



Government of India

# **MORTALITY STATISTICS IN INDIA 2006**

## *Status of Mortality Statistics Reporting in India*

**A Report  
March 2007**



**Central Bureau of Health Intelligence (CBHI)**  
Directorate General of Health Services  
Ministry of Health & Family Welfare,  
Nirman Bhavan, New Delhi - 110011



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**A Report  
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*Compiled and Edited by*

Dr. Ashok Kumar, M.D., Dy.DG & Director  
Dr. D.K. Raut, Joint Director  
Ms. Pratima Gupta, Assistant Director  
Sh. Umed Singh, Assistant Director



**Central Bureau of Health Intelligence (CBHI)**  
Directorate General of Health Services  
Ministry of Health & Family Welfare,  
Nirman Bhavan, New Delhi - 110011

## **PREFACE**

The purpose of preparation of country (India) report on Mortality Statistics is to have complete knowledge on status of mortality statistics of the country (India), which is a crucial aspect for assessing the current health situation in the country. Both the magnitude and distribution of disease burden are important for formulating the policies and programmes for enabling resource allocation to better address health needs and for monitoring the impact of health interventions. The status of mortality statistics shows overall picture of mortality reporting system (system of death registration of the country both in the health institutions and the community) age-wise, sex-wise, as well rural/urban.

It is important to understand the challenges faced by the health sector there is a need to have a correct/latest picture on mortality statistics of the country. Working group was constituted and a meeting with the experts from Registrar General of India, Social Statistics Division of Ministry of Statistics and Programme Implementation, office of the Chief Registrar (Births and Deaths) Delhi, Bureau of Health Intelligence, MCD and Dy. Commissioner (MH) Ministry of Health & Family Welfare to discuss the issues related to status of mortality reporting in India.

## **ACKNOWLEDGEMENT**

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## **Contributors**

**Sh. Harbinder Singh**, Dy. Registrar General, O/o. of the Registrar General of India, New Delhi

**Sh. Sunil Jain**, Dy. Registrar General of India (SRS), O/o. of the Registrar General of India, R.K. Puram, New Delhi

**H. Borah**, Director, M/o. of Statistics and Programme Implementation, West Block-8, R.K. Puram, New Delhi

**S. Chakraborty**, Deputy Director, M/o. of Statistics and Programme Implementation, West Block-8, R.K. Puram, New Delhi

**Sh. N.T. Krishna**, Dy. Director, O/o. Chief Registrar, (B&D), Room No.148, Old Sectt. Delhi -84

**Dr. I.P. Kaur**, DC(MH), MOHFW/GOI, Nirman Bhawan, New Delhi

**Dr. J. Duggal**, MO (IT), Room No. 58, Bureau of Health Intelligence, M.C.D, Town Hall

**Mr. V.K. Harnal**, Medical Record Officer, Medical Record Department & Training Centre, Safdarjung Hospital, New Delhi

**Dr. Ashok Kumar**, Director, CBHI

**Dr. D.K. Raut**, Joint Director, CBHI

**Sh. P.K. Mukhopadhyay**, Joint Director, CBHI

**Ms. Pratima Gupta**, Asstt. Director, CBHI

**Sh. Umed Singh**, Asstt. Director, CBHI

**Sh. V.K. Khanna**, Asstt. Director, CBHI

**Sh. A.K. Chopra**, Asstt. Director, CBHI

**Ms. R.K. Beniwal**, Asstt. Director, CBHI

## SELECTED DEFINITIONS USED IN THE CURRENT REPORT

|                                     |                                                                                                                                                                      |
|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Crude death rate<br>(CDR)           | $\frac{\text{Number of deaths during the year}}{\text{Mid-year population}} \times 1000$                                                                             |
| Age-specific mortality rate (ASMR)  | $\frac{\text{Number of deaths in a particular age-group}}{\text{Mid-year population of the same age-group}} \times 1000$                                             |
| Infant mortality rate (IMR)         | $\frac{\text{Number of infant deaths during the year}}{\text{Number of live births during the year}} \times 1000$                                                    |
| Neo-natal mortality rate (NMR)      | $\frac{\text{Number of infant deaths of < than 29 days during the year}}{\text{Number of live births during the year}} \times 1000$                                  |
| Early neo-natal mortality rate      | $\frac{\text{Number of infant deaths of < than 7 days during the year}}{\text{Number of live births during the year}} \times 1000$                                   |
| Late neo-natal mortality rate       | $\frac{\text{Number of infant deaths of 7 days to < than 29 days during the year}}{\text{Number of live births during the year}} \times 1000$                        |
| Post neo-natal mortality rate(PNMR) | $\frac{\text{Number of infant deaths of 29 days to < than one year during the year}}{\text{Number of live births during the year}} \times 1000$                      |
| Peri-natal mortality Rate (PMR)     | $\frac{\text{Number of still births and infant deaths of < than 7 days during the year}}{\text{Number of live births and still births during the year}} \times 1000$ |
| Still birth rate                    | $\frac{\text{Number of still births during the year}}{\text{Number of live births and still births during the year}} \times 1000$                                    |

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# **EXECUTIVE SUMMARY**

## **Vital Statistics**

Sample Registration System (SRS) is the reliable source of nation wide vital statistics. The coverage of vital registration of deaths is 50-69 % through CRS. Cause of death information is most of the times (sometimes) recorded on Civil Registration System (CRS) forms.

The country has adequate capacity to implement data collection, process the data and analyze the data from SRS. Frequency of the assessment of completeness of vital registration is done every year through CRS. Tabulation list ICD 10 is currently in use. Proportion of all deaths coded to ill-defined causes is 11- 19 % (14 % in 2000). Published statistics from SRS are disaggregated by sex, age and geographic region. Sample registration system (SRS) developing and generating timely and accurate data, which is nationally representative. Verbal autopsy (VA) tool validated and questionnaire is publicly available. VA tool is consistent with international standards

Lag time between the statistics from VR /SRS/ DSS were last published and the time that the data were collected is Less than 3 years. Mortality rates from SRS are used for national / sub national analysis and cause of death from Medical Certification of Death (MCD) is used for national reports.

## **Mortality**

### **Under five mortality (all cause)**

Method used to collect the most recent major data point is SRS. For the most recently published estimate (upto 2 years ago) the data were collected through SRS. More than three times the data were collected in last 10 years. No major discrepancies in the data points over time and between sources during last decade noted. Coverage of data upon which the most recently reported estimate is based is sample of deaths. Most recent data point is disaggregated by demographic characteristics (e.g. sex and age) socioeconomic status (e.g. wealth or occupation or education of their parent) and by locality (e.g. urban-rural or major administrative region). SRS is used for country estimates, which is, and transparent well-established method.

## **Adult mortality (all cause)**

Method used to collect the most recent major data point is Sample vital registration. For the most recently published estimate, (upto 2 years ago) the data were collected through this method. Number of data collection rounds in last decade was three or more. Data points in last decade were consistent over time. Coverage of data upon which the most recently reported estimate is based is Sample of deaths. Most recent data point is disaggregated by demographic variables (age and sex), socio-economic status (e.g. by wealth quintiles, level of education, or occupations) and by locality (e.g. urban/rural), major administrative regions). This method of country estimates is transparent well-established.

## **Maternal Mortality**

Data collection method for most recent data point is sample vital registration with verbal autopsy. For the most recently published estimate (upto 2 years ago) the data were collected. More than three data collection rounds were made in last decade. No major discrepancies in data points in last decade over time. Coverage of data upon which the most recently reported estimate is based is sample of deaths. Most recent data point is disaggregated by demographic variables (age), socio-economic status (e.g. by wealth quintiles, level of education, and occupations) and by locality (e.g. urban/rural, major administrative regions). In country estimates transparent well-established method is used.

## **Mortality Data**

### **Overall mortality regardless of causes of death**

India has a national compulsory death registration system under the Registration of Birth and Death Act, 1969.

**At the local/individual level**, the deaths are reported in the civil registry and at some places local health authorities and police are also involved. **At the national level**, ministry of home affairs and ministry of health & family welfare are responsible for the final data. The national estimated completeness of overall registered deaths is 50-59% (as per the year 2004). The source of completeness estimate is SRS crude death rate and mid year population (projected/census) in thousands. The information on data collection does not include any overseas territorial units.

**Population officially covered by the registration system of the country:** All deaths occurring within the territory of India are included. Military personnel (armed forces) dying within the country is included, but those dying abroad are not included and Ministry of foreign affairs is responsible for recording these deaths.

### **Other data**

Last census was conducted in the year 2001. The mortality modules included in national census are (i) child ever born and still alive and (ii) sibling survival. These modules were always there since the beginning of census in 1941 and 1971 – 2001.

The number of deaths by age and sex in a specified time period can be derived from the module using P/F (Parity/Fertility) method and Brass method.

For the last ten years the other source of information on adult and /or child mortality is sample vital registration system.

### **Causes of Death**

We have a compulsory national death registration system and the cause of death is part of the information collected. The current International form of Medical Certificate of Cause of Death as recommended by WHO in ICD-10 is used. Three lines are present in Part I of our death certificate (form 4 & 4A). The percentage of registered deaths that are certified in our country by Medical doctors is 15 %. The percentage of registered deaths occurring in a hospital or other medical institution as per CRS report (1995) is 29.4%. The follow-up enquiries to the certifier in case of doubt or inconsistency about the cause of death are undertaken. In order to obtain information on cause of death Verbal autopsy technique is used and 2005 is the last year it was done. The cause-of-death statistics provided to WHO are compiled by date of occurrence. The coding procedure is Decentralized, done at the local/regional level. The underlying cause of death on the medical certificate and assigning of ICD code is done by the certifier. ICD-10 is being used in the country and for deaths due to external causes, dual coding of both the external cause and the nature of injury is done. The death registration form also includes a question on pregnancy at the time of death or pregnancy in the last 12 months.

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# Chapter -1

## INTRODUCTION

Mortality statistics is the key health indicator to assess quality of life. However reporting of deaths in India has been the challenge for Public Health organizations, Health planners and programmers. Registration of births and deaths is an important source for demographic data for socio-economic development and population control in developing countries. The data on population growth, fertility and mortality serves as the starting point for population projections. Apart from these vital indicators, an adequate evaluation of a number of programs in the health sector, including family planning, maternal and reproductive health, immunization programs, is dependent upon the availability of accurate, up-to-date fertility and mortality data.

It is essential to assess the status of existing Mortality statistics reporting mechanism in India to take appropriate interventions for its improvement. World Health Organisation(WHO) has requested to prepare a report on the mortality statistics coverage, current status of data collection, flow of mortality statistics including cause of death in the country and utilization of the mortality data.

The demographic scenario in the country has been undergoing a change since the inception of SRS; however, the profile and rate of change is not uniform in all the states. Overall, the crude birth rate in the country has come down from 36.9 per one thousand population in 1971 to 23.8 in 2005, whereas the crude death rate has declined from 14.9 to a low of 7.6 in the same period. The infant mortality rate, which is an important indicator of the health status of the country, has registered a significant decline from 129 per one thousand live births in 1971 to 58 in 2005. During the period, the total fertility rate of the country has declined from 5.2 to 2.9. To fulfill its objective of monitoring the changes in vital indicators, the SRS sampling units are retained for about ten years, making it a panel household survey.

The Survey of Causes of Deaths (Rural) has been merged with Sample Registration System from 1st January 1999 to give more impetus covering both rural and urban areas and wider representation of sample villages and urban blocks for Causes of Death. The primary objective of the survey is to build up statistics on “Most Probable Causes of Death” for rural and urban areas using “lay diagnosis reporting (Post Death Verbal Autopsy)” method through post death enquiry based on symptoms, conditions, duration and anatomical site of the disease as observed by family members of the deceased at the time of death. As the collection of causes of death requires knowledge on medical terminologies, symptoms of disease and interview techniques, the supervisors of SRS have been trained by medical professionals in the art of collection of data on causes of deaths. A well-designed VA instrument has been developed and introduced in SRS. Supervisors of all states have been trained with the new VA instrument. To enhance the objectivity of the system, the role of SRS supervisor is restricted to faithfully collect data on sign and symptoms by interviewing the close relative of the deceased. Apart from recording the

responses for closed questionnaire, he has to fill up the narrative portion of the VA instrument.

## **CONSULTATION MEETING FOR PREPARATION OF COUNTRY (INDIA) REPORT ON MORTALITY STATISTICS**

A working group was constituted to discuss the current issues related to Mortality statistics in the country. Representatives from DteGHS, Ministry of Health & Family Welfare GOI, Registrar General of India, Ministry of Statistics and Programme Implementation, Delhi State health information Bureau and Officers of CBHI actively participated in the meeting. The list of the participants is enclosed along with the Programme schedule (Annexure-1).

The consultation meeting of working group was conducted on 8th March 2007 at Niramna Bhawan, New Delhi with the following objective.

*To discuss and summarise the mortality statistics coverage, current status of data collection, flow of mortality statistics including cause of death in the country and utilization of the mortality data.*

The following three sub-groups were formed to discuss mortality specific key issues during the meeting. The groups were requested to perform the following task.

### **Key issues:**

Group 1: Overview of mortality Reporting System in India

Group 2: Reporting Cause of Death

A. Cause of death (COD)

B. Completeness of death registration

Group 3: Maternal and infant mortality statistics.

**Methodology:** The following methodology adopted during the meeting.

Discussion on the Questionnaire provided by WHO (Annexure-3)

Group work of the all participants from health information & vital registration (including other sectors, e.g. Central Bureau of Statistics, international and national NGOs) so that subjectivity is avoided to the highest extend.

The expert's view / answers to the questions were obtained by individual discussions with each expert.

### **Group Task:**

Identify group leader and rapporteur

Discuss the mortality reporting status in India on following discussion points

Amend (use reference material) and prepare the report

Present salient features.

All three groups had detail discussions on the topics allotted to them and made the draft for the presentation and subsequently the topics were discussed with other colleagues in the respective organisations. Suggestions and modifications on the various topics were again included and final report is updated with latest fact and figures on mortality data especially from SRS, Registrar General of India. The key findings and outcome of the consultation meeting of the working group is compiled and presented in the report.

## CHAPTER - 2

# METHODS OF MORTALITY STATISTICS REPORTING IN INDIA

### INTRODUCTION

In India Registrar General of India collect compile, analyze and publish Mortality statistics for the country under the provisions of Registration of Birth and Death Act (1969) through Civil Registration System (CRS) and Sample Registration System (SRS). The registration of births and deaths has been made compulsory under the Registration of Births & Deaths (RBD) Act, 1969. The state governments under the rules framed by them are implementing the provisions of this Act. Though more than 30 years have passed since the enactment of the legislation, the level of birth and death registration is not satisfactory in certain parts of the country.

The National Population Policy 2000 has recognized the need for registration of births, deaths and marriages and set the goal of achieving universal registration of these events by 2010. Considering the fact that the level of registration of events under the RBD Act is very low, the National Population Commission appointed a Working Group on Registration of Births, Deaths and Marriages with Registrar General, India as Chairman to look into various issues relating to registration of vital events.

#### **A. Civil Registration System (crs)**

The Civil Registration System Unit of the Office of the Registrar General, India coordinates and unifies the activities of the State Governments on Registration of Births and Deaths in the country. It also provides general direction and guidance to the States/UTs in this matter for effective implementation of the provisions of the Registration of Births and Deaths Act, 1969 and compiles and disseminates the statistical information on vital events based on the registration of births and deaths through various publications.

#### **A.1 Current Status**

The Civil Registration System of a country envisages recording each and every incidence of vital event for legal purposes and in the process captures a lot of information on various characteristics of these events, which help in the compilation of a continuous series of vital events. Complete, timely and accurate registration of births and deaths is very crucial for the understanding of population dynamics at the local level and planning of effective health and development programmes. The extent of completeness and accuracy of birth and death registration is by itself an indicator of the modernisation of society as vital statistics belong to the Core Statistics of any National Statistical System.

In India, civil registration was first introduced in the last century mainly as an aid to public health administration for locating and identifying diseases of public health importance and to undertake remedial measures to control mortality. However, registration was kept voluntary and different provinces had different legislations and there was no standardisation of concepts, definitions and classifications. Various Commissions and Committees have reviewed the civil registration based vital statistics system in the past. The enactment of the 'Registration of Births and Deaths (RBD) Act, 1969' replacing all diverse laws that existed on the subject, and the Model Rules framed under the Act introduced a uniform piece of legislation to overcome the problems of multiplicity of Acts and Rules that existed in the country. Thus, the Act aimed to have a uniform system of registration and data collection on vital statistics. The Act provides for compulsory registration of births and deaths in the country.

The RBD Act has provided for a hierarchical set-up for the registration machinery in the country, headed by the Registrar General of India at the Centre, The Chief Registrar of Births and Deaths is the chief executive authority in the State for implementing the provisions of the Act. There are District Registrars in the districts and Registrars and Sub-registrars for registering births and deaths occurring in the area allotted to them within a district. The States with the approval of the Central Government have made Rules in accordance with the Model Rules to implement various provisions of the Registration of Births and Deaths Act.

## **A.2 DEFICIENCIES**

It is estimated that 26 million births and 9 million deaths occur in India every year and based upon the reports received, only 53 percent of births and 48 percent of deaths are registered. About 10 million births, which are about 25 percent of the unregistered births in the world and about 4 million deaths, are not registered. The poor registration in the rural areas of the country is the main reason for incomplete registration. On the basis of births registered in rural and urban areas, assuming that these births have taken place to the population living in these areas, the estimated birth rate works out to 12 and 24 per thousand respectively against 28 and 20 per thousand estimated from Sample Registration System during 1995. Even if it is taken that a sizable proportion, say 35-40 per cent of the births registered in the urban areas come from the population living in the rural areas, the birth rate of the rural areas could be estimated at around 14 to 15 per thousand, which shows that the level of registration in the rural areas may be around only 50 per cent. Further, the levels of registration of births and deaths vary widely across the States. Thus, the Civil Registration System suffers from incomplete coverage and the problem is more acute in a few States, which account for a big chunk of this incomplete coverage. Given the complete coverage, the CRS has the potential to provide estimates of vital rates such as birth rate, death rate, infant mortality rate and other related fertility and mortality indicators even at the district and below levels and will be of immense importance for micro level planning for development. However, due to incomplete coverage of the system, these estimates are made available at the State level only through the Sample Registration Scheme (SRS). However, even the estimates of infant mortality rate for small States and UTs are not reliable due to the small sample size.

There are more than 200,000 reporting units in the country and more than 100,000 local registrars doing the actual work of registration. Monitoring the receipt of statistical returns from each and every registration unit on a monthly basis is a challenging task. Other requirements are of training, supervision and maintenance of a timely supply of forms and registers in the registration units.

A combination of administrative factors is responsible for the poor registration levels of vital events. Except for a few States and UTs, generally multiple agencies are involved in the registration work at the sub-national level. This poses immense problems of coordination, monitoring and supervision, which directly affect the quality and timeliness of data. Though high -level inter-departmental committees exist, they have remained ineffective in improving the situation in most of the States. Further, the registration functionaries at all levels do the work of registration in addition to their other normal duties in an honorary capacity generally, without any incentive. This is why the work of registration, preparation and submission of statistical returns do not get due attention and priority. The quality of data becomes a major casualty. The number of Registration centres has also been a contentious issue. If this number is too small there are problems of accessibility. On the other hand, a large number of registration centres pose huge problems of control, management and supervision. Lack of adequate budget for supplying material resources such as forms and registers, for meeting training and supervisory requirements and publicity efforts put a constraint on the system to perform better. With regard to the registration of marriages, though legislations exist in some States, however, there is no uniform legislative enactment in the country. Some of the existing enactments are applicable to specific religious groups. There is also no provision for registration of divorces.

Even in States that have achieved high levels of registration, there is a considerable delay in reporting of statistics from the local registrars, eventually delaying the compilation of vital statistics at the State and National levels. A lot of paper work required and pending at the level of Registrar is one of the major reasons for the delay in submission of returns. Different States have different arrangements for processing the data on civil registration, depending on the number of registration centres, availability of manpower in offices where tabulation is done and the level of computerisation at the State headquarters. Varying lengths of time taken for intermediate tabulation at the district and town/municipality levels seriously affect the tabulation work at the State level resulting in the failure of States to meet the time limit prescribed under the law for publication of statistical reports.

The other factors that lead to incomplete registrations are a general lack of awareness in the public about the statutory requirements and procedures of registration, lack of demand of birth and death certificates in rural areas, acceptance of alternate documents as proof of death, and lack of perception of any benefits of registration by the people. Further, the registration centres are not always easily visible. Around 75 percent of births and 80 percent of deaths are domiciliary in nature and the statutory reporting of the events lies with the household.

### A.3 RECOMMENDATIONS

The National Statistical Commission working group has given following recommendations for improvement of Civil Registration System in India.

The Civil Registration System (CRS), which is capable of providing vital rates not only at the district but also lower level, is deficient in most of the States and UTs. The justification for improvement in the system of civil registration and vital statistics would usually be based on a demonstration of the potential of such a system to create individual records that are useful for legal and administrative purposes and also to aggregate them into usable statistics. The CRS in the country has so far not served the needs for which it was set up and therefore; it attracts low priority and attention not only by the Government but also by also potential users. The Commission observes that incomplete registrations and delays in the upward movement of the registration data have been major problems for timely processing and publication of the results of the Civil Registration System and this has undermined the its utility. At present it is a passive system, in which most people do not realise the importance of reporting births and deaths. Where ANMs and other village level workers have been given the responsibility of reporting births and deaths to the Registrar there has been a positive impact. In spite of demands for publication of the absolute number of births, deaths, infant deaths, etc., such figures are not available. There is growing need for district level vital statistics, which is a major lacuna in the way of decentralised planning. Recently, released provisional results of the Census 2001 have revealed that the population has grown at a faster rate than estimated and the sex ratio in the age group 0-6 years has declined considerably during the last decade from 945 to 927. Had the Civil Registration System in the country been efficient in covering all births and deaths and bringing out data in time, it would have been possible to introduce necessary preventive measures in time. The results of Census 2001, once again stress the need for an efficient Civil Registration System. The Commission also recognises the goal of attaining of complete registration of vital events namely, births, deaths, marriages and pregnancy as one of the 14 socio-demographic goals to be attained by the year 2010 in the recently announced National Population Policy, 2000, and therefore recommends:

- (i) There should be a more pro-active Civil Registration System in place of the existing passive system. In rural areas, *panchayats*, local bodies and other basic and primary workers apart from Auxiliary Nurses, Midwives, Village Watchmen should play an active role in informing the Registrar about the occurrence of vital events. They should collect birth and death information from households and deliver the same to the Registrar. All States should implement this as a part of strategy to improve the registration. This can be achieved by giving the local level workers the responsibility for informing and collection of reports of events and getting them registered.
- (ii) Within a State, as far as possible, only one department of the Government should be responsible upto the district level for implementing the provisions of the RBD Act. Where multiple departments are involved, inter-departmental coordination committees should ensure effective and periodic reviews to propose measures for

- improving registration levels and provision of registration services by drawing up a plan of action. This requires tight monitoring and supervision of the registration work at the field level.
- (iii) Recognising the increasing role of local self-governance in the light of the 73<sup>rd</sup> and 74<sup>th</sup> Constitutional Amendments and considering the fact that quite a few States in the country have already taken initiative in this direction, the *panchayats* in the rural areas and Municipalities in the urban areas should gradually be given the responsibility for registration of births, deaths and marriages.
  - (iv) Sufficient resources should be provided to the agencies implementing the Registration of Births and Deaths (RBD) Act. The Planning Commission should provide funding to the States for this purpose. Further, to improve the availability of required forms and registers used for registration of vital events, the Central Government should bear the expenditure on this account.
  - (v) Regular training programmes should be organised by the States for Registration officials at all levels. The 'Registrar's Manual for Registration of Births and Deaths' being prepared by RGI should be made available to all concerned, and training programmes should be conducted to impart training to all Registrars in the use of the manual.
  - (vi) The revamped system of registration of births and deaths in the country introduced by Registrar General of India, mainly with a view to strengthen the statistical functions of the CRS and to reduce paper work at the level of the local Registrar, by facilitating computerised data entry, easy retrieval of records and reducing storage requirements of records, should be vigorously implemented in all the States. There should be special emphasis on the monitoring and supervision of the system particularly for poorly performing States in order to enhance their performance.
  - (vii) Production of birth and death certificates should be encouraged for various purposes, as it will help in improving the overall registration of vital events. For example, the production of birth certificates should be made mandatory for entering the name of new-born child in the ration card, school admission, etc., and death certificates for settling insurance claims and for inheritance of property by legal heirs, in case it is not so already in any State and UT.
  - (viii) Considering the stated goal in the National Population Policy of 100 per cent registration of marriages by 2010, sustained efforts should be made to achieve this goal through the Civil Registration System by suitably amending the RBD Act for registration of all marriages and divorces.
  - (ix) Public campaigns should be launched to create awareness among the general public about the need and importance of registration of births and deaths. Also steps should be taken to improve customer services by making registration centres more visible, prompt issue of birth and death certificates, simplifying the procedure, making registration in big hospitals more efficient and proper preservation and maintenance of records of vital events.
  - (x) Acknowledging the fact that an efficient Civil Registration System is the lasting solution to produce a regular series of vital rates e.g., fertility, mortality, etc. specific for age, sex, and educational level upto the district and even lower levels, the ultimate goal should be to put in place the Civil Registration System in the next 10 years and to use the Sample Registration System (SRS) as a source of

- data for longitudinal study of the social dynamics of the country and as a means of validating the CRS data.
- (xi) Recourse to Information Technology (IT) should be taken for establishment of an effective system of civil registration that would provide prompt service to the public and help in quick retrieval of information for both administrative requirements and statistical purposes. As the costs of hardware and network communications will come down in the coming years, decentralised data entry and data transmission at the Registration level should be the goal to be achieved within a few years. Sustained efforts should be made for adoption of IT in modernising the CRS. The computers provided by the Department of Family Welfare, Government of India may be utilised for this purpose as well.

## **B. SAMLE REGISTRATION SYSTEM**

In India, the need for dependable demographic data was felt soon after independence heralding the era of five year planning. The registration of births and deaths started on voluntary basis and there was no uniformity in statistical returns resulting in both under-registration and incomplete coverage. In order to unify the civil registration activities, the Registration of Births & Deaths Act, 1969 was enacted. Despite having the registration of birth & death compulsory under the statute, the level of registration of births and deaths under the Act has continued to be far from satisfactory in several states/UTs. With a view to generate reliable and continuous data on these indicators, the Office of the Registrar General, India, initiated the scheme of sample registration of births and deaths in India popularly known as Sample Registration System (SRS) in 1964-65 on a pilot basis and on full scale from 1969-70. The SRS since then has been providing data on regular basis.

### **B.1 Objectives:**

The main objective of SRS is to provide reliable estimates of birth rate, death rate and infant mortality rate at the natural division level for the rural areas and at the state level for the urban areas. Natural divisions are National Sample Survey (NSS) classified group of contiguous administrative districts with distinct geographical and other natural characteristics. It also provides data for other measures of fertility and mortality including total fertility, infant and child mortality rate at higher geographical levels.

### **B.2 Methodology:**

The SRS in India is based on a dual record system. The field investigation under Sample Registration System consists of continuous enumeration of births and deaths in a sample of villages/urban blocks by a resident part-time enumerator, and an independent six monthly retrospective survey by a full-time supervisor. The data obtained through these two sources are matched. The unmatched and partially matched events are re-verified in the field to get an unduplicated count of correct events. The advantage of this procedure, in addition to elimination of errors of duplication, is that it leads to a quantitative assessment of the sources of distortion in the two sets of records making it a self-evaluating technique.

The revision of SRS sampling frame is undertaken in every ten years based on the results of latest census. While changing the sample, modifications in the sampling design; wider representation of population; overcoming the limitations in the existing scheme; meeting the additional requirements are taken into account. The first replacement was carried out in 1977-78 and the last being in 2004. Whereas the replacement of samples in earlier years was undertaken in phases spread over 2-3 years, the replacement in 2004 was completed within a year. The following table provides the sample size in different replacement period.

**Table 2.1**  
**Number of sample units at different replacement period**

| <b>Residence</b> | <b>1969-70</b> | <b>1977-78</b> | <b>1983-85</b> | <b>1993-95</b> | <b>2004</b> |
|------------------|----------------|----------------|----------------|----------------|-------------|
| Rural            | 2432           | 3684           | 4176           | 4436           | 4433        |
| Urban            | 1290           | 1738           | 1846           | 2235           | 3164        |
| Total            | 3722           | 5422           | 6022           | 6671           | 7597        |

The earlier sample was based on the reliability of birth rate at the state level, whereas the 2004 sample is estimated using IMR and reliability at natural division level.

