well developed. There are several reasons why it is important:

- Many stillbirths, particularly those that occur during childbirth, are preventable. There is little real difference between a ‘fetus’ that dies five minutes before delivery and an ‘infant’ that dies five minutes after birth. Both deaths are usually preventable.
- Interventions aimed at improving labor and delivery practices are likely to reduce stillbirths, as well as neonatal mortality, and this benefit should be recorded as evidence.

**Table 7. Comparison of WHO estimates and RAMOS results for MMR estimates**

<table>
<thead>
<tr>
<th></th>
<th>WHO</th>
<th>RAMOS</th>
</tr>
</thead>
</table>

*Note: * maternal deaths per 100,000 live births

7. A stillbirth is the death of a fetus after 20 weeks of pregnancy up to birth.
Many early neonatal deaths, particularly those that occur in the first few minutes of life, are not reported as infant deaths and instead are called stillbirths.

- Likewise there are interventions to improve women’s health prior to and during pregnancy that prevent stillbirths. These include the treatment of syphilis, infections, high blood pressure and diabetes. Stillbirths would be an important outcome measure.

Use of the perinatal mortality indicator would eliminate any biases that exist in reporting stillbirths v. early neonatal deaths (e.g. between countries, hospitals, and racial and ethnic reporting biases). It would also improve the evaluation of the impact of interventions during pregnancy and childbirth.

In countries that set a minimum gestational age for reporting of fetal deaths it is noted that the reporting is worst in the period just after the cut-off, but the reporting improves with each additional week of gestational age. So to improve stillbirth reporting in LAC, one tactic would be to set the minimum gestational age for reporting at a level some weeks below the limits for what a good reporting is expected, i.e. 20 weeks to improve reporting for 22 weeks or over.

**KEY ISSUES/OBSTACLES, CHALLENGES AND INNOVATIONS**

**Barriers toward a well functioning vital registration system**

As mentioned, establishing a well functioning vital registration system is a long-term process. All countries in Latin America and the Caribbean have vital statistics systems but progress is uneven toward the goal of achieving systems strong enough to be useful in monitoring and evaluation. Most of the vital statistics systems in Latin America have significant problems of underreporting, inaccurate cause of death classification, problems with timely flow of information and under use of the data.

**Barriers to improve coverage.**

Most common obstacles in improving coverage are related to lack of access to health services and registration offices, and cultural barriers (see Box 3 and the explanation in the following text).

The lack of awareness of the importance of registering vital events, high proportion of home deliveries and lack of access to health services are related to the high inequities present in the regions and are more prevalent among poor, rural and indigenous people. While specific investment and programs should tackle these inequities, the vital statistics system should try to implement strategies to increase its coverage among these target groups. This is the case of the cultural/language barriers. Campaigns to increase awareness of the importance of registering

---

8. WHO defines a perinatal death as a death occurring during late pregnancy (at 22 completed weeks gestation and over), during childbirth, and up to seven completed days of life.
vital events should be implemented on auxiliary registrars trained to deal with cultural/language differences.

**Box 3. More Commonly Reported Barriers To Registration**

- Lack of awareness of the population of the importance of registering vital events
- High proportion of home deliveries
- Lack of access to health services
- Cultural/language barriers
- Auxiliary registrars not trained to manage these differences
- Illegal cemeteries are common in rural areas
- Registration is not required for burial. Burials without certificates (in backyards) are more common for children and older people.
- Child not recognized by father. This could result in delays in registration or no registration of births.
- Distance to registration units/geographic barriers. The lack of registration units inside hospitals result in lost opportunities for coverage and timely registrations.
- Several requirements to register such as: witnesses and written declarations for home deliveries; marriage certificate needed to register a birth; forensic certificate needed in addition to death certificate to register a death; BCG vaccination certificate or payment of hospital bill required to register a birth; either one or both parents lacking ID/illegal immigrants.
- Birth registration fees
- Low incentives for auxiliary registrars to search for cases.
- Lack of mobile registration units/proactive search.
- Roles of the different agencies in the civil registration system are not clearly defined by the registration laws.

Legislation problems are another key factor behind these obstacles. Several requirements to register, including fees, should be avoided, as well as illegal cemeteries/ burial without certificates. The issue of children not recognized by fathers also should be considered in the legislation, introducing easy options to update information about fathers.

Other barriers are related to civil registration itself and more related to the institutional capacity of the system: distance to registration units, lack of registration units in hospitals, training needs, etc.

The effect of these barriers is not necessarily the same for the registration of births and deaths and for children and adults. For example, home delivery in developing countries is a well known risk factor for early neonatal deaths and for maternal mortality. Figures 2 and 3 show the relationship between the proportion of births attended by skilled health personnel or institutional deliveries (that when low indicate lack of access and cultural barriers) and neonatal, perinatal and maternal mortality in Mexico and Argentina.
Figure 2. Correlation between Proportion of Births Attended by Skilled Health Personnel and Perinatal and Maternal Mortality Rates in States of Mexico, 2001, 2002, 2003 and 2004

Source: Prepared based on data from Basic Health Indicators – Ministry of Health – PAHO – Mexico.

Figure 3. Correlation between Percentage of Institutional Deliveries and Neonatal and Maternal Mortality Rates in Provinces of Argentina, 2003, 2004 and 2005

Source: Prepared based on data from Basic Health Indicators – Ministry of Health – PAHO – Argentina.

Despite home delivery being a stronger risk factor for neonatal mortality, less notorious correlations in perinatal and neonatal mortality (r: -0.31 and 0.35) could be the effect of higher under registration of perinatal and neonatal deaths when they are born at home. The birth and
The death of a new baby is easier to go unobserved and consequently a complete registration of births and infant mortality is more challenging. Nevertheless, under registration of maternal deaths is still very high in several countries because of lack of registration or due to inaccurate cause of death classification that register the deaths, but not as maternal.

Obstacles to improve quality, opportunity and use of vital statistics information

The organizational structure of the vital statistics system plays a major role in the quality and opportunity of the vital statistics information and therefore on the use of vital statistics.

The vital statistics system requires interaction among the civil registration agency, the health sector and, in several cases, the national statistical institutes. In this context, where the institutions need the system for different purposes, coordination and organizational structure are critical. The system requires precise norms and simple information flow able to respond to the needs of all, and allows coordination at sub-national levels.

The level of decentralization is also a key factor. Because a quick feedback is a starting point for accurate information, when the organizational structure supports a decentralized system, a local use of the information allows and contributes to improve opportunity, but also the quality of the information.

Lack of access to health services is also related to lower quality of the vital statistics registers. Figure 4 shows that a stronger correlation than in the previous graphs can be found in the inverse relationship between percentage of institutional deliveries and the percentages of poorly defined causes of general deaths. This relationship could be showing that in those states where the proportion of institutional deliveries is lower, there are higher proportions of people who die at home without medical care, but also a lower capacity of the health services to achieve accurate diagnosis.
Figure 4. Correlation between Percentage of Institutional Deliveries and Poorly Defined Causes of Deaths in States of Brazil, 1999 and 2002

Source: Prepared based on data from Basic Health Indicators - DATASUS – Brazil.

The lack of awareness of the importance of registering vital events among health personnel is another key factor related to lack of quality of vital statistics. Birth and death certificates are filled as a bureaucratic step partially because information collected through the vital statistics system does not generate a positive feedback to those personnel. Lack of formal and continuing training on the vital statistics system is almost a standard in the region. Usually doctors learn how to fill the certificates from a colleague who learned from another colleague. In this process, misinformation undermines the quality of the system and misclassification or the use of symptoms as causes of deaths is very frequent.

A formal training program and certificate designs that promote and facilitate the accuracy of cause of death classification could result in a critical factor improving the quality of the vital statistics system.

Despite cause of death being one of the focus of the forensic medical systems, police doctors that commonly issue death certificates for those who die at home or outside a health institution do not care too much about cause of death classification. They usually focus on deciding if the death was “natural” or violent, ending in a death certificate where the cause of death is classified as “non-traumatic cardiac arrest”. Police doctors should be considered key
actors of the death register system and a specific program to train them should be designed to improve the cause of death certification when people die outside a health institution.

The non-confidentiality of vital statistics could be another factor that does not contribute to improve the quality of the system. Knowing the confidentiality of the system, the doctors will feel more comfortable including information that will not be used against them or their institution. To provide this confidentiality, some countries include two sections in the same form. “The death certificate” that requires a medical signature has a legal value, and “the statistical report” that is used to fuel the vital statistics system, possesses no legal value. (Figure 5)

Figure 5. Argentina’s Death Certificate and Statistical Report

In Argentina, the National Law 17622/68 and its decree 3110/70 state that the Statistical Report is mandatory but is not a legal declaration. The data must be considered only as a statistical description. The Statistical Report does not include identifying information like names or ID numbers. Once the Death Certificate/Statistical Report is collected at a Civil Register’s Office, it is separated and follows independent flows. A unique number to permit re-linking of the two parts could be essential in a legal investigation, for instance to determine intent in the case of violent deaths. Nevertheless physicians feel more secure and information is more accurate if no link is possible.

The local/regional use of the statistical reports is another factor that could promote better quality of information but also better quality of health services. Periodic feedback of vital
statistics information to the local or regional level would allow more timely analysis of health outcomes that could contribute to identify unexpected outcomes and failures of health services performance, and gaps and poor information of the records in the vital statistics registers.

Another critical step in the quality and use of the vital statistics system is the coding process. On one hand the system should include and use standard codes that allow the links of the vital statistics system with other demographic and economic statistical systems. On the other hand it is critical to have training for the use of specific codes like ICD-10 and the selection of the underlying cause of death, especially to avoid loss of quality in the decentralization process. NCHS’ instructions and examples of proper certification of causes of death can be accessed in:


**Technologies and innovations**

*Electronic registration – improving coverage, quality and timeliness*

Many countries in Latin America and the Caribbean, including Brazil and Colombia, are moving toward or have already implemented some aspects of electronic registration. Electronic birth and death registration systems enable birth and death certificates to be created, edited, coded, queried and corrected at the source point in electronic form; transmitted over high speed lines to a central location (either at the local or sub-national level) for processing and information management; and, finally, electronically transmitted to the national statistical office on a frequent and regular basis.

These systems shift the data entry function as close to the original record as possible, either the source data provider or the civil registrar. This approach speeds up the processing of vital event information and therefore could greatly improve queries back to the attending physician or another source to resolve inconsistencies or obtain missing information. Standardized, automated editing systems are used to continually “clean up” the data, preferably at the source, but also at the sub-national and national offices as appropriate. Changes and updates to the coded record are then transmitted to the national statistical office and entered in the data file on a continual basis.

Australia, the United Kingdom and the United States are fairly far along in the implementation of electronic registration. While birth registration in some states in the United States has had an electronic component for the past 20 years, a consistent national system is still under development. Efforts in the U.S. and elsewhere are moving forward and significant progress is expected within the next few years that other countries can learn from.

In addition to developing the electronic registration systems per se, local and sub-national civil registration offices might need to refine their data processing systems to receive and process electronic records from source providers. Similarly, the national statistical office might need to
re-engineer its systems to receive, control and process electronic data from sub-national civil registration offices. While this might be an intensive effort, it has the potential of providing staff with the capacity for online data retrieval for quality control, data tabulation, and report generation. The end result will be more timely vital statistics data at all levels of government.

**Linked files – improving quality and utilization.**

An important component of statistical processing is the creation of a linked birth-infant death file. While the linkages might be done as part of civil registration in local offices, the national statistical office should be involved in querying unlinked records, developing mechanisms to match cross-jurisdictional records, and assisting sub-national jurisdictions in obtaining information about vital events to their residents that occur outside of their jurisdiction.

In the United States, a formal arrangement called the Interstate Record Exchange Program enables states to exchange records of out-of-state occurrences with the state of residence. The exchange agreements are negotiated and administered by the National Association for Vital Records and Public Health Statistics (NAPHSIS)\(^9\) The National Center for Health Statistics (NCHS)\(^10\) supports the arrangement by periodically providing states with lists of out-of-state occurrences.

---

9. The National Association for Public Health Statistics and Information Systems (NAPHSIS) is a professional organization whose members include the vital statistics executives and other employees of state registration offices. In addition to providing the states with a common point of contact with the federal government and numerous other professional organizations, NAPHSIS facilitates inter-state exchange of ideas, methods, and technology for the registration of vital events and dissemination of vital and other public health statistics.

10. The United States vital statistics program is the responsibility of the Centers for Disease Control and Preventions' National Center for Health Statistics. CDC is an agency of the Department of Health and Human Services.
**Automation**

Many countries have automated much of the intra-office vital statistics functions, including the tracking of receipts, coding, editing, analysis and tabulation. Functions within the civil registration system, such as issuance of certified copies of records and preparation and transmission of statistical reports to the statistical office also might be automated. Computerized systems vary by country and historical development. The automation of the registration and filing processes is discussed in Electronic Birth and Death Registration Systems.

**Automated classification of cause of death – improving quality.** Classification of cause of death is a complex coding process. To address these complexities, several countries have explored or undertaken automation of the ICD classification.

Over the past 30 years, the United States has developed and refined the Mortality Medical Data System, an automated entry, classification and retrieval system for cause of death information reported on death certificates. The system’s components are ACME, TRANSAX, MICAR, and SuperMICAR. The ACME (Automated Classification of Medical Entities) program selects the underlying cause of death from the medical conditions reported on the death certificate. TRANSAX (Translation of Axes) facilitates the tabulation and use of multiple cause-of-death data by accommodating linkages of entities provided by the ICD. For example, diabetes and acidosis both stated on the record become diabetes with acidosis. MICAR (Mortality Medical Indexing, Classification and Retrieval) was designed to replace the manual coding required by ACME, allowing data entry operators to enter full text, abbreviations or reference numbers for cause-of-death terms while SuperMICAR allows the data entry operator to enter literal text as it appears on the death certificate. MICAR and SuperMICAR output are processed through the ACME program to assign the underlying cause of death. All U.S. death records are coded through this system either in the state office or at NCHS.11, 12. Because the success of this automated classification requires good quality data input, automated coding of causes of death is an activity that is best left until the quality of death certification reaches an acceptable level.

The World Health Organization’s Collaborating Centers for the Classification of Diseases have recognized that the ACME decision tables are the de-facto standard for the automated classification of the underlying cause of death in ICD-10. In addition, Eurostat, the Statistical Office of the European Union, has recommended that its members adopt ACME by 2005. In 2003, about 17 countries were using all or part of the Mortality Medical Data System to code cause of death. The dictionary has been translated into several languages and the program has been adapted for use in Catalonian, French, Italian, and Spanish. In addition, several countries, notably Sweden and Brazil, use their own versions of SuperMICAR and then use either ACME or the ACME decision tables to obtain the underlying cause of death.

---

11. The ten WHO Collaborating Centers for the Classification of Diseases were established “to assist users with problems encountered in the development of health-related classifications and in particular the use of the ICD.” The Centers meet annually to discuss matters of mutual interest and to advise WHO on the development, implementation, use, and revision of health-related classifications.
PART III – RECOMMENDATIONS AND CONCLUSIONS

Every country needs a strong vital statistics system to meet its needs for basic information about its population’s demographic and public health characteristics, family formation and fertility, infant mortality, leading causes of death and the like. Every country needs to be able to pinpoint health problems as they emerge and monitor health inequities in subgroups of the population.

Over time, as vital statistics improve, they will replace surveys in Latin America as the most important source of fundamental data for public health and other uses. Surveys will continue to be needed but they will increasingly focus on risk factors for chronic diseases and injuries. Vital statistics, when once reliable and disseminated in a timely way, will be regularly used by government policy and program staff, researchers, businesses and the media.

This report recommends that countries consider carrying out a thorough assessment of their vital statistics system in order to develop plans for strengthening the system over the short to medium term. For those countries with relatively high coverage of birth and death registration, they could consider assessing their current systems in order to map at how to improve data quality, uniformity and timely release of data. For countries still facing the challenge of increasing coverage, investments will likely have to first focus on coverage.

There are broad areas that all country assessments should cover and corresponding actions in each area. These include reviewing and developing recommendations around staffing, equipment, facilities and supply requirements, communication linkages, outreach to local civil registrars and data providers, training programs, public education and outreach, links with international collaborative efforts in vital statistics, and performance monitoring studies (see Box 4). But as a first step, a review of the broad institutional responsibilities/coordination for vital statistics is in order for several countries. In some countries, better bridges need to be built between the state registrars and the health system. Responsibilities of the National Statistical Institute, the Ministry of Health and other agencies when they are part of the system (Ministry of Interior, Ministry of Justice, etc) need to be clarified and in some countries between the states and national government.
Box 4. General Recommendations

1. Review/revision of registration laws supported by the creation of a national coordinating committee and high-level political support for CR/VS systems

2. Review staffing requirements, equipment, supplies and facilities for vital statistics national and sub-national offices. Develop action plan to address problems found.

3. Review communications linkages between sub-national and local civil registrars to ensure appropriate linkages and frequent, regular communication.

4. Assess whether there is sufficient outreach to local registrars and data providers from field staff to pursue training problem solving, and to encourage good registration and data collection practices.