### **B.2.1 Structure of the Sample Registration System**

The main components of SRS are:

- (i) Base-line survey of the sample units to obtain demographic details of the usual resident population of the sample areas;
- (ii) Continuous (longitudinal) enumeration of vital events pertaining to usual resident population by the enumerator;
- (iii) Independent retrospective half-yearly surveys for recording births and deaths which occurred during the half-year under reference and up-dating the House list, Household schedule and the list of women in the reproductive age group along with their pregnancy status by the Supervisor;
- (iv) Matching of events recorded during continuous enumeration and those listed in course of half- yearly survey;
- (v) Field verification of unmatched and partially matched events; and
- (vi) Filling of Verbal Autopsy Forms for finalized deaths (Annexure-7)

#### **B.2.1.1 Baseline Survey:**

The base-line survey is carried out prior to the start of continuous enumeration. This involves preparation of a notional map of the area to be surveyed, house numbering and house listing and filling-in of a household schedule. The supervisor prepares a notional map with the help of the enumerator showing important landmarks and location of the houses to be covered in the sample unit. He then prepares a list of houses/households covered by the sample in the House List (Form-1) and fills-in the Household Schedule (Form-2) wherein he records the residential status and other demographic particulars of

each individual residing in the household viz. identification code, name, sex, date of birth, age, educational/marital status and relation to head of household, etc. The inmates of public institutions like hotels, inns, schools and hospitals are excluded, but households living permanently within the compound of such institutions are covered. A list of all women in the reproductive span along with their pregnancy status is also prepared in Form 3 at the time of the base line survey.

#### **B.2.1.2 Continuous enumeration:**

The enumerator maintains a Birth Record (Form 4) and a Death Record (Form 5) in respect of his area. The enumerator is expected to record all births and deaths occurring within the sample unit, as well as those of the usual residents occurring outside the sample unit. The events in respect of visitors occurring within the sample unit are also listed, but these are not taken into account while calculating rates. Thus, the events to be netted by the enumerator are those pertaining to: (i) usual residents inside the sample unit; (ii) usual residents outside the sample unit; (iii) immigrants present; (iv) immigrants absent; and (v) visitors inside the sample unit.

For ensuring complete netting, the enumerator uses different sources to get information of the occurrence of vital events in the sample unit. These include the help of the village priest, barber, village headman, midwife and such other functionaries. The enumerators maintain contact with these informants at frequent intervals and collect information about the occurrence of births and deaths. On being informed about the occurrence of an event, he visits the concerned household and records the prescribed particulars. He also keeps in touch with other socially important persons and visits local or nearby hospitals, nursing homes, cremation or burial grounds, at frequent intervals to keep himself updated about the occurrence of events. He maintains and updates a list of all women in the reproductive span along with their pregnancy status, which helps him in netting of all the births. Despite all these efforts, the enumerator may miss information about some of the events. Therefore, he is required to visit all the households once in each quarter in rural areas and once a month in urban areas, so as to ensure that all the events have been recorded.

#### **B.2.1.3 Half-yearly survey:**

Half-yearly survey is carried out independently in each sample unit by a full-time supervisor. The supervisor belonging to the statistical cadre of the State Census Directorates (either a Compiler or a Sr. Compiler or Statistical Investigator or any suitable official) visits each household in the sample unit and records the particulars of births and deaths in Forms 9 & 10 respectively in respect of all the usual residents and visitors (only those occurring within the sample unit) which had occurred during the half-yearly period (January-June or July-December) under reference. Simultaneously, he updates the house-list, the household schedule and the pregnancy status of women by making entries of changes, if any. While carrying out this survey he does not have access to the birth and death records of the enumerator for the same periods which are withdrawn from the field before the supervisor's visit for the half yearly survey.

#### **B. 2.1.4 Matching:**

On completion of the half-yearly survey, the Forms 9 & 10 filled-in by the supervisors are compared with those in the Forms 4 & 5 (filled-in by the enumerators). This is done at the office of Directorate of Census Operations for all states except for rural areas of Kerala and Maharashtra, where it is done at the office of Directorate of Economics and Statistics of the respective states. Selected important entries in the enumerator's and supervisor's record are matched item by item and events are classified as fully matched, partially matched and unmatched. The items generally considered for matching are: Identification code of the head of Household and mother, Relationship of the mother to head, date of live birth, month in case of still birth/abortion, sex in case of live birth /still birth (for birth) and identification code of the head of household and mother in infant death, relationship of the deceased to head, date of death and sex in case of death.

#### **B.2.1.5 Field verification of unmatched and partially matched events:**

Every unmatched or partially matched event is verified by a visit to the concerned household. This is done either by a third person or jointly by the supervisor and the enumerator, depending upon the availability of staff.

#### **B.2.2 Sample design**

The Sample design adopted for SRS is a uni-stage stratified simple random sample without replacement except in stratum II (larger villages) of rural areas, where two stages stratification has been applied. In rural areas of bigger states (population with ten million or more as per Census 2001), natural division is the first geographical stratification or in rural areas of a smaller states, the stratification has been done on size of villages with villages having population less than 2,000 forming Stratum I and villages with population 2,000 or more forming Stratum II. Smaller villages with population less than 200 are excluded from the sampling frame in a manner that the total population of villages so excluded did not exceed 2 per cent of the total population of the concerned natural division in the state. The number of sample villages in each state is allocated to the substrata proportionally to their size (population). The villages within each size stratum are ordered by the female literacy rate based on the Census 2001 data, and three equal size substrata are established. The sample villages within each substratum are selected at random with equal probability. In the case of villages of Stratum 2, each sample village with a population of 2,000 or more is subdivided into two or more segments in a way that none of the segments cut across the Census Enumeration Blocks (CEBs) and the population of each segment formed by grouping the contiguous CEBs is approximately equal and do not exceed 2000. A frame of segments are prepared and selection of one segment is done at random at the second sampling stage for the SRS enumeration.

In urban areas, the categories of towns/cities have been divided into four strata based on the size classes in contrast to the six strata in the earlier sampling frame. Towns with population less than one lakh have been placed under stratum I, towns/cities with population one lakh or more but less than 5 lakhs under stratum II, towns/cities with population 5 lakh or more under stratum III and four metro cities of Delhi, Mumbai,

Chennai and Kolkata as separate strata viz. stratum IV. The sampling unit in urban area is a Census Enumeration Block. The Census Enumeration Block within each size stratum is ordered by the female literacy rate based on the Census 2001 data, and three equal size substrata are established. The sample Census Enumeration Block within each substratum is selected at random with equal probability. A simple random sample of these enumeration blocks are selected within each sub-strata without replacement from each of the size classes of towns/cities in each State/Union Territory.

### **B.2.3 Sample size**

The Infant Mortality is the decisive indicator for estimation of sample size at Natural Division, the ultimate level for estimation and dissemination of indicators for rural areas. The permissible level of error is taken as 10 prse (percentage relative standard error) at Natural Division level for rural areas and 10 prse at state level for urban areas, in respect of major states having population more than 10 million as per Census 2001. For minor states, 15 prse has been fixed at the total state level. Usually, the above criteria is followed, however, there have been a few exceptions, on account of operational constraints. Based on the above criteria, the number of units has been increased from 6671 to 7597 with 4433 in rural and 3164 in urban areas. Table 2.2 shows the number of sample units and population covered in 2005, separately for rural and urban areas of all the states and union territories.

### **B.3 Estimation procedure**

Estimates of population, births, deaths and infant deaths for natural division in rural areas for bigger states and at state level for smaller states separately for rural/urban areas for all states/UTs are obtained using unbiased method of estimation. The estimates of birth, death and infant death rates are obtained as the ratios of the 'estimated births to estimated population', 'estimated deaths to the estimated population' and 'estimated infant deaths to estimated births' respectively expressed in terms of per thousand.

**Table: 2.2**  
**Number of sample units and population covered India, States and Union territories, 2005**

| India/States/Union territories | Number of sample units |              |              | Population covered (in'000) |              |              |
|--------------------------------|------------------------|--------------|--------------|-----------------------------|--------------|--------------|
|                                | Total                  | Rural        | Urban        | Total                       | Rural        | Urban        |
| 1                              | 2                      | 3            | 4            | 5                           | 6            | 7            |
| <b>India</b>                   | <b>7,597</b>           | <b>4,433</b> | <b>3,164</b> | <b>6,830</b>                | <b>3,513</b> | <b>3,318</b> |
| <b>Bigger States</b>           |                        |              |              |                             |              |              |
| 1. Andhra Pradesh              | 375                    | 235          | 140          | 394                         | 199          | 195          |
| 2. Assam                       | 300                    | 90           | 210          | 195                         | 101          | 94           |
| 3. Bihar                       | 330                    | 200          | 130          | 334                         | 175          | 159          |
| 4. Chhattisgarh                | 130                    | 40           | 90           | 99                          | 51           | 48           |
| 5. Delhi                       | 200                    | 10           | 190          | 142                         | 77           | 65           |
| 6. Gujarat                     | 365                    | 215          | 150          | 351                         | 181          | 170          |
| 7. Haryana                     | 210                    | 100          | 110          | 202                         | 108          | 94           |
| 8. Jammu & Kashmir             | 260                    | 150          | 110          | 213                         | 111          | 102          |
| 9. Jharkhand                   | 170                    | 60           | 110          | 112                         | 59           | 53           |
| 10. Karnataka                  | 480                    | 330          | 150          | 431                         | 216          | 215          |
| 11. Kerala                     | 250                    | 150          | 100          | 333                         | 161          | 172          |
| 12. Madhya Pradesh             | 340                    | 220          | 120          | 305                         | 159          | 146          |
| 13. Maharashtra                | 485                    | 250          | 235          | 398                         | 204          | 194          |
| 14. Orissa                     | 405                    | 290          | 115          | 324                         | 163          | 161          |
| 15. Punjab                     | 250                    | 150          | 100          | 235                         | 124          | 111          |
| 16. Rajasthan                  | 350                    | 250          | 100          | 317                         | 166          | 151          |
| 17. Tamil Nadu                 | 465                    | 250          | 215          | 448                         | 225          | 223          |
| 18. Uttar Pradesh              | 500                    | 350          | 150          | 537                         | 284          | 253          |
| 19. West Bengal                | 555                    | 310          | 245          | 555                         | 286          | 269          |
| <b>Smaller States</b>          |                        |              |              |                             |              |              |
| 1. Arunachal Pradesh           | 60                     | 45           | 15           | 30                          | 16           | 15           |
| 2. Goa                         | 85                     | 43           | 42           | 76                          | 38           | 38           |
| 3. Himachal Pradesh            | 190                    | 140          | 50           | 92                          | 46           | 46           |
| 4. Manipur                     | 150                    | 110          | 40           | 129                         | 65           | 64           |
| 5. Meghalaya                   | 120                    | 90           | 30           | 61                          | 30           | 30           |
| 6. Mizoram                     | 40                     | 20           | 20           | 29                          | 15           | 15           |
| 7. Nagaland                    | 45                     | 33           | 12           | 36                          | 19           | 17           |
| 8. Sikkim                      | 60                     | 45           | 15           | 57                          | 29           | 27           |
| 9. Tripura                     | 80                     | 60           | 20           | 102                         | 52           | 50           |
| 10. Uttaranchal                | 150                    | 100          | 50           | 108                         | 56           | 52           |
| <b>Union Territories</b>       |                        |              |              |                             |              |              |
| 1. Andaman & Nicobar Islands   | 50                     | 34           | 16           | 33                          | 17           | 16           |
| 2. Chandigarh                  | 35                     | 5            | 30           | 30                          | 17           | 13           |
| 3. Dadra & Nagar Haveli        | 30                     | 22           | 8            | 37                          | 20           | 17           |
| 4. Daman & Diu                 | 20                     | 13           | 7            | 26                          | 15           | 12           |
| 5. Lakshadweep                 | 12                     | 6            | 6            | 14                          | 7            | 7            |
| 6. Pondicherry                 | 50                     | 17           | 33           | 44                          | 22           | 22           |

Note: Rural-Urban population may not add up to total due to rounding

## **B.4 Organization and Supervision**

From 1995, the SRS is being implemented mainly through the Directorates of Census Operations in both rural and urban areas. However, in the states of Kerala and Maharashtra the implementation of fieldwork and their monitoring for rural units has been entrusted to the Directorate of Economics & Statistics and the urban units to the Directorate of Census Operations.

For continuous enumeration, there is an enumerator for each sample unit, who is usually a anganwadi/resident teacher employed on a part-time basis and is paid honorarium for this purpose. For supervision and conduct of half-yearly surveys, there are full-time supervisors at the state headquarters. One supervisor is usually assigned a set of 10 to 12 sample units for conducting half-yearly surveys. Each state headquarters have a complement of staff necessary for planning and organizing various field operations, training of the field staff, effecting proper supervision and control, ensuring regular flow of returns from the field, forwarding of various returns to the Office of the Registrar General, India and for undertaking certain minimum tabulations.

At the national level, the Vital Statistics Division of the office of the Registrar General, India coordinates the implementation work, formulates and prescribes necessary standards, provides necessary instructions and guidance, undertakes tabulation, analysis and dissemination of data.

Supervision of the field work is an important component of SRS. This is undertaken by the supervisory level officials such as the Investigator, Assistant Director, Deputy Director, Joint Director and Director. Officers at the state headquarters undertake visits to sample units and inspect the work at the field level. Officers of Vital Statistics Division in the headquarters also undertake surprise checks and visits in SRS units for control of the quality of work.

## **B.5 SRS Forms and their flow**

For collecting information on population and vital events various forms/schedules have been prescribed under the SRS. Depending upon various operations under the system, the following 17 types of forms are in use:

### **A. Baseline Survey Forms**

- Form 1: House List
- Form 2: Household Schedule
- Form 3: Pregnancy Status of women

### **B. Continuous Enumeration Forms**

- Form 4: Outcome of Pregnancy recorded by Enumerator (January-June/July-December)
- Form 5: Deaths recorded by Enumerator (January-June/July-December)
- Form 6: Monthly report of Outcome of Pregnancy
- Form 7: Monthly report of Deaths

### **C. Half yearly Survey Forms**

Form 9: Outcome of Pregnancy recorded by Supervisor (January-June/July-December)

Form 10: Deaths recorded by Supervisor (January-June/July-December)

Form 15: Distribution of usual resident population by age, sex and marital status  
(as on 1st July/1st January)

Form 16: Distribution of Female population by broad age groups and levels of  
education (as on 1st July of the year)

Form 17: Number of females who got married  
by age at effective marriage (January-June/July-December)

### **D. Compilation/Tabulation Forms**

Form 8: Consolidated monthly report on births and deaths

Form 11: Finalised list of Outcome of Pregnancy (January-June/July-December)

Form 12: Finalised list of Deaths (January-June/July-December)

Form 13: Results of the HYS for Outcome of Pregnancy (January-June/July-December)

Form 14: Results of the HYS for Deaths (January-June/July-December)

Every enumerator records all births and deaths events (Forms 4 and 5) on a continuous basis and retains with him for six months prior to initiation of the next half yearly surveys. He is required to send to the state headquarters in the first week of the following month a monthly report on births and deaths (Forms 6 and 7). He copies down the relevant entries of birth and death records in monthly report from six monthly records and sends to the state headquarter. On the basis of the monthly reports received from the sample units, the state headquarters are required to prepare a consolidated monthly report (Form 8) and forward the same to the Office of the Registrar General, India by the end of the following month. The monthly reports for the individual units remain at the state headquarters. The supervisor records details of each birth and death event occurring during the six-month reference period in Forms 9 and 10 respectively. After matching of each birth and death event recorded in Forms 4 and 5 with those in Forms 9 and 10 and verification of partially and unmatched events in the field, finalized forms 11 and 12 are prepared after necessary corrections and inclusion of additional events recorded during the survey. These forms are sent to the Office of the Registrar General, India along with the half-yearly survey results in Forms 13, 14, 15, 16 and 17. Efforts are being made to computerize the entire system of period report including matching report and generation of specific tables thereon.

# **CHAPTER - 3**

## **MEDICAL CERTIFICATION OF CAUSE OF DEATHS**

### **1. Introduction:**

At the national level, the Registrar General of India (RGI) is responsible for collection, collation and publication of cause of death statistics. At the state level, the Vital Statistics Division of the Directorate of Health deals with cause of death statistics. It is of vital importance to know the leading causes of deaths, as they are essential for prioritizing Public Health Initiatives and various National Health Programmes.

Medical Certification of cause of Death is an important tool of obtaining authentic & scientific information regarding causes of mortality. The Scheme is formulated by Office of the Registrar General, India is a big step towards the establishment of a system in the country for obtaining data on causes of death. The Scheme had undergone phase-wise implementation in the State, starting from medical college hospitals. In second phase, District hospitals, specialized hospitals were covered. The office of the Registrar General had given necessary administrative guidelines regarding coverage of MCCD Scheme in both urban & rural area. Attempts are being made to cover all private & govt. hospitals since 1998. A brief overview of the cause of death reporting systems in India is given below.

### **2. Flow of MCCD Data**

Cause of death reports originate from lay reporters in rural areas and medical attendants in urban areas. The reports reach the State Vital Statistics office through the primary health centre, in case of rural areas, and the municipal health office for urban areas.

The data of MCCD flows from Hospitals/medical institutions of the notified areas to the Registrar (B&D) who has the functional jurisdiction. Thereafter it gets channelized to the District level and in turn to the o/o Chief Registrar of the concerned State for the preparation of Annual Report. The state reports will be consolidated into national level report on MCCD. A novel system of reporting of vital events is in vogue in NCT of Delhi (Area under Municipal Corporation of Delhi) wherein all registered health institutions furnish data “online” as they have been provided with unique “user-id” and “password”. This modal is likely to be replicated in other states in the future which will enhance the accuracy and reduce the time lag.

Tabulation is usually done at the state level but the statistics are published by the RGI. Until December 1998, cause of death data for the rural areas used to be collected under the Survey of Cause of Death Rural (SCD-Rural) scheme, from a sample of villages by a lay diagnosis and reporting system.

A paramedical person from the PHC is designated as the field agent who undertakes the primary survey. (S)he identifies key informants and maintains liaison with them. A household register is drawn up and updated on a half yearly basis. For each death occurring in the village, the field agent identifies one or more persons having knowledge of the circumstances of death, interviews them and records the symptoms and circumstances of death in Form-7.

A structured questionnaire is used to investigate cause of death using the symptoms and circumstances of death. The structured questionnaire is supplemented by a check list. The field agent arrives at a probable cause of death by applying the structured questionnaire to symptoms and circumstances recorded in Form-7. The check list entry against the probable cause of death is tallied with the symptoms and circumstances of death. The cause of death thus arrived is reported in Form-3. The PHC statistician is designated as the recorder of events reported by the field agent. Half-yearly verification of the household list is done by the recorder. Medical officer of the PHC is expected to check and certify the correctness of cause of death assignment by the field agent. Assignment of cause of death is done by the field agent based on a structured interview with a member of concerned household. The structured questionnaire currently in use was adopted after taking into account five years of field experience with a provisional questionnaire. The non medical list (NML) of causes of death was last revised in 1983 to correspond to ICD ninth revision (RGI, 1991). SCD-Rural used verbal autopsy (VA) to arrive at cause of deaths using paramedical personnel.

Since January 1999 a cause of death component has been added to the SRS (RGI, 1999). Two more columns have been added to SRS Form-5 (Columns 16-17) and Form-10 (columns 12-13). The SRS part-time enumerator (PTE) records cause of death in column 16 and the code in column 17 of the revised Form-5. The SRS supervisor records similar information in columns 12 and 13 of the revised Form-10. A major departure from the SCD-Rural design is doing away with the symptom record (SCD-Rural Form-7). Another departure from the SCD-Rural is the elimination of the structured questionnaire. Instead the instructions contain a list of causes, related symptoms for some, and the corresponding ICD-10 code. In case of the urban areas, a medical certification of cause of death (MCCD) scheme is operational. This scheme has been accorded legal sanction under the Registration of Births and Deaths (RBD) Act. All medically attended deaths are expected to be registered (Form-2) along with cause of death reports in a format (Form-4) which is similar to what is prescribed by the WHO for International Classification of Cause of Death (ICD). The responsibility for reporting cause of death rests with the doctor / health care provider who last attended on the deceased. Reports are sent to the municipal health authorities, who forward them to the concerned state vital statistics office. The medical attendant is required to follow guidelines contained in the Physician's manual on medical certification of cause of death (RGI, 1992). This manual prescribed the WHO form for reporting cause of death according to the current version of ICD. Coding and tabulation is done according to the National List which is an adaptation of the ICD basic tabulation list. Since the MCCD essentially implements ICD coding and guidelines, the design of the system is considered satisfactory.

### **3. Characteristics of a usable cause of death reporting system:**

Ruzicka and Lopez (1990) have listed five criteria used by the World Health Organisation to assess fitness of country-level cause of death data for inclusion in its compilations. Firstly, the proportion of all deaths attributed to residual categories such as "Symptoms, signs and ill defined conditions" is within limits, say less than 10%. Secondly, the proportionate distribution of deaths by cause is consistent with the estimated mortality level for that country. Thirdly, no cause of death with a clear age-sex dependency has been incorrectly assigned. Fourthly, the age-sex distribution for major causes is consistent with what one may expect for each cause. Finally, data generated by the system are consistent with previous years. Note that these are basically plausibility checks. A data set failing these criteria is more likely to be biased. A data set satisfying these criteria may still not be usable, on account of poor statistical power of the generated estimates, and biases that are not readily noticeable.

### **4. Statutory Frame-work**

The scheme on Medical Certification of Cause of Death (MCCD) being implemented by the office of the Registrar General, India aims to provide a reliable database for generating mortality statistics, which forms an integral part of the vital statistics system. Statistics on causes of death is obtained through the Civil Registration System under the Registration of Births and Deaths Act, 1969. Section 10(2) empowers the states to implement this scheme in any given area while taking into account the level of health infrastructure where as Section 10(3) of the Registration of Births & Death Act, 1969 fixes the onus for the issuance of a certificate as to the cause of death on the medical practitioners who attended the deceased at the time of death. However, the Act provides for maintaining the confidentiality of individual information by forbidding its disclosure under section 17(1).

The scheme of Medical Certification of Cause of Death is being implemented in most of States/UTs in a phased manner to provide reliable data on cause of death. The Offices of the Chief Registrar of Births and Deaths are tabulating data on MCCD in conformity with the International Classification of Diseases (ICD)-Tenth Revision. The statistical report generated by analysis of the data collected is published in the annual publication 'Medication Certification of Cause of Death'.

### **5. Level of Registration of COD**

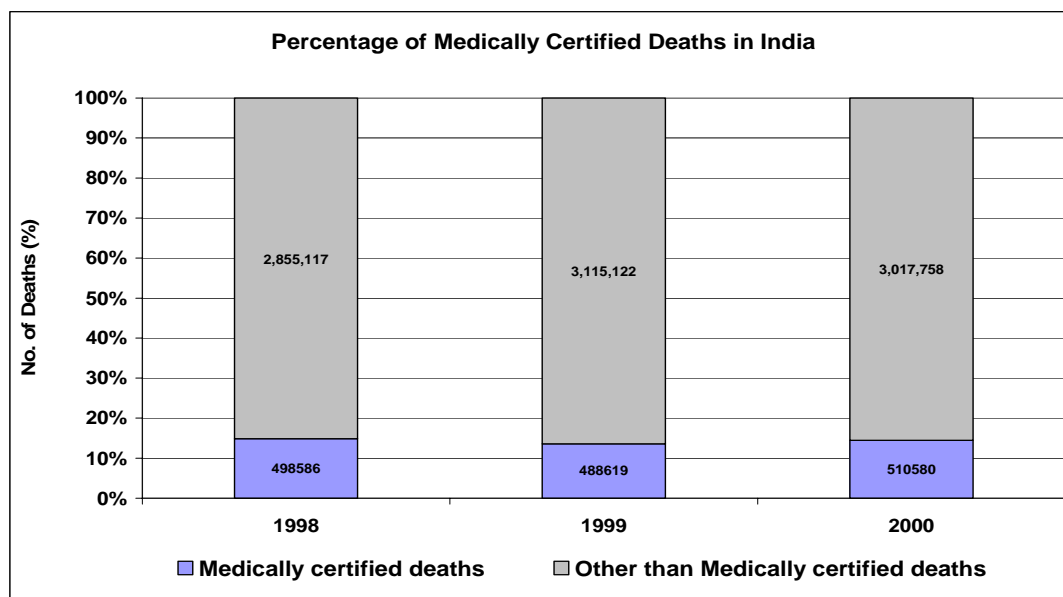
The quality of mortality data and the reliability of cause analysis in respect of medically certified deaths, to a great extent, depend on the level of registration of deaths. The current level of registration of births and deaths in the country is far from complete. Continuous efforts are being made by the Office of the Registrar General, India to bring about improvements in the system.

The proportion of medically certified Deaths in the total deaths is highly un-even among states of India. During the year 2000 it varied from as high as 94% in the state of Goa to a very low of less than 1% in case of the state of Utter Pradesh. Scheme implementation as

per the Sample Registration Scheme (SRS) estimates, implemented by Registrar General of India, the level of death registration in the country is about 50%. Further, the proportion of medically certified deaths is abysmally low of 14.5% during the year 2000. The time series data for the years 1998-2000 is presented in the table 3.1. The diagrammatic presentation also gives the status of level of registration in the country in a vivid manner.

**Table 3.1: Profile of Death Registration in India**

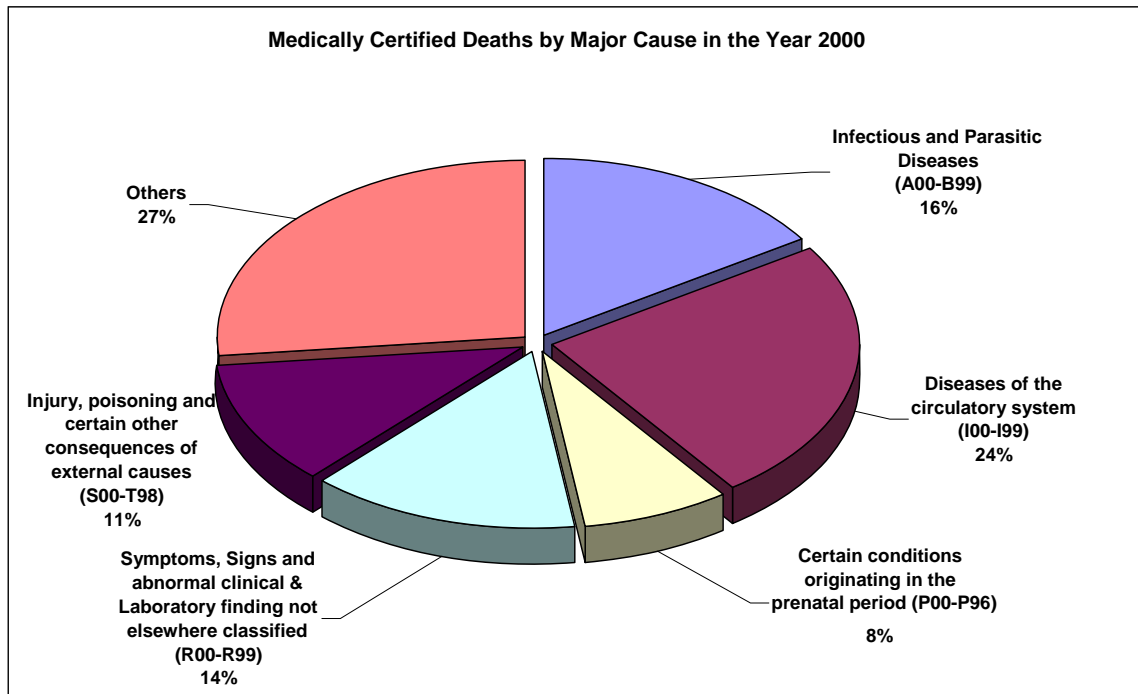
| Year | Number of Registered Deaths | Crude Death Rate (per1000 population) | Level of Death Registration | Medically Certified Deaths | % of Medically Certified Deaths to Total |
|------|-----------------------------|---------------------------------------|-----------------------------|----------------------------|------------------------------------------|
| 1998 | 3,353,703                   | 9.0                                   | 49.7                        | 498586                     | 14.9                                     |
| 1999 | 3,603,741                   | 8.7                                   | 51.8                        | 488619                     | 13.6                                     |
| 2000 | 3,528,338                   | 8.5                                   | 49.8                        | 510580                     | 14.5                                     |



## 6. Medical Certification of Cause of Death

During the year 2000, the total number of 510580 medically certified deaths were registered in India under the civil registration system. The cause analysis revealed that about 73.33% of the total medically certified deaths that has taken place in the year 2000

were under five major causes viz. Diseases of the circulatory system (I00-I99)(24.34%), Infectious and Parasitic Diseases (A00-B99)(15.72%), Symptoms, Signs and abnormal clinical & Laboratory finding not elsewhere classified (R00-R99)(14.21%), Injury, poisoning and certain other consequences of external causes (S00-T98)(11.28%), Certain conditions originating in the prenatal period (P00-P96)(7.79%) and the remaining 26.66% certified deaths were classified under the other causes. The MCCD data in terms of 19 major categories for the years 1998-2000 is presented in table 3.2 gender-wise.