5. Review training programs, if they exist, and develop and implement plans to ensure an adequate training package of courses, seminars and instructional materials for sub-national and local registrars, nosologists, and medical coders, data providers, statisticians, etc.

6. Evaluate current public education and outreach directed at the general public, professional institutions and other government agencies on the importance of registering vital events and the uses of vital statistics and develop and implement strengthened outreach, if appropriate.

7. Review how the national vital statistics system is linked to international activities to address issues of mutual concern and how the system might take better advantage of international collaborative efforts (much can be done at low cost with email and the internet).

8. Consider how performance monitoring studies (surveys and special studies to track relative improvement and identify problem areas in civil registration and statistics) might be useful to the country’s vital statistics system.

9. Evaluate institutional responsibilities at the national level. What roles do the Ministry of Health and the National Statistics Institute play in the collection, monitoring, quality review, compilation of data and release of information? If relevant, what roles do the states play versus the national level? What problems are occurring in coordinating across institutions? What can be learned from the institutional arrangements in countries with well-functioning systems?

10. Increase visibility of the importance of vital statistics by establishing regional indicators and targets for improvement. Suggested targets include: i) 100 percent coverage of birth and death registration by 2010; ii) electronic birth reporting from hospitals by 2015; iii) inadequate cause of death < 1 percent by 2015; and iv) all countries report annual infant and maternal mortality before the year is completed.

11. Use perinatal mortality (not just infant or neonatal) as an important indicator of population health.
Some countries in Latin America face significant problems across coverage of births, infant and fetal deaths, maternal deaths, and other deaths. But even countries with good birth and death coverage in general face problems with coverage of fetal and maternal deaths. Many countries in Latin America are implementing measures to improve coverage, such as establishing civil registry units in maternity hospitals and eliminating fees for vital registration. A list of specific steps such as these that countries might consider is listed in Table 8.

<table>
<thead>
<tr>
<th>Recommendations to Improve Coverage</th>
<th>Applicable to:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Births</td>
</tr>
<tr>
<td>Eliminate fees for vital registration</td>
<td>√</td>
</tr>
<tr>
<td>Regularize and professionalize the role of the civil registrar, including training of registration staff</td>
<td>√</td>
</tr>
<tr>
<td>Make the public aware of the benefits of registering events on time. Consider educational campaigns in areas with poor coverage, emphasizing fees charged only if event registered late</td>
<td>√</td>
</tr>
<tr>
<td>Require birth/death certificates for a variety of government services (education, work permits, etc.)</td>
<td>√</td>
</tr>
<tr>
<td>Include Civil Registry offices in Maternity Hospitals for births and all hospitals for deaths</td>
<td>√</td>
</tr>
<tr>
<td>Consider mobile civil registration units for remote and isolated areas</td>
<td>√</td>
</tr>
<tr>
<td>Eliminate any requirement to pay hospital bill before birth can be registered</td>
<td>√</td>
</tr>
<tr>
<td>If access to civil registry offices is limited, consider expanding the pool of officials who perform civil registration functions (for example, health workers, funeral directors, etc.)</td>
<td>√</td>
</tr>
<tr>
<td>Remove barriers such as need for BCG vaccination certificate or payment of hospital fees before births can be registered</td>
<td>√</td>
</tr>
<tr>
<td>Consider incentives, such as payments per birth registered, to maternity hospitals, or small gift to parents</td>
<td>√</td>
</tr>
<tr>
<td>Active follow-up of obstetric admissions to hospitals to determine whether all births, early infant deaths and fetal deaths are registered</td>
<td>√</td>
</tr>
<tr>
<td>Carry out education campaign to address under-registration of infant deaths and stillbirths that occur in hospital, targeting hospital personnel responsible for filing reports</td>
<td>√</td>
</tr>
<tr>
<td>Improve statistics on violent deaths by encouraging registrars to develop relationships with coroners to expedite processing</td>
<td>√</td>
</tr>
<tr>
<td>Consider routinely examining all deaths to women in their reproductive years to determine if maternal deaths are being classified to other causes</td>
<td>√</td>
</tr>
<tr>
<td>Match death certificates with birth and fetal death records to determine if the woman was pregnant during the period immediately preceding her death</td>
<td>√</td>
</tr>
</tbody>
</table>
As countries improve coverage, they can simultaneously support measures to improve data quality. Several countries in Latin America need to standardize forms across subunits of the country and standardize forms by type of vital event. All countries need to support training of medical certifiers and coders to improve cause of death reporting and accuracy of coding (Table 9).

| Table 9. Recommendations to Improve Data Quality |
|-----------------------------------------------|---------------------------------|-----------------|-----------------|-----------------|
|                                                                                     | Births | Infant and Fetal Deaths | Maternal Deaths | Other deaths |
| Improve access to health services to improve quality of information                  | ✓      | ✓                  | ✓               | ✓               |
| Where variation in forms exists across subunits of the country, standardize forms by type of vital event | ✓      | ✓                  | ✓               | ✓               |
| Support training of medical certifiers in cause of death, with particular attention to infant, fetal and maternal death | ✓      | ✓                  | ✓               | ✓               |
| Involve in this training any non-medical staff that usually perform certificates on non hospital deaths (e.g. police) | ✓      | ✓                  | ✓               | ✓               |
| Support training programs for medical coders                                        | ✓      | ✓                  | ✓               | ✓               |
| Adhere to international standards specified in the ICD such as event definitions, format of the death certificate, use of the nomenclature and coding rules, selection of the underlying cause, tabulations, etc. | ✓      | ✓                  | ✓               | ✓               |
| Improve the coordination/cooperation between the national statistical institute and the ministry of health | ✓      | ✓                  | ✓               | ✓               |
| For countries with relatively complete death registration, improve accuracy of reporting of underlying causes of death and minimize use of “catch-all” categories through evaluation of coding practices and actions to address problems identified | ✓      | ✓                  | ✓               | ✓               |
| For these countries, decentralized centers should implement algorithms to identify frequent errors and misclassifications requesting additional information from the health centers | ✓      | ✓                  | ✓               | ✓               |
| Use of automated classification of cause of death                                     | ✓      | ✓                  | ✓               | ✓               |
| These decentralized centers could periodically provide to local and regional health centers copies of the specific groups of certificates (i.e. infant deaths and deaths of women ranging in age from 15 to 45) to perform reviews, including deaths that did not occur in the hospitals | ✓      | ✓                  | ✓               | ✓               |
There are many steps between a vital event and its inclusion in the nation’s vital statistics and its release to the public. Timeliness of data depends on how quickly events are registered, processed, and forwarded to the statistical agency, how quickly data is processed and transmitted from sub-national to national statistical offices, and how quickly data is processed, checked and compiled at the national level. Any reporting area can delay the national file. The system in other words is as good as its weakest jurisdiction. Table 10 recommends setting 12 months as an appropriate timetable for release of data following the end of year, and also recommends assessing where delays are occurring to develop actions to reduce delays.

**Table 10. Recommendations to Improve Timeliness**

<table>
<thead>
<tr>
<th><strong>Most Appropriate for:</strong></th>
<th>Countries with the most advanced systems</th>
<th>Countries with moderate systems</th>
<th>Countries with weak systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set goal for the public release of a complete and accurate national data file within 12 months of the end of the year</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assess where delays are occurring: registration, processing and reporting to the statistical agency and develop action plans to address</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Increase electronic reporting</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Identify incentives for reporting in a timely manner (e.g. small gift to parents who register birth less than one month after it occurred)</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

31
REFERENCES


http://www.cdc.gov/nchs/data/nvsr/nvsr52/nvsr52_03.pdf


http://www.cdc.gov/nchs/data/misc/itop97.pdf


http://www.cdc.gov/nchs/data/misc/mvsact92b.pdf


National Center for Health Statistics website. About the Mortality Medical Data System.

http://www.cdc.gov/nchs/about/major/dvs/about.htm

National Center for Health Statistics Website. Matched Multiple Birth Data Set:
http://www.cdc.gov/nchs/r&d/rdc_twin.htm


www.wws.princeton.edu/~ota/ns20/alpha_f.html


www.who.int/whosis/icd10/collabor.htm


www.who.int/healthmetrics/library/issue_4_05apr.doc


www.who.int/whosis/icd10/implemen.htm


ANNEX 1. DEFINITIONS OF VITAL EVENTS

Live Birth is the complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of pregnancy who, after such separation, breathes or shows any other evidence of life such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles, whether or not the umbilical cord has been cut or the placenta is attached; each product of such a birth is considered live-born.

Fetal death is the death prior to the complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of pregnancy. The death is indicated by the fact that after such separation the fetus does not breathe or show any other evidence of life, such as beating of the heart, pulsation of the umbilical cord or definite movement of voluntary muscles.

Death is the permanent disappearance of all evidence of life at any time after live birth has taken place (post-natal cessation of vital functions without capability of resuscitation).

Marriage is the act, ceremony or process by which the legal relationship of husband and wife is constituted. The legality of the union might be established by civil, religious or other means as recognized by the laws of each country.

Divorce is the final dissolution of a marriage; that is, the separation of husband and wife and the end of the pact conferred on the parties. These parties are eligible to re-marriage under civil, religious and/or other provisions according to the laws of each country.
ANNEX 2. ORGANIZATION OF THE NATIONAL VITAL STATISTICS SYSTEMS

Civil Registration

The records that form the basis for vital statistics systems are collected through civil registration. The United Nations defines civil registration as “the continuous, permanent, compulsory recording of the occurrence and characteristics of vital events... provided through decree or regulation in accordance with the legal requirements of each country.” Since the civil registration system is a census, not a sample survey, it forms the basis for a statistical system that can provide national, regional, and local data.

Legal basis. The registration of vital events is stipulated by law. The statutes should define the types of events to be registered, designate informants for each type of event, the timeframes for registration, and processes for late registration, the registrar’s duties, rights and obligations for registration, penalties, and so forth. (See Annexes 1 and 2 for vital event definitions and recommended informants for each type of event.)

Organizational structure. Depending on a country’s structures and traditions, the national system may be administered centrally (as in Chile and Costa Rica) with a national agency responsible for directing, coordinating, and monitoring the nationwide civil registration effort. Alternatively, the administrative authorities may be decentralized (as in Argentina, Brazil and Mexico), with functions delegated to the states or provinces. The national statistical institutes are almost always the institution in charge of the Vital Statistics System. One exception is Bolivia. The National Statistics Institute of Bolivia stopped carrying out this function in 1982; the vital statistics system is now the responsibility of the Ministry of Health. Note that Bolivia and Honduras are the only countries in Latin America and the Caribbean that do not report on vital statistics to WHO.

In many cases coordination between the Ministry of Health and the National Institute of Statistics is close. In others, a major challenge is to improve coordination and eliminate duplication. In the Federal District of Mexico, for example, both the National Statistics Institute and the Secretariat of Health independently collect vital statistics. Functions of a national coordinating office for civil registration are summarized in Box 5.
Box 5. Functions of National Coordinating Office

The national office that is responsible for coordination of vital statistics ideally carries out the following functions:

- establishes and maintains an inter-agency coordination committee to address issues related to the production and improvement of vital and health statistics;
- promotes and ensures the use of uniform data collection instruments throughout the country (in countries with decentralized civil registration systems, this is typically accomplished through the use of nationally promulgated Standard Certificates and Reports.)
- develops uniform legislation and regulations to govern all aspects of the system (in a decentralized system, this is promoted through model legislation.)
- promotes interaction and cooperation among jurisdictions and agencies through the use of tools such as workshops, conference, newsletters, and field consultants or liaison officers.

Reporting Forms, reporting and statistical processing. The United Nations provides a recommended list of items that should be reported on vital events forms (see Annex 3). The intricacies of classifying, tabulating, and analyzing cause of death merit special mention. Causes of death are classified for purposes of statistical tabulation according to the International Classification of Diseases (ICD) published by the World Health Organization (WHO). To date, there have been eleven editions of the ICD, the most recent being the tenth revision (ICD-10), published in 1992. In the period since its publication, many countries have implemented (ICD-10) for mortality, including Brazil, Columbia, Costa Rica, and Venezuela in 1996.

Vital statistics may be transmitted to the central office as original reports, paper copies, on microfilm or magnetic media, or electronically. More countries are moving toward transmitting individual statistical records from the source (e.g., hospital where the event occurred) or from the local registrar to the subnational and national vital statistics offices through on-line computer systems. The processing of vital statistics data includes mechanisms to track the receipt and movement of records through the system; editing to evaluate the completeness and accuracy of the records; querying of records with missing or incomplete items; coding; imputation of missing or inconsistent items as appropriate; quality control of the process; tabulation and analysis; and data dissemination.

Tabulations and analyses and release of public use data files. A strong analytic program is an important component of the vital statistics system. The United Nations has published a list of recommended annual tabulations and table formats. The timely release of public use data files, made available to researchers and analysts, can be powerful tools for program planning, epidemiologic research, surveillance, and a variety of other uses. These electronic files, which can be released on magnetic media or over the Internet, may be unit-record or summary files. The unit-record files contain a record for each event, with some variables collapsed or suppressed to maintain confidentiality. The major files available from countries with a developed vital statistics system include births, mortality, marriage, divorce,
fetal death, and a file of linked births and infant deaths (fetal deaths may also be included to create a perinatal file).

Annex Table 1. Legal and Organizational Features of the National Vital Statistics Systems

<table>
<thead>
<tr>
<th>Country</th>
<th>Year Law Enacted</th>
<th>Civil Registrar Status</th>
<th>Vital Statistics Coordination Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina</td>
<td>1963</td>
<td>503 civil registrars.</td>
<td>National Statistics Institute</td>
</tr>
<tr>
<td>Bolivia</td>
<td>1976</td>
<td>2500 civil registry offices throughout country. Officials are unpaid. Also birth registry offices in public maternal-infant hospitals.</td>
<td>SNIS Sistema Nacional de Informacion en Salud—[check that this is under Ministry of Health] (INE program of vital statistics stopped in 1982)</td>
</tr>
<tr>
<td>Brazil</td>
<td>1973, 1975</td>
<td>Civil registration notary can be public or private.</td>
<td>Each state coordinates civil registration. No national coordinating institution.</td>
</tr>
<tr>
<td>Colombia</td>
<td>1970</td>
<td>1098 civil registry offices.</td>
<td>National Statistics Institute</td>
</tr>
<tr>
<td>Dominican Republic</td>
<td>1944</td>
<td>395 civil registrars</td>
<td>National Statistics Institute</td>
</tr>
<tr>
<td>Ecuador</td>
<td></td>
<td>241 civil registry offices.</td>
<td>National Statistics Institute</td>
</tr>
<tr>
<td>El Salvador</td>
<td>1995</td>
<td>262 civil registrars</td>
<td>National Statistics Institute</td>
</tr>
<tr>
<td>Guatemala</td>
<td>1984</td>
<td>334 civil registrars.</td>
<td>National Statistics Institute</td>
</tr>
<tr>
<td>Honduras</td>
<td>2000</td>
<td>323 civil registrars</td>
<td>National Statistics Institute</td>
</tr>
<tr>
<td>Mexico (DF)</td>
<td></td>
<td>511 civil registrars in the Federal District</td>
<td>Both the National Statistics Institute and the Secretariat of Health of the Federal District independently collect vital events</td>
</tr>
<tr>
<td>Nicaragua</td>
<td>1998</td>
<td>300 civil registrars</td>
<td>Ministry of Health</td>
</tr>
<tr>
<td>Panama</td>
<td>1960</td>
<td>316 civil registrars</td>
<td>National Statistics Institute</td>
</tr>
<tr>
<td>Paraguay</td>
<td>1987</td>
<td>461 civil registry offices. Majority of officials are unpaid.</td>
<td>Ministry of Health</td>
</tr>
<tr>
<td>Uruguay</td>
<td>1879, 1842, 1976, 1979</td>
<td>165 civil registry offices, including 6 units in the main maternal-infant hospitals. Paid civil servants.</td>
<td>National Institute of Statistics</td>
</tr>
<tr>
<td>Venezuela</td>
<td>1982</td>
<td>1076 civil registry offices. Registration offices are being put in every hospital unit.</td>
<td>National Statistics Institute</td>
</tr>
</tbody>
</table>

**The Civil Registration Process**

Regardless of whether the national system is centralized or decentralized, local civil registration units usually carry out the day-to-day work of recording vital events. The size of a local registration area is often defined by political boundaries. Despite the fact that civil registration is a legal obligation, if the registration process is perceived to be burdensome, coverage may suffer. Perceived “burdens” that may affect coverage include the location of local registration offices and the hours of operation. In some countries in Latin America, civil registrars are paid civil servants and the registry of vital events is free (Chile). In others, such as
Bolivia and Paraguay, civil registrars are not paid public officials, so their income is derived from the fees that they charge for services—whether or not fees are “permitted”. These fees can form another barrier to registration.

In most countries, the obligation to register a vital event rests with the individual or family. When a vital event occurs, the informant designated in law contacts the appropriate local registrar’s office to request the registration of the event. The informant provides the local registrar with identification and documentation to prove that the vital event has actually taken place. The registration document is then prepared, checked for completeness and accuracy, and signed by both the informant and the registrar.

The time frame for reporting the event to the civil registrar is specified in law. All countries have provisions for late or delayed registration to accommodate the registration of those events that were not registered within the required time period. In many countries in Latin America and the Caribbean, fines are imposed for late registration. Unfortunately, registrations that are seriously delayed may not be registered in time to be included in the statistical file.

The vital registration record/the statistical report. Every event registered through the civil registration process results in two important documents or electronic records: a vital registration record and a statistical report. In some countries the two are combined into a single document. A vital registration record details information on the characteristics of a vital event and the persons related to that event. The statistical report may include more information than is provided on the registration record (e.g., race). Many countries guarantee the confidentiality of the statistical items, but not necessarily that of the legal information on the vital registration record.

Other aspects of civil registration. There are several other legal functions of the civil registration process which, while not entirely relevant to the production of vital statistics, are important in their own right. These include correcting and amending records, sealing records at the request of a court, creating new records in the case of adoptions, maintaining a secure records archive, preserving and filing records in a manner that facilitates efficient retrieval, and processing requests for copies of records. Information on these processes is published elsewhere.

Civil registration systems need adequate resources to support all required functions, including those not directly related to current registration. If the entire civil registration system is not adequately funded, resources will typically be routed to the areas that have the most public impact, such as the certified copy and amendment processes. Thus, in times of limited resources the current registration and data quality functions so important to vital statistics are the areas that usually suffer.

---

12. Delayed registrations are events not registered within a period stated in law (typically within one year of the event). The process for registering these events is usually different from that for registering current events. In many countries the informant must petition the courts and present evidence of the event’s occurrence. The event is registered on a special form marked “delayed”.

39
ANNEX 3. PREFERRED INFORMANTS FOR VITAL EVENTS

The United Nations recommends the following individuals, in order of preference, as informants for the reporting of vital events:

<table>
<thead>
<tr>
<th></th>
<th>1. The mother</th>
</tr>
</thead>
<tbody>
<tr>
<td>Live Birth, Fetal Death, and Infant Death</td>
<td>2. The father</td>
</tr>
<tr>
<td></td>
<td>3. The nearest relative of the mother</td>
</tr>
<tr>
<td>Death of an adult person:</td>
<td>The nearest relative (e.g., the surviving spouse/partner, a brother, a sister, the father/mother of the decedent.)</td>
</tr>
<tr>
<td>Marriage:</td>
<td>The bride and the bridegroom</td>
</tr>
<tr>
<td>Divorce:</td>
<td>1. Either one of the parties</td>
</tr>
<tr>
<td></td>
<td>2. The petitioner to divorce</td>
</tr>
</tbody>
</table>

The informant’s function is declaration of the fact of birth, fetal death, or death. There is a supplementary medical certification of live birth or cause of fetal death or death that is also required, which falls to the attending physician or coroner. Depending on the country, the medical certification may be a supplementary statistical report and may not become part of the civil registration.

The medical certifier may fill out the medical documentation and provide it to the informant to take to the registrar – or the medical documentation may be sent directly to the registrar, depending on statute.

NOTE: in the United States, Canada, and several other countries, while the informant for personal information may that recommended by the United Nations responsibility for filing the report with the civil registrar rests with the service provider rather than the informant. Birth registration is the direct responsibility of the hospital of birth or the attendant at the birth (generally a physician or midwife.) In the absence of an attendant, the parents of the child are responsible for registering the birth. While procedures vary from hospital to hospital, usually the personal information is obtained from the mother; medical information may be obtained from the chart or from a worksheet filled out by the birth attendant.

Death registration is the direct responsibility of the funeral director or person acting as such. The funeral director obtains the data required, other than the cause of death, from the decedent’s family or other informant. The attending physician provides the cause and manner of death. If no physician was in attendance or if the death was due to other than natural causes, the medical examiner or coroner will investigate the death and provide the cause and manner.

ANNEX 4. RECOMMENDED CONTENT OF STATISTICAL BIRTH, DEATH AND FETAL DEATH RECORDS

Live Birth:

Characteristics of the event
* Attendant at birth
* Date of occurrence
* Date of registration
* Hospitalization
* Place of occurrence
* Type of birth (i.e., single, multiple)

Characteristics of the child
* Gestational age
* Legitimacy status
* Sex
* Weight at birth

Characteristics of the parents
* Age (or date of birth) of father
* Age (or date of birth) of mother
* Citizenship (nationality) of mother, father
* Date (or duration) of marriage (for legitimate births)
* Duration of residence in usual (present) residence for mother, father
* Educational attainment of mother, father
* Ethnic (or national) group of mother, father
* Interval since last live birth for mother
* Literacy status of mother, father
* Number of children born alive to mother
* Number of children of this mother still living
* Number of fetal deaths to this mother
* Occupation of mother, father
* Place of birth of mother, father
* Place of residence at a specified date; mother, father
* Place of usual residence of mother
* Place of usual residence of father
* Type of activity of mother, father

Death:

Characteristics of the event
* Attendant at birth (for deaths under one year of age)
* Cause of death
* Certifier
* Date of occurrence
* Date of registration
* Hospitalization
* Place of occurrence

Characteristics of the deceased
* Age (or date of birth)
* Age of surviving spouse (for married)
* Citizenship (or nationality)
* Duration (or date of marriage)
* Educational attainment
* Ethnic (or national) group
* Legitimacy status (if deceased under one year of age)
* Literary status
* Marital status
* Number of children born alive (for females of child-bearing age or older)
* Number of children still living (for females of child-bearing age or older)
* Occupation
* Place of birth
* Place of residence at a specific past date
* place of usual residence
* Sex
* Type of activity
* Was birth registered (for deaths under one year of age)
**Fetal Death:**

**Characteristics of the event**
- Attendant at birth
- Cause of fetal death
- Certifier
- * Date of occurrence (of fetal delivery)
- * Date of registration
- Hospitalization
- * Place of occurrence
- * Type of birth (single or multiple)

**Characteristics of the fetus**
- * Gestational age
- * Legitimacy
- * Sex
- Weight at delivery

**Characteristics of the parents**
- Age (or date of birth) of father
- * Age (or date of birth) of mother
- Citizenship (or nationality) of mother, father
- * Duration (or date) of marriage (for legitimate pregnancies)
- Educational attainment of mother, father
- Ethnic (and/or national) group of mother, father
- Literacy status of mother, father
- Occupation of mother, father
- * Number of children born alive to this mother
- * Number of previous fetal deaths to this mother
- Place of birth of mother, father
- Place of usual residence of mother, father
- Type of activity of mother, father

Annex 5. Evaluation of Coverage of Vital Events

An ongoing evaluation of the registration process at the national, subnational, and local levels should be an integral part of the civil registration/vital statistics process. Much of this can be done as part of the overall records control system (ensuring that the records are being received in the statistical office at the expected rate). In countries with a long history of complete (close to 100 percent) registration, this may be all that is needed. However, in countries that are still striving for complete registration, or where completeness is a new phenomena, independent evaluations should also be pursued.

Direct methods of evaluation: The direct method of evaluating registration completeness involves matching registration records with records from an independent source. After matching, the unmatched records in the independent source are examined to determine the extent of under-reporting and the characteristics of the missing records.

These methods will generally produce accurate estimates of registration completeness if the comparison source is independent of the civil registration system, reflects the full spectrum of the event, and the matching criteria is appropriate to the data sources. The methodology can be applied at either the national or local level. The main drawback of the direct method is its cost.

The choice of an independent source is an important component of the evaluation. If a special study is under consideration, it may be appropriate to include multiple sources. Some examples of extant files that can be matched with vital statistics files to evaluate registration completeness are:

Other civil registration records – matched files of births and infant deaths can be used to evaluate the completeness of birth registration for infant deaths. Although this evaluation is limited to only a portion of the birth file, it is a useful measure since it provides information on events that are highly likely to remain unregistered. (It should be noted that early infant deaths are also likely to be under-reported). Birth and infant death matching has important analytical implications as well and should be pursued on an ongoing basis. (See “Matching Births and Deaths” in National Vital Statistics Systems - an Overview.)

Administrative and social records – Birth and death records can be matched against a variety of other lists, such as school enrollments, hospital records, baptism and burial records. While none of these are complete sources of all births and deaths, each set can help to detect underreporting of certain types of events. Because of their selectivity, however, matching based on any one of these lists should not be used to estimate the overall level of registration completeness.

14. Since these studies are expensive and time-consuming, they are typically not repeated once a reliable registration rate has been achieved. The most recent test of birth registration completeness in the United States was conducted in 1964-1968. The study examined coverage by place of delivery (in or out of hospital) and race. It estimated that 99 percent of all births occurring in the United States were registered, including 99.5 percent of white births and 98.6 percent of all other births.30
Realistically, this type of matching cannot be done routinely. It should be done as a special study or periodic evaluation.

Population censuses and surveys – Data from population censuses and surveys can be used to compile lists of live births or deaths to use in the evaluation of registration completeness. Matching these lists with vital events files can provide an estimate of under-registration, errors in registration, etc. The matching may be done for the entire file or a sample, at either the national or local levels.

**Indirect evaluation methods**: Indirect evaluation of registration completeness involves examination of statistics from the vital statistics files and other sources to obtain an estimate of coverage. Some examples are:

**Comparison of trends** – the total number of events registered can be compared with the number registered in a previous time period (e.g., comparing the current year with the previous year). In most cases the total number of events in a population will not vary greatly. (This technique may be problematic if the population is undergoing rapid change in size or characteristics resulting from events such as migration, war, epidemics, etc.) Because vital events have a seasonal pattern, the comparison time period should have similar seasonality.

**Delayed registrations** – The proportion of total registrations that are delayed provides an estimate of under-reporting in previous years. Monitoring the extent of delayed registrations over time will provide a rough estimate of whether the registration system is improving or deteriorating.

**Sex ratios at birth** – For large population groups, an examination of sex ratios at birth may be used to assess the completeness of birth registration. A sex ratio of about 105 male births per 100 female births indicates either a reasonable level of registration, or a problem that is not sex-specific. A lower sex ratio may be an indication of the under-registration of male infants who died shortly after birth.

**Comparisons with Census data** – comparing the number of children under one year of age enumerated in the census with the number of live births minus the number of infant deaths in the 12 months preceding the census can be used to assess the completeness of birth registration. This is only a rough estimate since the difference may be due to either under-registration or errors in the census. The problems of infant under-enumeration and age misstatement in censuses are of particular concern in developing countries.

**Comparisons with other sources** – there are other sources of data that can provide an indication of the quality of vital statistics data. In the violent death example cited above, comparisons of the number of homicides reported in the local newspapers with those reported through the vital statistics system could provide a rough estimate of the scope of the late registration of violent events.
Civil registration records are the best source of vital statistics data. Countries with deficient civil registration systems must work with the Civil Registration authority to continuously improve the system so that it ultimately will provide complete coverage of timely, accurate statistics. In those countries where the civil registration system lacks complete coverage in certain geo-political areas, or where quality and timeliness issues create major deficiencies, there may be a need for an interim system to supplement or supplant all or part of the civil registration system. Two other principal data collection methods are generally used to provide data for estimating vital rates in these situations: population censuses and household sample surveys. While these sources are not optimal, they can be used for a limited period of time to supplement civil registration data.

**Population Censuses.**

The goal of a population census is to enumerate all individuals living in a geo-political area at a given time and on a given date. Thus, it provides an estimate of the population at risk and denominators to estimate birth- and death-rates, etc. However, when coverage in the civil registration system is not complete, the population census can be used to “fill in the blanks” if specific questions are included on the census to gather information on fertility and mortality.

Typically, the questions address the number of live births and/or deaths that occurred among household members during the 12 months preceding the interview. When questions on the decedent’s age at death, and/or the cause of death, are added, the resultant information can be used to estimate age-specific and/or cause-specific mortality rates.

The strength of using census data to supplement civil registration data is that the information is available by sex, age, and residence for all geographical subdivisions of the country. There are significant limitations, however. First, the detail gathered on the census will typically not be as great as is possible through civil registration. In addition, as with other retrospective surveys, there may be errors caused by memory lapses and proxy respondents. Also, since a census is a costly operation, it is taken periodically, typically at about 10-year intervals. Consequently, in non-census years, indirect estimation techniques must be used to provide the supplemental vital statistics estimates.

---

**Household Sample Surveys.**

Household surveys have been used in developing countries for the past 50 years to collect data to estimate vital statistics rates and related statistics. In addition to single wave surveys, prospective surveys have been undertaken by a number of countries to better assess fertility and mortality patterns and factors affecting population growth. The methodologies applicable to these surveys have been published elsewhere.

The sample size, and hence the cost of a survey to provide detailed statistics at all geopolitical levels can be significant. In addition, “the experience with retrospective surveys... in obtaining complete counts of vital events has not been encouraging, for instance, the estimated median percentage of births covered in seven Asian population growth estimation studies involving single-round surveys, was 67 percent, and the range was 28 to 96 percent... the median percentage of deaths covered was 51 percent and range was 23 to 90 percent.”

**Dual records Approach.**

A refinement of the household survey method is the dual records approach. In this approach, data on vital events in a defined area are obtained from two independent data collection systems, a household survey and a separate reporting method. The separate method may be the Census, the civil registration system, or another method.

Every record recorded by either system is counted as an event. The records are then matched and the duplicates eliminated. Therefore, the quality of the matching process is critical. This, (plus the cost, which can be great), is the biggest drawback to the dual records approach. If the matching criteria are too rigid, real matches may be thrown out resulting in an overcount of events. If the criteria are too loose, false matches will be accepted, resulting in an undercount. Several countries have used the dual records system successfully, notably India, which has been operating a dual records system on a continuous basis since 1970.

**Indirect Estimation Techniques.**

The constraints of using population censuses and household surveys to estimate vital statistics rates have led to the development of indirect estimation techniques, using mathematical models to derive vital statistics rates from censuses and surveys. The United Nations has published a manual on indirect estimation techniques.

The advantage of indirect estimation is that estimates can be produced easily once the required demographic data are available from censuses or surveys. However, the survey costs may be a draw-back, since the sample size required to produce subnational estimates may be large.

In summary, there is no “best” approach that a country with deficient civil
registration should use to obtain vital statistics estimates. Indirect estimates and estimates from surveys and censuses are valuable, but are not a substitute for continuous vital statistics. These techniques may be the only methods available at a point in time for generating vital rates in the absence of reliable civil registration data; however, they should be regarded as temporary measures to be used while the civil registration system is brought up to standard. They should not be relied on as permanent solutions.
Annex 7. Country Fact Sheets

Civil Registration and Vital Statistics in Argentina

Key Summary Indicators

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total population</td>
<td>38,371,528 (2004)</td>
</tr>
<tr>
<td>Administrative division</td>
<td>23 provinces and a District Capital</td>
</tr>
<tr>
<td>GDP per capita</td>
<td>7483 (const. US$2000)</td>
</tr>
<tr>
<td>Adult literacy rate</td>
<td>97%</td>
</tr>
<tr>
<td>TFR</td>
<td>2.31</td>
</tr>
<tr>
<td>IMR (1,000 births)</td>
<td>16.2</td>
</tr>
<tr>
<td>MMR (100,000 births)</td>
<td>43.6</td>
</tr>
<tr>
<td>Number of primary civil register offices</td>
<td>2,681</td>
</tr>
<tr>
<td>% of births registered</td>
<td>98</td>
</tr>
<tr>
<td>% of deliveries by registered skilled attendant</td>
<td>99</td>
</tr>
<tr>
<td>% of deaths registered</td>
<td>96</td>
</tr>
<tr>
<td>% of deaths registered certified by a physician</td>
<td>99</td>
</tr>
</tbody>
</table>

Situation Analysis

Civil Registration

- Mandatory birth & death registration;
- Done by the family (hospitals/local offices);
- Mobile units operate regularly to catch those population lacking a local registry office;
- Registration fees and late-registration fees vary across provinces;
- Birth should be registered within 40 days and deaths within 48 hrs;
- Fetal deaths should be registered;
- Social benefits associated to registration;

Data Coverage

- High coverage of vital events;
- No data on under-reporting for infant/maternal mortality; it is assumed to be important;
- No data on sub-registry of births

Barriers to registration

- Registration fees although there are exemption for those who can not afford them;

Other Sources of Vital Statistics

- Last Population Census in 2000

Data Quality and Timeliness

- Problems with cause of death certified by physicians;
- Around two-year delay on publicizing data;
- No data on poorly defined deaths
- No data on quality/timeliness of statistics;
- No areas/sub-populations identified with greater proportion of under-reporting
Registration Process and Use of Vital Statistics

Organizational Structure
Centrally administered; vital events are recorded regionally in the local offices of the Civil Registry dependent of the Provincial Civil Registry Offices (25 in total, one per province with the exception of the province of Cordoba which has two). There is in general one unit of registry per municipality. Data is collected by civil registrar. Provinces perform their civil registry duties independently and with scarce communication among them.