**Table 3.2: Distribution of Medically Certified Deaths by Cause (ICD 10)**

| S. No | Cause of Death                                                                                                | 1998  |        |        |       | 1999  |        |        |       | 2000  |        |        |       |
|-------|---------------------------------------------------------------------------------------------------------------|-------|--------|--------|-------|-------|--------|--------|-------|-------|--------|--------|-------|
|       |                                                                                                               | Male  | Female | Total  | %age  | Male  | Female | Total  | %age  | Male  | Female | Total  | %age  |
| 1     | Infectious and Parasitic Diseases (A00-B99)                                                                   | 53594 | 28314  | 81908  | 16.43 | 46916 | 24800  | 71716  | 14.68 | 52674 | 27609  | 80283  | 15.72 |
| 2     | Neoplasms (C00-C14)                                                                                           | 9373  | 6415   | 15788  | 3.17  | 10232 | 7226   | 17458  | 3.57  | 10655 | 7766   | 18421  | 3.61  |
| 3     | Diseases of the Blood and blood forming organs and certain disorders involving the immune mechanism (D50-D89) | 5776  | 5355   | 11131  | 2.23  | 4177  | 3690   | 7867   | 1.61  | 4106  | 4071   | 8177   | 1.60  |
| 4     | Endocrine, Nutritional and Metabolic Diseases (E00-E99)                                                       | 7593  | 5138   | 12731  | 2.55  | 8675  | 5709   | 14384  | 2.94  | 9937  | 6747   | 16684  | 3.27  |
| 5     | Mental and Behavioural disorders (F01-F99)                                                                    | 477   | 98     | 575    | 0.12  | 466   | 114    | 580    | 0.12  | 437   | 103    | 540    | 0.11  |
| 6     | Diseases of the Nervous System (G00-G98)                                                                      | 8945  | 5888   | 14833  | 2.98  | 8972  | 5516   | 14488  | 2.97  | 9886  | 5968   | 15854  | 3.11  |
| 7     | Disease of the eye and adnexa (H00-H59)                                                                       | 86    | 48     | 134    | 0.03  | 78    | 35     | 113    | 0.02  | 32    | 11     | 43     | 0.01  |
| 8     | Disease of ear and mastoid process (H60-H95)                                                                  | 52    | 26     | 78     | 0.02  | 26    | 16     | 42     | 0.01  | 33    | 11     | 44     | 0.01  |
| 9     | Diseases of the circulatory system (I00-I99)                                                                  | 80112 | 45307  | 125419 | 25.15 | 75139 | 41042  | 116181 | 23.78 | 79947 | 44323  | 124270 | 24.34 |
| 10    | Diseases of the Respiratory System (J00-J98)                                                                  | 23375 | 13260  | 36635  | 7.35  | 23993 | 13541  | 37534  | 7.68  | 23079 | 12849  | 35928  | 7.04  |
| 11    | Diseases of the Digestive System (K00-K92)                                                                    | 17214 | 6214   | 23428  | 4.70  | 15511 | 5085   | 20596  | 4.22  | 17650 | 5660   | 23310  | 4.57  |
| 12    | Diseases of the skin and subcutaneous tissue (L00-L98)                                                        | 455   | 231    | 686    | 0.14  | 487   | 229    | 716    | 0.15  | 421   | 240    | 661    | 0.13  |
| 13    | Diseases of the Muscular Skeletal system connective tissue (M00-M99)                                          | 161   | 135    | 296    | 0.06  | 170   | 144    | 314    | 0.06  | 158   | 119    | 277    | 0.05  |
| 14    | Diseases of the Genitourinary System (N00-N99)                                                                | 5123  | 3052   | 8175   | 1.64  | 5167  | 2902   | 8069   | 1.65  | 6283  | 3569   | 9852   | 1.93  |
| 15    | Pregnancy, Childbirth and Puerperium (O00-O99)                                                                | N.A   | 3194   | 3194   | 0.64  | N.A   | 4169   | 4169   | 0.85  | N.A   | 3982   | 3982   | 0.78  |
| 16    | Certain conditions originating in the prenatal period (P00-P96)                                               | 24100 | 15228  | 39328  | 7.89  | 22437 | 14217  | 36654  | 7.50  | 24328 | 15456  | 39784  | 7.79  |

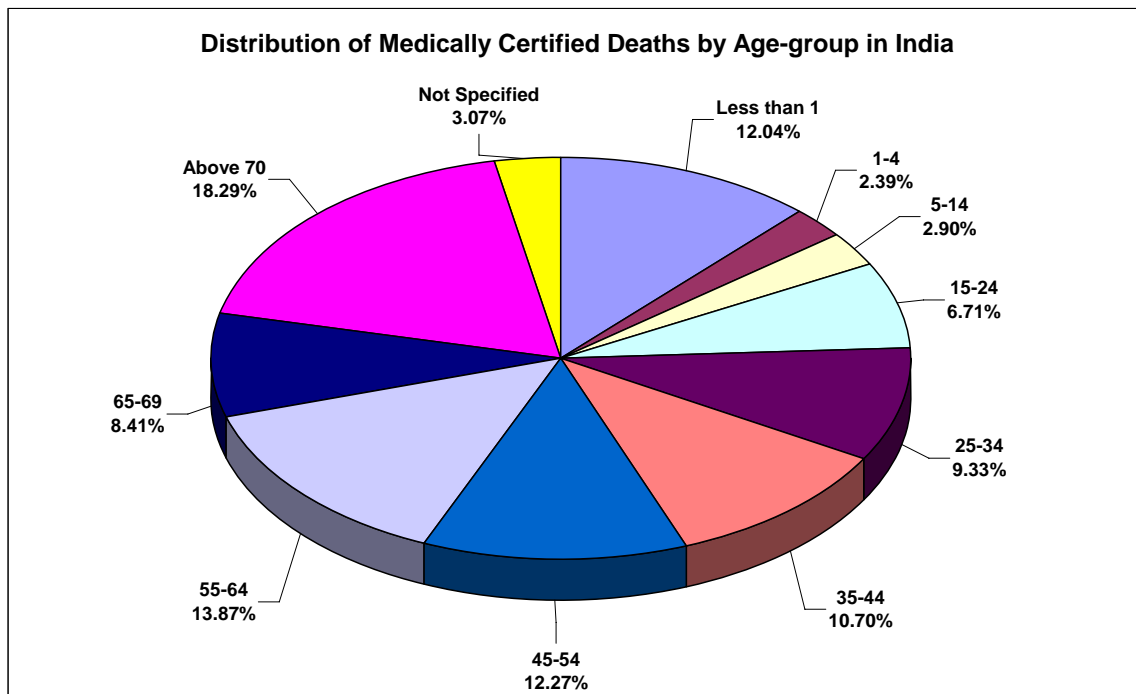
|    |                                                                                               |               |               |               |               |               |               |               |               |               |               |               |               |
|----|-----------------------------------------------------------------------------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| 17 | Congenital Malformations, Deformations & Chromosomal abnormalities (Q00-Q99)                  | 1348          | 849           | 2197          | 0.44          | 1699          | 1191          | 2890          | 0.59          | 1471          | 876           | 2347          | 0.46          |
| 18 | Symptoms, Signs and abnormal clinical & Laboratory finding not elsewhere classified (R00-R99) | 37515         | 23958         | 61473         | 12.33         | 43316         | 27992         | 71308         | 14.59         | 43715         | 28831         | 72546         | 14.21         |
| 19 | Injury, poisoning and certain other consequences of external causes (S00-T98)                 | 36725         | 23852         | 60577         | 12.15         | 37705         | 25835         | 63540         | 13.00         | 34307         | 23270         | 57577         | 11.28         |
|    | <b>Total</b>                                                                                  | <b>312024</b> | <b>186562</b> | <b>498586</b> | <b>100.00</b> | <b>305166</b> | <b>183453</b> | <b>488619</b> | <b>100.00</b> | <b>319119</b> | <b>191461</b> | <b>510580</b> | <b>100.00</b> |

## 7. Distribution of medically Certified Deaths by Age, Sex and Cause

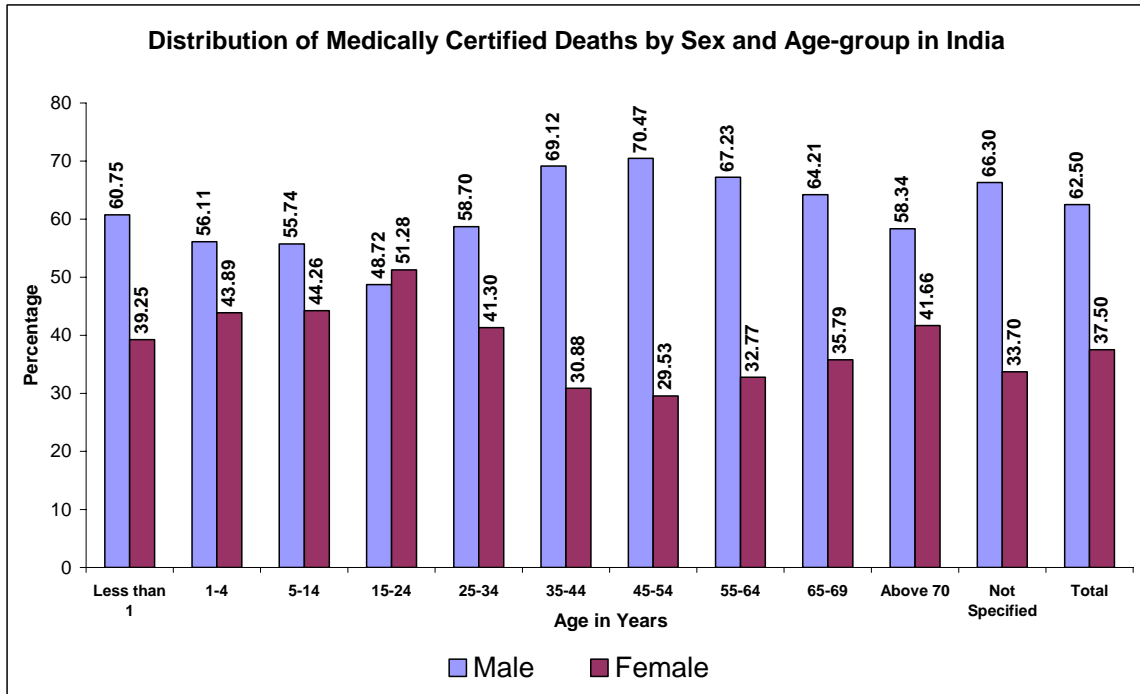
Out of the total medically certified deaths, 18.29% occurred in the age-group above 70 years followed by 13.87% in the age group 55-64 years and 12.27% in the age-group 45-54 years. It is disheartening to observe that 12.04% of the medically certified deaths have taken place in case of children below 1 year age.

**Table 3.3 : Distribution of Medically Certified Deaths by Age and Sex.**

| Age in Years  | Medically Certified Deaths |        |        |        |          |        |
|---------------|----------------------------|--------|--------|--------|----------|--------|
|               | Male                       |        | Female |        | Combined |        |
|               | Number                     | %age   | Number | %age   | Number   | %age   |
| Less than 1   | 37360                      | 11.71  | 24138  | 12.61  | 61498    | 12.04  |
| 1-4           | 6859                       | 2.15   | 5366   | 2.80   | 12225    | 2.39   |
| 5-14          | 8256                       | 2.59   | 6556   | 3.42   | 14812    | 2.90   |
| 15-24         | 16696                      | 5.23   | 17574  | 9.18   | 34270    | 6.71   |
| 25-34         | 27971                      | 8.77   | 19683  | 10.28  | 47654    | 9.33   |
| 35-44         | 37773                      | 11.84  | 16877  | 8.81   | 54650    | 10.70  |
| 45-54         | 44146                      | 13.83  | 18495  | 9.66   | 62641    | 12.27  |
| 55-64         | 47613                      | 14.92  | 23213  | 12.12  | 70826    | 13.87  |
| 65-69         | 27561                      | 8.64   | 15363  | 8.02   | 42924    | 8.41   |
| Above 70      | 54492                      | 17.08  | 38914  | 20.32  | 93406    | 18.29  |
| Not Specified | 10392                      | 3.26   | 5282   | 2.76   | 15674    | 3.07   |
| Total         | 319119                     | 100.00 | 191461 | 100.00 | 510580   | 100.00 |



Age-group wise distribution of medically certified deaths revealed that except for the age-group 15-24 years male deaths outnumbered female deaths in all age groups (table 3.4, 3.5 & 3.6).



**Table 3.4 Distribution of Medically Certified Deaths by Cause and Age-group (Male)**

| S.No. | Cause of Death & ICD 10                                                                                       | Below 1 year | 1-4 years | 5-14 years | 15-54 years | 55 and above | NS   | Total |
|-------|---------------------------------------------------------------------------------------------------------------|--------------|-----------|------------|-------------|--------------|------|-------|
| 1     | Infectious and Parasitic Diseases (A00-B99)                                                                   | 3468         | 1976      | 2032       | 26308       | 17134        | 1756 | 52674 |
| 2     | Neoplasms (C00-C14)                                                                                           | 103          | 142       | 271        | 3975        | 5872         | 292  | 10655 |
| 3     | Diseases of the Blood and blood forming organs and certain disorders involving the immune mechanism (D50-D89) | 259          | 273       | 336        | 1642        | 1351         | 245  | 4106  |
| 4     | Endocrine, Nutritional and Metabolic Diseases (E00-E99)                                                       | 238          | 142       | 83         | 2826        | 6398         | 250  | 9937  |
| 5     | Mental and Behavioural disorders (F01-F99)                                                                    | 5            | 3         | 10         | 292         | 118          | 9    | 437   |
| 6     | Diseases of the Nervous System (G00-G98)                                                                      | 1078         | 851       | 924        | 3859        | 2724         | 450  | 9886  |
| 7     | Disease of the eye and adnexa (H00-H59)                                                                       | 2            | 3         | 2          | 18          | 6            | 1    | 32    |
| 8     | Disease of ear and mastoid process (H60-H95)                                                                  | 1            | 3         | 5          | 11          | 12           | 1    | 33    |
| 9     | Diseases of the circulatory system (I00-I99)                                                                  | 840          | 337       | 658        | 26654       | 48901        | 2557 | 79947 |
| 10    | Diseases of the Respiratory System (J00-J98)                                                                  | 2904         | 1155      | 693        | 6866        | 10556        | 905  | 23079 |
| 11    | Diseases of the Digestive System (K00-K92)                                                                    | 295          | 265       | 377        | 10063       | 5978         | 672  | 17650 |
| 12    | Diseases of the skin and subcutaneous tissue (L00-L98)                                                        | 11           | 6         | 6          | 187         | 189          | 22   | 421   |
| 13    | Diseases of the Muscular Skeletal system connective tissue (M00-M99)                                          | 4            | 1         | 8          | 68          | 71           | 6    | 158   |
| 14    | Diseases of the Genitourinary System (N00-N99)                                                                | 200          | 82        | 157        | 2503        | 3034         | 307  | 6283  |
| 15    | Pregnancy, Childbirth and Puerperium (O00-O99)                                                                | 0            | 0         | 0          | 0           | 0            | 0    | 0     |
| 16    | Certain conditions originating in the prenatal period (P00-P96)                                               | 24328        | 0         | 0          | 0           | 0            | 0    | 24328 |
| 17    | Congenital Malformations, Deformations & Chromosomal abnormalities (Q00-Q99)                                  | 986          | 122       | 85         | 128         | 63           | 87   | 1471  |
| 18    | Symptoms, Signs and abnormal clinical & Laboratory finding not elsewhere classified (R00-                     | 2258         | 851       | 1070       | 16585       | 21755        | 1196 | 43715 |

|    |                                                                               |       |      |      |        |        |       |        |
|----|-------------------------------------------------------------------------------|-------|------|------|--------|--------|-------|--------|
|    | R99)                                                                          |       |      |      |        |        |       |        |
| 19 | Injury, poisoning and certain other consequences of external causes (S00-T98) | 380   | 647  | 1539 | 24601  | 5504   | 1636  | 34307  |
|    | Total                                                                         | 37360 | 6859 | 8256 | 126586 | 129666 | 10392 | 319119 |

**Table 3.5 Distribution of Medically Certified Deaths by Cause and Age-group (Female)**

| S.No. | Cause of Death & ICD 10                                                                                       | Below 1 year | 1-4 years | 5-14 years | 15-54 years | 55 and above | NS   | Total |
|-------|---------------------------------------------------------------------------------------------------------------|--------------|-----------|------------|-------------|--------------|------|-------|
| 1     | Infectious and Parasitic Diseases (A00-B99)                                                                   | 2157         | 1558      | 1767       | 12886       | 8426         | 815  | 27609 |
| 2     | Neoplasms (C00-C14)                                                                                           | 87           | 66        | 137        | 3570        | 3732         | 174  | 7766  |
| 3     | Diseases of the Blood and blood forming organs and certain disorders involving the immune mechanism (D50-D89) | 179          | 245       | 313        | 1891        | 1229         | 214  | 4071  |
| 4     | Endocrine, Nutritional and Metabolic Diseases (E00-E99)                                                       | 235          | 143       | 95         | 1617        | 4515         | 142  | 6747  |
| 5     | Mental and Behavioural disorders (F01-F99)                                                                    | 3            | 2         | 1          | 54          | 43           | 0    | 103   |
| 6     | Diseases of the Nervous System (G00-G98)                                                                      | 676          | 651       | 669        | 2209        | 1500         | 263  | 5968  |
| 7     | Disease of the eye and adnexa (H00-H59)                                                                       | 1            | 1         | 3          | 6           | 0            | 0    | 11    |
| 8     | Disease of ear and mastoid process (H60-H95)                                                                  | 0            | 1         | 2          | 5           | 3            | 0    | 11    |
| 9     | Diseases of the circulatory system (I00-I99)                                                                  | 519          | 228       | 474        | 12425       | 29448        | 1229 | 44323 |
| 10    | Diseases of the Respiratory System (J00-J98)                                                                  | 2086         | 1028      | 561        | 3240        | 5567         | 367  | 12849 |
| 11    | Diseases of the Digestive System (K00-K92)                                                                    | 167          | 140       | 283        | 2733        | 2134         | 203  | 5660  |
| 12    | Diseases of the skin and subcutaneous tissue (L00-L98)                                                        | 14           | 6         | 6          | 117         | 92           | 5    | 240   |
| 13    | Diseases of the Muscular Skeletal system connective tissue (M00-M99)                                          | 5            | 1         | 2          | 62          | 44           | 5    | 119   |
| 14    | Diseases of the Genitourinary System (N00-N99)                                                                | 104          | 58        | 107        | 1511        | 1659         | 130  | 3569  |
| 15    | Pregnancy, Childbirth and Puerperium (O00-O99)                                                                | 0            | 0         | 3          | 3891        | 0            | 88   | 3982  |

|    |                                                                                               |       |      |      |       |       |      |        |
|----|-----------------------------------------------------------------------------------------------|-------|------|------|-------|-------|------|--------|
| 16 | Certain conditions originating in the prenatal period (P00-P96)                               | 15456 | 0    | 0    | 0     | 0     | 0    | 15456  |
| 17 | Congenital Malformations, Deformations & Chromosomal abnormalities (Q00-Q99)                  | 552   | 81   | 31   | 134   | 29    | 49   | 876    |
| 18 | Symptoms, Signs and abnormal clinical & Laboratory finding not elsewhere classified (R00-R99) | 1655  | 664  | 879  | 8579  | 16504 | 550  | 28831  |
| 19 | Injury, poisoning and certain other consequences of external causes (S00-T98)                 | 242   | 493  | 1223 | 17699 | 2565  | 1048 | 23270  |
|    | Total                                                                                         | 24138 | 5366 | 6556 | 72629 | 77490 | 5282 | 191461 |

**Table 3.6 Distribution of Medically Certified Deaths by Cause and Age-group (Total)**

| S.No. | Cause of Death & ICD 10                                                                                       | Below 1 year | 1-4 years | 5-14 years | 15-54 years | 55 and above | NS   | Total  |
|-------|---------------------------------------------------------------------------------------------------------------|--------------|-----------|------------|-------------|--------------|------|--------|
| 1     | Infectious and Parasitic Diseases (A00-B99)                                                                   | 5625         | 3534      | 3799       | 39194       | 25560        | 2571 | 80283  |
| 2     | Neoplasms (C00-C14)                                                                                           | 190          | 208       | 408        | 7545        | 9604         | 466  | 18421  |
| 3     | Diseases of the Blood and blood forming organs and certain disorders involving the immune mechanism (D50-D89) | 438          | 518       | 649        | 3533        | 2580         | 459  | 8177   |
| 4     | Endocrine, Nutritional and Metabolic Diseases (E00-E99)                                                       | 473          | 285       | 178        | 4443        | 10913        | 392  | 16684  |
| 5     | Mental and Behavioural disorders (F01-F99)                                                                    | 8            | 5         | 11         | 346         | 161          | 9    | 540    |
| 6     | Diseases of the Nervous System (G00-G98)                                                                      | 1754         | 1502      | 1593       | 6068        | 4224         | 713  | 15854  |
| 7     | Disease of the eye and adnexa (H00-H59)                                                                       | 3            | 4         | 5          | 24          | 6            | 1    | 43     |
| 8     | Disease of ear and mastoid process (H60-H95)                                                                  | 1            | 4         | 7          | 16          | 15           | 1    | 44     |
| 9     | Diseases of the circulatory system (I00-I99)                                                                  | 1359         | 565       | 1132       | 39079       | 78349        | 3786 | 124270 |
| 10    | Diseases of the Respiratory System (J00-J98)                                                                  | 4990         | 2183      | 1254       | 10106       | 16123        | 1272 | 35928  |
| 11    | Diseases of the Digestive System (K00-K92)                                                                    | 462          | 405       | 660        | 12796       | 8112         | 875  | 23310  |
| 12    | Diseases of the skin and subcutaneous tissue (L00-L98)                                                        | 25           | 12        | 12         | 304         | 281          | 27   | 661    |

|    |                                                                                               |       |       |       |        |        |       |        |
|----|-----------------------------------------------------------------------------------------------|-------|-------|-------|--------|--------|-------|--------|
| 13 | Diseases of the Muscular Skeletal system connective tissue (M00-M99)                          | 9     | 2     | 10    | 130    | 115    | 11    | 277    |
| 14 | Diseases of the Genitourinary System (N00-N99)                                                | 304   | 140   | 264   | 4014   | 4693   | 437   | 9852   |
| 15 | Pregnancy, Childbirth and Puerperium (O00-O99)                                                | 0     | 0     | 3     | 3891   | 0      | 88    | 3982   |
| 16 | Certain conditions originating in the prenatal period (P00-P96)                               | 39784 | 0     | 0     | 0      | 0      | 0     | 39784  |
| 17 | Congenital Malformations, Deformations & Chromosomal abnormalities (Q00-Q99)                  | 1538  | 203   | 116   | 262    | 92     | 136   | 2347   |
| 18 | Symptoms, Signs and abnormal clinical & Laboratory finding not elsewhere classified (R00-R99) | 3913  | 1515  | 1949  | 25164  | 38259  | 1746  | 72546  |
| 19 | Injury, poisoning and certain other consequences of external causes (S00-T98)                 | 622   | 1140  | 2762  | 42300  | 8069   | 2684  | 57577  |
|    | Total                                                                                         | 61498 | 12225 | 14812 | 199215 | 207156 | 15674 | 510580 |

## **8. Cause of death reporting in India. A performance analysis from few states of India:**

### **A. Andhra Pradesh**

Valid and reliable statistics on cause of death is an essential input for the setting of priorities in the health sector. Major initiatives to systematically identify health sector priorities have used cause of death information. An ideal cause of death reporting system consists of: (a) a fully developed vital registration system with, (b) cent percent medical attendance at the time of death, and (c) full compliance by the health care providers in the writing and filing of cause of death reports. Developing countries like India are making efforts to operate cause of death reporting systems that are feasible within the given constraints of partially developed registration of vital events and poor availability of medical facilities. Andhra Pradesh Health Department has examined the usability of the cause of death statistics in India from the rural and urban areas respectively. Subjective assessment of factors contributing to various aspects of poor performance was done and the possible measures for improving the usability of cause of death statistics in India were discussed as summary findings. The cause of death reporting systems in India and usability of the statistics was examined. For rural areas, cause of death statistics used to be collected through the SCD-Rural scheme, which operated till December 1998.

To assess the utility of cause of death statistics, study of the SCD-Rural and MCCD data for a period of about five years in the first half of the 1990s using nine criteria for utility was done. These usability criteria are: (a) content validity of lay reporting systems, (b) adequate coverage and compliance, (c) validity of statistics at sub-national levels of disaggregation, (d) minimal usage of residual categories, such as unclassifiable or ill defined conditions, (e) consistency of cause-specific mortality proportions with general mortality level, (f) absence of incorrect assignment of causes with clear age-sex dependency, (g) no case of improbable age-sex distribution by cause, (h) consistency of cause-specific mortality proportion over time, and (i) timely compilation and publication of the statistics.

It was found that major factors affecting the usability of the cause of death statistics in India are (a) poor coverage, (b) high incidence of unclassifiable deaths, (c) long delay and irregular publication of statistics, and (d) lack of systematic screening. It was recommended, based on subjective understanding of the problems, that certain measures are required to improve the utility of cause of death statistics in India. It was proposed that the Ministry of Health, Government of India, and all State Governments through the Ministries of Health and Municipal Administration, to improve coverage by cause of death reporting systems, launch a drive. Based on the experience in Andhra Pradesh, it was conjectured that introducing periodical reviews jointly by the Departments of Health and Municipal Administration, identification of non-reporting municipalities and sample units, and further identification of non reporting health care institutions sustained over a period of, say, five years, will improve coverage substantially. Other measures recommended include: (a) training programmes to know cause of death report writing skills among physicians, (b) compilation and publication of cause of death statistics at the

State level, (c) sponsored research on cause of death structure and their policy implications, (d) computerisation of filing, tabulation and flow of cause of death statistics, both at the municipality and state level. To reduce the unusually high level of unclassifiable deaths, it was recommended that an amendment be brought in the Registration of Births and Deaths Act (RBD Act.) making the maintenance of records mandatory in hospitals and health care institutions. It was also pointed out that the cause of death columns added to the SRS data collection forms do not provide for recording of symptoms necessary for the systematic screening and coding of cause of death reports. Research is recommended in order to evaluate the performance of the new cause of death reporting system in rural areas.

| <b>Leading causes of death - all age groups in Andhra Pradesh, 1991</b>    |       |                                          |      |                                       |       |
|----------------------------------------------------------------------------|-------|------------------------------------------|------|---------------------------------------|-------|
| <b>All</b>                                                                 |       | <b>Females</b>                           |      | <b>Males</b>                          |       |
| Cause                                                                      | %     | Cause                                    | %    | Cause                                 | %     |
| Ischemic heart disease                                                     | 13.21 | Ischemic heart disease                   | 12.2 | Ischaemic heart disease               | 14.08 |
| Cerebrovascular disease                                                    | 8.11  | Cerebrovascular disease                  | 8.33 | Cerebrovascular disease               | 7.92  |
| Lower respiratory infections                                               | 7.02  | Diarrhoeal diseases                      | 7.49 | Tuberculosis                          | 7.76  |
| Diarrhoeal diseases                                                        | 6.61  | Lower respiratory infections             | 7.15 | Lower respiratory infections          | 6.91  |
| Tuberculosis                                                               | 6.32  | Low birth weight                         | 5    | Diarrhoeal diseases                   | 5.86  |
| Low birth weight                                                           | 4.96  | Tuberculosis                             | 4.67 | Chronic obstructive Pulmonary Disease | 5.34  |
| Chronic obstructive pulmonary disease                                      | 4.76  | Chronic obstructive pulmonary disease    | 4.08 | Low birth weight                      | 4.93  |
| Self-inflicted injury                                                      | 3.54  | Self-inflicted injury                    | 3.76 | Self-inflicted injury                 | 3.34  |
| Asthma                                                                     | 2.55  | Stomach cancer                           | 2.71 | Asthma                                | 3.14  |
| Stomach cancer                                                             | 2.28  | Dementia and other degenerative CNS dis. | 2.09 | Road accidents                        | 2.59  |
|                                                                            |       |                                          |      | Cirrhosis of the liver                | 2.19  |
| <b>Residual cause with % deaths higher than last cause included above:</b> |       |                                          |      |                                       |       |
| Other unintentional injuries                                               | 3.94  | Other unintentional injuries             | 4.09 | Other unintentional injuries          | 3.81  |
| Other cardiac diseases                                                     | 2.32  | Other cardiac diseases                   | 2.58 |                                       |       |

To estimate the cause of death structure in rural areas, the Andhra Pradesh Rural Cause of Death (APRCD) study, 1998 was implemented. All SCD-Rural death reports received by

the state's Vital Statistics Division for a nine-month period, 1998 April to December, were systematically reviewed by a physician. SCD-Rural system uses verbal autopsy to determine cause of death in sample areas. Reports considered to have adequate information for assignment of cause of death from the non- medical list were coded by the physician. In some cases, this code was identical to code originally given by the SCD-Rural system and for some others there was a change in coding. Reports without adequate information for assignment of cause of death were dispatched for field enquiry and on-site review by a physician. A final cause of death code was assigned based on the on-site review. Additional deaths were detected by the visiting physicians from the same sample villages and pertaining to the study period. These deaths were investigated using verbal autopsy and a cause of death was assigned after systematic screening by another physician reviewer. Altogether 3842 deaths from the rural areas of Andhra Pradesh were investigated. For urban areas, MCCD data from the neighbouring state of Maharashtra for the years 1986-90 was used as an approximation. Deaths by cause in the rural and urban areas respectively were added up to arrive at the estimate of causes of death in Andhra Pradesh.