While the National Institute of Statistics (Instituto Nacional de Estadísticas y Censos, INDEC) is responsible for the national statistics system, since 1977, the Ministry of Public Health has the responsibility of the production of vital statistics. The Vital Statistics System belongs to the National Health Statistics Program (Programa Nacional de Estadísticas de Salud, PNES)

Reporting and Statistical Process
- Coding of death and birth statistical reports take place at the vital statistics provincial offices (VSPO);
- ICD X is used for cause of death since 1997;
- Software in place to detect inconsistencies at data entry.
- The certificates are sent monthly to the provincial level
- At the VSPOs the information is entered electronically and sent annually to the national level

Data Analysis and Utilization
- The Ministry of Health elaborate the reports on Vital Statistics;
- System in place to monitor quality or timeliness of vital statistics
- The VSPOs analyzed the information at provincial level.

Use of technology for data analysis
- The system is partially automatize. The information is not linked with other systems. Databases are not available in the Web

Innovative use of vital statistics
- Some provinces have developed, infant and maternal mortality surveillance systems that are linked with the Vital statistics system
- Some provinces implemented systematic reviews of the certificates to analyzes avoidable causes of death in IM and MM/Women aged 15 to 49 years old.

Main efforts to improve registration and the registration system
- Since 1985 there is a national coding commission of the International Classification of Diseases which reviews and suggests new actions to develop at the national level;
- Since 1998, there is national committee (“Organismo Permanente de Coordinación de los Registros Civiles Provinciales de la Argentina”) in charge of promoting coordination among provincial civil registry offices;
- There is an inter-institutional commission coordinated by the INDEC and formed by the Ministry of Health, the Ministry of the Interior, and the provincial offices of the Civil Registry.
- There is a central database of the vital events registered in each local office;
- Regional meetings to foster coordination and institutional capacity among provincial offices;
- Birth and death registration forms were updated in 2001; special emphasis to identify maternal mortality;
Current Challenges

- Modify the registration law; each province has its own regulations and manuals that need to be unified;
- Improve legal mechanisms regarding personnel certifying the cause of death, continued training to staff certifying vital events, as well as fostering the civil registry career;
- Develop information, communication and education campaigns on the importance to register vital events;
- Assess strategies to improve coordination among provincial offices of the civil registry;
- Evaluate the opportunity and timelessness of the provision of information at managerial levels;
- Omit fees for registry and unify the statistic reports produced at the local offices;
- Strengthen the institutional commission of vital statistics and the civil registry;
- A unified training package should be developed.

For further info see Vital Statistics Report, World Bank…
CIVIL REGISTRATION AND VITAL STATISTICS IN BOLIVIA

Key Summary Indicators

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total population</td>
<td>9,009,045 (2004)</td>
</tr>
<tr>
<td>Administrative division</td>
<td>9 departments</td>
</tr>
<tr>
<td>GDP per capita</td>
<td>1034 (const. US$2000)</td>
</tr>
<tr>
<td>Adult literacy rate</td>
<td>87%</td>
</tr>
<tr>
<td>TFR</td>
<td>3.72</td>
</tr>
<tr>
<td>IMR (1,000 births)</td>
<td>54.0</td>
</tr>
<tr>
<td>MMR (100,000 births)</td>
<td>230</td>
</tr>
<tr>
<td>Number of primary civil register offices</td>
<td>2,500</td>
</tr>
<tr>
<td>% of births registered</td>
<td>65%</td>
</tr>
<tr>
<td>% of deliveries by registered skilled attendant</td>
<td>67%</td>
</tr>
<tr>
<td>% of deaths registered</td>
<td>35%</td>
</tr>
<tr>
<td>% of deaths registered certified by a physician</td>
<td>45%</td>
</tr>
</tbody>
</table>

Situation Analysis

Civil Registration
- Mandatory birth & death registration;
- Done by the family;
- Births can be registered at the local offices and/or maternity hospitals (requirements: birth certificate or witnesses);
- Theoretical is free of charge but apparently there are fees;
- Fetal deaths are not registered;

Data Coverage
- Overwhelming majority of deaths and births are not registered;
- No data on under-reporting; it is assumed to be important;
- Data is mostly on quantities instead of focusing on the characteristics of vital events

Barriers to registration
- Lack of time or money;
- Distance to registration units;
- Cultural differences; language barriers
- Illegal cemeteries are frequent in rural areas.

Other Sources of Vital Statistics
- Last Population Census in 2001
- Several OPS Studies;
- DHS Surveys (last available in 2003)

Data Quality and Timeliness
- High percentage of deliveries are not assisted by a professional and majority of deaths are not certified by a physician;
- No data on poorly defined deaths
- Birth and deaths not registered reach 60% and 80% respectively in rural areas;
- Last published data is from 1982

Registration Process and Use of Vital Statistics

Organizational Structure
Centrally administered; vital events are recorded regionally (each department is responsible for recording its vital events). The Corte Nacional Electoral is the responsible institution; it is a decentralized governmental institution of the Judiciary Power with an office in each department.
There is no Vital Statistics System in the country. The National Program conducted by the Statistical Office
(INE) was interrupted in 1982. Since 1991 there is a National System of Health Information (Sistema Nacional de Información en Salud, SNIS) responsible for processing the information regarding production of services and morbidity/mortality data. The SNIS is organized in 9 departmental units. It collects clinical (no statistical) data mainly from public facilities. There is no legal obligation to report to SNIS therefore registration is incomplete and, in general, delayed.

Reporting and Statistical Process

- Coding of death take place at central SNIS
- ICD X is used for cause of death since 2002.
- No software in place to detect inconsistencies at data entry.
- No query system to complete/correct reports at source.
- Final tabulation and reporting is done at the national level
- Birth and death certificates are sent from point of registry to next level once a month
- Information is entered electronically at municipal level and sent by CD or Diskette

Data Analysis and Utilization

- Both the Ministry of Health through the SNIS and the INE elaborate their own reports on Vital Statistics;
- Reports are limited to quantities and not to characteristics of the vital events;
- No system in place to monitor quality or timeliness of vital statistics
- No analysis at the municipal level. E.g. There is not infant mortality reports at municipal level

Use of technology for data analysis

- No uses of innovative technology to improve collection, analysis and dissemination

Innovative use of vital statistics

- No

Main efforts to improve registration and the registration system

- A new law of Civil Registry is under study.
- The National Civil Registry began a process of electronic recording of vital events. The Government of Spain is supporting the scale-up of the initiative along the whole country.
- Between 2000 and 2002, with support of the IADB, all birth and deaths registries since 1943 were uploaded to electronic format; although this process didn’t include the characteristics of the vital events.
- UNICEF has recently supported several campaigns to register children.
- Since 2002, with support from OPS/Bolivia, the MOH implemented a unified medical death certificate (Certificado Médico Unico de Defunción, CEMEUD), along with a training program for physicians to improve the certification of the cause of death in the certificates.
- Current forms of birth and death registries were updated in 2002.

Current Challenges

Since its interruption, in 1982 the vital statistics system does not provide regular information to WHO/PAHO. And UN, PAHO in 2004-05 started a support to re-start the system.

- Generate a National System for Vital Statistics;
- Guarantee the gratuity of registration;
- Revise the legal framework to include the definition of vital events that need to be registered and certified to assure its comparability and appropriate statistical use;
- Disseminate the importance of vital statistics;
• Coordinate the actions of the Civil Registry with those of the Health Ministry and INE;
• Improve opportunity and completeness of birth and death registry and its recording in an electronic database;
• Introduce new forms of registry for births (they are not up-to-date with international norms);
• Improve the quality of cause of death certification and registration;
• Focus on the characteristics of vital events and not only on its quantities;
• Assure geographical access to registry office to the whole population;
• Improve institutional capacity for analysis, interpretation and dissemination of the information gathered through greater infrastructure of human and physical resource.

For further info see Vital Statistics Report, World Bank…
CIVIL REGISTRATION AND VITAL STATISTICS IN BRAZIL

Key Summary Indicators

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total population</td>
<td>183,912,544 (2004)</td>
</tr>
<tr>
<td>Administrative division</td>
<td>26 States + 1 Federal District</td>
</tr>
<tr>
<td>GDP per capita</td>
<td>3564 (const. US$2000)</td>
</tr>
<tr>
<td>% of births registered</td>
<td>75.6</td>
</tr>
<tr>
<td>% of deliveries by registered skilled attendant</td>
<td>96</td>
</tr>
<tr>
<td>% of deaths registered</td>
<td>80.5</td>
</tr>
<tr>
<td>% of deaths registered certified by a physician</td>
<td>96</td>
</tr>
<tr>
<td>Adult literacy rate</td>
<td>89%</td>
</tr>
<tr>
<td>TFR</td>
<td>2.31</td>
</tr>
<tr>
<td>IMR (1,000 births)</td>
<td>31.8</td>
</tr>
<tr>
<td>MMR (100,000 births)</td>
<td>73.1</td>
</tr>
<tr>
<td>Number of primary civil register offices</td>
<td>8,110</td>
</tr>
</tbody>
</table>

Situation Analysis

Civil Registration

- Mandatory birth & death registration;
- Done by the family.
- Free of charge; birth registrations have a fine if done after 15 days in urban areas (90 days in rural locations);
- Death certificate is required for burial authorization;
- Birth and death declarations are issued by the health center, forensic medicine or civil authority at the moment of the event; a copy of the birth/death declaration should be sent to the municipal health authorities immediately,
- Between 19% (IBGE) and 15% (MOH) of all deaths where not registered with greater variations among states
- IBGE estimated that death of infants (<1 year) was under registered by 48.6% and under reported to SIM by 36.9% (2000).

Barriers to registration

- Distance to registration units, especially in the Amazonian and Northeastern regions.
- No civil registry at the district of residence.
- Illegal/Private cemeteries are frequent in rural areas.

Other Sources of Vital Statistics

- Last Population Census in 2000
- DHS surveys (last available in 1996). One of the surveys (1991) was limited to the Northeastern region. The 1996 survey estimated infant mortality by regions and national maternal mortality ratios.

Data Quality and Timeliness (2002)

- 67% of deaths reported to SIM occurred in a health establishment and 96% of them where medically certified.
- 13.7% of deaths and 30.8% of fetal deaths with poorly defined cause of death.
- 11 states had 20-40% of their death certificates with ill defined cause of death while other 8 states had <10% of their certificates coded as ill defined;
- In the states’ capital cities, death certificates misclassified 40% of maternal deaths.
- North and Northeast areas have consistently greater proportion of under-reporting
- Both the MOH and IBGE data for births and deaths are available with one year lag on the internet.
Organizational Structure
There is no national authority of civil registration, each state coordinates civil registration in its territory. The operational unit in charge of civil registration is the “cartório do registro civil de pessoas naturais” or Civil Registration Notary (either public or private, dependent of the State judiciary power); or the consulate, if in a foreign country.

Two information systems on births and deaths are operating in Brazil in 2004: (1) The Instituto Brasileiro de Geografia e Estatisticas (Brazilian Institute of Geography and Statistics, IBGE) system based on the civil registration records; and, (2) The Ministry of Health Live Born and death information systems (Sistemas de Informacoes sobre Mortalidade (SIM), Nascidos Vivos (SINASC), based on the notaries’ declaration of vital events. SIM and SINASC have been operational since 1976 and 1990 respectively; and, electronically since 1992 and 1994.

Vital statistics are the responsibility of IBGE, federal institution dependent of the Ministry of Planning. IBGE has 27 units (one per state plus one for Brasilia) and 533 agencies located in main municipalities for data collection.

The Ministry of Health is in charge of the mortality and live births information systems (SIM and SINASC). The State and Municipal Health Secretariats are responsible in their territories for the SIM and SINASC. An Advisory Committee for SIM and SINASC was created in 2003.

Reporting and Statistical Process
- The live born and death declarations used to certify the events are designed and distributed nationwide by the Ministry of Health. Last review of the contents of the forms was done in 1999.
- Software has been developed by the MOH for SIM and SINASC and is available both for individual computers and on the internet. It includes queries, corrections and a tabulation program.
- ICD X has been in use since 1996 for coding cause of death.
- IBGE distributes multi event forms for each vital event to the Civil Registration Notaries for reporting. The forms contain no information on cause of death. That is, IBGE does not collect or record cause of death, hence only the MOH-SIM has this information.
- Civil Registration Notaries report to IBGE every three months, 32.7% of the Notaries report on magnetic form. The data of the forms for the notaries reporting in paper are coded and entered electronically at the state units of IBGE.
- The data entry program has automatic queries and corrections.
- All the state units are on line with IBGE in Rio de Janeiro, where a central database is maintained using ORACLE.
- Final tabulation is done at IBGE headquarters. Tables crossing main variables are available in a SIDRA environment on the IBGE web page.

Data Analysis and Utilization
- Both the Ministry of Health and the IBGE elaborate their own reports on Vital Statistics;
- Municipalities are in charge of the notification of deaths and births to the State, which in turns report to the national database.
- It is to note that while the MOH is basing its vital statistics on certification on birth and death, the IBGE is basing it on actual registration of the events so there are differences between the two systems as to what is actually being measured: while the MOH tends to have full coverage of all the events occurring within the scope of the health system, either because the events occur in health facilities or because it is identified by the primary health care network; the IBGE tends to have full coverage of what is registered by the family at the notaries. Since the certification of birth and death is necessary for registration and most are done with knowledge of the health system, it is expected, as has been observed, that in almost all states the MOH- SIM and SINAC have a higher coverage.
- The Ministry of Health analyzed the information at municipal level.
Use of technology for data analysis

- Software has been developed by the MOH for SIM and SINASC and is available both for individual computers and on the Web. It includes queries, corrections and a tabulation program.

Innovative use of vital statistics

- Infant and maternal mortality review committees are on development at states and some municipalities.

Main efforts to improve registration and the registration system

- A WHO Collaborating Center for the Classification of Diseases – Centro Brasilerio de Classificacao de Doencas-CBCD- operates at the Faculty of Public Health of the University of Sao Paulo. The CBCD is working closely with the Ministry of Health particularly in improving the quality of SIM by collaborating in training coding and data management personnel and performing evaluative research.
- Recent obstetric history was introduced in the death certificate in 1996.
- The country has been using the Selector of Basic Cause System– SIABE- since 1994 on the mortality data entry program. This system selects the underlying cause of death from the medical conditions reported on the death certificate. SIABE is based on the USA ACME (Automated Classification of Medical Entities) and is now being reviewed so as to adapt to the Brazilian Mortality Profile.
- In 1999 a nation wide campaign was developed to increment child registration.
- Since 2003 the Ministry of Health created an incentive of US$5 for the maternitys that perform child registration after birth (in 2003 only 70 hospitals of around 23,400 had created a birth registration office).
- In 2004, 13% (1,048) of notaries operating in the country had electronic based registration. Most of them in Sao Paulo and Brasilia, though.
- In 2003 a process started to ensure data coding and entry is done by the municipal health authorities. In 2004 all states are in capacity of coding and entering data, consolidating the database for the state and sending it to the MOH every three months. Failure to comply with the defined times of data flow from one territorial level to the next by 60 days or more results in serious budget cuts for primary health care and disease control.
- The states of the South, Southeast and Center-west regions have notably improved the coverage of birth and death registration in the last ten years.
- Brazil is seeking to attain high coverage of infant and maternal mortality prevention committees at the municipal level country wide. These committees would collect more detailed information on infant and maternal deaths for analysis and intervention. Its effectiveness varies along States.
- A MOH project with support from the World Bank (VIGISUS) is directed at restructuring the Brazilian public health surveillance system; it has a specific component aimed at strengthening SIM and SINASC by promoting its integration to other health information systems in existence, specifically those of maternal and child health and health attention.

Current Challenges

- The registration system is limited at the state level and no central authority is overseeing its operation or supporting a nation wide strategy to strengthen it. Less-developed States need support to improve their registration system in a way such that it becomes more efficient and accessible: i.e implement electronic registration, train registrars, develop campaigns for public awareness, support new notaries etc.;
- Creating effective bridges between the Health System and the registration authority at the state level that guarantee that all deaths and births certified at health institutions are routed for civil
registration.;
- Develop a strategy in the Amazonian and Northeastern states and municipalities for the identification and legalization of private cemeteries;
- A joint effort between IBGE and the Ministry of Health must be done in order to clarify the estimates of live born trends, specifically in the South and Southeastern states;
- A major effort needs to be done in the North and Northeastern states to upgrade coverage and quality of death certificate of children under one year and women of reproductive age;
- A project is being developed to integrate the Primary Health Care and Health Care Information Systems with the SIM and SINASC. The Northeastern states should be a priority for this project. The SIM and SINASC database should allow routine analysis at the national and state level to identify inequities and assess progress in specific vulnerable subgroups.
- The live born and death forms in use do not specify if place of residence is rural or urban, information that is useful in monitoring interventions.
- There is no linkage between the death certificate and the live born certificate for maternal deaths occurring at or after delivery. This should be useful for analysis of subgroups according to place of birth, type of delivery, and number of antenatal visits.
- Careful double check at the State and national level should be encouraged to ensure availability of key information for further analysis.