## **B. Maharashtra:**

The following are the examples of some initiatives taken up by Govt. of Maharashtra for identifying causes of death in their state.

The responsibility of collection, compilation of Civil Registration data was entrusted to a separate Bureau of vital statistics in year 1955. After the integration of preventive & curative health services, the responsibility to handle hospital statistics was entrusted to the bureau (SBHI) in the year 1970.

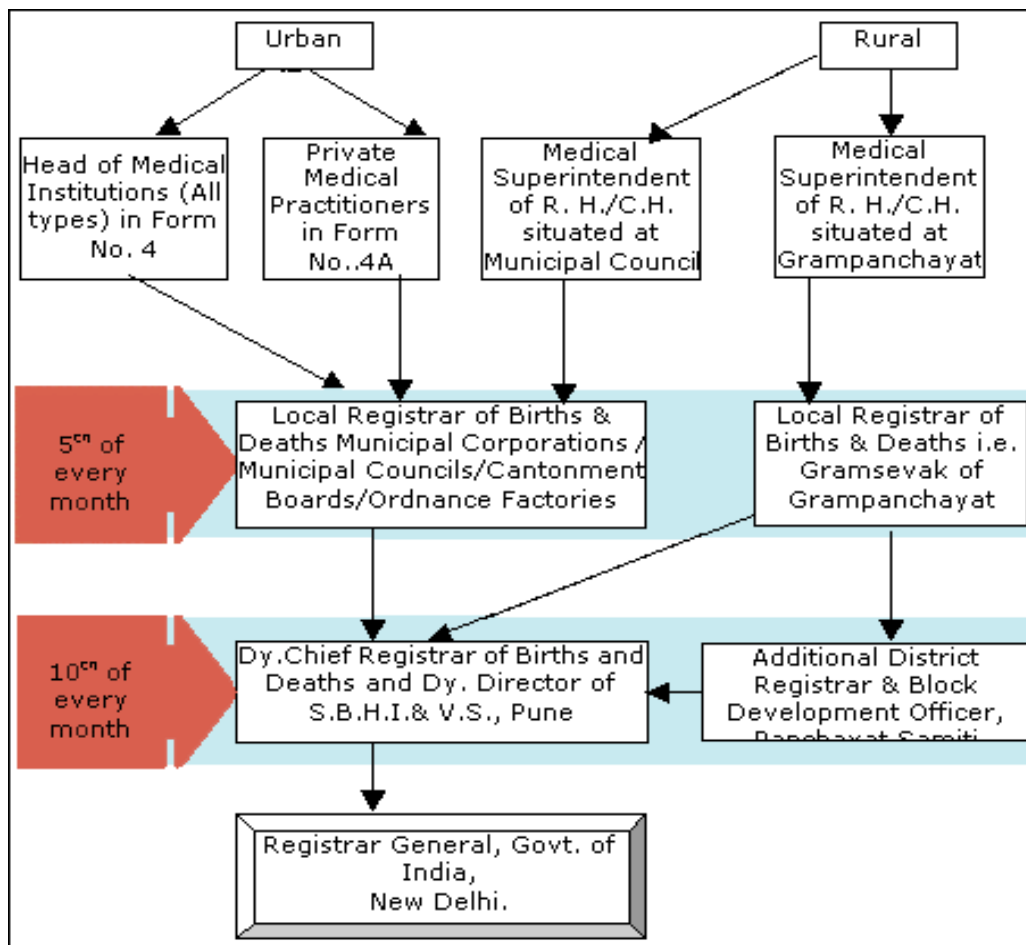
### *B.1 Medical Certification Of Causes Of Death*

M.C.C.D. scheme was introduced for the first time in Maharashtra State in Pune in 1951. Late on it was extended to the cities, nagpur (1957), Mumbai (1962) & Solapur (1969). the remaining urban areas of the state were covered in 1970 & onwards with the encouragement of the Director General Of Health Services, G.O.I. & with the co-operation of the director Of Municipal administration. a directive was issued to all the Municipalities towards the end of 1969 to bring into effect MCCD, in their respective areas, for certifying the cause of death under the Maharashtra Municipality Act 1965.

**B.2 STRATEGY: Medical Certification of Causes of Death**

- ▶ In the case of deaths occurred in the institutions, Head of the institution is responsible for submission of form no.4 to the Local Registrar.
- ▶ In the case of domiciliary death attended by any physician prior to death is responsible to submit form no.4A to the local registrar.
- ▶ It is the duty of the registrar to provide forms No 4 & 4A to the Institutions & Physicians in his jurisdiction.
- ▶ It is the duty of Registrar, to ask about form No.4 & 4A according to occurrence of death, while entering the death event.
- ▶ Civil Surgeon of District Hospital & District Health Officer Z.P. is responsible for review of quantity, quality & training of M.C.C.D. at district level.
- ▶ Deputy Director is responsible for compilation, coding & analysis of data received through MCCD according to ICD-10.

**B.3 FLOW OF MCCD FROM URBAN AND RURAL AREAS**



#### *B.4 Survey Of Causes Of Death Scheme (Rural)*

Mortality influences the rate of growth of the population & provides a dimension of demographic perspective, which is vital for socio-economic planning. The pattern of deaths by causes, age & sex reflect the health status of the community & in turn provides a rational basis for health planning. It is not feasible to build up statistics of mortality by causes based on "Medical Certification of Causes of Death (MCCD)" due to paucity of medical institutions, & physicians in rural area. Still the percentage of non-institutional & unattended death is at higher side in the State as well as in the Country. This most important statistical gap has been bridged, to some extent by the scheme "Survey Of Causes Of Death".

- 1.1 The Office Of the Registrar General, India initiated in the 1960s a Scheme called as " Model Registration System" (MRS). With a view that, there should be some centers, which are to be model in Registration of vital events. The scheme was introduced according to recommendations made in the ' Conference on improvement of Vital Statistics' held in 1961.
- 1.2 The Registrar General, India had launched the scheme in some States on pilot basis in 1965. Further the scheme has expanded in 10 states Andhra, Bihar, Asam, Gujrat, keral, Orisa, Punjab, Rajasthan, Tamilnadu, West Bengal, The states Maharashtra, Hariyana, Jammu & Kashmir, Karnataka, M.P., U.P. are covered under the scheme in 1967.
- 1.3 The scheme was renamed in 1982 as" Survey Of Causes Of Death Scheme (Rural)".
- 1.4 The implementation of the scheme has stopped by Registrar General, India in 1997 at central level & merged in the S.R.S. Scheme.
- 1.5 The progress & data received under the scheme was satisfactory in the Maharashtra State., & there was no financial burden, in view of this , State has decided to continue the Scheme in Maharashtra.

#### **Present Status**

- 1.1 The Scheme was implemented in 600 H.Q. villages of P.H.C. in the State previously
- 1.2 The enforcement of the SCD scheme has been included in the Project Implementation Plan of Maharashtra Health System Development Project in 2003-04 & received the financial support.
- 1.3 The implementation of the Scheme has been shifted from P.H.C.H.Q. village to village level, without changing the nos. of villages.
- 1.4 The lists of classification of the diseases have been modified baseon ICD-10. Now the frame of 109 diseases through 19 major groups have been made available to the M.O. P.H.C. to select the cause of death, based on "lay diagnosis reporting".

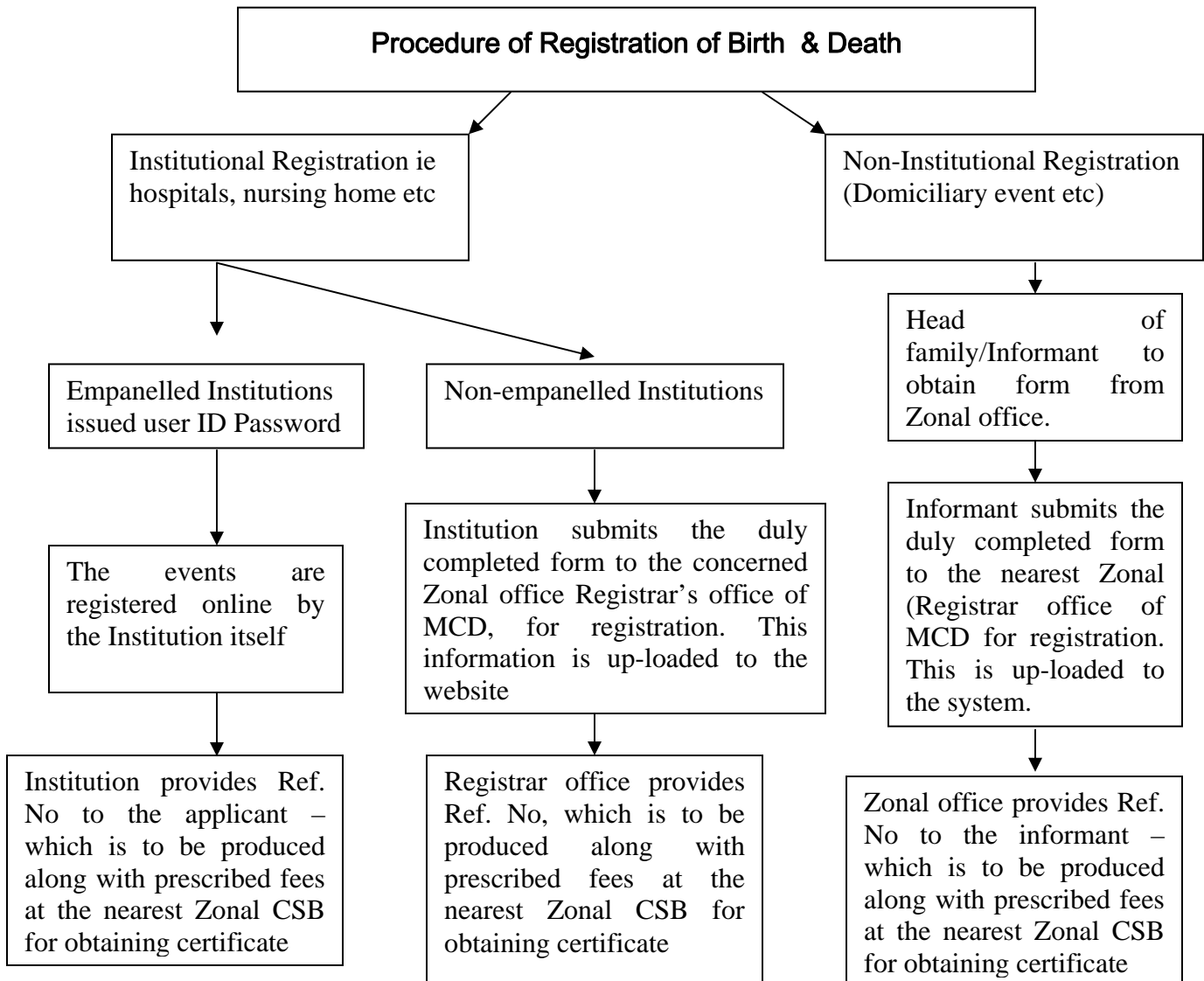
## C. DELHI

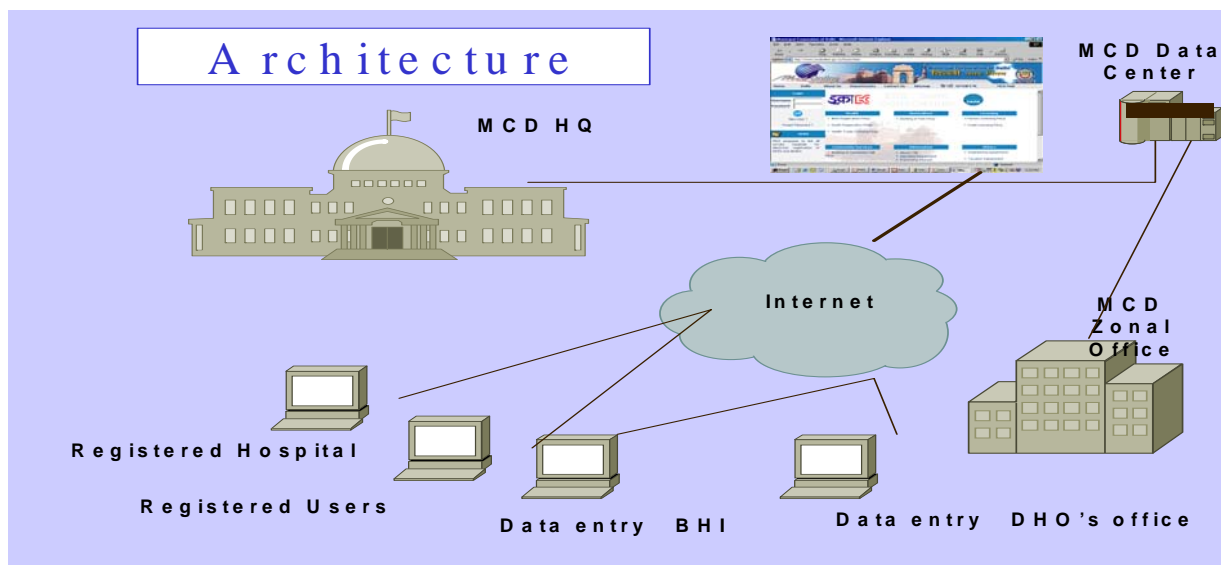
### DELHI (M.C.D.) AS A MODEL FOR REGISTRATION SYSTEM

#### REGISTRATION OF BIRTHS AND DEATHS

Municipal Corporation of Delhi (MCD) is the second biggest Civic Body of the World and is an autonomous body. It organizes civic services in nearly 94% of geographic area of Delhi and 97% of population of Delhi resides under the jurisdiction of MCD. MCD has been authorized to organize Registration of Birth & Death events occurring in its jurisdiction. Health Department, a constituent unit of MCD, has been assigned this job and is being organized by Bureau Health Intelligence Unit.

#### PROCEDURE FOR REGISTRATION OF BIRTH AND DEATH:





The **Municipal Health Officer** (M.H.O) of M.C.D. is the Addl. Chief Registrar of Birth & Death and heads the BHI unit. He is assisted by the **Officer In charge of Vital Statistics (O.I.V.S)** designated as Asst. Chief Registrar of Birth & Death. There are 12 Registrars heading one zone each supported by 76 Sub Registrars.

**The initiative to Computerize Registration of Births and Deaths (RBD)** was undertaken with the aim to improve quality of service by reducing response time, to generate reports – MIS and CRS, to reduce human error, to facilitate quick search, to handle large volume of data and to develop transparency. Computerization of registration of Births and Deaths was started on 19<sup>th</sup> February 2003. Today registration of vital events in MCD is done on line (OLIR system) by all the MCD Hospitals and all the Govt. and private hospitals/institutions which are empanelled with MCD. **OLIR (Online Institutional Registration)** scheme came into effect on 1.1.2004. Today there are more than 335 empanelled hospitals. Each empanelled hospital is given a unique user id and password.

The OLIR (on line registration system) is an extremely simple procedure done by logging on to the MCD website. ([www.mcdonline.gov.in](http://www.mcdonline.gov.in))

The efforts of the MCD in developing a complete solution on registration of vital events have been lauded by the RGI & the UNICEF and have been recommended for a countrywide replication of the model.

**MCCD (Medical Certification of cause of death)** is being implemented by all the empanelled hospitals as per ICD –X Classification. Trainings have been imparted to Govt and private institutions empanelled with MCD to implement the MCCD scheme effectively.

The success of MCD has prompted the RGI and UNICEF to recommend the replication of MCD model on Registration of Birth & Death in other parts of the country.

**Digitalization of Records:**

In order to facilitate quick search and cutting down response time for issue of certificates the records are being digitalized & up-loaded to the MCD website. The procedure adopted is scanning indexing and data entry. This also helps in preservation of records. Digitalization is being carried out by out sourcing.

Computerization of RBD has helped in providing quality services, and has facilitated quick search and ability to handle large volume of data. It has also helped in generating reports and in developing transparency by reducing response time through simplification of the procedure

# **CHAPTER - 4**

## **STATUS OF MORTALITY REPORTING IN INDIA**

### **1. Introduction**

The health of the population is a matter of serious national concern. It is highly correlated with the overall development of the country. A healthy population is a developmental goal by itself though it is also a necessary ingredient for the other wider goals of social and economic development. India's health system seems to be currently at cross roads with major changes occurring in the morbidity and mortality patterns. Some of these changes are consequent to the demographic transition, which is accompanied by changes in the age structure of the population but most of the changes are due to the control of major communicable diseases.

Some of the biggest public health successes in the Western world have come about because of simple records of people's deaths—their age at death, where they lived, and what they died of. More than two-thirds of deaths worldwide are in developing countries, yet little is known about the causes of death in these nations. In India, about 58% of the deaths are registered during 2004, and of these, only one-third provides data on the cause of death. India's HIV/AIDS epidemic is rising—it may already have surpassed South Africa for the highest number of people infected. Similarly like many other developing nations, the numbers of people dying from non-communicable diseases such as heart disease and cancer are growing. Unlike most infectious diseases, the causes of non-communicable ones can be the result of several risk factors, such as smoking, elevated blood pressure, or inherited genetic mutations.

Many countries have routine systems for collecting mortality data. Each year, information on deaths is analyzed and the resulting tabulations are made available by each government.

### **2. International Death Certificate**

The basis of mortality data is the Death Certificate. For ensuring national and international comparability, it is very much essential to have a uniform and standardized system of recording and classifying deaths.

### **3. Death Reporting Form used in India**

In order to improve the quality of maternal mortality and infant mortality data and to provide alternative method of collecting data on deaths during pregnancy and infancy, a set of questions are added to the basic structure of international death certificate for use in India (annexure- 8).

#### **4. Limitations of mortality data**

There are limitations in reporting Mortality data. Problems faced in complete reporting of Mortality are as follows:

(a) In complete reporting of deaths. This is not a problem in developed countries, but in India and other developing countries, this may be considerable (b) Lack of accuracy that is inaccuracies in the recording of age and cause of death. The practice of medical certification of death is not widespread, if it does exist; the cause of death is often inaccurate or incomplete due to such difficulties as lack of diagnostic evidence, inexperience on the part of the certifying doctor and absence of post-mortem which may be important in deciding the cause of death.

(c) Lack of uniformity: There is no uniform and standardized method of collection of data. This hampers national and international comparability

(d) Choosing a single cause of death: Most countries tabulate mortality data only according to the underlying cause of death. Other diseases (or risk factors) and conditions, which contribute to the patient's death, are not tabulated, and valuable information is thereby lost

(e) Change in coding system: Changing coding systems and changing fashions in diagnosis may affect the validity. We also need uniform definitions and nomenclature used throughout the country

(f) Diseases with low fatality: Lastly, mortality statistics are virtually useless, if the disease is associated with low fatality (e.g., mental diseases, arthritis)

#### **5. Data on Morbidity and Mortality at Disaggregated Levels**

Data on morbidity and mortality form the core of any health planning strategy. The size and geographical distribution of occurrence of diseases and deaths by their causes for different age groups, sex, occupations and various other characteristics are of immense value to the public health planners, medical scientists, epidemiologists and researchers. Unfortunately, these data or an epidemiological profile on which all health care planning should be based is primarily lacking. Morbidity and epidemiological studies on a nationwide scale have never been done. With regard to the data on mortality, the Registration of Births and Deaths Act, 1969, empowers the State Governments to introduce the system of Medical Certification of Cause of Death (MCCD) in specified areas in a phased manner, ultimately to cover the whole State. The scheme, which is functional in only 28 States and UTs is grossly deficient with regard to coverage, which is far from complete in almost all States. The available report of the year 1995, indicates that only about 17 percent of the total registered deaths and 46 percent of the total registered urban deaths were medically certified.

## **6. Current Status**

Health is a State subject and vital and public Health Statistics are traditionally the responsibility of State Health Directorates. However, in a few States vital statistics have been the responsibility of State Directorates of Economics. National Socio-Demographic Goals for 2010 is to reduce infant mortality rate to below 30 per 1000 live births and maternal mortality ratio to below 100 per 100,000 live births.

### **6.1 National Commission on Population Task Force on Monitoring**

The National Commission on Population (NCP) has to review, monitor and give directions for the implementation of the National Population policy 2000. In relation to population stabilization, the task of monitoring and evaluation should take into account certain relevant social, economic and demographic indicators in order to be able to know whether the policies and programs are being implemented successfully for achieving the objectives. The Task Force has identified the key indicators on social, economic and demographic indicators for monitoring purposes of which following indicators related to Mortality statistics:-

1. Child mortality up to the age of 2
2. Maternal Mortality Rate
3. Percentage of births, deaths and marriages registered

The registration of births and deaths has been made compulsory under the Registration of Births & Deaths (RBD) Act, 1969. The provisions of this Act are being implemented by the state governments under the rules framed by them. Though more than 35 years have passed since the enactment of the legislation, the level of birth and death registration is not satisfactory in certain parts of the country.

The National Population Policy 2000 has recognized the need for registration of births, deaths and marriages and set the goal of achieving universal registration of these events by 2010. It is felt that the level of registration is low in the States due to one or more of the following reasons.

1. Lack of awareness of the need of birth and death registration among the public and the district officials.
2. Insufficient monitoring by the Chief Registrar of Births & Deaths.
3. Non-availability of forms -a poor reflection on the failure of the State government.
4. Lack of initiative on the part of the registration machinery.

The level of vital events registration is very low in the States of Uttar Pradesh, Bihar, Andhra Pradesh, Madhya Pradesh and Rajasthan. Unless there is considerable improvement in the coverage in birth and death registration in these large and

demographically important States, it will not be possible for the country as a whole to make any progress towards the goal of universal registration of births and deaths.

## **6.2 Registration Machinery:**

The Registration of Birth and Death Act, 1969, provides for the State Governments to frame rules for the establishment of the registration machinery in the State and procedures for registration. The Act provides for a Chief Registrar at the State level, District Registrars at the District level and Registrars at the Registration Centre to discharge the functions under the Act. At the Central level the Registrar General, India is to coordinate and unify the activities of the Chief Registrars and issue general directions to the State governments regarding registration. All the State Governments have notified the registration machinery in the States. Table 4.1 summarizes the information on the registration machinery in various States.

Registrars in Urban Areas: Health Officer/Executive Officer or the Commissioner of Municipality/Municipal Corporation are the Registrars. In large cities the Registrar functions as a manager of the system with the Sub- Registrar with jurisdiction in different areas of the cities doing the actual registration.

| <b>Table 4.1 Agencies for Registration of Births &amp; Deaths in States/UTs</b> |                                                                                                                                                                                                                                                                |
|---------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Chief Registrars</b>                                                         |                                                                                                                                                                                                                                                                |
| Department of Health:                                                           | Andhra Pradesh, Assam, Gujarat, Haryana, Himachal Pradesh, Jammu & Kashmir, Maharashtra, Manipur, Meghalaya, Orissa, Punjab, Sikkim, Tamil Nadu, Tripura, Uttar Pradesh, Uttrakhand, West Bengal, A&N Islands, Chandigarh and Lakshadweep- (17 States & 3 UTs) |
| Department of Economics & Statistics/Planning & Evaluation                      | Arunachal Pradesh, Bihar, Goa, Jharkhand, Karnataka, Madhya Pradesh, Mizoram, Chhatisgarh, Rajasthan, Nagaland, Daman & Diu and Delhi -(10 States & 2 UTs).                                                                                                    |
| Others                                                                          | Kerala (Director of Panchayats), Dadra & Nagar Haveli (Administration), Pondicherry (Local Administration Deptt.) -(1 State & 2 UTs)                                                                                                                           |
| <b>Additional/Deputy Chief Registrars</b>                                       |                                                                                                                                                                                                                                                                |
| Addl./Dy. Director Health                                                       | Andhra Pradesh, Haryana, Himachal Pradesh, Maharashtra, Meghalaya, Orissa, Tamil Nadu, Uttar Pradesh, Uttrakhand, West Bengal and Lakshadweep - (10 States & 1 UT).                                                                                            |
| Addl./Dy. Director Economics & Statistics/Planning & Evaluation                 | Bihar, Jammu & Kashmir, Goa, Gujarat, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Chhattisgarh, Manipur, Mizoram, Nagaland, Punjab, Rajasthan, Sikkim and Daman & Diu -(15 States & 1 UT)                                                                    |
| Others                                                                          | Assam (Rural Development), Kerala (Dy. Director, Panchayats), Delhi (Municipal Health Officer)-(2 State & 1 UT)                                                                                                                                                |
| <b>District Registrar</b>                                                       |                                                                                                                                                                                                                                                                |
| District Health/ Medical Officer                                                | Andhra Pradesh, Gujarat, Haryana, Himachal Pradesh, Jammu & Kashmir, Maharashtra, Manipur, Meghalaya, Orissa, Punjab, Sikkim, A&N Islands, Lakshadweep and Chandigarh -(11 States & 3 UTs)                                                                     |
| District Statistical Officer                                                    | Chhattisgarh, Nagaland, Madhya Pradesh, Rajasthan, Delhi (Asstt. Director) -(4 States & 1 UT)                                                                                                                                                                  |
| Dy. Commissioner/Collector                                                      | Arunachal Pradesh, Assam, Bihar, Goa, Jharkhand, Karnataka, Mizoram, Tamil Nadu, Tripura,                                                                                                                                                                      |

|                                                                                 |                                                                                                                                                                                                                                                   |
|---------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                 | Uttar Pradesh, Uttarakhand, West Bengal and Daman & Diu -(12 States & 1 UT)                                                                                                                                                                       |
| Others                                                                          | Kerala (Asstt. Director, Panchayats) Dadra & Nagar Haveli (Mamlatdar-cum-Survey & Settlement Officer) and Pondicherry (Municipal Administration)                                                                                                  |
| <b>Registrars in Rural Areas</b>                                                |                                                                                                                                                                                                                                                   |
| Panchayat Secretary (Local Self Government)                                     | Bihar, Goa, Gujarat (Talati-cum-Mantri), Himachal Pradesh, Jharkhand, Kerala, Madhya Pradesh, Maharashtra, Punjab, Rajasthan (Partly), Tripura (partly), Uttar Pradesh, Uttarakhand, West Bengal, Dadra & Nagar Haveli. Daman & Diu, Pondicherry. |
| Station House Officer (Police)                                                  | Chhattisgarh, Jammu & Kashmir and Chandigarh.                                                                                                                                                                                                     |
| Village/Revenue Officer                                                         | Andhra Pradesh, Arunachal Pradesh, Karnataka, Tamil Nadu                                                                                                                                                                                          |
| Tehsildar-Sub Divisional Officer/<br>Asstt. Commissioner                        | Tripura (Partly)                                                                                                                                                                                                                                  |
| Primary Health Centre<br>Incharge/Health Inspector/ Block<br>Sanitary Inspector | Assam, Haryana, Manipur (Partly) Maghalaya, Orissa, Sikkim, A&N Islands , Delhi and Lakshadweep                                                                                                                                                   |
| Block Development Officer                                                       | Manipur (Partly)                                                                                                                                                                                                                                  |
| Teacher of Government School                                                    | Mizoram, Nagaland, Rajasthan (Partly)                                                                                                                                                                                                             |

### **6.3 Level of Registration:**

At national level only about 62 per cent of the births and 58 per cent of the deaths are being covered by the registration machinery at present. The level of registration varies substantially across the States. The events are to be registered at the place of occurrence and not at the place of usual residence of the mother in case of birth and of the person who died in case of death. Reliable data on actual levels of birth and death rates are available from Sample Registration System (SRS) which collects this information for the usually resident population. The comparison between the birth rates and death rates worked out from the data on registered births and deaths and the corresponding rates from the SRS provides an indication of the level of registration in most of the states. In those states and union territories where large number of people comes from outside its boundaries due to availability of medical facilities the birth rates and death rates are likely to be significantly higher in the civil registration system. Table 4.2 provide the levels of birth and death registration for the period 1996-2004.

### **7. Level of death registration during 1996-2004**

Goa, Chandigarh, Delhi and Pondicherry are the only State/UTs where more than 90% of the deaths are being registered. During this period the States of Karnataka, Kerala and Punjab have registered more than 80% of the estimated deaths. The States of Chhattisgarh, Gujarat, Haryana, Himachal Pradesh, Maharashtra, Mizoram, Orissa, Tamil Nadu, Andaman & Nicobar Islands, Dadra Nagar Haveli, Daman & Diu and Lakshadweep are the States/Uts where the level of registration of deaths lies in the range of 50 to 80 percent (Table 4.2 & 4.3).

**Table 4.2 : Level of registration of deaths - States/Union territories, 1996-2004**

| India/State/Union Territories  | Level of registration of deaths |             |             |             |             |             |             |             |             |
|--------------------------------|---------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|                                | 1996                            | 1997        | 1998        | 1999        | 2000        | 2001        | 2002        | 2003        | 2004        |
| <b>India</b>                   | <b>47.3</b>                     | <b>46.3</b> | <b>49.7</b> | <b>51.8</b> | <b>49.8</b> | <b>51.7</b> | <b>54.1</b> | <b>56.8</b> | <b>58.1</b> |
| <b>Total<sup>1</sup></b>       | <b>51.9</b>                     | <b>56.6</b> | <b>61.8</b> | <b>59.8</b> | <b>55.4</b> | <b>59.4</b> | <b>62.3</b> | <b>62.5</b> | <b>65.9</b> |
| <b>States</b>                  |                                 |             |             |             |             |             |             |             |             |
| 1. Andhra Pradesh              | 34.8                            | 34.0        | 40.0        | 37.6        | 56.7        | 57.8        | 58.9        | 59.8        | 67.7        |
| 2. Arunachal Pradesh           | 30.6                            | 27.5        | 26.1        | 28.4        | 23.1        | 28.7        | n.a.        | n.a.        | n.a.        |
| 3. Assam <sup>2</sup>          | 10.2                            | 14.1        | 11.9        | 20.7        | 20.1        | na          | n.a.        | 28.2        | n.a.        |
| 4. Bihar <sup>3</sup>          | 18.0                            | na          | na          | na          | 9.4         | 11.0        | 12.0        | 13.5        | 18.1        |
| 5. Chhattisgarh <sup>4</sup>   | --I.i Madhya Pradesh--          |             |             | 70.0        | 66.1        | 66.6        | 72.8        | 72.6        | 75.7        |
| 6. Goa <sup>6</sup>            | 104.5                           | 95.7        | 100.5       | 108.0       | 100.5       | 100.3       | n.a.        | n.a.        | n.a.        |
| 7. Gujarat                     | 69.9                            | 65.1        | 59.6        | 54.8        | 60.4        | 62.9        | 58.3        | 64.3        | 74.3        |
| 8. Haryana                     | 71.4                            | 67.5        | 72.8        | 73.1        | 72.2        | 70.6        | 75.5        | 81.1        | 83.0        |
| 9. Himachal Pradesh            | 60.7                            | 61.6        | 66.1        | 72.5        | 74.3        | 80.7        | 77.1        | 84.3        | 84.5        |
| 10. Jammu & Kashmir            | nc                              | nc          | 72.8        | 61.7        | 49.5        | 41.0        | 48.7        | 49.5        | 50.4        |
| 11. Jharkhand <sup>4</sup>     | -----I.i Bihar-----             |             |             | 23.0        | 22.8        | 23.8        | 29.4        | 32.6        | 34.7        |
| 12. Karnataka                  | 90.1                            | 92.4        | 93.5        | 87.5        | 86.4        | 90.7        | 91.8        | 91.7        | 90.3        |
| 13. Kerala <sup>6</sup>        | 90.4                            | 86.7        | 93.0        | 92.8        | 88.1        | 86.4        | 89.5        | 100.2       | 99.5        |
| 14. Madhya Pradesh             | 58.6                            | 53.8        | 59.2        | 53.6        | 48.1        | 47.9        | 49.4        | 52.4        | 52.0        |
| 15. Maharashtra                | 69.3                            | 62.5        | 72.3        | 68.1        | 71.5        | 72.4        | 78.1        | 83.2        | 84.1        |
| 16. Manipur                    | 19.7                            | 17.0        | 24.0        | 26.1        | 25.3        | 23.0        | 43.6        | 33.3        | 42.3        |
| 17. Meghalaya                  | 37.5                            | 41.9        | 45.5        | 43.5        | 51.6        | 38.7        | 47.8        | 49.4        | n.a.        |
| 18. Mizoram <sup>6</sup>       | 99.5                            | 82.1        | 73.1        | 80.9        | 77.7        | 103.0       | 101.4       | 100.5       | 96.7        |
| 19. Nagaland                   | nc                              | nc          | nc          | nc          | nc          | nc          | n.c.        | n.c.        | 78.8        |
| 20. Orissa                     | 58.5                            | 58.2        | 64.8        | 63.8        | 61.4        | 61.6        | 67.1        | 67.6        | 64.1        |
| 21. Punjab                     | 87.9                            | 86.7        | 84.8        | 88.6        | 82.5        | 89.3        | 87.6        | 93.3        | 91.9        |
| 22. Rajasthan                  | 28.6                            | 32.8        | 42.5        | 42.7        | 45.6        | 55.1        | 62.4        | 59.1        | 70.4        |
| 23. Sikkim                     | 15.0                            | 19.1        | 35.4        | 36.6        | 41.4        | 54.9        | 74.9        | 92.1        | 88.5        |
| 24. Tamil Nadu                 | 78.3                            | 78.2        | 78.4        | 78.5        | 73.0        | 80.8        | 82.9        | 86.7        | 84.8        |
| 25. Tripura                    | 37.1                            | 40.6        | 42.4        | 37.0        | 64.9        | 75.1        | 49.5        | 62.6        | 75.8        |
| 26. Uttar Pradesh <sup>5</sup> | na                              | na          | na          | na          | na          | na          | n.a.        | n.a.        | n.a.        |
| 27. Uttaranchal <sup>4,5</sup> | --- I.i Uttar Pradesh---        |             |             | na          | na          | na          | n.a.        | n.a.        | 37.9        |
| 28. West Bengal                | 30.3                            | 33.2        | 38.7        | 54.0        | 53.4        | 56.2        | 59.3        | 59.1        | 58.0        |
| <b>Union territories</b>       |                                 |             |             |             |             |             |             |             |             |
| 1. A. N. Islands <sup>6</sup>  | 70.4                            | 64.5        | 73.2        | 57.3        | 61.9        | 73.3        | 71.2        | 72.3        | 110.0       |
| 2. Chandigarh <sup>6</sup>     | 209.8                           | 214.2       | 236.1       | 231.9       | 238.7       | 264.4       | 293.3       | 261.7       | 321.8       |
| 3. Dadra & Nagar Haveli        | 62.0                            | 59.7        | 63.2        | 57.3        | 56.1        | 60.3        | 56.9        | 77.5        | 82.1        |
| 4. Daman & Diu <sup>6</sup>    | 77.6                            | 118.9       | 85.7        | 98.2        | 85.4        | 83.0        | 79.9        | 76.6        | 80.5        |

|                             |       |       |       |       |       |       |       |       |       |
|-----------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 5. Delhi <sup>6</sup>       | 115.0 | 109.3 | 121.2 | 126.3 | 116.3 | 114.0 | 117.2 | n.a.  | 118.9 |
| 6. Lakshadweep              | 79.4  | 80.6  | 84.7  | 81.9  | 85.3  | 93.1  | 95.0  | 99.8  | 64.9  |
| 7. Pondicherry <sup>6</sup> | 125.7 | 108.3 | 113.9 | 122.8 | 136.3 | 133.3 | 144.3 | 153.8 | 119.1 |

**Notes:**

1. Total refers to the States/Union territories for which data are available for respective year
  2. The report of Assam for the year 1996 is based on only 16 out of 23 districts.
  3. The report of Bihar for the year 1996 is based on only 36 out of 54 districts.
  4. Newly formed states. The SRS rates for these three newly formed states are estimated for the year 1999 and hence the level of registration also.
  5. Complete and reliable information is not available
  6. Includes delayed registration, death occurring to outside residents of states/UT's
- na : Data not available; nc : Not calculated as the SRS rates are not available

**Table 4.3: States Classified by Levels of Registration**

| Level of Registration (Per cent) | EVENT                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                             |
|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                  | Birth                                                                                                                                                                                                                                                              | Death                                                                                                                                                                                                                       |
| Above 80                         | Arunachal Pradesh, Goa, Gujarat, Haryana, Himachal Pradesh, Karnataka, Kerala, Maharashtra, Mizoram, Nagaland, Orissa, Punjab, Sikkim, Tamil Nadu, Tripura, West Bengal, A&N Islands, Chandigarh, Daman & Diu, Delhi and Pondicherry.<br><br>(16 States and 5 UTs) | Goa, Haryana, Himachal Pradesh, Karnataka, Kerala, Maharashtra, Mizoram, Punjab, Sikkim, Tamil Nadu, A & N Islands, Chandigarh, Daman & Diu, Nagar Haveli, Daman & Diu, Delhi and Pondicherry.<br><br>(10 States and 6 UTs) |
| 60-80                            | Andhra Pradesh, Jammu & Kashmir, Manipur, Uttaranchal, Dadra & Nagar Haveli and Lakshadweep<br><br>(4 States & 2UTs)                                                                                                                                               | Andhra Pradesh, Chhattisgarh, Gujarat, Nagaland Orissa, Rajasthan, Tripura and Lakshadweep<br><br>(7 States and 1 UT)                                                                                                       |
| 40-60                            | Assam, Chhattisgarh, Madhya Pradesh, Meghalaya and Rajasthan<br><br>(4 States)                                                                                                                                                                                     | Jammu & Kashmir, Madhya Pradesh, Manipur, Meghalaya and West Bengal<br><br>(5 States)                                                                                                                                       |
| Below 40                         | Bihar, Jharkhand and Uttar Pradesh<br><br>(3 States)                                                                                                                                                                                                               | Arunachal Pradesh, Assam, Bihar, Jharkhand, Uttar Pradesh and Uttaranchal<br><br>(6 States)                                                                                                                                 |

*Source:* Office of Registrar General and Census Commissioner, India

## **8. Level of public awareness and enforcement**

The current level of registration of births and deaths in the country is far from complete. Continuous efforts are being made by the Office of the Registrar General, India to bring about improvements in the system. Various activities pursued during 1999-2000 to achieve the goal are given below:

Large-scale publicity measures have been launched to create awareness among general public about the importance of registration of births and deaths and the procedure for registration. For this various media like television, radio, postal stationery, cinema slides, video film, etc., have been utilised. Efforts have been made to reach directly to the rural masses by distributing the stickers in the schools in rural areas. Video and audio spots in different language are also being produced for publicity through Doordarshan and All India Radio.

The states of Andhra Pradesh, Assam, Bihar, Rajasthan and Uttar Pradesh are having the lowest level of registration in the country. The Registrar General, India held a review meeting exclusively with the Chief Registrars of Births and Deaths in these states for accelerated improvement in the registration of births and deaths.

To facilitate easy registration and ensure quicker flow of records from registration centres to state and national level tabulation offices forms and procedure for registration have been simplified for adoption from January 1, 2000. The computation capacity in these centres is also being enhanced.

One of the main causes of low level registration is the lack of awareness about the need, importance and benefits of registration and the procedure thereof among the general public and also lack of procedural knowledge among the registration functionaries across all levels, particularly at the lower level.

In order to create awareness, the Office of the Registrar General, India has been undertaking several publicity measures, which include -

- release of advertisements on Birth / Death registration through the electronic media, viz., Doordarshan, Private T.V., and All India Radio
- release of advertisements on Birth / Death registration through the mass print media, viz., leading local newspapers during school admission time and on special occasions (Children's Day, Independence Day, Republic Day, World Population Day, State Formation Day, etc)
- publicity through conventional modes, viz., hoardings, wall hangers, wall paintings, calendars, paintings on public utilities, pamphlets, posters, Meghdoot postcards
- publicity targeting school children through supply of name label stickers to be used on note-books & text books/school bags/geometry boxes/foot rules bearing civil registration messages / slogans, spread of messages on civil registration in the students' assembly, prayers and other congregations, quiz contests for children, etc.

The National Population Policy, 2000 has set the goal of achieving cent per cent registration by the year 2010. This is a national endeavour. The Ministries of Health and Women & Child Development shall also play important role in this endeavour to create awareness among the general public about the need and importance of registration by including the civil registration slogans in their health-related advertisements like Pulse Polio, HIV/AIDS, Dengue, etc., which have a wider reach among the people. Besides, these Ministries can think of re-defining the role of Aanganwadi Workers / Health workers / ANMs/ASHA, who are in constant touch with the rural masses. Their services could be utilized in educating the rural masses, especially the expectant mothers and mothers whose post-natal care are attended to by them. The Aanganwadi centre is another point where the Aanganwadi Workers come into contact with children till they go to regular school. These functionaries can also act as interface between the local Registrar of Births & Deaths and the local people and ensure registration of all birth and death events, institutional as well as domiciliary, and issuance of birth/death certificates.

## **9. Recommendations**

The present system of data collection through the Ministry of Health and Family Welfare, through MCCD or surveys conducted by RGI and NFHS on morbidity and mortality are unable to meet the data requirements of public health planners, medical scientists, epidemiologists and researchers. Further, there are hardly any estimates available at the district and below level, which is a serious handicap in planning the preventive action at these levels. The Commission strongly feels that the situation needs to be corrected by taking necessary interventions and recommends:

- (i) There should be periodic sample surveys of households on morbidity in the country, by trained investigators taking in to account the seasonal variations in diseases. These data should be analysed as quickly as possible and the morbidity patterns in the country should be published regularly. The National Statistical System should bring out regularly the morbidity and mortality patterns in the different age groups at least at the district/regional levels including for the diseases like T.B. and AIDS.
- (ii) The morbidity and mortality surveys should be conducted in two stages. While at the first stage, the data could be collected on a fairly large sample; at the second stage, data from a sub-sample may be collected and verified by trained medical functionaries on certain specific aspects like causes of death, maternal mortality audit, etc.
- (iii) As recommended by the Khusro Committee, the quality of data on infant, child mortality and maternal mortality can be greatly improved by conducting comprehensive sample surveys of pregnant women and by a follow up of these over one or more years after childbirth. Such surveys can be conducted on a small scale at local levels.
- (iv) There should be a procedure for medical certification of the cause of death to be implemented at least on a sample basis throughout the country regularly, in order to have a better understanding of the causes or factors underlying deaths in the country. The death records should include symptom-based information on the possible cause of death.
- (v) The scheme of Medical Certification of Cause of Death (MCCD) envisaged under the Registration of Births and Deaths Act, 1969 should be strengthened. The State

Governments should attach a high priority to the implementation of this scheme both in the rural and urban areas. There should be a system for prompt reporting of deaths due to certain diseases, like cholera, polio, malaria, diphtheria, etc. so that immediate preventive and curative measures can be taken.

- (vi) The statistical system in all hospitals, nursing homes and other treatment facilities and dispensaries including those in the private sector should necessarily include certain basic information on each patient and this information in prescribed formats should flow to Health Statistical System within a fixed time frame. Computerisation of birth, morbidity and mortality records should be done in phases and should be coded with ICD-10 codes to facilitate processing.

## CHAPTER – 5

### ESTIMATES OF MORTALITY INDICATORS

Mortality is one of the basic components of population change and essential for demographic studies and public health administration. It is the principal ingredient for population projections and life tables. Information on death events recorded in SRS is used to estimate mortality indicators. The various measures of mortality are Crude Death Rate (CDR), Infant Mortality Rate (IMR) and its components, Age Specific Mortality Rates (ASMR), Still Birth Rate (SBR) and Peri-Natal Mortality Rate (PMR).

SRS has continued to provide data for estimating various mortality measures since its inception. The crude death rate (CDR) at all India level has declined significantly from 14.9 to 12.5 during 1971 to 1981 and thereafter from 9.8 to 7.6 during 1991 to 2005. The decline has been steeper in rural areas as compared to urban areas. The infant mortality rate, which plays an important role in health planning, has shown a considerable decline from 129 per 1000 live births in 1971 to 110 in 1981 and from 80 in 1991 to 58 in 2005. The child mortality rate has depicted a perceptible decline from 51.9 in 1971 to 41.2 in 1981 and from 26.5 in 1991 to 17.3 in 2005. In 2005, slightly more than one-fourth of the deaths were institutional and three-fourth received medical attention other than institution.

Apart from the all India scenario, this chapter presents data on mortality indicators for bigger states by sex, residence and broad age groups. It includes data on infant mortality and its component viz., neo-natal mortality and post neo-natal, peri-natal mortality and their changes over the last decade. It also includes data on medical attention before death.

Apart from the mortality indicators at state and national levels, the SRS sample from 2004 onwards also provides estimates of death rates at sub-state, viz. NSSO Natural Division Level in rural areas. NSSO natural divisions have been formed taking into consideration the geography of the state and by grouping continuous districts having similar topography, population density, cropping pattern and rainfall etc. The **Table** at annexure-6 of this report contains data on death rate and infant mortality rate besides birth for 56 Natural Divisions of bigger states. The **Table** also contains data on death rate and infant mortality rate besides birth death for four metro cities viz. Chennai, Delhi, Kolkata and Mumbai.

**Table 5.1****CDR (Crude death rates) by residence, India and bigger states, 2005**

| India and bigger states | Total | Rural | Urban |
|-------------------------|-------|-------|-------|
| <b>India</b>            | 7.6   | 8.1   | 6.0   |
| Andhra Pradesh          | 7.3   | 7.9   | 5.9   |
| Assam                   | 8.7   | 9.2   | 5.6   |
| Bihar                   | 8.1   | 8.3   | 6.6   |
| Chhattisgarh            | 8.1   | 8.4   | 6.9   |
| Delhi                   | 4.6   | 5.5   | 4.5   |
| Gujarat                 | 7.1   | 8.0   | 5.8   |
| Haryana                 | 6.7   | 7.0   | 5.8   |
| Himachal Pradesh        | 6.9   | 7.1   | 4.7   |
| Jammu & Kashmir         | 5.5   | 5.7   | 5.0   |
| Jharkhand               | 7.9   | 8.4   | 5.7   |
| Karnataka               | 7.1   | 7.9   | 5.6   |
| Kerala                  | 6.4   | 6.3   | 6.5   |
| Madhya Pradesh          | 9.0   | 9.8   | 6.1   |
| Maharashtra             | 6.7   | 7.4   | 5.7   |
| Orissa                  | 9.5   | 9.9   | 7.0   |
| Punjab                  | 6.7   | 7.2   | 5.8   |
| Rajasthan               | 7.0   | 7.2   | 6.2   |
| Tamil Nadu              | 7.4   | 8.2   | 6.2   |
| Uttar Pradesh           | 8.7   | 9.1   | 6.8   |
| West Bengal             | 6.4   | 6.3   | 6.6   |

Crude Death Rate (Table 5.1) at the national level for 2005 was 7.6 per thousand populations and it varies from 8.1 in rural areas to 6.0 in urban areas. Among the bigger states it varies from 4.6 in Delhi to 9.5 in Orissa. The states having death rate higher than national level are Assam (8.7), Bihar (8.1), Chhattisgarh (8.1), Jharkhand (7.9), Madhya Pradesh (9.0), Orissa (9.5) and Uttar Pradesh (8.7).

Table 5.2 given below shows the percentage change in the level of crude death rate between the period 1993-95 and 2003-05 for India and bigger states. During this period crude death rate in India has declined by 16.3 per cent. Among the bigger states, decline in crude death rate varies from only 23.8 per cent in Bihar to 7.4 per cent in Tamil Nadu. In Kerala, average crude death rate have shown marginal increase during 1993-95 to 2003-05 period, which could be possibly due to the changes in age structure of the population.

**Table 5.2**

**Percent change in average crude death rate between 1993-95 and 2003-2005,  
by residence, India and bigger states**

| India and<br>bigger states | Total       |             |             | Rural       |             |             | Urban       |             |             |
|----------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|                            | 1993-<br>95 | 2003-<br>05 | %<br>Change | 1993-<br>95 | 2003-<br>05 | %<br>Change | 1993-<br>95 | 2003-<br>05 | %<br>Change |
| <b>India</b>               | 9.2         | 7.7         | -16.3       | 10.2        | 8.3         | -18.6       | 6.4         | 5.9         | -7.8        |
| Andhra Pradesh             | 8.4         | 7.4         | -11.9       | 9.3         | 8.2         | -11.8       | 6.0         | 5.4         | -10.0       |
| Assam                      | 9.7         | 8.9         | -8.2        | 10.0        | 9.3         | -7.0        | 6.9         | 5.7         | -17.4       |
| Bihar*                     | 10.5        | 8.0         | -23.8       | 11.0        | 8.3         | -24.5       | 6.5         | 5.8         | -10.8       |
| Gujarat                    | 8.2         | 7.2         | -12.2       | 8.9         | 8.0         | -10.1       | 6.6         | 5.9         | -10.6       |
| Haryana                    | 8.0         | 6.8         | -15.0       | 8.5         | 7.1         | -16.5       | 6.7         | 5.9         | -11.9       |
| Himachal Pradesh           | 8.6         | 6.9         | -19.8       | 8.9         | 7.1         | -20.2       | 5.8         | 4.7         | -19.0       |
| Karnataka                  | 8.0         | 7.1         | -11.3       | 9.1         | 7.8         | -14.3       | 5.6         | 5.5         | -1.8        |
| Kerala                     | 6.0         | 6.3         | 5.0         | 6.0         | 6.2         | 3.3         | 6.1         | 6.3         | 3.3         |
| Madhya Pradesh*            | 11.8        | 9.0         | -23.7       | 12.8        | 9.8         | -23.4       | 7.7         | 6.6         | -14.3       |
| Maharashtra                | 7.4         | 6.7         | -9.5        | 9.1         | 7.5         | -17.6       | 5.3         | 5.6         | 5.7         |
| Orissa                     | 11.4        | 9.6         | -15.8       | 12.0        | 10.0        | -16.7       | 6.9         | 6.8         | -1.4        |
| Punjab                     | 7.6         | 6.7         | -11.8       | 8.3         | 7.1         | -14.5       | 6.0         | 5.8         | -3.3        |
| Rajasthan                  | 9.1         | 7.2         | -20.9       | 9.7         | 7.5         | -22.7       | 6.6         | 6.2         | -6.1        |
| Tamil Nadu                 | 8.1         | 7.5         | -7.4        | 9.1         | 8.3         | -8.8        | 6.2         | 6.2         | 0.0         |
| Uttar Pradesh*             | 11.0        | 8.8         | -20.0       | 11.6        | 9.5         | -18.1       | 8.0         | 6.3         | -21.3       |
| West Bengal                | 7.9         | 6.4         | -19.0       | 8.5         | 6.5         | -23.5       | 6.2         | 6.3         | 1.6         |

\* Bihar includes Jharkhand, Madhya Pradesh includes Chhattisgarh and Uttar Pradesh includes Uttaranchal.

Table 5.3 given below presents the estimated crude death rate for India by residence separately for males and females. It is observed that, compared to males, death rate for females is lower in both rural and urban areas.

**Table 5.3**  
**Crude death rates by sex and residence, India, 2005**

| Residence | Total | Males | Females |
|-----------|-------|-------|---------|
| Total     | 7.6   | 8.0   | 7.1     |
| Rural     | 8.1   | 8.5   | 7.7     |
| Urban     | 6.0   | 6.5   | 5.5     |

Crude death rates for males and females in the bigger states are shown below in Table 5.4. It is observed that male death rate exceeds female death rate in all bigger states.

**Table 5.4**  
**Crude death rates by sex, India and bigger states, 2005**

| India and bigger states | Total      | Males      | Females    |
|-------------------------|------------|------------|------------|
| <b>India</b>            | <b>7.6</b> | <b>8.0</b> | <b>7.1</b> |
| Andhra Pradesh          | 7.3        | 7.7        | 6.9        |
| Assam                   | 8.7        | 9.3        | 7.9        |
| Bihar                   | 8.1        | 8.2        | 8.0        |
| Chhattisgarh            | 8.1        | 8.6        | 7.6        |
| Delhi                   | 4.6        | 4.7        | 4.6        |
| Gujarat                 | 7.1        | 7.6        | 6.6        |
| Haryana                 | 6.7        | 7.0        | 6.3        |
| Himachal Pradesh        | 6.9        | 7.6        | 6.1        |
| Jammu & Kashmir         | 5.5        | 5.8        | 5.3        |
| Jharkhand               | 7.9        | 7.9        | 7.8        |
| Karnataka               | 7.1        | 7.6        | 6.6        |
| Kerala                  | 6.4        | 7.6        | 5.2        |
| Madhya Pradesh          | 9.0        | 9.2        | 8.6        |
| Maharashtra             | 6.7        | 7.4        | 5.9        |
| Orissa                  | 9.5        | 10.1       | 8.8        |
| Punjab                  | 6.7        | 7.2        | 6.1        |
| Rajasthan               | 7.0        | 7.0        | 6.9        |
| Tamil Nadu              | 7.4        | 8.0        | 6.7        |
| Uttar Pradesh           | 8.7        | 8.8        | 8.6        |
| West Bengal             | 6.4        | 7.0        | 5.7        |

Table 5.5 given below provides the per cent distribution of deaths by broad age groups for India and bigger states. At the national level 18.5 per cent of the deaths were infant deaths (0-1 year) whereas 42.8 per cent of the deaths occurred to persons aged 60 years and above. Toddlers (1-4 years) accounted for 5.4 per cent of the deaths. The percentage of infant deaths to total deaths varied from a low 3.4 per cent in Kerala to a high of 27.8 per cent in Rajasthan. Percentage contribution of deaths from person's 60 years and above varied from 34.4 in Madhya Pradesh to 69.5 in Kerala. The percent distributions of deaths to total deaths by residence, sex and age-group at the national level and for the bigger states are given in (annexure-5).

**Table 5.5**

**Per cent distribution of deaths by broad age groups, India and bigger states, 2005**

| India and bigger states | Broad age-groups |            |             |            |             |             |
|-------------------------|------------------|------------|-------------|------------|-------------|-------------|
|                         | <1               | 1-4        | 0-4         | 5-14       | 15-59       | 60+         |
| <b>India</b>            | <b>18.5</b>      | <b>5.4</b> | <b>23.8</b> | <b>4.1</b> | <b>29.3</b> | <b>42.8</b> |
| Andhra Pradesh          | 14.8             | 2.3        | 17.2        | 2.6        | 35.9        | 44.4        |
| Assam                   | 19.6             | 4.8        | 24.4        | 4.8        | 35.6        | 35.2        |
| Bihar                   | 22.9             | 9.5        | 32.5        | 6.8        | 24.7        | 36.0        |
| Chhattisgarh            | 21.3             | 8.3        | 29.6        | 4.7        | 27.7        | 38.0        |
| Delhi                   | 14.0             | 4.1        | 18.1        | 2.7        | 34.9        | 44.3        |
| Gujarat                 | 17.8             | 4.4        | 22.2        | 3.2        | 30.6        | 43.9        |
| Haryana                 | 21.7             | 4.0        | 25.8        | 2.8        | 26.7        | 44.7        |
| Himachal Pradesh        | 15.5             | 2.8        | 18.3        | 1.1        | 28.3        | 52.3        |
| Jammu & Kashmir         | 17.3             | 3.0        | 20.3        | 3.5        | 26.1        | 50.1        |
| Jharkhand               | 17.1             | 7.8        | 25.0        | 7.3        | 31.5        | 36.2        |
| Karnataka               | 14.5             | 1.9        | 16.3        | 1.9        | 34.5        | 47.3        |
| Kerala                  | 3.4              | 0.9        | 4.3         | 1.1        | 25.1        | 69.5        |
| Madhya Pradesh          | 24.8             | 7.1        | 31.9        | 5.5        | 28.2        | 34.4        |
| Maharashtra             | 10.1             | 2.3        | 12.4        | 2.5        | 32.8        | 52.3        |
| Orissa                  | 17.8             | 4.9        | 22.7        | 3.8        | 28.8        | 44.8        |
| Punjab                  | 12.0             | 2.8        | 14.8        | 1.9        | 28.6        | 54.6        |
| Rajasthan               | 27.8             | 7.1        | 35.0        | 4.3        | 23.9        | 36.8        |
| Tamil Nadu              | 8.3              | 1.2        | 9.5         | 1.8        | 33.4        | 55.2        |
| Uttar Pradesh           | 25.6             | 8.4        | 34.0        | 5.5        | 25.1        | 35.3        |
| West Bengal             | 11.4             | 3.1        | 14.5        | 3.5        | 31.8        | 50.2        |

Note: Total may not add upto 100 due to rounding.

The percent share of infant deaths to total deaths by residence is shown below in Table 5.6 for India and bigger states. At the national level, such share in the year 2005 was 18.5 per cent and varied

from 20.1 per cent in rural areas to 12.6 per cent in urban areas. In rural areas, Kerala registered 3.6, the lowest per cent share of infant deaths as compared to 31.1 in Rajasthan. In urban areas the variation was from 2.7 per cent in Kerala to 20.9 per cent in Uttar Pradesh.