*For further info see Vital Statistics Report, World Bank…*
**Key Summary Indicators**

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Value</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total population</td>
<td>(2004) 16,123,815</td>
<td></td>
</tr>
<tr>
<td>Administrative division</td>
<td>13 regions, 51 provinces and 342 comunas</td>
<td></td>
</tr>
<tr>
<td>GDP per capita</td>
<td>5462 (const. US$2000)</td>
<td></td>
</tr>
<tr>
<td>Adult literacy rate</td>
<td>96%</td>
<td></td>
</tr>
<tr>
<td>TFR</td>
<td>1.98</td>
<td></td>
</tr>
<tr>
<td>IMR (1,000 births)</td>
<td>7.6</td>
<td></td>
</tr>
<tr>
<td>MMR (100,000 births)</td>
<td>13.4</td>
<td></td>
</tr>
<tr>
<td>Number of primary civil register offices</td>
<td>450</td>
<td></td>
</tr>
<tr>
<td>% of births registered</td>
<td>95</td>
<td></td>
</tr>
<tr>
<td>% of deliveries by registered skilled attendant</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>% of deaths registered</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>% of deaths registered certified by a physician</td>
<td>99.7</td>
<td></td>
</tr>
</tbody>
</table>

**Situation Analysis**

**Civil Registration**
- Mandatory birth & death registration;
- Fetal deaths are only recorded for statistical purposes;
- Done by the family or requested by medical personnel (in hospitals/offices);
- Free of charge;

**Data Coverage**
- Around 5% of births are not registered;
- Very few under-reported on general deaths;
- Studies show important, but decreasing, under-reporting for maternal mortality and fetal mortality;
- Poorly defined deaths are around 3% (2002); for fetal deaths this rises to 9%.

**Barriers to registration**
- No apparent

**Other Sources of Vital Statistics**
Last Population Census in 2001

**Data Quality and Timeliness**
- Very few deaths are non certified by a physician;
- Maternal death is assumed on women deaths 10-49 yrs unless the cause is external;
- One year delay on publicizing data;
- Sub-populations with greater proportion of under-reporting are not evident but quality differ among regions.

**Registration Process and Use of Vital Statistics**

**Organizational Structure**
Centrally administered; vital events are recorded regionally (subject to population density but there is at least one office of the Civil Registry per “comuna”; offices exist even in the most desolated areas). Data is collected by health institution or civil registrar.

The Instituto Nacional de Estadística (INE) is the responsible for vital statistics; it is a decentralized governmental institution of the Ministry of Economy.

From 1982 there is a permanent Committee -formed by the Ministry of Health and the Civil registry- responsible for vital statistics.
Reporting and Statistical Process

- Coding of death and birth statistical reports take place at the Ministry of Health; socioeconomic characteristics are coded by the INE;
- ICD X is used for cause of death since 1997.
- Software in place to detect inconsistencies at data entry.
- There is a well established communication system to check information consistency, codification and answer questions about vital statistics procedures.
- Certificates are entered electronically at municipal level and sent from point of registry to next level diary online.

Data Analysis and Utilization

- Both the Ministry of Health and the INE elaborate their own reports on Vital Statistics; INE published annual reports on vital statistics and since 2000 the MOH also produces its reports on mortality and natality;
- System in place to monitor quality or timeliness of vital statistics.
- Analyzed at municipal level.

Use of technology for data analysis

- National electronic archive of all vital events available at the Civil Registry.
- Information is entered electronically at municipal level online.
- Software check for data integrity.

Innovative use of vital statistics

- Increase in demand through infant or maternal mortality review committees.

Main efforts to improve registration and the registration system

- The National Committee of Vital Statistics was created in 1982 to coordinate the production of vital statistics among the INE, the Civil Registry and the Ministry of Health; this agreement was recognized in 1992 with the Forrest Linder Award from the US National Statistics Center as a model of vital statistics’ production.
- Since 2000 all data from birth and death certificates are centralized in a database at every local Civil Registry office (except in those with very few events -around 5% of the total); this electronic registry is available for all births since 1900 and all deaths since 1966.
- In 2000 birth registry forms were updated.
- Fetal deaths can be registered regardless the gestation period.
- For fetal deaths and for deaths of child less of 1 year: questions on weight at birth, weeks of gestation and nutritional status are asked.
- Data on last delivery and/or abortion is included in the death certificate.
- A Census of all personal working on civil registry is planned.

Current Challenges

- Improve opportunity and completeness of electronic database.
- Introduce new forms of registry for general and fetal deaths (they are old fashioned).
- Regulate/improve the certification of deaths done by physicians; national registry of certified physicians.
- There is no separate information for deaths of women in reproductive age.
- There is no data regarding the degree of under-reporting maternal and fetal deaths.
• Improve institutional capacity for analysis, interpretation and dissemination of the information gathered through greater infrastructure of human and physical resources, especially within the Ministry of Health.

For further info see Vital Statistics Report, World Bank…
CIVIL REGISTRATION AND VITAL STATISTICS IN COLOMBIA

Key Summary Indicators

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total population</td>
<td>44,915,016 (2004)</td>
</tr>
<tr>
<td>Administrative division</td>
<td>32 Departments and 1 capital district</td>
</tr>
<tr>
<td>GDP per capita</td>
<td>2091 (const. US$2000)</td>
</tr>
<tr>
<td>Adult literacy rate</td>
<td>93%</td>
</tr>
<tr>
<td>TFR</td>
<td>2.42</td>
</tr>
<tr>
<td>IMR (1,000 births)</td>
<td>17.5</td>
</tr>
<tr>
<td>MMR (100,000 births)</td>
<td>84.4</td>
</tr>
</tbody>
</table>

Situation Analysis

Civil Registration

- Mandatory birth & death registration;
- Fetal deaths are included in death certificates;
- Done by the family. –Some hospital have registration offices;
- Free of charge;
- In the case of non existent live born certificate (late registrations or never reported to the health authorities) the religious certification such as the christening inscription, and the declaration of two witness suffice;
- Registration should be done within 30 days of birth. No fine is charged for late registration;

- Caquetá and Nariño to just 1% in Bogotá;
- Coverage is around 93% (2000), ranging from 90-95% in the larger cities to 100% in the smaller municipalities

Barriers to registration

- Distances or costs of transportation difficult registration within 30 days;
- Death is seldom registered since no registration is required for burial. It is usually done when the family of the deceased wants to claim legal rights such as inheritance, pension or similar.
- Guerrilla/conflict areas,

Other Sources of Vital Statistics

- The last national census took place in 2005;
- DHS surveys (last available in 2005)

Data Quality and Timeliness

- In 2001 less than 2% of all deaths and 17.8% of fetal deaths showed poorly defined causes.
- Two-years delay on publicizing data;
Organizational Structure

The central coordinating institution for civil registration is the Registraduria Nacional del Estado Civil (RNEC) dependant of the Electoral Organization. Each of the 32 departments and the district of Bogotá has in turn delegations of the RNEC. The operational unit that registers individual vital events is either the civil registration office, “notarios” (notaries), consulates abroad, civil state registrars, and exceptionally, police inspectors or “corregidores”.

The central national office in charge of vital statistics is the Departamento Administrativo Nacional de Estadísticas-DANE-, which depends directly of the President’s office. The vital statistics system operates as an alliance between the health sector and the DANE, overseen by a sector committee of Demography coordinated by DANE. It convenes the Ministry of Social Protection the Ministry of Environment, the National Registrar of Civil Status, the director of the Institute of Forensic Medicine, the Superintendent of Notaries and Registry and representatives from the health insurers. DANE has 6 regional offices: North, Northwest Mideast, Center, Midwest and Southwest and 21 smaller offices depending of these. Municipal and Departmental Health Directions are the instances responsible for collection of certificates and review them before sending to DANE’s regional offices.

Reporting and Statistical Process

- Death and birth certificates are collected from the hospitals and health centers; a first review by the Epidemiology offices takes place before sending to the corresponding regional office of DANE;
- Cause of death is coded at the regional branches and since 1999 ICD X has been used;
- The Birth and Death Certificates issued in the health system flow directly towards the statistics system without passing through the registration system first.
- The databases are sent by trimesters to the national DANE offices and to the departmental health directions;
- DANE validates and tabulates its information at the central database.

Data Analysis and Utilization

- Both the Ministry of Health and DANE elaborate their own reports on Vital Statistics;
- DANE regional offices perform quality control, coding, electronic data entry, data processing and production of information
- No reports at municipal level

Use of technology for data analysis

- In 2004 40% of the offices that depend directly from the RNEC are entering data online directly and another 40% is doing so by sending electronically to the regional office. Almost all the notaries are entering the data electronically.

Innovative use of vital statistics

Infant or maternal mortality review committees are not yet in place

Main efforts to improve registration and the registration system

- Major transformations during the decade of the 90’s so that both the legal and statistical functions would be guaranteed, since until then the first had overshadowed the second.
- The new system of birth and death certification and flow of certificates started in 1997.
- Recent obstetric history was introduced in the death certificate in 1998;
- There is an ongoing process of developing the technological capacity for entering birth and death registries electronically directly at place of registry at all registration offices.
- A query for civil registration for the public is available on the internet at www.registraduria.gov.co where the existing national database of civil registration until 2000 is available.
• Since 2003, a UNICEF project to establish registration offices at major hospitals and clinics is being implemented. In 2004 five hospitals in the country had the system in place.
• DANE is trying to draw new estimates of mortality under-registration based on sampling of municipalities.

### Current Challenges

• Improve opportunity and completeness of electronic database; problems with data from the past that was not entered electronically, leaving gaps in the databases.
• Increase the number of hospitals and clinics performing electronic registration;
• The RNC needs to coordinate with DANE to identify population groups where birth and death registration is low to which orient their actions to increase registration;
• Enforcer regulations as to compulsory nature of death registration to authorize burial;
• Develop a partnership between DANE and the Health System’s surveillance system at the Departmental level to improve quality and coverage of maternal and infant mortality and to better identify its causes;
• Strengthen the capacity of analysis of mortality information within the health system (at both national and municipal level) in order to orient policy and programs to reduce maternal and infant mortality;
• Increase special technical assistance, training and resources to the poorest, more rural departments where infant and maternal mortality are the highest and at the same time have the lowest occurrence of institutional births and deaths hence the lowest coverage of birth and death certificates.

*For further info see Vital Statistics Report, World Bank…*
CIVIL REGISTRATION AND VITAL STATISTICS IN
COSTA RICA

Key Summary Indicators

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total population</td>
<td>4,253,037 (2004)</td>
</tr>
<tr>
<td>Administrative division</td>
<td>81 cantones in 7 provinces</td>
</tr>
<tr>
<td>GDP per capita</td>
<td>4328 (const. US$2000)</td>
</tr>
<tr>
<td>% of births registered</td>
<td>98</td>
</tr>
<tr>
<td>% of deliveries by registered skilled attendant</td>
<td>98</td>
</tr>
<tr>
<td>% of deaths registered</td>
<td>96</td>
</tr>
<tr>
<td>% of deaths registered certified by a physician</td>
<td>85</td>
</tr>
<tr>
<td>Adult literacy rate</td>
<td>95%</td>
</tr>
<tr>
<td>TFR</td>
<td>2.0</td>
</tr>
<tr>
<td>IMR (1,000 births)</td>
<td>11.3</td>
</tr>
<tr>
<td>MMR (100,000 births)</td>
<td>30.5</td>
</tr>
<tr>
<td>Number of primary civil register offices</td>
<td>31</td>
</tr>
</tbody>
</table>

Situation Analysis

Civil Registration
- Mandatory birth & death registration;
- No systematic registration of fetal deaths;
- Done by the family in local offices or authorized registrars (hospital, civil guard, funerary homes, cemeteries, etc); it can be done by the director of the Hospital;
- Free of charge; non-mandatory fee for late registration (after 30 days of the event);

Barriers to registration
- No apparent

Other Sources of Vital Statistics
- Last Population Census in 2001
- Fecundity Survey available for 1993

Data Quality and Timeliness
- Most deaths are certified by a physician;
- 4% poorly defined deaths;
- Most birth are institutional;
- No major delays on publicizing data;
- There is no info on the quality of the data;
- No areas/sub-populations with greater proportion of under-reporting;

Registration Process and Use of Vital Statistics

Organizational Structure
Centrally administered by the Civil Registry, an institution dependant on the Electoral Tribunal; vital events are recorded regionally (subject to population density but there is at least one office per “comuna”). Regional offices receive and process vital events and send the information to the central office. Data is collected at the central level.

The National Institute of Statistics (Instituto Nacional de Estadística, INEC) is the responsible for vital statistics; it is a decentralized autonomous governmental institution. After receiving the data from the Civil Registry, it tabulates and publishes all data. Both the Civil Registry and the INEC use the same forms for registry.

The MOH uses the data sent semiannually by the INEC.
Although there is no formal inter-agency coordination the communication among institutions is very fluid.
Reporting and Statistical Process
- Coding of death and birth statistical reports take place at the Ministry of Health
- ICD X is used for cause of death since 1997.
- Software in place to detect inconsistencies at data entry.
- Complete system to check/repair inconsistencies in death causes;
- Certificates are sent from point of registry to next level once a week
- Certificates are entered electronically at central level

Data Analysis and Utilization
- Both the Ministry of Health and the INEC elaborate their own reports on Vital Statistics;
- System in place to monitor quality or timeliness of vital statistics;

Use of technology for data analysis
- Software check for data integrity
- National electronic archive at INEC
- All vital events available at on Internet: [http://censos.ccp.ucr.ac.cr/](http://censos.ccp.ucr.ac.cr/)

Innovative use of vital statistics
No infant or maternal mortality review committees

Main efforts to improve registration and the registration system
- In 2002 the Civil Registry has implemented a Child Identity Card (Tarjeta de Identidad del Menor, TIM), in order to improve registration of children and youth (under 18 yrs old)
- New form to register fetal deaths in operation since 2003

Current Challenges
- Review and actualize legal provisions.
- Improve the mechanism to record fetal deaths.
- Need of financial resources to improve services local civil registry offices.
- Improve coordination with the Civil Registry for the collection of fetal deaths.
- Promote an inter-institutional coordination aimed at improving the information system for public health surveillance.

For further info see Vital Statistics Report, World Bank…
CIVIL REGISTRATION AND VITAL STATISTICS IN DOMINICAN REPUBLIC

Key Summary Indicators

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total population (2004)</td>
<td>8,767,870</td>
</tr>
<tr>
<td>Administrative division</td>
<td>7 regions, 30 provinces</td>
</tr>
<tr>
<td>GDP per capita</td>
<td>2476 (const. US$2000)</td>
</tr>
<tr>
<td>Adult literacy rate</td>
<td>87%</td>
</tr>
<tr>
<td>TFR</td>
<td>2.82</td>
</tr>
<tr>
<td>IMR (1,000 births)</td>
<td>27.4</td>
</tr>
<tr>
<td>MMR (100,000 births)</td>
<td>75.3</td>
</tr>
</tbody>
</table>

Number of primary civil register offices: 48
% of deliveries by registered skilled attendant: 98

Situation Analysis

Civil Registration
- Mandatory birth & death registration;
- No registration of fetal deaths;
- Done by the family. –In some hospitals or local offices
- Free of charge;

Data Coverage
- Non-hospital births (5 %) are not registered in any civil registry office;
- 40% under-reported on general deaths;
- No data on under-reporting for maternal mortality and fetal mortality; it is assumed to be important;
- No data on poorly defined deaths

Barriers to registration
- non-compliance of the legal requirements by the cemeteries for burials;
- lack of awareness and motivation to report
- Illegal Haitian immigrants

Other Sources of Vital Statistics
- Last Population Census in 2001
- DHS Surveys (last available in 2002)

Data Quality and Timeliness
- Incomplete filling of birth and death certificates at the civil registry offices;
- 85% of deaths are non certified by a physician;
- 46 % of births are reported late in the civil registry offices.

Registration Process and Use of Vital Statistics

Organizational Structure
Centrally administered; vital events are recorded regionally (subject to population density but there is at least one office per “comuna”). Regional offices receive and process vital events and send the information to the central office.
There are problems forwarding at the central level of death certificates.
The Oficina Nacional de Estadística (ONE) is the responsible for vital statistics; it is a decentralized governmental institution of the Secretariat of the Presidency.
Functions of institutions responsible for the collection, analysis, use and dissemination of vital events data are independent. There is a scarce coordination among the civil registry offices and the Secretariat of Public Health and Social Welfare in the collection of vital events.

Reporting and Statistical Process
- Coding of death statistical reports take place at the Ministry of Health; births by the “Junta
Electoral” and socioeconomic characteristics are coded by the ONE;

- ICD X is in used for cause of death
- Manual detection of inconsistencies at data.
- There is no online network of information of the local civil registries to the central civil registry.

Data Analysis and Utilization

- The National Office of Statistics in not using vital events data for statistical purposes. For example, this office assesses the live births figure through monthly summary reports of data collected.
- Both the Ministry of Health and the INEC elaborate their own reports on Vital Statistics resulting in different figures;
- No system in place to monitor quality or timeliness of vital statistics

Use of technology for data analysis

- No

Innovative use of vital statistics

- Few infant or maternal mortality review committees under implementation

Current Challenges

- Review and update the current legal provisions (include, for example, the use of digital signature for registration, the registration of orphan people after birth, the registration of births in the nearest place, etc.)
- Legal modification to include the official registry of fetal deaths.
- Assess better coordination mechanisms among civil registry offices, as well as enforcement of relevant laws. In particular, improve inter-institutional coordination among the Secretariat of Public Health and Social Welfare (SESPAS), the General Office of Civil Registry, the National Office of Statistics (ONE) and the Provincial Offices of Information and Statistics (OPIE).
- Organize a “Vital Statistics Technical Committee” to review the operations of the civil registry and vital statistics and assess the required coordination mechanisms among the institutions involved.
- Assess the necessary mechanisms (logistic, legal, etc) so that these non-hospital births are registered in the civil registry offices.
- Improve the coverage and quality of data so that it can be used for planning by the health sector and other stakeholders.
- Strengthen local civil registries to collect, analyze and forward online data to the central office of the civil registry and/or other institutions.
- Assess the required mechanisms so that ONE obtains and use regularly statistical information collected from the vital events.
- Develop a package of training through courses, seminars and educational materials aimed at local and national registrars coders and staff managing data.
- Develop information, education and communication campaigns on the importance of the use and rights for the reporting of vital events by the population.
- Improve institutional capacity for analysis, interpretation and dissemination of the information gathered through greater infrastructure of human and physical resources, especially within the Ministry of Health.

For further info see Vital Statistics Report, World Bank…
**CIVIL REGISTRATION AND VITAL STATISTICS IN ECUADOR**

### Key Summary Indicators

<table>
<thead>
<tr>
<th>Indicator</th>
<th>2004</th>
<th>2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total population</td>
<td>13,039,984</td>
<td></td>
</tr>
<tr>
<td>Administrative division</td>
<td>22 provinces</td>
<td></td>
</tr>
<tr>
<td>GDP per capita (const. US$2000)</td>
<td>1459</td>
<td></td>
</tr>
<tr>
<td>Adult literacy rate</td>
<td>91%</td>
<td></td>
</tr>
<tr>
<td>TFR</td>
<td>2.72</td>
<td></td>
</tr>
<tr>
<td>IMR (1,000 births)</td>
<td>23</td>
<td></td>
</tr>
<tr>
<td>MMR (100,000 births)</td>
<td>77.8</td>
<td></td>
</tr>
<tr>
<td>Number of primary civil register offices</td>
<td>219</td>
<td></td>
</tr>
<tr>
<td>% of births registered</td>
<td>80</td>
<td></td>
</tr>
<tr>
<td>% of deaths registered</td>
<td>73</td>
<td></td>
</tr>
<tr>
<td>% of deaths registered certified by a physician</td>
<td>87.7</td>
<td></td>
</tr>
</tbody>
</table>

### Situation Analysis

**Civil Registration**
- Mandatory birth & death registration;
- Done by the family in local registry offices;
- Free of charge; a fine is charged if birth registration is done after 30 days;
- Deaths should be registered within 48 hrs;
- A complex legal procedure is needed for registry a birth after a year;
- Birth registration is required for catholic Baptism;
- Fetal deaths are seldom registered;
- BCG vaccination certificate required; Either one or both parents lacking ID.
- 2% indigenous pop. (non Spanish speaker);
- No civil registrar at the parish of residence;
- Illegal cemeteries are frequent in rural areas.

**Data Coverage**
- 12.5% of children had not been registered at age 5: 21.2% in the Amazonian region and 14.2% in the poorest 20% of the population (2000);
- An estimated 27% of deaths are not registered with under registration of deaths in children under one year estimated to be higher.
- Fetal and neonatal deaths are mostly not registered
- No data on under-reporting for maternal mortality and fetal mortality; it is assumed to be important;

**Barriers to registration**
- Lack of time or money;
- Distance to registration units (rural coast);
- Child not recognized by father (rural coast & urban sierra areas);

**Other Sources of Vital Statistics**
- Last Population Census in 2001
- DHS surveys (ENDEMAIN; last available in 2004).

**Data Quality and Timeliness**
- 29% of births are delivered at home and of these 98.5% occur in population from low socioeconomic status (ENDEMAIN 99).
- In 2001 12.3% of deaths registered were not certified by health personnel.
- According to INEC (2001): 12.6% of deaths and 15.5% of fetal deaths poorly defined;
- The year’s data are available to the public the second semester of the next year.
- Rural coast, Sierra area & Amazonian, along with indigenous communities have greater proportion of under-reporting
Registration Process and Use of Vital Statistics

Organizational Structure
Administered centrally, under the responsibility of The Dirección General de Registro Civil, Identificación y Cedulación, dependant of the Ministry of Government. The operational unit recording vital events is the “area” attending one or several parishes (795 rural and 378 urban) according to population density and geography; the consulate if in a foreign country. 219 Civil Registration Administrative Offices operate at the Cantonal level and 22 at the Provincial level. Data is collected by civil registrar and sent monthly to the Institute of Statistics for it analysis.

The government institution responsible for vital statistics is the Instituto Nacional de Estadística y Censos- INEC- decentralized institute dependent of the Ministry of Economy and Finance. INEC has four regional branches: North (Ambato) South (Cuenca) Coast (Guayaquil) and Central (Quito).

A Coordinating Committee of the national system of vital statistics is in place since 1975, integrated by the Ministry of Health, INEC and the General Direction of Civil Registration.

Reporting and Statistical Process
- Coding of death and birth statistical reports take place at INEC regional branches;
- ICD X is used for cause of death since 1997;
- Software in place to detect inconsistencies at data entry;
- No query system to complete/correct reports at source;
- Final tabulation and reporting is done at the national level;
- Certificate is sent from point of registry to the provincial level once a month
- Certificates are entered electronically at provincial level

Data Analysis and Utilization
- Both the Ministry of Health and the INE elaborate their own reports on Vital Statistics;
- INEC publishes its reports annually
- No system in place to monitor coverage or quality of vital statistics
- Information at municipal level is published yearly

Use of technology for data analysis
- Software for data entry does not check for data integrity

Innovative use of vital statistics
There are not infant or maternal mortality review committees

Main efforts to improve registration and the registration system
- The national council for modernization of the state is developing a project on reform of the civil registration system funded by a World Bank loan;
- UNICEF is leading a birth registration campaign in the Amazonian region;
- A Chilean technical cooperation mission advised in 2003;
- In the early 90’s an estimated 50% of births registered were so after the first year, in 2000 of the births registered 98.1% of the registration occurred during the first year;
- In 1992 81.3% of deaths were medically certified and in 2001 87.7% of them were medically certified.
Current Challenges

- Increase availability of culturally appropriate and accessible operational units in rural areas in order to reduce birth and death under-registration.
- Improve opportunity and completeness of electronic database;
- Identify groups of population underrepresented in the statistics because of lack of registration and devising mechanisms for improving;
- Improve quality of cause of death certification;
- Improve completeness of birth and death certificate;
- Increase analysis capacity, interpretation and dissemination of information gathered.

*For further info see Vital Statistics Report, World Bank…*
CIVIL REGISTRATION AND VITAL STATISTICS IN
EL SALVADOR

Key Summary Indicators

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>Number of primary civil register offices</th>
<th>262</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total population</td>
<td>(2004)</td>
<td>6,762,439</td>
<td></td>
</tr>
<tr>
<td>Administrative division</td>
<td>14 departments &amp; 262 municipalities.</td>
<td>% of births registered</td>
<td>72</td>
</tr>
<tr>
<td>GDP per capita</td>
<td>2088 (const. US$2000)</td>
<td>% of deliveries by registered skilled attendant</td>
<td>92</td>
</tr>
<tr>
<td></td>
<td>% of deaths registered</td>
<td>75</td>
<td></td>
</tr>
<tr>
<td>TFR</td>
<td>2.8</td>
<td>% of deaths registered certified by a physician</td>
<td>83</td>
</tr>
<tr>
<td>IMR (1,000 births)</td>
<td>24.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MMR (100,000 births)</td>
<td>173.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Situation Analysis

Civil Registration
- Mandatory birth & death registration;
- No systematic registration of fetal deaths;
- Done by the family in local offices; birth registry in hospitals in some departments;
- Birth should be registered within 15 days;
- Free of charge but certificates can be charged; fees for later registration are possible;
- Non-married people can register a birth only in person

Barriers to registration
- Judiciary order is required to register people older than 5 yrs old;
- Witnesses are required for home deliveries;

Other Sources of Vital Statistics
- Last Population Census in 2001
- DHS-type surveys (last available is FESAL 2002/03)

Data Quality and Timeliness
- Problems with diagnosis of causes of death (mostly done by non-professional staff);
- Important delays on publicizing data;
- 30% of deaths are poorly defined; but raises to 81% in the case of fetal deaths
- No data on quality of statistics;

Registration Process and Use of Vital Statistics

Organizational Structure
The Registration Office of the Family Status is regulated by each municipal mayor’s office, acting in an autonomous fashion. From an organic perspective, there is no agency regulating, supervising and controlling the adequate operations of the 262 registration offices. Data is collected by civil register offices. The Oficina General de Estadísticas y Censos (DYGESTIC) is the responsible for vital statistics; it is a decentralized governmental institution of the Ministry of Economy. Local offices of the Civil Registry are supposed to send one a month the information to the DYGESTIC but this in general does not happen. There is no coordination mechanism among the vital statistics system, civil registry offices and the Ministry of Public Health.
Reporting and Statistical Process
- Coding of death and birth statistical reports take place at the MOH?
- ICD 10 is used for cause of death
- Software in place to data entry but does not detect inconsistencies
- Certificates are sent from point of registry to next level once a year
- Information is entered electronically at departamental level

Data Analysis and Utilization
- The Ministry of Public Health and Social Welfare, through the Office of Health Planning and the Unit of Health Information have developed a bulletin on health indicators, but only publish hospital data, as well as health indicators generated by other sources of data.
- Both the Ministry of Health and the INEC elaborate their own reports on Vital Statistics;
- Last published data by INEC uses 1998 stats.
- No system in place to monitor quality or timeliness of vital statistics

Use of technology for data analysis
- Software at departmental level for data entry but does not detect inconsistencies

Innovative use of vital statistics
- There are not infant or maternal mortality review committees

Current Challenges
- Review and actualize legal provisions.
- Create coordination mechanisms among municipalities, the Ministry of Health and the two responsible institutions or organize a technical committee supporting vital statistics.
- Evaluate the coordination of the civil registry offices and improve registering at the local and adjacent offices level. Create a national archive of the registries.
- Improve the quality of information from the vital events registration forms through training, manuals and national regulations.
- Implement a coordinated training system to staff involved in recording vital events, from data collection, processing and analysis, as well as the preparation of updated manuals.
- Assess at the national level the need to strengthen local filing, cleaning and entering data or foster the creation of a central level agency responsible to coordinate the filing of all information and/or provide on line information from the local civil registries to the central level.
- Improve the participation of the Ministry of Public Health and Social Welfare with the National Registry of Natural Persons and the General Office of Statistics and Censuses (DIGESTYC)
- Improve institutional capacity for analysis, interpretation and dissemination of the information gathered through greater infrastructure of human and physical resources, especially within the Ministry of Health.

For further info see Vital Statistics Report, World Bank…
CIVIL REGISTRATION AND VITAL STATISTICS IN GUATEMALA

Key Summary Indicators

| Total population | 12,294,794 (2004) | Number of primary civil register offices | 334 |
| Administrative division | 8 regions, 22 departments and 331 municipalities | % of births registered, (estimated in Kestler paper) | 95 |
| GDP per capita | 1722 (const. US$2000) | % of deliveries by registered skilled attendant | 41 |
| Adult literacy rate | 69% | % of deaths registered (estimated in Kestler paper) | 98 |
| TFR | 4.42 | % of deaths registered certified by a physician | 66 |
| IMR (1,000 births) | 33.4 |
| MMR (100,000 births) | 153.0 |

Situation Analysis

Civil Registration
- Mandatory birth & death registration;
- No systematic registration of fetal deaths although they are required by law;
- Done by the family (mostly in registry offices; very few alternative sites to register);
- Free of charge but fees are charged for late registration (after 30 days in the case of births and after 24hrs in the case of deaths);

Data Coverage
- No data on under-reporting for maternal mortality and fetal mortality; it is assumed to be important;
- Report on coverage of vital statistics system present figures a bit higher that the expected to comparable countries in the region
- Diverse forms used throughout the country

Barriers to registration
- Lack of awareness of population
- Cultural/geographic barriers

Other Sources of Vital Statistics
- Last Population Census in 2002
- DHS Surveys (last one in 1998/99; plus the Maternal and Infant Health Survey in 2002)

Data Quality and Timeliness
- High proportion of registration is filled by untrained staff (especially in death forms);
- No data on quality of registries;
- Important delays on publicizing data
- 1.2% poorly defined deaths; in fetal deaths this rises to 62%;
- Indigenous areas/sub-populations with greater proportion of under-reporting;

Registration Process and Use of Vital Statistics

Organizational Structure
The Civil Registry Office (Registro Civil) is the legal responsible institution for the registration of vital events. Its primary local offices are dependant on the municipalities. Data is collected by civil registrar
The National Institute of Statistics (Instituto Nacional de Estadística, INEC) is the responsible for vital statistics; it is a decentralized governmental institution of the Ministry of Economy. The INEC is in charge of centralizing all the information from the local registry offices and prepare official reports. There is scarce control of data forwarding by local civil registry offices to the central level. The INEC is also responsible for the training. Lack of coordination with local registry offices and delays in publishing reports are common.

The Ministry of Health, has created the Health Management System (Sistema Gerencial en Salud, SIGSA) - a parallel system of vital statistics as a response to the delays in INEC official reports).

**Reporting and Statistical Process**
- Coding of death and birth statistical reports take place at both the MOH and the INEC without coordination;
- ICD X is not yet used for cause of death
- Software in place to detect inconsistencies at data entry.
- Certificates are sent from point of registry to next level annually
- Data it entered electronically at national level

**Data Analysis and Utilization**
- Both the Ministry of Health and the INEC elaborate their own reports on Vital Statistics;
- No system in place to monitor quality or timeliness of vital statistics

**Use of technology for data analysis**
- Software to detect inconsistencies at data entry

**Innovative use of vital statistics**
- There are not infant or maternal mortality review committees

**Main efforts to improve registration and the registration system**
- No info available

**Current Challenges**
- Review and actualize legal provisions.
- Articulate more the vital statistics system and provide a more technical direction at the national level.
- Determine new mechanisms enabling to improve quality of data collected, particularly in relation to the cause of death in the death certificate.
- Develop or update current continued training, including courses, seminars and educational materials on registry at the national and local level.
- Develop information, education and communication programs aimed to the general population regarding the rights and duties to register vital events.
- Improve through inter-institutional coordination the technical and administrative factors both at the level of vital statistics as well as civil registries.
- Review and standardize form used in the country for collection and reporting of vital events data.
- Develop trained technical staff in the management of vital statistics
- Organize an inter-institutional technical committee responsible to review the operation of all institutions involved in registering, analyzing, and disseminating vital events data.
- Improve institutional capacity for analysis, interpretation and dissemination of the information gathered trough greater infrastructure of human and physical resources, especially within the Ministry of Health.

*For further info see Vital Statistics Report, World Bank…*
CIVIL REGISTRATION AND VITAL STATISTICS IN HONDURAS

**Key Summary Indicators**

<table>
<thead>
<tr>
<th>Total population (2004)</th>
<th>7,048,327</th>
<th>Number of primary civil register offices</th>
<th>298</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrative division</td>
<td>18 departments</td>
<td>% of births registered</td>
<td>34.5</td>
</tr>
<tr>
<td>GDP per capita</td>
<td>965 (const. US$2000)</td>
<td>% of deliveries by registered skilled attendant</td>
<td>56</td>
</tr>
<tr>
<td>Adult literacy rate</td>
<td>80%</td>
<td>% of deaths registered</td>
<td>26</td>
</tr>
<tr>
<td>TFR</td>
<td>3.56</td>
<td>% of deaths registered certified by a physician</td>
<td>7.6</td>
</tr>
<tr>
<td>IMR (1,000 births)</td>
<td>31.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MMR (100,000 births)</td>
<td>108.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Situation Analysis**

**Civil Registration**
- Mandatory birth & death registration;
- No registry of fetal deaths;
- Non-mandatory fees for late registration (after 30 days for births, 8 days for deaths);
- Done by the family, mostly in local offices;
- Birth and death certifications are not free. A 10 lempiras fee is requested.
- Duplication of forms

**Data Coverage**
- Great majority of births and deaths are not registered;
- No data on actual coverage;
- No data on under-reporting for maternal mortality and fetal mortality;

**Barriers to registration**
- Several requirements to register (such as witnesses and written declaration);
- Marriage certificate is needed to register a birth;
- Forensic certificate is needed in addition to death certificate to register a death;
- Non-confidentiality of vital statistics

**Other Sources of Vital Statistics**
- Last Population Census 2001
- ENESF 2001 and DHS 2005 in progress

**Data Quality and Timeliness**
- Overwhelming majority of deaths are non certified by a physician;
- Important administrative and technical problems were identified;
- No information regarding timeliness or quality, expected to be extremely poor;
- 10% poorly defined deaths;
- No security copies of forms

**Registration Process and Use of Vital Statistics**

**Organizational Structure**
Centrally administered; vital events are recorded locally. The National Registry of People is the legal responsible of registering all vital acts (there seem to be not enough local registry office). Its functions are more electoral than statistical. Data is collected by civil registrar and sent to the National Institute of Statistics (Instituto Nacional de Estadistica, INE) for its analysis. The INE is responsible for the national statistics system; it is a decentralized governmental institution,
created in 2000 with the purpose of improve and modernize the national statistics systems. The Ministry of Health has info from hospital records (approximately 60% of coverage). It should be noted that the forms used by the MOH are different to those used by INE. There are no formal agreements on coordination among the three institutions.