**Table 5.6**

**Percentage of infant deaths to total deaths by residence  
India and bigger states, 2005**

| India and bigger states | Total       | Rural       | Urban       |
|-------------------------|-------------|-------------|-------------|
| <b>India</b>            | <b>18.5</b> | <b>20.1</b> | <b>12.6</b> |
| Andhra Pradesh          | 14.8        | 16.0        | 11.1        |
| Assam                   | 19.6        | 20.5        | 10.6        |
| Bihar                   | 22.9        | 23.5        | 17.1        |
| Chhattisgarh            | 21.3        | 22.6        | 14.9        |
| Delhi                   | 14.0        | 15.1        | 13.8        |
| Gujarat                 | 17.8        | 19.9        | 13.3        |
| Haryana                 | 21.7        | 23.7        | 16.3        |
| Himachal Pradesh        | 15.5        | 16.1        | 8.1         |
| Jammu & Kashmir         | 17.3        | 18.9        | 11.1        |
| Jharkhand               | 17.1        | 18.2        | 10.8        |
| Karnataka               | 14.5        | 15.2        | 12.5        |
| Kerala                  | 3.4         | 3.6         | 2.7         |
| Madhya Pradesh          | 24.8        | 25.8        | 19.6        |
| Maharashtra             | 10.1        | 10.9        | 8.7         |
| Orissa                  | 17.8        | 18.3        | 12.8        |
| Punjab                  | 12.0        | 12.6        | 10.7        |
| Rajasthan               | 27.8        | 31.1        | 16.3        |
| Tamil Nadu              | 8.3         | 8.0         | 8.8         |
| Uttar Pradesh           | 25.6        | 26.4        | 20.9        |
| West Bengal             | 11.4        | 13.5        | 6.0         |

Table 5.7 given below presents IMR by sex and residence for the year 2005 for India and bigger states. Infant Mortality Rate (IMR) is defined as the infant deaths (less than one year) per thousand live births. At the national level IMR was reported to be 58 and varied from 64 in rural areas to 40 in urban areas. Among the bigger states, it varied from 14 in Kerala to 76 in Madhya Pradesh. Female infants experienced a higher mortality than male infants in all states. Chart 20 provides the values of IMR by residence for India and bigger states. On account of limited deaths there can be some distortion in gender infant mortality rates.

**Table 5.7**

**Infant mortality rates by sex and residence, India and bigger states, 2005**

| India and bigger states | Total     |               |           | Rural     |           |           | Urban     |           |               |
|-------------------------|-----------|---------------|-----------|-----------|-----------|-----------|-----------|-----------|---------------|
|                         | Total     | Males         | Females   | Total     | Males     | Females   | Total     | Males     | Females       |
| <b>India</b>            | <b>58</b> | <b>56</b>     | <b>61</b> | <b>64</b> | <b>62</b> | <b>66</b> | <b>40</b> | <b>37</b> | <b>43</b>     |
| Andhra Pradesh          | 57        | 56            | 58        | 63        | 62        | 64        | 39        | 38        | 40            |
| Assam                   | 68        | 66            | 69        | 71        | 69        | 72        | 39        | 36        | 43            |
| Bihar                   | 61        | 60            | 62        | 62        | 61        | 63        | 47        | 45        | 50            |
| Chhattisgarh            | 63        | 63            | 64        | 65        | 65        | 66        | 52        | 49        | 55            |
| Delhi                   | 35        | 33            | 37        | 44        | 50        | 36        | 33        | 30        | 37            |
| Gujarat                 | 54        | 52            | 55        | 63        | 61        | 64        | 37        | 36        | 38            |
| Haryana                 | 60        | 51            | 70        | 64        | 55        | 76        | 45        | 40        | 52            |
| Himachal Pradesh        | 49        | <sup>47</sup> | 51        | 53        | 48        | 53        | 20        | 27        | <sup>14</sup> |
| Jammu & Kashmir         | 50        | 47            | 55        | 53        | 49        | 58        | 39        | 36        | 43            |
| Jharkhand               | 50        | 43            | 58        | 53        | 45        | 62        | 33        | 31        | 35            |
| Karnataka               | 50        | 48            | 51        | 54        | 54        | 55        | 39        | 37        | 42            |
| Kerala                  | 14        | 14            | 15        | 15        | 15        | 16        | 12        | 11        | 14            |
| Madhya Pradesh          | 76        | 72            | 79        | 80        | 77        | 84        | 54        | 52        | 56            |
| Maharashtra             | 36        | 34            | 37        | 41        | 40        | 42        | 27        | 25        | 29            |
| Orissa                  | 75        | 74            | 77        | 78        | 77        | 79        | 55        | 50        | 61            |
| Punjab                  | 44        | 41            | 48        | 49        | 46        | 51        | 37        | 32        | 43            |
| Rajasthan               | 68        | 64            | 72        | 75        | 71        | 79        | 43        | 37        | 49            |
| Tamil Nadu              | 37        | 35            | 39        | 39        | 38        | 40        | 34        | 30        | 39            |
| Uttar Pradesh           | 73        | 71            | 75        | 77        | 75        | 79        | 54        | 53        | 55            |
| West Bengal             | 38        | 38            | 39        | 40        | 40        | 40        | 31        | 28        | 35            |

The percentage change in the average level of infant mortality between 1993-95 and 2003-05 is given below in Table 5.8. During this period IMR, at the national level, declined by 20.7 per cent. Among the bigger states the decline varied from 30.4 per cent in West Bengal to 10.7 per cent in Andhra Pradesh. In the rural areas decline in IMR varied from 33.5 per cent in Maharashtra to 6.5 per cent in Gujarat. The decline in IMR varied from 42.6 per cent in Assam to 6.1 per cent in Punjab in urban areas.

**Table 5.8**  
**Per cent change in average infant mortality rates between 1993-95 and 2003-2005 by residence, India and bigger states**

| India and<br>Bigger states | Total       |             |             | Rural       |             |             | Urban       |             |             |
|----------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|                            | 1993-<br>95 | 2003-<br>05 | %<br>Change | 1993-<br>95 | 2003-<br>05 | %<br>Change | 1993-<br>95 | 2003-<br>05 | %<br>Change |
| <b>India</b>               | 74.0        | 58.7        | -20.7       | 80.7        | 64.7        | -19.8       | 48.3        | 39.3        | -18.6       |
| Andhra Pradesh             | 65.3        | 58.3        | -10.7       | 71.0        | 65.0        | -8.5        | 47.0        | 37.0        | -21.3       |
| Assam                      | 78.7        | 67.0        | -14.9       | 80.0        | 70.0        | -12.5       | 65.0        | 37.3        | -42.6       |
| Bihar*                     | 70.0        | 57.1        | -18.4       | 71.7        | 58.8        | -18.0       | 53.0        | 41.7        | -21.3       |
| Gujarat                    | 61.3        | 54.7        | -10.8       | 67.7        | 63.3        | -6.5        | 46.7        | 37.0        | -20.8       |
| Haryana                    | 68.3        | 60.0        | -12.2       | 70.0        | 63.7        | -9.0        | 62.0        | 47.0        | -24.2       |
| Himachal Pradesh           | 61.7        | 49.7        | -19.4       | 63.0        | 51.3        | -18.6       | 39.3        | 23.0        | -41.5       |
| Karnataka                  | 65.3        | 50.3        | -23.0       | 73.7        | 56.3        | -23.6       | 45.0        | 33.7        | -25.1       |
| Kerala                     | 14.7        | 12.3        | -16.3       | 15.7        | 13.3        | -15.3       | 11.7        | 10.3        | -12.0       |
| Madhya Pradesh*            | 101.0       | 74.3        | -26.4       | 107.3       | 79.0        | -26.4       | 61.7        | 53.1        | -13.9       |
| Maharashtra                | 53.3        | 38.0        | -28.7       | 65.7        | 43.7        | -33.5       | 34.7        | 28.7        | -17.3       |
| Orissa                     | 105.3       | 78.3        | -25.6       | 110.0       | 81.3        | -26.1       | 66.3        | 56.0        | -15.5       |
| Punjab                     | 54.0        | 46.0        | -14.8       | 59.0        | 50.7        | -14.1       | 38.0        | 35.7        | -6.1        |
| Rajasthan                  | 84.0        | 70.0        | -16.7       | 88.3        | 75.7        | -14.3       | 59.3        | 46.0        | -22.4       |
| Tamil Nadu                 | 56.3        | 40.3        | -28.4       | 63.7        | 44.0        | -30.9       | 41.7        | 33.3        | -20.1       |
| Uttar Pradesh*             | 89.3        | 71.8        | -19.6       | 92.7        | 76.4        | -17.6       | 66.0        | 49.7        | -24.7       |
| West Bengal                | 59.3        | 41.3        | -30.4       | 63.0        | 43.3        | -31.3       | 43.3        | 32.3        | -25.4       |

\* Bihar includes Jharkhand, Madhya Pradesh includes Chhattisgarh and Uttar Pradesh includes Uttaranchal.

Table 5.9 given below presents the neo-natal (less than 29 days) mortality rate and the percentage of neo-natal deaths to infant deaths for the year 2005 both at the national and state levels. At the national level, the neo-natal mortality rate was 37 and ranged from 23 in urban areas to 41 in rural

areas. Among the bigger states neo-natal mortality ranges from 53 in Orissa to 11 in Kerala. The percentage of neo-natal deaths to total infant deaths was 62.9 per cent at the national level and varied from 58.2 per cent in urban areas to 63.7 per cent in rural areas. Among the bigger states West Bengal (76.8) registered the highest percentage of neo-natal deaths to infant deaths and the lowest in Assam (49.2).

**Table 5.9**

**Neo-natal mortality rates and percentage share of neo-natal deaths to infant deaths by residence, India and bigger states, 2005**

| India and Bigger states | Neo-natal mortality rate |           |           | Percentage of Neo-natal death to infant deaths |             |             |
|-------------------------|--------------------------|-----------|-----------|------------------------------------------------|-------------|-------------|
|                         | Total                    | Rural     | Urban     | Total                                          | Rural       | Urban       |
| <b>India</b>            | <b>37</b>                | <b>41</b> | <b>23</b> | <b>62.9</b>                                    | <b>63.7</b> | <b>58.2</b> |
| Andhra Pradesh          | 35                       | 43        | 11        | 61.1                                           | 68.0        | 28.7        |
| Assam                   | 33                       | 35        | 18        | 49.2                                           | 49.4        | 45.5        |
| Bihar                   | 32                       | 34        | 18        | 53.1                                           | 54.2        | 37.5        |
| Chhattisgarh            | 45                       | 46        | 36        | 70.3                                           | 70.5        | 68.5        |
| Delhi                   | 20                       | 17        | 21        | 57.5                                           | 38.0        | 62.0        |
| Gujarat                 | 36                       | 40        | 27        | 66.3                                           | 63.9        | 74.1        |
| Haryana                 | 35                       | 38        | 27        | 58.7                                           | 58.3        | 60.3        |
| Himachal Pradesh        | 33                       | 35        | 14        | 62.4                                           | 62.9        | 50.0        |
| Jammu & Kashmir         | 36                       | 37        | 31        | 71.6                                           | 70.4        | 80.3        |
| Jharkhand               | 28                       | 30        | 16        | 56.2                                           | 57.0        | 48.3        |
| Karnataka               | 28                       | 34        | 15        | 56.9                                           | 62.8        | 38.1        |
| Kerala                  | 11                       | 11        | 10        | 75.9                                           | 74.3        | 81.9        |
| Madhya Pradesh          | 51                       | 54        | 36        | 67.0                                           | 67.1        | 66.8        |
| Maharashtra             | 25                       | 30        | 19        | 70.8                                           | 71.9        | 68.3        |
| Orissa                  | 53                       | 56        | 32        | 70.6                                           | 71.6        | 58.7        |
| Punjab                  | 30                       | 33        | 23        | 67.3                                           | 68.9        | 63.5        |
| Rajasthan               | 43                       | 47        | 25        | 63.0                                           | 63.7        | 58.8        |
| Tamil Nadu              | 26                       | 31        | 19        | 70.9                                           | 80.7        | 54.9        |
| Uttar Pradesh           | 45                       | 48        | 33        | 61.6                                           | 61.7        | 61.4        |
| West Bengal             | 30                       | 32        | 20        | 76.8                                           | 79.1        | 64.0        |

Early neo-natal mortality rate viz. number of infant deaths less than seven days of life per thousand live births forms an important component of infant mortality rate and more specifically of the neo-natal mortality rate. Table 5.10 given below presents the early neo-natal mortality rate along with the percentage of early neo-natal deaths to the total infant deaths. At the national level the early neo-natal mortality rate for the year 2005 has been estimated at 28 and ranges from 31 in rural areas to 16 in urban areas. Among the bigger states Kerala (9) and Orissa (41) were the two extremes.

The percentage of early neo-natal deaths to the total infant deaths during the year 2005, at the national level, has been 47.6 and it varied from 49.0 in rural area to 39.6 in urban areas. In most of the states rural proportion is relatively higher than the urban proportion. Among the bigger states the percentage for total, varied from 34.7 in Himachal Pradesh to 60.5 in Kerala.

**Table 5.10**

**Early neo-natal mortality rates and percentage share of early neo-natal deaths to infant deaths by residence, India and bigger states, 2005**

| India and Bigger states | Early neo-natal mortality rate |       |       | Percentage of Early neo-natal deaths to infant deaths |       |       |
|-------------------------|--------------------------------|-------|-------|-------------------------------------------------------|-------|-------|
|                         | Total                          | Rural | Urban | Total                                                 | Rural | Urban |
| <b>India</b>            | 28                             | 31    | 16    | 47.6                                                  | 49.0  | 39.6  |
| Andhra Pradesh          | 26                             | 32    | 8     | 46.1                                                  | 51.3  | 21.5  |
| Assam                   | 25                             | 27    | 10    | 37.5                                                  | 38.2  | 25.7  |
| Bihar                   | 28                             | 29    | 13    | 45.7                                                  | 46.9  | 27.8  |
| Chhattisgarh            | 36                             | 38    | 25    | 57.1                                                  | 58.2  | 48.7  |
| Delhi                   | 16                             | 10    | 17    | 45.0                                                  | 22.8  | 50.1  |
| Gujarat                 | 28                             | 31    | 21    | 51.4                                                  | 49.4  | 57.8  |
| Haryana                 | 24                             | 28    | 11    | 39.9                                                  | 43.5  | 25.1  |
| Himachal Pradesh        | 19                             | 19    | 11    | 34.7                                                  | 34.5  | 39.9  |
| Jammu & Kashmir         | 29                             | 31    | 18    | 57.4                                                  | 58.8  | 47.4  |
| Jharkhand               | 22                             | 24    | 12    | 44.6                                                  | 45.5  | 36.1  |
| Karnataka               | 23                             | 27    | 13    | 46.1                                                  | 50.3  | 32.7  |
| Kerala                  | 9                              | 8     | 10    | 60.5                                                  | 55.1  | 81.9  |
| Madhya Pradesh          | 38                             | 40    | 28    | 49.8                                                  | 49.5  | 51.9  |
| Maharashtra             | 20                             | 23    | 15    | 55.2                                                  | 54.9  | 55.9  |
| Orissa                  | 41                             | 44    | 15    | 54.7                                                  | 57.0  | 27.6  |
| Punjab                  | 18                             | 24    | 8     | 41.3                                                  | 49.4  | 22.2  |
| Rajasthan               | 33                             | 38    | 16    | 49.1                                                  | 50.8  | 37.3  |
| Tamil Nadu              | 19                             | 23    | 13    | 51.3                                                  | 59.8  | 37.5  |
| Uttar Pradesh           | 32                             | 35    | 18    | 43.8                                                  | 45.1  | 34.1  |
| West Bengal             | 23                             | 25    | 14    | 59.7                                                  | 62.1  | 46.0  |

Table 5.11 given below presents the peri-natal mortality rate and still birth rate for the year 2005, by residence, for India and bigger states. Peri-natal mortality rate (PMR) is defined as the number of still births together with infant deaths of less than 7 days per one thousand live births (LB) and still births (SB) during the year. The still birth rate (SBR) is estimated as the ratio of the number of still births per one thousand live births (LB) and still births (SB) during the year.

At the national level peri-natal mortality rate has been estimated to be 37 and ranged from 40 in rural areas to 24 in urban areas. Among the bigger states, Orissa (54) and Kerala(17) formed the two extremes. The estimate of still birth rate for the year 2005, at the national level is 9. Among the bigger states the highest level of still birth rate has been estimated for Himachal (19) and the lowest for Bihar (2). Still births are extremely difficult to capture and there is room for considerable improvement in netting the event.

**Table 5.11**

**Peri-natal mortality rates and still birth rates by residence,  
India and bigger states, 2005**

| India and<br>Bigger states | Peri-natal mortality rate |       |       | Still birth rate |       |       |
|----------------------------|---------------------------|-------|-------|------------------|-------|-------|
|                            | Total                     | Rural | Urban | Total            | Rural | Urban |
| <b>India</b>               | 37                        | 40    | 24    | 9                | 9     | 8     |
| Andhra Pradesh             | 37                        | 44    | 15    | 11               | 12    | 7     |
| Assam                      | 34                        | 35    | 19    | 9                | 9     | 9     |
| Bihar                      | 30                        | 31    | 14    | 2                | 2     | 1     |
| Chhattisgarh               | 53                        | 55    | 44    | 18               | 17    | 19    |
| Delhi                      | 25                        | 27    | 25    | 10               | 17    | 9     |
| Gujarat                    | 36                        | 39    | 29    | 8                | 8     | 8     |
| Haryana                    | 30                        | 33    | 22    | 7                | 5     | 11    |
| Himachal Pradesh           | 38                        | 39    | 23    | 19               | 20    | 11    |
| Jammu & Kashmir            | 36                        | 39    | 23    | 7                | 8     | 4     |
| Jharkhand                  | 22                        | 24    | 12    | *                | *     | *     |
| Karnataka                  | 36                        | 43    | 18    | 13               | 16    | 6     |
| Kerala                     | 17                        | 18    | 14    | 9                | 10    | 4     |
| Madhya Pradesh             | 45                        | 46    | 43    | 8                | 7     | 15    |
| Maharashtra                | 31                        | 35    | 26    | 12               | 13    | 11    |
| Orissa                     | 54                        | 57    | 34    | 14               | 13    | 20    |
| Punjab                     | 32                        | 39    | 20    | 14               | 15    | 12    |
| Rajasthan                  | 44                        | 49    | 27    | 11               | 11    | 11    |
| Tamil Nadu                 | 30                        | 38    | 19    | 11               | 15    | 6     |
| Uttar Pradesh              | 41                        | 45    | 23    | 10               | 11    | 5     |
| West Bengal                | 31                        | 34    | 21    | 9                | 9     | 7     |

\*: No estimate can be made on sample values.

Per cent share of deaths to children below age five to total deaths by residence for India and bigger states is shown below in Table 5.12. At the national level such percentage was 23.8 and it varied from 26.1 in rural areas to 15.6 in urban areas. Among the bigger states, the variation was from 4.3 in Kerala to 35.0 in Rajasthan. In rural areas such variation was from 4.8 in Kerala to 39.4 in Rajasthan and in urban areas, it was 3.0 in Kerala to 28.2 in Uttar Pradesh.

**Table 5.12**  
**Percentage of deaths in the age group 0-4 years to total deaths**  
**by residence, India and bigger states, 2005**

| India and bigger states | Total       | Rural       | Urban       |
|-------------------------|-------------|-------------|-------------|
| <b>India</b>            | <b>23.8</b> | <b>26.1</b> | <b>15.6</b> |
| Andhra Pradesh          | 17.2        | 18.5        | 12.9        |
| Assam                   | 24.4        | 25.6        | 12.7        |
| Bihar                   | 32.5        | 33.0        | 26.7        |
| Chhattisgarh            | 29.6        | 31.8        | 18.3        |
| Delhi                   | 18.1        | 26.6        | 16.3        |
| Gujarat                 | 22.2        | 26.1        | 13.9        |
| Haryana                 | 25.8        | 27.6        | 20.7        |
| Himachal Pradesh        | 18.3        | 19.0        | 8.9         |
| Jammu & Kashmir         | 20.3        | 22.3        | 12.3        |
| Jharkhand               | 25.0        | 26.6        | 15.4        |
| Karnataka               | 16.3        | 17.4        | 13.4        |
| Kerala                  | 4.3         | 4.8         | 3.0         |
| Madhya Pradesh          | 31.9        | 33.4        | 24.3        |
| Maharashtra             | 12.4        | 13.5        | 10.5        |
| Orissa                  | 22.7        | 23.4        | 16.1        |
| Punjab                  | 14.8        | 15.6        | 13.4        |
| Rajasthan               | 35.0        | 39.4        | 19.2        |
| Tamil Nadu              | 9.5         | 9.5         | 9.5         |
| Uttar Pradesh           | 34.0        | 35.1        | 28.2        |
| West Bengal             | 14.5        | 17.5        | 7.0         |

The death rates for children below age 5 by residence are given below in Table 5.13 separately for males and females. At the national level, child mortality rate was estimated at 17.3 and it varied from 19.5 in rural areas to 10.3 in urban areas. Among the bigger states child death rate varied from 3.4 in Kerala to 24.7 in Uttar Pradesh. Except for the states of Assam and Kerala, female children have higher death rates than male children in the remaining states.

**Table 5.13**  
**Estimated death rates for children aged 0-4 years by sex and residence**  
**India and bigger states, 2005**

| India and bigger states | Total       |             |             | Rural       |             |             | Urban       |            |             |
|-------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------------|-------------|
|                         | Total       | Male        | Female      | Total       | Male        | Female      | Total       | Male       | Female      |
| <b>India</b>            | <b>17.3</b> | <b>16.4</b> | <b>18.2</b> | <b>19.5</b> | <b>18.6</b> | <b>20.4</b> | <b>10.3</b> | <b>9.5</b> | <b>11.1</b> |
| Andhra Pradesh          | 14.8        | 14.4        | 15.2        | 17.3        | 16.7        | 17.9        | 8.8         | 9.1        | 8.6         |
| Assam                   | 19.7        | 20.4        | 19.0        | 21.1        | 21.9        | 20.2        | 8.7         | 7.9        | 9.6         |
| Bihar                   | 20.1        | 19.1        | 21.1        | 20.6        | 19.7        | 21.5        | 15.3        | 13.7       | 17.1        |
| Chhattisgarh            | 20.2        | 18.6        | 22.1        | 21.6        | 19.6        | 23.9        | 13.0        | 13.4       | 12.5        |
| Delhi                   | 8.3         | 7.7         | 8.9         | 12.8        | 14.5        | 10.8        | 7.4         | 6.4        | 8.6         |
| Gujarat                 | 16.0        | 15.3        | 16.8        | 20.3        | 19.7        | 20.9        | 8.6         | 8.0        | 9.3         |
| Haryana                 | 17.8        | 14.6        | 21.7        | 19.7        | 16.1        | 24.3        | 13.0        | 10.8       | 15.5        |
| Himachal Pradesh        | 13.5        | 9.4         | 18.0        | 14.2        | 9.6         | 19.1        | 5.8         | 7.9        | 3.3         |
| Jammu & Kashmir         | 12.0        | 11.5        | 12.5        | 12.7        | 12.3        | 13.2        | 8.4         | 7.5        | 9.5         |
| Jharkhand               | 16.1        | 14.1        | 18.3        | 17.5        | 15.1        | 20.3        | 8.8         | 9.0        | 8.5         |
| Karnataka               | 13.1        | 12.5        | 13.7        | 15.6        | 14.7        | 16.6        | 8.5         | 8.5        | 8.4         |
| Kerala                  | 3.4         | 3.5         | 3.3         | 3.7         | 3.9         | 3.6         | 2.5         | 2.4        | 2.6         |
| Madhya Pradesh          | 24.6        | 23.9        | 25.4        | 27.3        | 26.6        | 28.0        | 14.3        | 13.4       | 15.2        |
| Maharashtra             | 8.6         | 8.6         | 8.6         | 9.8         | 10.1        | 9.5         | 6.7         | 6.2        | 7.2         |
| Orissa                  | 21.4        | 21.3        | 21.6        | 22.6        | 22.6        | 22.5        | 13.2        | 11.9       | 14.6        |
| Punjab                  | 11.3        | 10.1        | 12.8        | 12.8        | 11.8        | 14.1        | 8.9         | 7.2        | 10.8        |
| Rajasthan               | 20.3        | 18.5        | 22.4        | 23.1        | 21.1        | 25.4        | 10.8        | 9.3        | 12.4        |
| Tamil Nadu              | 9.0         | 8.9         | 9.2         | 9.8         | 9.9         | 9.7         | 8.0         | 7.5        | 8.4         |
| Uttar Pradesh           | 24.7        | 23.2        | 26.3        | 26.0        | 24.4        | 27.7        | 18.2        | 17.0       | 19.5        |
| West Bengal             | 10.0        | 9.9         | 10.1        | 11.0        | 11.2        | 10.8        | 6.2         | 5.1        | 7.4         |

Death rates for children in the age group 5-14 are given below in Table 5.14. As revealed by the data, at the national level, the death rate in this age group was estimated to be 1.3. Rural-urban differentials exist with the urban areas registering in general significantly lower death rates as compared to that in rural areas. Among the bigger states the lowest death rate in this age group is registered in Kerala and Himachal Pradesh (0.4) and the highest in Jharkhand (2.2).

**Table 5.14**  
**Death rates for children age 5-14 years by sex and residence**  
**India and bigger states, 2005**

| India and bigger states | Total      |            |            | Rural      |            |            | Urban      |            |            |
|-------------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
|                         | Total      | Male       | Female     | Total      | Male       | Female     | Total      | Male       | Female     |
| <b>India</b>            | <b>1.3</b> | <b>1.3</b> | <b>1.4</b> | <b>1.5</b> | <b>1.5</b> | <b>1.6</b> | <b>0.8</b> | <b>0.8</b> | <b>0.8</b> |
| Andhra Pradesh          | 0.9        | 0.8        | 1.1        | 1.1        | 0.9        | 1.3        | 0.5        | 0.5        | 0.5        |
| Assam                   | 1.7        | 1.9        | 1.6        | 1.8        | 1.9        | 1.7        | 1.0        | 1.4        | 0.6        |
| Bihar                   | 2.0        | 1.8        | 2.2        | 2.1        | 1.8        | 2.3        | 1.2        | 1.5        | 0.9        |
| Chhattisgarh            | 1.6        | 2.1        | 1.1        | 1.8        | 2.4        | 1.2        | 0.7        | 0.8        | 0.6        |
| Delhi                   | 0.6        | 0.7        | 0.4        | 1.1        | 1.0        | 1.2        | 0.5        | 0.6        | 0.3        |
| Gujarat                 | 1.1        | 1.2        | 1.0        | 1.3        | 1.5        | 1.1        | 0.7        | 0.6        | 0.8        |
| Haryana                 | 0.8        | 0.7        | 0.9        | 0.9        | 0.8        | 1.0        | 0.6        | 0.7        | 0.6        |
| Himachal Pradesh        | 0.4        | 0.1        | 0.6        | 0.2        | 0.0        | 0.5        | 1.7        | 1.1        | 2.3        |
| Jammu & Kashmir         | 0.9        | 0.8        | 0.9        | 0.9        | 0.9        | 0.8        | 0.9        | 0.6        | 1.2        |
| Jharkhand               | 2.2        | 2.4        | 1.9        | 2.4        | 2.6        | 2.1        | 1.2        | 1.4        | 1.0        |
| Karnataka               | 0.7        | 0.7        | 0.6        | 0.6        | 0.8        | 0.4        | 0.7        | 0.4        | 1.0        |
| Kerala                  | 0.4        | 0.3        | 0.5        | 0.5        | 0.5        | 0.5        | 0.2        | 0.0        | 0.4        |
| Madhya Pradesh          | 2.0        | 1.9        | 2.0        | 2.3        | 2.2        | 2.3        | 0.8        | 0.7        | 0.9        |
| Maharashtra             | 0.8        | 0.8        | 0.9        | 0.9        | 0.9        | 0.9        | 0.6        | 0.6        | 0.7        |
| Orissa                  | 1.6        | 1.5        | 1.8        | 1.7        | 1.6        | 1.8        | 1.0        | 0.9        | 1.2        |
| Punjab                  | 0.6        | 0.8        | 0.5        | 0.6        | 0.8        | 0.4        | 0.7        | 0.7        | 0.7        |
| Rajasthan               | 1.1        | 1.0        | 1.2        | 1.3        | 1.2        | 1.4        | 0.5        | 0.3        | 0.7        |
| Tamil Nadu              | 0.8        | 1.0        | 0.5        | 0.9        | 1.1        | 0.7        | 0.6        | 0.9        | 0.3        |
| Uttar Pradesh           | 1.7        | 1.5        | 2.0        | 1.8        | 1.6        | 2.1        | 1.3        | 1.3        | 1.4        |
| West Bengal             | 1.1        | 1.1        | 1.1        | 1.2        | 1.2        | 1.2        | 0.5        | 0.5        | 0.4        |

Death rates in the age group 15-59, by sex and residence, are given below in Table 5.15. At the national level, death rates in this age group is estimated to be 3.7 and it varies from 4.0 in rural areas to 3.2 in urban areas. In both rural and urban areas, females death rate are lower than that of males except for Chhattisgarh in rural area.