**Reporting and Statistical Process**
- ICD 10 is used for cause of death since 2002.
- Civil Registration offices collect the information and INE performs data-entry. Double check for inconsistencies is not performed.
- No electronic record and no security copy;
- Legal forms are different from vital forms;
- Certificates are sent from point of registry to next level once a month
- Data is it entered electronically at national level

**Data Analysis and Utilization**
- Only 38 (12%) of municipal civil registries provide on-line information;
- No system in place to monitor quality or timeliness of vital statistics;
- Access to information is manual; no alphabetic order;
- The Ministry of Health, through the Office of Planning and Management Evaluation, Department of Statistics publish since 1997 hospital statistics. This data include just hospital-base information;
- The National Statistical System publishes independently some vital statistics report;
- Vital Statistics reports are distributed manually;

**Use of technology for data analysis**
Very limited use of technology (in 2004 only 38 municipalities provide electronic information);

**Innovative use of vital statistics**
N/A

**Main efforts to improve registration and the registration system**
- Within the modernization of the State, there has been an improvement and modernization of the statistical information systems, which facilitates the decision making process with the creation of the National Institute of Statistics (INE). (Decree No. 86-2000)
- Regional Committees on Maternal Mortality? (Copan is listed as a good example)

**Current Challenges**
- Improve coverage of registry (maybe introduce some incentives/penalties to register);
- Introduce new forms of registry (they are old fashioned);
- Check for accuracy of data;
- Improve local capacity to registry; introduce more electronic recording;
- Coordination is needed among the institutions;
- There is no separate information for deaths of women in reproductive age;
- There is no data regarding the degree of under-reporting maternal and fetal deaths;
- Improve institutional capacity for analysis, interpretation and dissemination of the information gathered through greater infrastructure of human and physical resources, especially within the Ministry of Health.

*For further info see Vital Statistics Report, World Bank…*
CIVIL REGISTRATION AND VITAL STATISTICS IN MEXICO

Key Summary Indicators

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total population</td>
<td>(2004) 103,795,216</td>
</tr>
<tr>
<td>Administrative division</td>
<td>31 states and 1 Federal District</td>
</tr>
<tr>
<td>GDP per capita</td>
<td>5,968 (const. US$2000)</td>
</tr>
<tr>
<td>Adult literacy rate</td>
<td>91%</td>
</tr>
<tr>
<td>TFR</td>
<td>2.2</td>
</tr>
<tr>
<td>IMR (1,000 births)</td>
<td>22.6</td>
</tr>
<tr>
<td>MMR (100,000 births)</td>
<td>65.2</td>
</tr>
</tbody>
</table>

Situation Analysis

Civil Registration
- Mandatory birth & death registration;
- Done by the family (at hospitals and local offices);
- Free of charge;
- Fetal deaths are systematically recorded;

Data Coverage
- Around X % of births are not registered;
- Very few under-reported on general deaths;
- No data on under-reporting for maternal mortality and fetal mortality; it is assumed to be important;
- No data on poorly defined deaths

Barriers to registration
- No apparent

Other Sources of Vital Statistics
- Last Population Census in 2000

Data Quality and Timeliness
- Very few deaths are non certified by a physician;
- Poor states have greater proportion of under-reporting: e.g. Birth coverage in Chiapas is 35% and death register in Guerrero 71%;

Registration Process and Use of Vital Statistics

Organizational Structure
Centrally administered; vital events are recorded regionally. The States carry out independently the civil registry duties with scarce communication among them. Death data is collected by health institution and births by civil registration offices. Civil registries do not use an standardize form to register vital events. Both the National Institute of Statistics (Instituto Nacional de Estadística, INEGI) and the Secretariat of Health of the Federal District independently collect vital events and use different coding criteria?

Reporting and Statistical Process
- Coding of death and birth statistical reports take place at the Ministry of Health;
- ICD 10 is in use;
- Software in place to detect inconsistencies at data entry;
- Support system for consistency on coding for cause of death;
- Birth certificates are sent from point of registry to INEGI weekly. Death certificates to MOH monthly;
- Data is entered electronically at state levels
Data Analysis and Utilization
- Both the Ministry of Health and the INEGI elaborate their own reports on Vital Statistics;
- No data on system in place to monitor quality or timeliness of vital statistics

Use of technology for data analysis
- Support system for consistency on coding for cause of death

Innovative use of vital statistics
- Some infant or maternal mortality review committees at state levels

Main efforts to improve registration and the registration system
- New forms for general death certificate and fetal deaths certificate were introduced in 2004;
- Different progress in the automation of civil registry offices

Current Challenges
- Improve and update the technology to enter, analyze and disseminate vital events to be used for statistical purposes;
- Improve coordination among state civil registry offices;
- Develop information, communication and education campaigns on the importance to register vital events;
- Define the importance of a single form making possible comparison of data collected at the national level and in Mexico DF;
- In Mexico DF, to strengthen the implementation of the 2004 form of death certificate with technical resources including training and computer hardware;
- Strengthen the implementation of the 2004 form for fetal death certificate with technical resources including training and computer hardware
- Improve coordination among the two institutions participating in the vital statistics system;

For further info see Vital Statistics Report, World Bank…
CIVIL REGISTRATION AND VITAL STATISTICS IN NICARAGUA

Key Summary Indicators

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total population</td>
<td>5,376,140 (2004)</td>
</tr>
<tr>
<td>Administrative division</td>
<td>17 departments and 151 municipalities</td>
</tr>
<tr>
<td>GDP per capita (const. US$2000)</td>
<td>817</td>
</tr>
<tr>
<td>Adult literacy rate</td>
<td>77</td>
</tr>
<tr>
<td>TFR</td>
<td>3.16</td>
</tr>
<tr>
<td>IMR (1,000 births)</td>
<td>30.8</td>
</tr>
<tr>
<td>MMR (100,000 births)</td>
<td>82.8</td>
</tr>
<tr>
<td>% of births registered</td>
<td>85</td>
</tr>
<tr>
<td>% of deliveries by registered skilled attendant</td>
<td>67</td>
</tr>
<tr>
<td>% of deaths registered</td>
<td>47.1</td>
</tr>
<tr>
<td>% of deaths registered certified by a physician</td>
<td>NA</td>
</tr>
</tbody>
</table>

Situation Analysis

Civil Registration
- Mandatory birth & death registration;
- Done by the family mostly in local offices although there are a few of alternatives sites;
- Free of charge;
- Non-mandatory fee for late registration (after 8 days for births and 24 hrs for deaths);
- Fetal deaths are not registered;

Data Coverage
- Low coverage;
- Under-reporting on general deaths;
- No data on under-reporting for maternal mortality and fetal mortality; it is assumed to be important;

Barriers to registration
- Lack of awareness of the population of the importance of registering vital events;
- Several requirements to register: witnesses and marriage certificate is needed to register a birth; forensic certificate and municipal verification is needed in addition to death certificate to register a death;

Other Sources of Vital Statistics
- Last Population Census in 2005
- DHS Survey (last available in 2001)

Data Quality and Timeliness
- 60% adequate filling of birth certificate and 40% of death certificates (2001)
- Important delay on publicizing data;
- No data on quality of the statistics;
- No data on poorly defined deaths

Registration Process and Use of Vital Statistics

Organizational Structure
Centrally administered; vital events are recorded regionally by local offices of the Civil Registry (there is one office per municipality, 28 auxiliary offices in towns and 18 offices in maternity hospitals). Data is collected by health institution?
The Ministry of Public Health is the responsible for the vital statistics system with participation of the local health systems, known as SILAIS (Sistemas Locales de Atención Integral en Salud). The MOH is directly responsible for control of the birth and death forms.
The department of Statistics (INEC) has a very limited role of publishing the summary reports sent to them
by the Civil Registry offices. There is a National Commission of Vital Statistics formed by the three institutions.

**Reporting and Statistical Process**
- Most of the editing, coding and data entry is done electronically at the central level;
- ICD 10 is used for cause of death since 2005;
- Software in place to detect inconsistencies at data entry.
- Certificates are sent from point of registry to next level each month
- Data is entered electronically at national level

**Data Analysis and Utilization**
- Last official publication on vital statistics was on 1994;
- No system in place to monitor quality or timeliness of vital statistics

**Use of technology for data analysis**
- Automation is available only at the central level

**Innovative use of vital statistics**
- N/A

**Main efforts to improve registration and the registration system**
- The National Committee of Vital Statistics was created in 1984 to design the forms and manuals currently in use. But to date there are no coordination mechanisms or alliances among the institutions.
- Inter-agency project (UNICEF, PNUD, PAHO) coordinated by UNFPA to strengthen the civil registry and the vital statistics system is stand by while preparation of the census. Is is expected to resume in 2007

**Current Challenges**
- Enact a modern and specific law for civil registry;
- Expand the network and the registering mechanisms with the organization of mobile and auxiliary units;
- Register fetal deaths
- Increase education/information regarding the importance of reporting vital events;
- Connect electronically the central level with the departmental civil registry offices to increase coverage and quality of the information;
- Change/review forms in use to; update manuals, regulations and procedures;
- Foster the re-installation of the National Committee of the Civil Registry and Vital Statistics (CONARCEV);
- There is no separate information for deaths of women in reproductive age;
- There is no data regarding the degree of under-reporting maternal and fetal deaths;
- Improve institutional capacity for analysis, interpretation and dissemination of the information gathered through greater infrastructure of human and physical resources, especially within the Ministry of Health.

*For further info see Vital Statistics Report, World Bank…*
CIVIL REGISTRATION AND VITAL STATISTICS IN PANAMA

Key Summary Indicators

<table>
<thead>
<tr>
<th>Metric</th>
<th>Indicator/Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total population (2004)</td>
<td>3,175,354</td>
</tr>
<tr>
<td>Administrative division</td>
<td>9 provinces; 3 indigenous regions; 75 districts/municip.</td>
</tr>
<tr>
<td>% of births registered</td>
<td>95</td>
</tr>
<tr>
<td>Number of primary civil register offices</td>
<td>316</td>
</tr>
<tr>
<td>GDP per capita (const. US$2000)</td>
<td>4170</td>
</tr>
<tr>
<td>% of deliveries by registered skilled attendant</td>
<td>93</td>
</tr>
<tr>
<td>Adult literacy rate</td>
<td>92%</td>
</tr>
<tr>
<td>% of deaths registered</td>
<td>81</td>
</tr>
<tr>
<td>TFR</td>
<td>2.64</td>
</tr>
<tr>
<td>% of deaths registered certified by a physician</td>
<td>93</td>
</tr>
<tr>
<td>IMR (1,000 births)</td>
<td>18.8</td>
</tr>
<tr>
<td>MMR (100,000 births)</td>
<td>68.0</td>
</tr>
</tbody>
</table>

Situation Analysis

Civil Registration
- Mandatory birth & death registration;
- Done by the family, mostly in local offices but there are a few of alternatives sites;
- Free of charge;
- Non-mandatory fee for late registration (after 15 days for births, 3 days for deaths);
- Auxiliary registrars search “cases” and register the vital events in the rural areas;
- Witnesses are needed to register births/deaths;

Data Coverage
- No data on under-reporting for maternal mortality and fetal mortality; it is assumed to be important;
- No recent data on coverage

Barriers to registration
- Language/cultural barriers in some indigenous areas
- Lack of knowledge/motivation to report
- Low incentives for auxiliary registrars to search for cases

Other Sources of Vital Statistics
- Last Population Census in 1998

Data Quality and Timeliness
- Only 3% poorly defined deaths; this rises to 5% in the case of fetal deaths;
- No data on delay on publicizing data;
- No recent evaluations regarding the quality of the information collected.
- Indigenous areas have for sure greater proportion of under-reporting

Registration Process and Use of Vital Statistics

Organizational Structure
Since 1974, there are two parallel systems. The Civil Registry is the legal responsible of death and birth registration. The National Controller Office (Contraloria General de la Nacion), in turn, has a Department of Vital Statistics, in charge of collect, tabulate, and disseminates the information. This Department is also responsible for publish the info produced of all vital statistics in the country. The forms used by the two
institutions are different and final data presents inconsistencies. There is a Technical Committee of Vital Stats.

**Reporting and Statistical Process**
- Coding of death and birth statistical reports take place where???
- ICD X is used for cause of death since 1998
- Software in place to detect inconsistencies at data entry.
- Certificates are sent from point of registry to next level monthly
- Data is entered electronically at central level

**Data Analysis and Utilization**
- No system in place to monitor quality or timeliness of vital statistics;
- Last published statistics for 2001;

**Use of technology for data analysis**
- Support system for consistency and initial analysis

**Innovative use of vital statistics**
- N/A

---

### Main efforts to improve registration and the registration system

- The Technical Committee of Vital Statistics was created in XXXX but is not currently active;
- The Ley de Paternidad Responsible (Responsible Paternity Law) have improved the registration.

---

### Current Challenges

- Review and actualize the legal provisions ;
- Improve the mechanisms for the official registration of fetal deaths;
- Provide ongoing training to auxiliary registrars and identify the mechanisms to improve their working conditions;
- Evaluate the completeness and accuracy of the information reported to and container in the vital statistics system;
- Develop a training package with courses, seminars and instructional materials for national and local registrars, medical coders, data providers and statistician;
- Develop information, education and communications campaigns on the importance to report vital events;
- Improve coverage and quality of data collected.
- Improve the control of receipts, editing, querying, coding and quality control of vital statistics.
- Reactivate the Technical Committee to review the operations of the civil registry and vital statistics and assess the necessary coordination mechanisms to improve the system.
- Improve institutional capacity for analysis, interpretation and dissemination of the information gathered through greater infrastructure of human and physical resources, especially within the Ministry of Health.

*For further info see Vital Statistics Report, World Bank…*
CIVIL REGISTRATION AND VITAL STATISTICS IN PARAGUAY

Key Summary Indicators

<table>
<thead>
<tr>
<th>Total population</th>
<th>(2004)</th>
<th>6,017,196</th>
<th>Number of primary civil register offices</th>
<th>461</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrative division</td>
<td>18 departments</td>
<td>% of births registered</td>
<td>51</td>
<td></td>
</tr>
<tr>
<td>GDP per capita</td>
<td>1373 (const. US$2000)</td>
<td>% of deliveries by registered skilled attendant</td>
<td>77</td>
<td></td>
</tr>
<tr>
<td>Adult literacy rate</td>
<td>93%</td>
<td>% of deaths registered</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>TFR</td>
<td>3.74</td>
<td>% of deaths registered certified by a physician</td>
<td>64%</td>
<td></td>
</tr>
<tr>
<td>IMR (1,000 births)</td>
<td>20.6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MMR (100,000 births)</td>
<td>185</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Situation Analysis

Civil Registration
- Mandatory birth & death registration;
- Done by the family. -In some hospitals and civil register offices
- Theoretically is free of charge but fees are common;
- Birth certificate is required for catholic Baptist;
- After one year of the birth, requirements to register increase significantly;
- Fetal deaths are contemplated in the forms but in practice are not registered

Data Coverage
- Around 50% of children under 7 years of age (600,000) are not registered;
- 40% of deaths are not registered; the percentage is estimated to be much higher for children under one year
- Fetal deaths are mostly not registered
- No data on maternal deaths

Barriers to registration
- Low acknowledgment of the importance;
- Lack of time or money;
- Distance to registration units;
- 60% of births are not attended by skilled staff;
- Illegal cemeteries;
- Burial without certificates (in backyards) are common for children and older people

Other Sources of Vital Statistics
- Last Population Census in 2002
- DHS-type Survey (available in 2004)

Data Quality and Timeliness
- No data on deaths without known cause;
- Most deaths are non certified by a physician;
- One year delay on publicizing data;
- Rural, poor, and Indigenous areas with greater proportion of under-reporting;

Registration Process and Use of Vital Statistics

Organizational Structure
Centrally administered by the Dirección General del Registro Civil, dependant of the Ministry of Justice. Vital events are recorded locally (by local offices of the Civil Registry situated in most density populated localities).
The government institution responsible for vital statistics is the Ministry of Health. The MOH, trough 18 regional committees (one per sanitary region), consolidates and distributes the information for further statistical use. The Technical Committee of Vital Statistics is in place since 2004, integrated by the
Ministry of Health, General Direction of Statistics and the General Direction of Civil Registration. Data is collected by health institutions; the MOH coded and process all registries. The Statistics Office also received the data from the Civil Registry, consolidates both timely and delayed registries, codes and processes the data, and publishes it annually.