**Table 5.15**  
**Death rates for persons age 15-59 years by sex and residence**  
**India and bigger states, 2005**

| India and bigger states | Total      |            |            | Rural      |            |            | Urban      |            |            |
|-------------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
|                         | Total      | Male       | Female     | Total      | Male       | Female     | Total      | Male       | Female     |
| <b>India</b>            | <b>3.7</b> | <b>4.3</b> | <b>3.1</b> | <b>4.0</b> | <b>4.4</b> | <b>3.5</b> | <b>3.2</b> | <b>3.9</b> | <b>2.4</b> |
| Andhra Pradesh          | 4.1        | 4.9        | 3.4        | 4.3        | 5.2        | 3.4        | 3.7        | 4.3        | 3.1        |
| Assam                   | 5.2        | 5.8        | 4.5        | 5.5        | 6.2        | 4.8        | 3.4        | 4.0        | 2.7        |
| Bihar                   | 3.8        | 3.9        | 3.7        | 3.8        | 4.0        | 3.7        | 3.5        | 3.6        | 3.4        |
| Chhattisgarh            | 3.9        | 4.0        | 3.8        | 3.9        | 3.8        | 4.0        | 3.9        | 4.8        | 2.8        |
| Delhi                   | 2.6        | 2.7        | 2.3        | 1.6        | 1.9        | 1.2        | 2.7        | 2.9        | 2.5        |
| Gujarat                 | 3.5        | 4.4        | 2.6        | 3.8        | 4.8        | 2.8        | 3.1        | 3.9        | 2.2        |
| Haryana                 | 3.0        | 3.5        | 2.3        | 3.1        | 3.6        | 2.4        | 2.7        | 3.3        | 2.0        |
| Himachal Pradesh        | 3.2        | 4.2        | 2.2        | 3.2        | 4.3        | 2.2        | 2.9        | 4.0        | 1.8        |
| Jammu & Kashmir         | 2.4        | 2.6        | 2.1        | 2.4        | 2.5        | 2.3        | 2.2        | 2.8        | 1.6        |
| Jharkhand               | 4.4        | 4.6        | 4.2        | 4.7        | 4.7        | 4.7        | 3.5        | 4.4        | 2.5        |
| Karnataka               | 3.9        | 4.6        | 3.0        | 4.4        | 5.1        | 3.6        | 2.9        | 3.8        | 2.0        |
| Kerala                  | 2.5        | 3.8        | 1.3        | 2.5        | 3.8        | 1.4        | 2.3        | 3.7        | 1.1        |
| Madhya Pradesh          | 4.4        | 4.9        | 4.0        | 4.8        | 5.2        | 4.5        | 3.2        | 4.0        | 2.4        |
| Maharashtra             | 3.6        | 4.5        | 2.6        | 3.9        | 4.7        | 3.0        | 3.2        | 4.3        | 2.0        |
| Orissa                  | 4.5        | 5.4        | 3.7        | 4.6        | 5.4        | 3.8        | 4.1        | 4.9        | 3.3        |
| Punjab                  | 3.1        | 3.5        | 2.6        | 3.5        | 4.1        | 2.9        | 2.4        | 2.7        | 2.1        |
| Rajasthan               | 3.0        | 3.5        | 2.5        | 2.8        | 3.1        | 2.5        | 3.5        | 4.5        | 2.5        |
| Tamil Nadu              | 3.7        | 4.5        | 3.0        | 4.2        | 4.8        | 3.7        | 3.1        | 4.0        | 2.1        |
| Uttar Pradesh           | 4.0        | 4.2        | 3.9        | 4.3        | 4.3        | 4.2        | 3.1        | 3.5        | 2.6        |
| West Bengal             | 3.2        | 3.7        | 2.7        | 3.2        | 3.6        | 2.8        | 3.2        | 4.0        | 2.5        |

Death rates for persons aged 60 years and above by sex and residence are given below in Table 5.16. At the national level, males had higher mortality than females in both rural and urban areas. The death rate for this age group, among the bigger states varies from 38.8 in Himachal Pradesh to 53.8 in Assam.

**Table 5.16**  
**Death rates for persons age 60 years and above by**  
**sex and residence, India and bigger states, 2005**

| India and bigger states | Total       |             |             | Rural       |             |             | Urban       |             |             |
|-------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|                         | Total       | Male        | Female      | Total       | Male        | Female      | Total       | Male        | Female      |
| <b>India</b>            | <b>44.7</b> | <b>49.0</b> | <b>40.5</b> | <b>45.3</b> | <b>50.0</b> | <b>40.6</b> | <b>42.9</b> | <b>46.0</b> | <b>40.0</b> |
| Andhra Pradesh          | 42.4        | 44.7        | 40.4        | 42.2        | 45.2        | 39.5        | 43.3        | 43.2        | 43.4        |
| Assam                   | 53.8        | 56.1        | 51.2        | 55.7        | 57.1        | 54.1        | 42.7        | 50.1        | 34.0        |
| Bihar                   | 46.2        | 49.7        | 42.2        | 46.7        | 50.6        | 42.2        | 41.9        | 41.5        | 42.3        |
| Chhtisgarh              | 45.1        | 54.9        | 36.2        | 43.0        | 52.1        | 34.9        | 56.4        | 69.5        | 43.8        |
| Delhi                   | 40.9        | 41.7        | 39.9        | 63.3        | 66.4        | 59.6        | 37.5        | 37.9        | 37.0        |
| Gujarat                 | 44.6        | 48.9        | 40.8        | 45.6        | 52.7        | 39.3        | 42.9        | 42.4        | 43.4        |
| Haryana                 | 43.3        | 49.9        | 36.7        | 42.5        | 51.3        | 33.5        | 45.5        | 46.0        | 45.1        |
| Himachal                | 38.8        | 44.1        | 33.6        | 39.6        | 45.3        | 33.9        | 28.8        | 28.0        | 29.6        |
| Jammu &                 | 39.9        | 42.0        | 37.8        | 40.7        | 41.3        | 40.0        | 37.5        | 44.2        | 30.7        |
| Jharkhand               | 51.0        | 53.4        | 48.4        | 52.2        | 55.1        | 49.3        | 45.4        | 46.3        | 44.3        |
| Karnataka               | 45.3        | 48.5        | 42.4        | 46.3        | 48.6        | 44.2        | 43.1        | 48.4        | 38.2        |
| Kerala                  | 40.5        | 47.9        | 34.5        | 39.2        | 46.5        | 33.3        | 44.6        | 52.3        | 38.3        |
| Madhya Pradesh          | 47.6        | 52.4        | 42.9        | 49.8        | 55.3        | 44.2        | 40.0        | 41.4        | 38.7        |
| Maharashtra             | 41.0        | 45.8        | 36.5        | 41.0        | 48.1        | 34.5        | 41.0        | 41.6        | 40.4        |
| Orissa                  | 50.8        | 53.4        | 48.2        | 51.7        | 55.0        | 48.6        | 43.6        | 41.9        | 45.2        |
| Punjab                  | 41.2        | 47.0        | 35.4        | 39.1        | 43.6        | 34.6        | 45.7        | 54.4        | 37.0        |
| Rajasthan               | 41.1        | 44.6        | 37.8        | 40.0        | 43.9        | 36.2        | 44.5        | 46.7        | 42.4        |
| Tamil Nadu              | 44.0        | 47.0        | 41.2        | 46.5        | 48.4        | 44.7        | 40.3        | 44.8        | 36.2        |
| Uttar Pradesh           | 47.0        | 51.3        | 42.4        | 47.0        | 51.5        | 42.1        | 47.1        | 50.4        | 43.5        |
| West Bengal             | 45.9        | 51.8        | 39.9        | 46.9        | 52.8        | 40.9        | 44.1        | 49.9        | 37.9        |

## Medical attention before death

The type of medical attention received before death is also collected in the SRS. In the new sample from 2005, the options on types of medical attention received before death have been modified to capture the deaths occurred specifically at private hospital/nursing homes. The new options include 'Government Hospital', 'Private Hospital', 'Qualified professional', 'Untrained functionary' and 'others'. The options for the sample based on 1991 sample were 'Institutional'; 'Medical attentions other than institution'; and 'No medical attention'. Table 5.17 given below presents the percentage distribution of deaths by type of medical attention received before death for India and bigger states separately for rural and urban areas for the year 2005. At the national level, 15.9 per cent of the deaths occurred at Government Hospital and varied from 12.8 percent in rural areas to 27.1 percent in urban areas. Among the bigger states, Himachal Pradesh (42.2) had the highest percentage of deaths in Government Hospital and Jharkhand (9.7) the lowest. Deaths in private hospitals accounted for about 12 percent and it varied from 2.9 percent in Orissa to 33.2 percent in Kerala. About 34 percent deaths were attended by untrained functionaries and others.

**Table 5.17**

**Percent distribution of deaths by type of medical attention received before death by residence, India and bigger states, 2005**

| India and bigger states | Government Hospital |             |             | Private Hospital |             |             | Qualified professional |             |             | Untrained functionary & others |             |             |
|-------------------------|---------------------|-------------|-------------|------------------|-------------|-------------|------------------------|-------------|-------------|--------------------------------|-------------|-------------|
|                         | Total               | Rural       | Urban       | Total            | Rural       | Urban       | Total                  | Rural       | Urban       | Total                          | Rural       | Urban       |
| India                   | <b>15.9</b>         | <b>12.8</b> | <b>27.1</b> | <b>12.0</b>      | <b>10.0</b> | <b>19.1</b> | <b>38.6</b>            | <b>39.4</b> | <b>35.9</b> | <b>33.5</b>                    | <b>37.9</b> | <b>18.0</b> |
| Andhra Pradesh          | 12.0                | 9.2         | 21.1        | 16.1             | 15.2        | 19.0        | 33.2                   | 32.7        | 34.7        | 38.7                           | 42.9        | 25.2        |
| Assam                   | 11.0                | 10.0        | 20.4        | 10.1             | 9.9         | 11.5        | 55.8                   | 56.1        | 53.3        | 23.1                           | 23.9        | 14.8        |
| Bihar                   | 10.6                | 9.9         | 18.1        | 7.2              | 6.3         | 17.3        | 44.2                   | 44.0        | 46.8        | 37.9                           | 39.8        | 17.8        |
| Chhattisgarh            | 16.4                | 12.7        | 34.7        | 8.8              | 7.7         | 14.4        | 25.5                   | 23.2        | 37.0        | 49.3                           | 56.4        | 13.9        |
| Delhi                   | 38.9                | 16.6        | 43.6        | 10.7             | 6.0         | 11.7        | 29.0                   | 49.5        | 24.7        | 21.4                           | 27.9        | 20.0        |
| Gujarat                 | 18.6                | 14.7        | 27.1        | 14.2             | 12.1        | 18.6        | 49.7                   | 52.9        | 42.7        | 17.5                           | 20.3        | 11.6        |
| Haryana                 | 13.6                | 12.9        | 15.6        | 11.1             | 10.7        | 12.2        | 56.2                   | 57.3        | 53.1        | 19.1                           | 19.1        | 19.1        |
| Himachal Pradesh        | 42.2                | 43.1        | 28.6        | 10.2             | 9.3         | 23.0        | 27.3                   | 27.9        | 18.5        | 20.4                           | 19.7        | 29.9        |
| Jammu & Kashmir         | 35.4                | 30.0        | 57.0        | 8.1              | 7.6         | 10.0        | 33.5                   | 34.6        | 28.8        | 23.0                           | 27.8        | 4.2         |
| Jharkhand               | 9.7                 | 6.5         | 28.9        | 9.6              | 7.7         | 20.6        | 36.1                   | 35.7        | 38.7        | 44.6                           | 50.1        | 11.8        |
| Karnataka               | 23.0                | 19.2        | 32.8        | 14.5             | 11.5        | 22.4        | 18.8                   | 21.5        | 12.0        | 43.7                           | 47.9        | 32.8        |
| Kerala                  | 36.0                | 37.6        | 31.3        | 33.2             | 35.4        | 26.7        | 12.7                   | 7.6         | 28.0        | 18.1                           | 19.4        | 14.0        |
| Madhya Pradesh          | 13.9                | 11.0        | 29.2        | 13.7             | 12.5        | 20.1        | 34.1                   | 34.4        | 32.7        | 38.3                           | 42.1        | 18.0        |
| Maharashtra             | 22.5                | 18.4        | 29.6        | 15.2             | 12.1        | 20.6        | 42.1                   | 45.0        | 36.9        | 20.3                           | 24.5        | 12.9        |
| Orissa                  | 16.0                | 14.8        | 26.7        | 2.9              | 2.5         | 6.0         | 22.7                   | 22.4        | 25.2        | 58.4                           | 60.3        | 42.1        |
| Punjab                  | 11.6                | 10.8        | 13.2        | 30.7             | 25.6        | 41.1        | 48.5                   | 52.7        | 39.9        | 9.2                            | 10.9        | 5.8         |
| Rajasthan               | 15.3                | 11.7        | 27.8        | 8.1              | 6.9         | 12.3        | 45.8                   | 45.4        | 47.4        | 30.7                           | 35.9        | 12.5        |
| Tamil Nadu              | 15.8                | 11.8        | 22.8        | 14.6             | 10.3        | 22.3        | 22.3                   | 20.3        | 25.9        | 47.3                           | 57.6        | 29.0        |
| Uttar Pradesh           | 9.8                 | 7.9         | 20.6        | 11.1             | 9.1         | 22.3        | 46.2                   | 47.2        | 40.4        | 32.9                           | 35.8        | 16.7        |
| West Bengal             | 22.3                | 17.3        | 35.0        | 6.1              | 3.5         | 12.6        | 46.4                   | 47.4        | 44.0        | 25.1                           | 31.8        | 8.4         |

# CHAPTER-6

## MATERNAL AND INFANT MORTALITY

### 1. Introduction

Mortality is one of the basic components of population change and essential inputs for demographic studies and public health administration. Information on death events is used for measuring mortality. The various measures of mortality are Crude Death rate (CDR), Infant Mortality Rate (IMR), Age Specific Mortality Rates (ASMR), Maternal Mortality Ratio (MMR), Still Birth Rate (SBR), per-Natal Mortality Rate (PMR). Along with these measures, India produces estimate of Maternal Mortality Rate which is a remarkable achievement for a diverse country like India. India also able to estimate the 'Lifetime Risk of Maternal Death' for all living women who belongs to the internationally prescribed child bearing ages.

United Nations in its Millennium Development Goals (MDGs) identified two goals which are related to mortality. Goal 4 targets at reduction of child mortality rate among children under five by two-thirds from 1990 to 2015. The two basic indicators are to be used by all countries for monitoring the goal are 'Under Five Mortality Rate (U5MR)' and 'Infant Mortality Rate (IMR)'. Goal 5 of Millennium development Goals dealt with 'Improvement of maternal health'. The target specified in Goal 5 of MDG is: 'Reduce by three- quarters, between 1990 and 2015, the maternal mortality rate'. Thus the key indicator for tracking the goal is 'Maternal Mortality Ratio (MMR)'.

One of the indicators of mortality condition and health situation is 'Life Expectancy'. It is expected that a country would have less death rates and more life expectancy as it progressed over time. In India Life expectancy at birth is 65.3 years for males and 67.2 years for females whereas 'Life expectancy at age 1' is 61.8 years for males and 63.5 years for females. The life expectancy at birth increased from 50.5 years to 61.8 years for males during the period 1970-2003 whereas the increase of the same for females is from 49.0 years to 63.5 years.

Statistics on maternal mortality form a part of vital statistics system and have a great value for health planners, administrators and medical professionals. Data on maternal mortality being scarce, efforts have been made in the past to make indirect estimates. Indirect estimates by the World Health Organisation (WHO) show that India had about 120,000 to 140,000 maternal deaths in 2002. The indirect estimates rely on vital registration deaths and econometric models; these are then likely to be approximately correct. Against this, direct estimation from household interviews of causes of death is better and more reliable even though precise levels of maternal deaths are difficult to estimate due to overall limitations resulting from the fact that maternal deaths are a small percentage of total births in the country.

In a country of the size of India, levels of maternal mortality vary greatly across the regions, due to variation in underlying access to emergency obstetrical care, prenatal care, anemia rates among women, education levels of women, and other factors. Large studies with several hundred maternal deaths will be needed to estimate the reasons for variation across the regions.

Indirect estimates of maternal mortality or those based on small studies in India have been unable to establish, reliably, existing levels, trends and differences in maternal deaths. Similarly, the data on the causes of maternal death remains scant.

## **2. Maternal Mortality:**

Deaths due to pregnancy and child birth are common among women in the reproductive age groups. Reduction of mortality of women has thus been an area of concern and governments across the globe have set time bound targets to achieve it. The International Conference on Population and Development in 1994 had recommended reduction in maternal mortality by at least 50 per cent of the 1990 levels by the year 2000 and further one half by the year 2015.

Reduction of maternal mortality is one of the major challenges to improve the overall quality of life. The absence of reliable estimates of measures of maternal mortality makes the process both difficult and complex. Recently, in India, an attempt has been made through the Sample Registration System (SRS) - a large, ongoing, low-cost and long-term measurement system to provide the levels and trends in maternal mortality across the country.

### **2.1 Measures of Maternal Mortality in India**

The Tenth revision of International Classification of diseases (ICD-10) defines a maternal death as the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes. Realising the subjectivity of the 42 days period and recognising the fact that modern life-sustaining procedures and technologies can prolong dying and delay death, ICD-10 introduced a new category, the 'late maternal Death', which is defined as the death of a woman from direct or indirect obstetric causes for more than 42 days but less than one year after termination of pregnancy.

According to ICD-10, maternal deaths can be divided in to two groups' viz. *Direct Obstetric Deaths* and *Indirect Obstetric Deaths*. Direct Obstetric Deaths are deaths resulting from obstetric complications of the pregnant state (pregnancy, labour and the puerperium), from interventions, omissions, incorrect treatment or from a chain of events resulting from any of these. Indirect Obstetric Deaths are deaths resulting from previous existing disease or disease that developed during pregnancy and which was not due to direct obstetric causes, but was aggravated by physiologic effects of pregnancy. The drawback of this definition is that maternal deaths can escape being so classified because the precise cause of death cannot be given even though the fact of the woman having been pregnant is known. Such under-registration is frequent in both developing and developed countries.

Deaths from "accidental or incidental" causes have historically been excluded from maternal mortality statistics. However, in practice, the distinction between incidental and indirect causes of death is difficult to ascertain. To facilitate the identification of maternal deaths in circumstances where cause of death attribution is inadequate, ICD-10 introduced a new category, that of pregnancy-related death, which is defined as the death of a woman while pregnant or within 42 days

of termination of pregnancy, irrespective of the cause of death. In practical terms then, there are two distinct approaches to identifying maternal deaths, one based on ‘Medical Cause of Death’ following the ICD definition of maternal death, and the other based on timing of death relative to pregnancy i.e. using the ICD definition of ‘Pregnancy Related Death’.

Maternal mortality is historically measured by ‘Maternal Mortality Ratio’ which is defined as the number of maternal deaths to women of age group (15-49) years per 1,00,000 live births. Although this ratio gives us a measure of maternal mortality, it can not be taken as a probability rate and also it has an over estimation bias. It overestimates the real situation since there may be maternal deaths when still birth occurs. So the denominator in maternal mortality ratio does not capture the still births, it tends to overestimate the reality. The other drawback of it is that maternal mortality ratio is not a probability rate in true sense because the denominator is exactly not the set of all women who can be considered as having a risk of mortality death. This probability is captured by using ‘Maternal Mortality Rate’ which is defined as number of maternal deaths to women in the age group (15-49) years per 1,00,000 living women on that age group. From a demographic perspective it is essential to measure the death rates in terms of probability to access the reality. India, being a leading country in official statistics world, calculates ‘Maternal Mortality Rate’. The sample registration system in India calculates this rate along with the maternal mortality ratio. Another measure of interest for maternal mortality is to find out the life time risk of maternal death of a woman belonging to the age group (15-49) years. Very few countries in the world are able to calculate it. India calculates this risk probability using the indicator ‘Lifetime Risk of Maternal Death’. The sample registration system in India brought out these measures by using the well designed sample survey over India.

**Table 6.1 shows the measures of maternal deaths in India during 2001-2003 based on a survey by the office of Registrar General of India.**

Table 6.1: Maternal Mortality Indicators in India, 2001-03

| Indicator                          | Value     |
|------------------------------------|-----------|
| Maternal Mortality Ratio           | 301       |
| 95% CI of Maternal Mortality Ratio | (285-317) |
| Maternal Mortality Rate            | 27.4      |
| Lifetime Risk (%)                  | 1.0       |

The results shows that the maternal mortality ratio is 301 per 1,00,000 live births in India. This ratio estimate is a point estimate of maternal mortality. It is also necessary to have an interval estimator of maternal mortality ratio. In India, the 95% confidence interval of maternal mortality ratio is (285-317). It gives a lower and upper bound within which the ratio is expected to vary with a confidence level of 95 per cent. The maternal mortality rate for India is 27.4 per 1,00,000 living women in the reproductive age group. It means the probability of dying of a woman during child birth is 0.000274, which is very small. As obvious from this rate, the life time risk of maternal death of a woman in the reproductive age group is 1.0 percent.

The latest survey (2001-03) also indicates the age distribution of maternal deaths. Table 6.2 below presents the age distribution of Maternal Deaths and Non-maternal Deaths along with their interval estimates. As data depicts, the proportion of deaths is approximately 41 per cent in age group (19-24) years, which indicates that women at early reproductive age groups are facing health problems relating to child birth more frequently than their elder counterpart. This indicator is very useful for policy makers in health sector along with doctors in targeting this specific group of mothers.

Table 6.2 : Age Distribution of Maternal Deaths from 2001-03 Special Survey of Deaths

| Age Groups | Maternal Deaths |         | Non-maternal Deaths |         |
|------------|-----------------|---------|---------------------|---------|
|            | Proportion      | 95 % CI | Proportion          | 95 % CI |
| 15-19      | 12%             | (9-14)  | 14%                 | (12-17) |
| 20-24      | 29%             | (26-32) | 15%                 | (12-18) |
| 25-29      | 21%             | (18-24) | 13%                 | (11-16) |
| 30-34      | 20%             | (17-23) | 12%                 | (10-15) |
| 35-39      | 12%             | (10-15) | 14%                 | (11-16) |
| 40-44      | 4%              | (3-6)   | 14%                 | (12-17) |
| 45-49      | 1%              | (0-2)   | 17%                 | (14-20) |
| 15-49      | 100%            |         | 100%                |         |

India progresses considerably over the time as maternal mortality is concerned. A time series data (Table 6.3) depicts that maternal mortality ratio was 398 per 1,00,000 live births during 1997-98. Now it reduces to 301 per 1,00,000 live births. During 1997-98 maternal mortality rate was 34.8 as compared to 27.4 in 2001-03. The life time risk also reduces from 1.2 percent to 1.0 percent during the period 1997-2003.

Table 6.3: Maternal Mortality Indicators in India over time

| Indicator                          | 1997-98   | 1999-01   | 2001-03   |
|------------------------------------|-----------|-----------|-----------|
| Maternal Mortality Ratio           | 398       | 327       | 301       |
| 95% CI of Maternal Mortality Ratio | (378-417) | (311-343) | (285-317) |
| Maternal Mortality Rate            | 34.8      | 31.2      | 27.4      |
| Lifetime Risk (%)                  | 1.2       | 1.1       | 1.0       |

1997-98: Retrospective MMR Survey; 1999-01: SRS retrospective household reports; 2001-03: Survey of deaths using RHIME

## 2.2 Maternal Mortality study in India (1997-2003):

During the seven-year period from 1997 to 2003, team of, Registrar General, India, In Collaboration with Centre for Global Health Research University of Toronto, Canada conducted study and examined maternal deaths to assess trends in maternal mortality in recent years, examine the major

causes of maternal mortality, and provide estimates of current and future burden from maternal deaths.

The study has investigated 4,484 maternal deaths among over 1.3 million births occurring in a nationally-representative continuous demographic survey called the Sample Registration System. The result summary of the study is given below: -

- About two-thirds of maternal deaths occur in a handful of the states - Bihar and Jharkand, Orissa, Madhya Pradesh and Chhattisgarh, Rajasthan, Uttar Pradesh and Uttaranchal (the Empowered Action Group or EAG states) and in Assam.
- The maternal mortality ratio (MMR) - the number of maternal deaths per 100,000 live births has declined from 398 (95%CI 378-417) in 1997-1998 to 301 (95%CI 285-317) in 2001-2003.
- The overall relative decline of nearly 24 per cent during 1997-2001 includes a 16 per cent relative decline in the EAG states and in Assam. In contrast MMR has fallen by 7 per cent in the southern states of Andhra Pradesh, Karnataka, Kerala and Tamil Nadu.
- In 2001-03, the lifetime risk of a women dying of in childbirth is 1.8 per cent in the EAG states and in Assam, 0.4 per cent in southern states and 0.6 per cent in other states.
- Based on about 26 million births in 2004, nearly 78,000 maternal deaths are estimated (95%CI 74,000-82,000) in India in that year.
- The leading causes of maternal death have been, haemorrhage (38%), sepsis (11%), and abortion (8%).
- The risk of a female dying of maternal and non-maternal causes is higher in the rural areas or in an EAG state or in Assam. Low level of education among females specifically enhances the risk of maternal death appreciably.

Based on the conservative estimates, it has been projected that the MMR would be 195 by 2012. However, using the Log-linear model, the projected MMR would be 231 by 2012.

Table 6.4 : Live Births, Maternal Deaths, Maternal Mortality Ratio in India by State from 2001-2003 Special Survey of Deaths using RHIME

| India & Major States            | Sample Female Population | Live Births | Maternal Deaths | MMR | 95% CI    | Maternal Mortality Rate | Lifetime risk |
|---------------------------------|--------------------------|-------------|-----------------|-----|-----------|-------------------------|---------------|
| INDIA TOTAL                     | 5 039 583                | 459 631     | 1383            | 301 | (285-317) | 27.4                    | 1.0%          |
| Assam                           | 202 943                  | 19 619      | 96              | 490 | (393-588) | 47.4                    | 1.6%          |
| Bihar/Jharkhand                 | 321 721                  | 42 112      | 156             | 371 | (313-430) | 48.6                    | 1.7%          |
| Madhya Pradesh/<br>Chhattisgarh | 220 269                  | 27 563      | 104             | 379 | (306-452) | 47.4                    | 1.6%          |
| Orissa                          | 254 176                  | 20 914      | 75              | 358 | (277-439) | 29.5                    | 1.0%          |
| Rajasthan                       | 248 891                  | 31 371      | 140             | 445 | (371-519) | 56.1                    | 1.9%          |
| Uttar Pradesh/Uttaranchal       | 462 547                  | 62 659      | 324             | 517 | (461-573) | 70.0                    | 2.4%          |
| EAG AND ASSAM<br>SUBTOTAL       | 1 710 547                | 204 238     | 895             | 438 | (410-467) | 52.4                    | 1.8%          |
| Andhra Pradesh                  | 251 511                  | 19 152      | 37              | 195 | (132-257) | 14.8                    | 0.5%          |
| Karnataka                       | 299 571                  | 24 875      | 57              | 228 | (169-287) | 18.9                    | 0.7%          |
| Kerala                          | 274 990                  | 16 448      | 18              | 110 | (59-161)  | 6.6                     | 0.2%          |
| Tamil Nadu                      | 298 726                  | 19 689      | 26              | 134 | (83-185)  | 8.8                     | 0.3%          |
| SOUTH SUBTOTAL                  | 1 124 798                | 80 164      | 139             | 173 | (144-202) | 12.3                    | 0.4%          |
| Gujarat                         | 219 783                  | 21 220      | 37              | 172 | (116-228) | 16.6                    | 0.6%          |
| Haryana                         | 163 710                  | 17 075      | 28              | 162 | (102-223) | 16.9                    | 0.6%          |
| Maharashtra                     | 266 750                  | 20 982      | 31              | 149 | (97-201)  | 11.7                    | 0.4%          |
| Punjab                          | 142 595                  | 11 090      | 20              | 178 | (100-257) | 13.8                    | 0.5%          |
| West Bengal                     | 390 702                  | 29 972      | 58              | 194 | (144-243) | 14.8                    | 0.5%          |
| Other                           | 1020 698                 | 74 890      | 176             | 235 | (200-269) | 17.2                    | 0.6%          |
| OTHER SUBTOTAL                  | 2 204 238                | 175 229     | 349             | 199 | (178-220) | 15.8                    | 0.6%          |

Table 6.5 : Causes of Maternal Deaths from 2001-03 Special Survey of Deaths

| Maternal Causes        | ICD-10 Code                                                 | India       |         | EAG and Assam |         | South       |         | Other       |         |
|------------------------|-------------------------------------------------------------|-------------|---------|---------------|---------|-------------|---------|-------------|---------|
|                        |                                                             | %           | 95% CI  | %             | 95% CI  | %           | 95% CI  | %           | 95% CI  |
| Haemorrhage            | O44-O46,<br>O67, O72                                        | 38%         | (34-41) | 37%           | (33-42) | 30%         | (17-44) | 40%         | (33-47) |
| Sepsis                 | O85-O86                                                     | 11%         | (9-14)  | 11%           | (8-14)  | 17%         | (6-28)  | 10%         | (6-15)  |
| Hypertensive Disorders | O10-O16                                                     | 5%          | (3-6)   | 4%            | (2-6)   | 13%         | (3-23)  | 6%          | (2-9)   |
| Obstructed Labour      | O64-O66                                                     | 5%          | (3-6)   | 5%            | (3-7)   | 9%          | (1-17)  | 4%          | (1-7)   |
| Abortion               | O00-O08                                                     | 8%          | (6-10)  | 10%           | (7-12)  | 4%          | (-2-10) | 3%          | (1-6)   |
| Other Conditions       | O20-<br>O43,O47-<br>O63,O68-<br>O71,O73-<br>O84,O87-<br>O99 | 34%         | (30-37) | 33%           | (29-37) | 26%         | (13-39) | 37%         | (30-44) |
| <b>Total</b>           |                                                             | <b>100%</b> |         | <b>100%</b>   |         | <b>100%</b> |         | <b>100%</b> |         |

### **2.3 Medical Causes of Maternal Mortality**

Causes of maternal mortality are great concerns for medical practitioners. Non availability of data makes both policy makers and practitioners handicapped while dealing with programmes with an objective of maternal death reduction. The latest survey of sample registration system depicts that in India 38 per cent maternal deaths are due to 'haemorrhage' and 11 per cent are due to 'sepsis'. Table 6.6 below presents the causes of maternal deaths in India. The causes are codified using 'International Classification of Diseases (ICD-10)'. Corresponding interval estimates are also provided with a confidence interval of 95 per cent.