Reporting and Statistical Process
- Coding of death and birth statistical reports take place at Ministry of Health; only the cause of death is coded;
- ICD X is used for cause of death since 1996.
- No query system to complete/correct reports at source.
- Final tabulation and reporting is done at the national level
- No software in place to detect inconsistencies at data entry?
- Certificates are sent from point of registry to next level monthly
- Data is entered electronically at national level

Data Analysis and Utilization
- Both the Ministry of Health and the INE elaborate their own reports on Vital Statistics; those of the INE are the only ones with annual periodicity;
- No system in place to monitor quality or timeliness of vital statistics
- No analysis at municipal level

Use of technology for data analysis
- No, manual registry in place

Innovative use of vital statistics
- No

Main efforts to improve registration and the registration system
- In 1992 new forms for births and deaths were designed and implemented with support of the IADB.
- The National Conselour on Vital Statistics (Consejo Nacional de las Estadisticas Vitales) was created in 2003 and in 2004 the Tecnichal Committee (Comité Técnico de las Estadisticas Vitales)
- Last Mortality publication was done in 2003 with support of PAHO (data is from 2000).
- IADB project to support the electronic conversion of Civil Registry data.
- The UE has financed a campaign promoting the right to registry in vulnerable populations.

Current Challenges
- Assure gratuity of the vital events registry
- Assure geographical accesibility of registry offices
- Pay and train all local civil registrars, especially those located in rural areas
- Improve quality checks of data-entry at the central level
- Improve completeness of birth and death certificate.
- Improve quality of cause of death certification and coding
- Analyze the degree of under-reporting and its causes to propose solutions
- Diffusion/promotion of the importance of registry vital events among the population
- Effectively introduce fetal death registry
- Increase human resources, institutional strengthening, improve infrastructure.
- Strengthen the activities of the Technical Committee on Vital Statistics and unify its criteria.

For further info see Vital Statistics Report, World Bank…
**Civil Registration and Vital Statistics in Peru**

### Key Summary Indicators

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total population (2004)</td>
<td>27,562,392</td>
</tr>
<tr>
<td>Number of primary civil register offices</td>
<td>3,770</td>
</tr>
<tr>
<td>Administrative division</td>
<td>24 departments and 1 Constitutional province</td>
</tr>
<tr>
<td>GDP per capita (const. US$2000)</td>
<td>2206</td>
</tr>
<tr>
<td>% of births registered</td>
<td>54.8</td>
</tr>
<tr>
<td>% of deliveries by registered skilled attendant</td>
<td>50.2</td>
</tr>
<tr>
<td>% of deaths registered</td>
<td>51.7</td>
</tr>
<tr>
<td>% of deaths registered certified by a physician</td>
<td>31.8</td>
</tr>
<tr>
<td>IMR (1,000 births)</td>
<td>24.2</td>
</tr>
<tr>
<td>MMR (100,000 births)</td>
<td>185</td>
</tr>
</tbody>
</table>

### Situation Analysis

#### Civil Registration
- Mandatory birth & death registration
- Births should be registered within 30 days;
- Done by the family mostly in local offices;
- Birth registration is possible in 15 public hospitals (should be done within 3 days);
- Free of charge;
- Fetal deaths registration is not mandatory (hospitals filled at discretion)

#### Data Coverage
- Under reporting of births is estimated to be 45.2% (2003);
- Only half of deaths are registered;
- No data on under-reporting for maternal mortality and fetal mortality; it is assumed to be important;

#### Barriers to registration
- High proportion of home deliveries;
- Not perceived as important for a large proportion of the population;
- Illegal/Private cemeteries are frequent in rural areas;

#### Other Sources of Vital Statistics
- Last Population Census in 1993;
- DHS surveys (last available in 2004) estimated national infant mortality and maternal mortality ratios.

#### Data Quality and Timeliness
- Very few deaths are certified by a physician;
- 1.3% of birth certificates lack info on the age of the mother, in 11.1% the information on weight of the child was missing (2000);
- 13% cause of deaths poorly defined (2000);
- Important delays on publicizing data;
- Poor indigenous areas/sub-populations with greater proportion of under-reporting;

### Registration Process and Use of Vital Statistics

#### Organizational Structure
The national authority of civil registration is the Registro Nacional de Identificación y Estado Civil-RENIEC- part of the Peruvian electoral system. RENIEC has 11 regional offices. The operational unit in charge of civil registration is the “registration office” dependent of the local governments. Births and deaths are certified by health worker or civil registrar.

The National Institute of Statistics (Instituto Nacional de Estadisticas e Informatica, INEI) is the head of
the vital statistics system, dependent of the President of the Council of Ministries; it has 25 departmental offices of statistics and informatics and coordinates all governmental statistics offices. The General Office of Statistics and Informatics of the Ministry of Health is responsible for death and birth statistics since 2001. The Ministry of Health has 34 Regional Directions of Health. The MOH collects the info and consolidates a national electronic database. There are no time limits for the registry offices to send the statistical reports to the regional health authorities, therefore long delays are frequent.

**Reporting and Statistical Process**
- Coding of death and birth statistical reports take place at the Ministry of Health;
- Query of certificates is not systematic or standard in every regional direction of the MOH.
- ICD X is implemented since 2004.
- Software in place to detect inconsistencies at data entry.
- Certificates are sent from point of registry to next level annually
- data is entered electronically at national level

**Data Analysis and Utilization**
- Ministry of Health databases are partial since some Regional Offices have not reported their statistics;
- INEI published vital statistics annually until 1997; since then it only reports data for the Metropolitan area
- INEI has published an in-depth analysis on maternal mortality 1993-2000 based on 1996 and 2000 ENDES.
- The General Office of Epidemiology (MOH) has an active surveillance system of maternal mortality.
- No system in place to monitor quality or coverage of vital statistics

**Use of technology for data analysis**
- Few registration offices have started electronic registration of birth and death.

**Innovative use of vital statistics**
- No infant or maternal mortality review committees in place

**Main efforts to improve registration and the registration system**
- The National Registry Direction (RENIEC), created in 1995 and recently in operation is a result of a major effort to improve the registration system.
- Registration offices are being implemented at maternity hospitals, at present 15 are operating.
- In 2001 a two year agreement was signed between RENIEC, the Ministry of Health and the Institute of Statistics, committing the parties, amongst others, to develop strategies to improve quality of vital statistics and to train personnel at health services and the civil registrars.
- A new instruction handbook to improve death certification and completion of the new death certificate including instructive examples for defining cause of death and coding has been prepared by the MOH; it was distributed in 2004 along with training to personnel in charge of registration/reporting process.
- New live born and death certificate were implemented in 2004. The new birth form includes the footprint of the new born. The new death certificate inquires on recent obstetric history of women 10-54 and whether autopsy was performed.

**Current Challenges**
- RENIEC to set goals on registration of births and deaths, based on estimates by district, so that with the available statistics system by office, it may identify the districts with major under
registration and orient interventions to improve it;
• Implement specific strategies to encourage registration among the rural andean population;
• Achieve the capacity to develop a national electronic registry.
• Improve opportunity and completeness of electronic database;
• Sustain and strengthen the agreement between INEI; RENIEC and the Ministry of Health in order to use INEI’s capacity and experience to improve registration and reporting.
• Establish querying protocols and report schedules at each territorial level, both for the registration offices and for the health establishments and regional health directions.
• Establish routine interchange of information between the infant and maternal surveillance systems and the vital statistics information system.
• Analyze the degree of under-reporting and its causes.

*For further info see Vital Statistics Report, World Bank…*
Key Summary Indicators

<table>
<thead>
<tr>
<th>Total population</th>
<th>(2004) 3,439,473</th>
<th>Number of primary civil register offices</th>
<th>165</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrative division</td>
<td>19 departments</td>
<td>% of births registered</td>
<td>100</td>
</tr>
<tr>
<td>GDP per capita</td>
<td>5926 (const. US$2000)</td>
<td>% of deliveries by registered skilled attendant</td>
<td>99</td>
</tr>
<tr>
<td>Adult literacy rate</td>
<td>98%</td>
<td>% of deaths registered</td>
<td>100</td>
</tr>
<tr>
<td>TFR</td>
<td>2.08</td>
<td>% of deaths registered certified by a physician</td>
<td>100</td>
</tr>
<tr>
<td>IMR (1,000 births)</td>
<td>15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MMR (100,000 births)</td>
<td>33</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Situation Analysis

Civil Registration
- Mandatory birth & death registration;
- Done by the family (units of registry at the main maternity hospitals); in Montevideo is done directly by the director of the hospital;
- Birth certificate is needed to leave the hospital in any life birth occurrence;
- Free of charge; Late registration is free in public schools

Barriers to registration
- No apparent

Other Sources of Vital Statistics
- Last Population Census in 1996
- For perinatal deaths: Sistema de Información Perinatal (SIP).

Data Quality and Timeliness
- All deaths are certified by a physician and all births are attended by a skilled attendant;
- Two-year delay on publicizing data;
- Poorly defined deaths are around 7.8% (2002)
- Problems with physician certification of death

Registration Process and Use of Vital Statistics

Organizational Structure
Centrally administered; vital events are recorded regionally (trough either local offices of Civil Registry -in Montevideo and Canelones- or authorized parties -Juzgados de Paz). The Direcccion Nacional de Registro Civil is the responsible for registration; it is a decentralized governmental institution of the Judiciary Power.

The government institution responsible for vital statistics is the Instituto Nacional de Estadistica (INE), decentralized institute dependent of the Presidency. The INE is also responsible to coordinate with other government units such as the Ministry of Health. The Ministry of Health is in turn who receives the certificates, check its consistency, code the data and enter it in the database before sending to the INE.
Reporting and Statistical Process
- ICD X is used for cause of death;
- Manual system in place to repair certificates with problems;
- Software in place to detect inconsistencies at data entry;
- Certificates are sent from point of registry to next level monthly
- Data is entered electronically at national level

Data Analysis and Utilization
- The Ministry of Health do not publish regularly neither has a webpage; it does special request;
- The INE processes its own tabulations on vital statistics included in the Annual Statistical Report
- No system in place to monitor quality or timeliness of vital statistics

Use of technology for data analysis
- Very limited

Innovative use of vital statistics
- No infant or maternal mortality review committees yet in place

Main efforts to improve registration and the registration system
- Late registration in public schools partly financed by the IADB; the same project also planned to convert to electronic format the registries;
- In 2002 a Department of Information on Population was created with the purpose of also create a national system of health information. This department does not replace the other organizations
- Special system in place to assure the registry of perinatal deaths (including fetal deaths)

Current Challenges
- Increase availability of electronic records for registries;
- Improve registry of maternal deaths; to do so the death certificate should be updated;
- Improve quality of cause of death certification, training physicians.
- Change the death certificate (it is old-fashioned);
- Analyze the degree of under-reporting in maternal and fetal deaths.
- Improve the opportunity/timeliness of registry.
- Improve analysis capacity, interpretation and dissemination of information gathered. Tabulations available are few and basic.
- Assure regularity on both the Ministry of Health and INE publications.

For further info see Vital Statistics Report, World Bank…
CIVIL REGISTRATION AND VITAL STATISTICS IN VENEZUELA

Key Summary Indicators

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total population (2004)</td>
<td>26,127,000</td>
</tr>
<tr>
<td>Administrative division</td>
<td>23 states &amp; 1 Capital District</td>
</tr>
<tr>
<td>% of births registered</td>
<td>84.5</td>
</tr>
<tr>
<td>GDP per capita (const. US$2000)</td>
<td>4596</td>
</tr>
<tr>
<td>% of deliveries by registered skilled attendant</td>
<td>99.7</td>
</tr>
<tr>
<td>Adult literacy rate</td>
<td>93%</td>
</tr>
<tr>
<td>% of deaths registered</td>
<td>96.8</td>
</tr>
<tr>
<td>TFR</td>
<td>2.65</td>
</tr>
<tr>
<td>% of deaths registered certified by a physician</td>
<td>83.2</td>
</tr>
<tr>
<td>IMR (1,000 births)</td>
<td>16</td>
</tr>
<tr>
<td>MMR (100,000 births)</td>
<td>57.8</td>
</tr>
</tbody>
</table>

Situation Analysis

Civil Registration
- Mandatory birth & death registration;
- Fetal deaths are only recorded for statistical purposes;
- Done by the family (hospitals/registry office);
- Birth registration is required to leave hospital;
- Free of charge;

Data Coverage
- Registry coverage varies across institutions: INE statistical system captured around 41% of births in 2001. But the coverage of birth reports sent to the MOHSD statistics system in 2002 was much higher (around 84.8%);
- No data on under-reporting for maternal mortality and fetal mortality;
- Incomplete reports on deaths of children under one year of age (either age of the mother or baby weight was missing in more than 40% of cases).

Barriers to registration
- No apparent

Other Sources of Vital Statistics
- Last Population Census in 2001

Data Quality and Timeliness
- Timely registration of birth has been deteriorating: around 50% of deaths occurring in 2001 were registered the next two years;
- Death attributed to poorly defined causes was reduced from 5.9% in 1999 to 0.81% in 2002.
- Around two-years delay on publicizing data;
- Poor areas/sub-populations with greater proportion of under-reporting

Registration Process and Use of Vital Statistics

Organizational Structure
The National Office of Civil Registration, created in 1999, dependent of the National Electoral Council, will be the central authority. This law it is being implemented yet not operational as of 2003. The system in
place is decentralized and each state has its own registrar and a network of registration offices. The operational unit in charge of civil registration is the “jefatura civil” (Civilian Chief Office) dependant of the State; the consulate if in a foreign country. A decentralization process is taking place and registration offices will depend on the municipal governments.

Vital statistics are under the National Institute of Statistics (INE), autonomous institution ascribed to the Ministry of Planning and Development. INE has 24 regional offices, one in each state, in charge of collecting the statistical report from the birth and death registries. INE validates and tabulates the information collected at the regional branches in a the central database. With the implementation of the 2001 law on the Public Function of Statistics and the development of the National Statistics System- NSS- INE will stop all production and processing of information and will be dedicated only to the national census and to exert stewardship of the NSS. Exact timing for these events is not clear.

The MOH heads the process of collecting, coding and organizing the information on births and deaths that are collected at the health facilities on the certificates. The MOH is the head of the vital statistics system. It has an Epidemiology Direction in each of the 24 states.

**Reporting and Statistical Process**

- MOH State level offices code the live birth record and the death certificate received from health establishments;
- ICD X is used for cause of death since 1996;
- Software in place to detect inconsistencies at data entry;
- Certificates are sent from point of registry to next level monthly
- Data is entered electronically at the second level (Estates)

**Data Analysis and Utilization**

- Both the Ministry of Health and the INE elaborate their own reports on Vital Statistics;
- Annual publications are released on Vital Statistics; last year published is 2002;
- Last data published of causes of infant and maternal mortality are of 2001;

**Use of technology for data analysis**

- Several software are in use but a comprehensive system is still needed

**Innovative use of vital statistics**

No infant or maternal mortality review committees in place

**Main efforts to improve registration and the registration system**

- For the last 20 years, a WHO Collaborating Center for the Classification of Diseases operates at the Ministry of Health under the Direction of Social Information and Statistics.
- In 2000 the MOHSD started to enter in a central database the live birth report.
- Recent obstetric history has been included in the death certificate since 2000 for women in childbearing ages
- The new system that started implementation in 2003 have a registration office at the main hospitals for birth registration and is planned to put into operation electronic birth registration in every hospital unit.
- In 2002, sponsored by UNICEF, the Ministries of Health and of Justice launched a National Plan of Identity Since Birth. The plan will be completed in 2007 and is intended at developing and equipping the registration unit in the major hospital of each state. The largest maternity of Venezuela in Caracas started operating the registration unit in January 2004
- The development of the National Registration System is planned to have electronic registration in every office and online flow of data to the future regional registration offices of the National Electoral System where a central national database is to be held.
Current Challenges

- The 8 states where under reporting infant deaths is 30% or more, need technical assistance and follow-up.
- Quality of infant mortality death certificates needs to be improved in order to give full use to critical variables such as weight and age of mother.
- Having Venezuela reached a relatively low infant mortality rate for the region, there is an urgent need to start unifying and improving infant mortality information at the national and sub-national levels.
- The MOH needs to perform studies leading to estimate under reporting and miss classification of maternal mortality at the national and sub-national level.
- Improve institutional capacity for analysis, interpretation and dissemination of the information gathered through greater infrastructure of human and physical resources, especially within the Ministry of Health.

*For further info see Vital Statistics Report, World Bank…*
La gestión de los hospitales en América Latina

Resultados de una encuesta realizada en cuatro países

Richard J. Bogue, Claude H. Hall, Jr. y Gerard M. La Forgia

Junio de 2007