**Table 6.6: Causes of Maternal Deaths in India from 2001-03 Special Survey of Deaths**

| Maternal Causes        | ICD-10 Code          | India |         |
|------------------------|----------------------|-------|---------|
|                        |                      | %     | 95% CI  |
| Haemorrhage            | O44-O46,<br>O67, O72 | 38%   | (34-41) |
| Sepsis                 | O85-O86              | 11%   | (9-14)  |
| Hypertensive Disorders | O10-O16              | 5%    | (3-6)   |
| Obstructed Labour      | O64-O66              | 5%    | (3-6)   |
| Abortion               | O00-O08              | 8%    | (6-10)  |

**Table 6.6: Causes of Maternal Deaths in India from 2001-03 Special Survey of Deaths**

|                  |          |      |         |
|------------------|----------|------|---------|
|                  | O20-O43, |      |         |
|                  | O47-O63, |      |         |
| Other Conditions | O68-O71, |      |         |
|                  | O73-O84, |      |         |
|                  | O87-O99  | 34%  | (30-37) |
| Total            |          | 100% |         |

Above table shows the different causes of maternal deaths. But along with these causes the factor which is very important for reduction of maternal mortality is institutional deliveries. More institutionalised deliveries ensure less chance of maternal mortality as these deliveries are attended by skilled personals. The time series data on institutional deliveries helps policy makers to access the performance of health systems over time. In the latest survey sample registration system in India also captures data on institutional deliveries.

**Table 6.7: Type of medical attention at birth (Institutional),1991-2003**

|       | 1991 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 |
|-------|------|------|------|------|------|------|------|------|------|
| India | 24.3 | 25.2 | 25.4 | 25.4 | 26.6 | 25.2 | 26.3 | 27.7 | 28.3 |

Table 6.7 shows the time series data on proportion of institutional delivery over the time. This proportion increases from 24.3 percent to 28.3 percent during the period 1991-2003.

### 3. Infant Mortality

The death of a child is a tragic loss. Though survival prospects have improved in every region, approximately 10.5 million children died before their fifth birthday in world during 2004. That's 30,000 children a day. Most of these children live in developing countries and die from a disease or a combination of diseases that could be prevented or treated if the means were there. Sometimes the cause is as simple as the lack of antibiotics for treating pneumonia or oral dehydration salts for diarrhea. Malnutrition contributes to over half these deaths. Two measures that are frequently used to quantify the infant deaths are 'Infant Mortality Rate (IMR)', 'Under Five Mortality Rate (U5MR)'. As per the National Health Policy, reduce IMR to 30/1000 and MMR to 100/100,000 by 2010.

IMR is universally regarded not only a most important indicator of the health status of a community but also of the level of living of people in general, and effectiveness of MCH services in particular. Infant mortality is given a separate treatment by demographers because: (a) infant mortality is the largest single age-category of mortality; (b) deaths at this age are due to a peculiar set of diseases and conditions to which the adult population is less exposed or less

vulnerable; (c) specific health programmes and hence may change more rapidly than the general death rate.

In general, the infant mortality rates reflect the socio-economic development of a country. Deaths during the first four weeks are largely preventable by good health care. Much of the variations between developed and developing world in antenatal care is that about half of all pregnant women in the least developed countries have no antenatal care, and 7 out of 10 babies are born without the help of a trained birth attendant. The other major factor being malnutrition and high parity of the mother, low birth weight of the baby, and congenital anomalies.

The decline in infant mortality has been attributed to: (a) improved obstetric and peri-natal care, e.g. availability of oxygen, foetal monitoring during labour, improved techniques for the induction of labour (b) improvement in the quality of life, that is economic and social progress (c) better control of communicable diseases, e.g. immunization (d) advances in chemotherapy, antibiotics and insecticides (e) better nutrition, e.g. emphasis on breast feeding, and (f) family planning, e.g. birth spacing.

In the industrial world, the dominant factor in the decline of infant mortality was economic and social progress (i.e. quality of life), with medical services playing secondary role. On the other hand, in most of the developing countries, this pattern has been almost turned upside down. That is, medical services (e.g. mass control of disease, immunization, antibiotics and insecticides) have made the major impact, with social and economic progress taking the support role. Therefore, infant mortality rates are reluctant to fall below 100 per 1000 live births in many developing countries, it is now conceded for only socio-economic development can re-accelerate the progress and lead to further significant fall in infant deaths.

### **3.1 Measures of Infant Mortality in India**

Infant mortality is defined as deaths of infants. Measures that are mainly used to quantify the infant deaths are 'Infant Mortality Rate (IMR)', 'Under Five Mortality Rate (U5MR)', 'Age-Specific Mortality Rate (ASMR)', 'Peri-Natal Mortality Rate', and 'Still Birth Rate (SBR)'. Infant mortality rate comprises of two parts viz. 'Neo-Natal Mortality Rate (NMR)' and 'Post Neo-Natal Mortality Rate'. The 'Neo-Natal Mortality Rate' also comprises of 'Early Neo-Natal Mortality Rate', and 'Late Neo-Natal Mortality Rate'.

India provides all of the above statistics relating to infant deaths. The main source of these statistics and measures is the Sample Registration System (SRS) in India. SRS used a designed based sample survey all over the India to provide the estimates of the measures of demographic characteristics like fertility and mortality. We can get an idea about the infant mortality condition in India using these results.

**Table 6.8 Age-specific death rate by sex and residence, 2005**

| Age Group      | Total |      |        | Rural |      |        | Urban |      |        |
|----------------|-------|------|--------|-------|------|--------|-------|------|--------|
|                | Total | Male | Female | Total | Male | Female | Total | Male | Female |
| Below 1        | 63.9  | 61.9 | 66.2   | 70.7  | 68.5 | 73.0   | 41.4  | 39.5 | 43.6   |
| 1-4            | 4.9   | 4.3  | 5.6    | 5.7   | 5.0  | 6.5    | 2.4   | 2.0  | 2.9    |
| 0-4            | 17.3  | 16.4 | 18.2   | 19.5  | 18.6 | 20.4   | 10.3  | 9.5  | 11.1   |
| 5-9            | 1.6   | 1.5  | 1.7    | 1.8   | 1.7  | 1.9    | 0.9   | 0.8  | 0.9    |
| 10-14          | 1.1   | 1.1  | 1.1    | 1.3   | 1.3  | 1.3    | 0.7   | 0.7  | 0.7    |
| All ages (CDR) | 7.6   | 8.0  | 7.1    | 8.1   | 8.5  | 7.7    | 6.0   | 6.5  | 5.5    |

Table 6.8 indicates the age specific death rates (up to age 14) by sex and residence in India in 2005. It also provides the over all Crude Death Rate (CDR) including all ages. In 2005, the CDR for India was 7.6 while it is 8.1 for rural area and 6.0 for urban. Among males, the CDR in rural area was 8.5 and it was 6.5 for urban area. While CDR for rural and urban females are 7.7 and 5.5 respectively.

**Table 6.9: IMR in India, 2005**

| Sector | IMR  |        |       |
|--------|------|--------|-------|
|        | Male | Female | Total |
| Rural  | 62   | 66     | 64    |
| Urban  | 37   | 43     | 40    |
| Total  | 56   | 61     | 58    |

Table 6.9 presents the 'Infant Mortality Rates' in India by sex and residence for the year 2005. The IMR is 58 for India as a whole where in rural area it is 64 and in urban area it is 40. The figure varies with residency status but also with differences in gender. At the national level, considering both rural and urban sector, the IMR is 56 for males and 61 for females.

Table 6.10 below presents the measures of Under-five Mortality Rate, Neo-Natal Mortality Rate, Post Neo-Natal Mortality Rate, Early Neo-Natal Mortality Rate, and Late Neo-Natal Mortality Rate along with Still Birth Rate in India during 2005.

**Table 6.10: U5MR and Other mortality indicators of infant, 2005**

| Indicators                     | Total | Rural | Urban |
|--------------------------------|-------|-------|-------|
| Under five Mortality Rate      | 17    | 19    | 10    |
| Neo-natal mortality rate       | 37    | 41    | 23    |
| Early neo-natal mortality rate | 28    | 31    | 16    |
| Late neo-natal mortality rate  | 9     | 9     | 7     |
| Post neo-natal mortality rate  | 22    | 23    | 17    |
| Peri- natal mortality rate     | 37    | 40    | 24    |
| Still birth rate               | 9     | 9     | 8     |

The 'Under Five Mortality Rate' is almost twice in rural area than its urban counter part. Taking two sectors together, the 'Under five Mortality Rate' is 17 for India. As Table 6.10 depicts, there exists a differences in performances of the above mentioned infant mortality indicators between rural and urban sectors in India. Except Still Birth Rate and Late neo-natal mortality rate, all other rates are considerably higher in rural India compare to its urban counterpart. The Neo-natal mortality rate is considerably high in rural area, which in turn is responsible for higher IMR. It is to be noted that Peri-natal mortality rate is 37 per 1000 in India whereas the Still birth rate is 9 per 1000. It indicates a high proportion of infants' death in early life circle, which is captured by measuring early neo-natal mortality rate.

### **3.2 Medical Causes of Infant Mortality**

The causes of infant mortality are multifactorial. The principal causes of infant mortality in India are low birth weight, respiratory infections, diarrhoeal diseases, congenital malformations and cord infection. Neonatal deaths make a major contribution (70%) to infant mortality. Whereas in developing countries, the high infant mortality is mainly due to low birth weight, and the combined effects of infection (e.g. diarrhoea, respiratory infections) and malnutrition, in developed countries, it is mainly due to congenital anomalies, anoxia and hypoxia.

## REFERENCES

1. Socio-economic Statistics, The National Statistical Commission Report (2002)
2. Ruzicka LT, Lopez AD. The use of cause-of-death statistics for health situation assessment: national and international experiences. *World Health Stat Q* 1990;43:249-58.
3. Cause of death reporting in India. A performance Analysis. Prasanta Mahapatra<sup>1</sup>, PV Chalapati Rao Institute of Health Systems, HACA Bhavan, Hyderabad, AP 500004, India.
4. Mahapatra Prasanta; "Priority setting in health sector. Why is a good cause of death reporting system important?"; Working Paper # WPxx/1999; Institute of Health Systems, HACA Bhavan, Hyderabad, AP500004, India.
5. Mahapatra Prasanta; "The verbal autopsy based cause of death reporting systems in rural areas of India. A review"; Working Paper # WPxx/2000; Institute of Health Systems, HACA Bhavan, Hyderabad, AP500004, India.
6. Registrar General of India ; Survey of cause of death (rural), India- Manual of instructions part II - Non-medical list - RGI - Vital statistics division; 1991; New Delhi.
7. Registrar General of India; Physicians manual on medical certification of cause, RGI – Vital statistics division; 1992 June; New Delhi.
8. Registrar General of India; Population projections for India and states 1996-2016.; Registrar General and Census Commissioner, India. 1996 Aug. New Delhi;.
9. Registrar General of India; Survey of cause of death (rural), India- Manual of instructions part I - organisation; Registrar General of India - Vital statistics division; 1993; New Delhi.
10. Ruzicka Lado and Lopez Alan D. "The use of cause of death statistics for health situation assessment: National and International Experiences". *World Health Statistics Quarterly*. 1990; 43:249-257.
11. WHO. International classification of diseases and related health problems. Tenth revision. Volume 2 Instructional manual. World Health Organisation, Geneva; 1993.
12. Murray Christopher J.L. and Lopez Alan D. "Estimating causes of death: new methods and global and regional applications for 1990. Murray Christopher J.L. and Lopez Alan D., Editors. *The global burden of disease. A comprehensive assessment of mortality and disability from diseases, injuries, and risk factors in 1990 and projected to 2020*. Harvard School of Public Health, Boston; 1996.
13. Report of the working group on registration of births, deaths and marriages (Part –I), National Commission on Population
14. Maternal Mortality in India: 1997-2003 Trends, Causes and Risk Factors Registrar General, India New Delhi Sample Registration System – 2004
15. National Health Policy, Department of Health (2002), Ministry of Health and Family Welfare, Nirman Bhawan, New Delhi
16. Government of India (2007): 'Sample Registration System Statistical Report 2005', Office of Registrar General, India.
17. Government of India (2006): 'SRS based Abridged Life Tables 1999-2003', Office of Registrar General, India.
18. Government of India (2006): 'Maternal Mortality in India 1997-2003: Trends, Causes and Risk Factors', Office of Registrar General, India.

**Preparation of country (India) report on Mortality Statistics – Consultation meeting****Venue: Resource Centre, Room No. 445 ‘A’, Nirman Bhawan, New Delhi -11****Date: 8th March, 2007****Tentative Programme**

|                |                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1030-1045 hrs  | Registration and Introduction                                                                                                                                                                                                                                                                      | Mr. Umed Sigh, Mr. Nair                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 1045-1100 hrs. | Welcome Address                                                                                                                                                                                                                                                                                    | Dr. Ashok Kumar<br>Dy. DG & Director CBHI/GOI                                                                                                                                                                                                                                                                                                                                                                                                       |
| 1100-1115 hrs. | Objectives                                                                                                                                                                                                                                                                                         | Dr. D.K. Raut<br>Joint Director, (TC&R) – CBHI                                                                                                                                                                                                                                                                                                                                                                                                      |
| 1115-1130 hrs. | Tea Break                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 1130-1330 hrs. | Discussions on Questionnaire                                                                                                                                                                                                                                                                       | All Participants                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 1330-1400 hrs. | Lunch Break                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 1400-1530 hrs. | <p>Introduction on Group Discussion:<br/>Theme and expected outcome</p> <p>Group Discussion:<br/>Mortality Reporting System in India (Team Members)</p> <p>Cause of death and Completeness of death registration (Team Members)</p> <p>Maternal and Infant Mortality Statistics (Team Members)</p> | <p>Dr. D.K. Raut<br/>Joint Director, (TC&amp;R) – CBHI</p> <p>1. Sh. Harbinder Singh, Dy.<br/>Registrar General</p> <p>2. Sh. V.K. Harnal, MRO,<br/>Safdarjung Hospital</p> <p>3. Sh. Umed Singh, AD, CBHI</p> <p>1. Sh. N.T. Krishna, Dy.<br/>Director</p> <p>2. Dr.(Mrs.) J. Duggal, MO(IT)</p> <p>3. Smt. R.K. Beniwal, AD,<br/>CBHI</p> <p>1. Sh. H. Borah, Director, M/o.<br/>SPI</p> <p>2. Sh. S. Chakraborty, Dy.<br/>Director, M/o. SPI</p> |

|                 |                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                 |                                                                                                                                                                                                                                | 3. Sh. Sh. A.K. Chopra, AD, CBHI                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 1530 -1545 hrs. | Tea Break                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 1545-1700 hrs.  | <p>Group Presentation</p> <p>Mortality Reporting System in India (Team Members)</p> <p>Cause of death and Completeness of death registration (Team Members)</p> <p>Maternal and Infant Mortality Statistics (Team Members)</p> | <p>Chairman: Sh. Sunil Jain, Dy. RGI (SRS)</p> <p>1. Sh. Harbinder Singh, Dy. Registrar General</p> <p>2. Sh. V.K. Harnal, MRO, Safdarjung Hospital</p> <p>3. Sh. Umed Singh, AD, CBHI</p> <p>1. Sh. N.T. Krishna, Dy. Director</p> <p>2. Dr.(Mrs.) J. Duggal, MO(IT)</p> <p>3. Smt. R.K. Beniwal, AD, CBHI</p> <p>1. Sh. H. Borah, Director, M/o. SPI</p> <p>2. Sh. S. Chakrabortty, Dy. Director, M/o. SPI</p> <p>3. Sh. Sunil Jain, Dy. RGI (SRS)</p> <p>4. Sh. Sh. A.K. Chopra, AD, CBHI</p> |
| 1700-1715 hrs.  | Conclusion                                                                                                                                                                                                                     | Dr. D.K. Raut<br>Joint Director, (TC&R) – CBHI                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 1715 -1730 hrs. | Vote of thanks                                                                                                                                                                                                                 | Mr. P.K. Mukhopadhyay, Joint Director (I&E)-CBHI                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

**Preparation of country (India) report on Mortality Statistics – Consultation meeting on  
8<sup>th</sup> March, 2007 at 10.30 a.m. in Resource Centre (Room No. 445, A-Wing)  
Nirman Bhawan, New Delhi**

**List of Participants**

| <b><u>S. No</u></b> | <b><u>Name</u></b>         | <b><u>Designation</u></b>            | <b><u>Address</u></b>                                                                      | <b><u>Tel. No.</u></b>                | <b><u>Fax No.</u></b> | <b><u>e-mail</u></b>                                                                                                   |
|---------------------|----------------------------|--------------------------------------|--------------------------------------------------------------------------------------------|---------------------------------------|-----------------------|------------------------------------------------------------------------------------------------------------------------|
| 1.                  | <b>Mr. V.K. Harnal</b>     | Medical Record Officer               | Medical Record Department & Training Centre<br>Safdarjung Hospital, New Delhi              | 26707253<br>24677018<br>(M)9810556427 | 26177899              | <a href="mailto:vharnal53@yahoo.com">vharnal53@yahoo.com</a>                                                           |
| 2.                  | <b>H. Borah</b>            | Director                             | M/o. of Statistics and Programme Implementation,<br>West Block-8, R.K. Puram,<br>New Delhi | 26183392                              | 26108001              | <a href="mailto:hbmb@rediffmail.com">hbmb@rediffmail.com</a>                                                           |
| 3.                  | <b>S. Chakraborty</b>      | Deputy Director                      | M/o. of Statistics and Programme Implementation,<br>West Block-8, R.K. Puram,<br>New Delhi | 26183392                              | 26108001              | <a href="mailto:sourav_cin@yahoo.co.in">sourav_cin@yahoo.co.in</a>                                                     |
| 4.                  | <b>Sh. N.T. Krishna</b>    | Dy. Director                         | O/o. Chief Registrar (B&D), Room No.148<br>Old Sectt. Delhi -84                            | 23890183<br>23890277                  | 23890362              | <a href="mailto:dires@nic.in">dires@nic.in</a><br><a href="mailto:ntkrishna56@yahoo.co.in">ntkrishna56@yahoo.co.in</a> |
| 5.                  | <b>Sh. Harbinder Singh</b> | Dy. Registrar General                | O/o. of the Registrar General of India, New Delhi                                          | 26100678                              | 26100678              |                                                                                                                        |
| 6.                  | <b>Sh. Sunil Jain</b>      | Dy. Registrar General of India (SRS) | O/o. of the Registrar General of India,<br>R.K. Puram, New Delhi                           | 26104012                              | 26107616,<br>26100678 | <a href="mailto:suniljain@nic.in">suniljain@nic.in</a>                                                                 |
| 7.                  | <b>Dr. I.P. Kaur</b>       | DC(MH)                               | MOHFW                                                                                      | 23061540                              | 23061540              | <a href="mailto:ip.kaur@nic.in">ip.kaur@nic.in</a>                                                                     |
| 8.                  | <b>Dr. J. Duggal</b>       | MO (IT)                              | Room No. 58, Bureau of Health Intelligence, M.C.D,                                         | 23959592                              | 23959592              | <a href="mailto:jasveen_duggal@yahoo.co.in">jasveen_duggal@yahoo.co.in</a>                                             |

|     |                              |                                        |                                                                                                |                           |          |                                                                    |
|-----|------------------------------|----------------------------------------|------------------------------------------------------------------------------------------------|---------------------------|----------|--------------------------------------------------------------------|
|     |                              |                                        | Town Hall                                                                                      |                           |          |                                                                    |
| 9.  | <b>Dr. D.K. Raut</b>         | Joint Director & Programme Coordinator | Central Bureau of Health Intelligence (CBHI), R.No.401-A Wing, Nirman Bhawan, New Delhi-110011 | 23062695<br>(M)9910734145 | 23062695 | <a href="mailto:drdeepakraut@gmail.com">drdeepakraut@gmail.com</a> |
| 10. | <b>Mr. Nihal Singh</b>       | NPO-WHO, SEARO                         |                                                                                                |                           |          |                                                                    |
| 11. | <b>Mr. Nanda Raj</b>         | NPO-WR-India                           |                                                                                                |                           |          |                                                                    |
| 10. | <b>Sh. P.K. Mukhopadhyay</b> | Joint Director, CBHI                   |                                                                                                | 23062695                  | 23062695 |                                                                    |
| 11. | <b>Sh. V.K. Khanna</b>       | Asstt. Director, CBHI                  |                                                                                                | 23062695                  | 23062695 |                                                                    |
| 12. | <b>Sh. A.K. Chopra</b>       | Asstt. Director, CBHI                  |                                                                                                | 23062695                  | 23062695 |                                                                    |
| 13. | <b>Ms. R.K. Beniwal</b>      | Asstt. Director, CBHI                  |                                                                                                | 23062695                  | 23062695 |                                                                    |
| 14. | <b>Sh. Umed Singh</b>        | Asstt. Director, CBHI                  |                                                                                                | 23062695                  | 23062695 |                                                                    |

**CONSULTATION MEETING FOR PREPARATION OF COUNTRY  
(INDIA) REPORT ON MORTALITY STATISTICS, at Nirman Bhawan,  
New Delhi Dated on 8<sup>th</sup> March 2007**

**GROUP TASK**

**Group 1: Overview of mortality Reporting System in India**

1. Mortality Statistics coverage
2. Current status of data collection.
3. Flow of mortality statistics
  - Where are deaths registered
  - Flow & period of reporting
  - % of deaths occurring in hospitals vs community.
  - Who registers & reports
4. Deaths records in Statistics Deptt, police records and others, if present.
5. Dissemination of the information (time between collection and publication)
6. Utilisation of the mortality statistics information at national and sub-national levels.
7. What contributes to incomplete registration?
8. Level of public awareness and Enforcement.

**Group 2: Reporting Cause of Death**

**A. Cause of death (COD)**

1. Birth & Death Act (Civil Registration Act) & who classify the cause of death & its key points related to mortality statistics.
2. Use of ICD-10 in health Institutions in classifying COD
3. Reporting of COD at MRD – history & record study, if available
4. Medical Certification of cause of death (If it is in place then describe followings).
  - How is it done (use of international form recommended by WHO in ICD-10), here and who does it,
  - Percentage of medically certified deaths,
  - How the data are validated; and
  - Are there other techniques in place.
  - Is verbal autopsy used? Of ill-defined causes).
5. About misclassification of cause of death (wrong diagnosis of the death). • Issues, challenges (in-hospital deaths, deaths occurring in the community).
6. Recording and reporting of “unnatural” deaths (external causes, accidents, injuries, self inflicted, criminal injuries) - How these deaths are recorded like in police department or Forensic record and reporting.

7. Use of International Classification of Diseases (ICD-10) in the health institutions in classifying the cause of death, the accuracy and reporting according to ICD-10. (Some analysis of death certificates and comparing with the history & record of the respective patient profile would be useful and would provide qualitative data for answering this question).

#### **B. Completeness of death registration**

1. Completeness of death registration (registered deaths, estimated deaths).
2. Any sub-national PROVINCIAL/ REGIONAL DISTRICT/COMMUNITIES comparisons?
3. Please indicate and describe, where possible, coverage of vital registration in those sub-national units, where it is working well, where it has some limitations or not working at all.
4. Reports that have attempted to assess completeness of vital registration (e.g. Central Statistical Office assessment, research reports, scientific papers, unpublished PhD theses, etc., when completeness of vital registration (e.g. Central Statistical Office assessment, research reports, scientific papers, unpublished PhD theses, etc., when completeness has been assessed).

#### **Group 3: Maternal and infant mortality statistics**

1. Sources, any studies, approaches.
2. % of maternal & infant deaths captured by the routine vital registration system or other special programmes.
3. Availability of disaggregated data.
4. Data collection method, timeliness, periodicity, consistency, representativeness, estimation methods





















## Annexure-4

**Table 1**  
**Age-specific death rate by sex and residence, 2005**

| Age-group                      | India |       |        |       |       |        |       |       |        |
|--------------------------------|-------|-------|--------|-------|-------|--------|-------|-------|--------|
|                                | Total |       |        | Rural |       |        | Urban |       |        |
|                                | Total | Male  | Female | Total | Male  | Female | Total | Male  | Female |
| Below 1                        | 63.9  | 61.9  | 66.2   | 70.7  | 68.5  | 73.0   | 41.4  | 39.5  | 43.6   |
| 1-4                            | 4.9   | 4.3   | 5.6    | 5.7   | 5.0   | 6.5    | 2.4   | 2.0   | 2.9    |
| 0-4                            | 17.3  | 16.4  | 18.2   | 19.5  | 18.6  | 20.4   | 10.3  | 9.5   | 11.1   |
| 5-9                            | 1.6   | 1.5   | 1.7    | 1.8   | 1.7   | 1.9    | 0.9   | 0.8   | 0.9    |
| 10-14                          | 1.1   | 1.1   | 1.1    | 1.3   | 1.3   | 1.3    | 0.7   | 0.7   | 0.7    |
| 15-19                          | 1.7   | 1.5   | 1.9    | 1.9   | 1.7   | 2.0    | 1.3   | 1.0   | 1.5    |
| 20-24                          | 2.0   | 2.0   | 2.1    | 2.2   | 2.1   | 2.3    | 1.6   | 1.6   | 1.6    |
| 25-29                          | 2.2   | 2.3   | 2.2    | 2.5   | 2.4   | 2.5    | 1.7   | 2.0   | 1.3    |
| 30-34                          | 2.5   | 3.0   | 2.0    | 2.7   | 3.2   | 2.3    | 2.0   | 2.5   | 1.5    |
| 35-39                          | 3.2   | 3.9   | 2.4    | 3.4   | 3.9   | 2.7    | 2.8   | 3.8   | 1.7    |
| 40-44                          | 4.0   | 5.0   | 3.0    | 4.3   | 5.2   | 3.3    | 3.5   | 4.6   | 2.3    |
| 45-49                          | 6.0   | 7.2   | 4.4    | 6.4   | 7.4   | 5.0    | 5.3   | 6.9   | 3.2    |
| 50-54                          | 8.4   | 10.8  | 6.4    | 8.6   | 10.9  | 6.8    | 7.8   | 10.6  | 5.2    |
| 55-59                          | 13.3  | 15.4  | 10.9   | 14.0  | 16.0  | 11.7   | 11.7  | 14.0  | 8.9    |
| 60-64                          | 21.2  | 24.2  | 18.2   | 22.0  | 25.1  | 18.8   | 19.0  | 21.6  | 16.4   |
| 65-69                          | 32.6  | 37.7  | 27.7   | 33.4  | 38.9  | 28.2   | 30.3  | 34.5  | 26.3   |
| 70-74                          | 52.8  | 57.5  | 48.0   | 54.0  | 58.5  | 49.3   | 49.2  | 54.5  | 44.0   |
| 75-79                          | 74.0  | 83.6  | 64.5   | 72.8  | 83.9  | 61.7   | 77.2  | 82.6  | 72.2   |
| 80-84                          | 106.7 | 113.9 | 99.9   | 106.4 | 113.2 | 99.8   | 107.8 | 116.3 | 100.4  |
| 85+                            | 169.3 | 170.6 | 168.1  | 166.7 | 166.0 | 167.3  | 176.9 | 186.3 | 170.1  |
| All ages<br>(Crude death rate) | 7.6   | 8.0   | 7.1    | 8.1   | 8.5   | 7.7    | 6.0   | 6.5   | 5.5    |

**Table 2**  
**Under five and infant mortality indicators, 2005**

| Indicators                     | India |       |       |
|--------------------------------|-------|-------|-------|
|                                | Total | Rural | Urban |
| Under five mortality rate      | 17    | 19    | 10    |
| Infant mortality rate          | 58    | 64    | 40    |
| Neo-natal mortality rate       | 37    | 41    | 23    |
| Early neo-natal mortality rate | 28    | 31    | 16    |
| Late neo-natal mortality rate  | 9     | 9     | 7     |
| Post neo-natal mortality rate  | 22    | 23    | 17    |
| Peri-natal mortality rate      | 37    | 40    | 24    |
| Still birth rate               | 9     | 9     | 8     |

**Table 1****Age-specific death rate by sex and residence, 2005****Andhra Pradesh**

| Age-group                      | Total |       |        | Rural |       |        | Urban |       |        |
|--------------------------------|-------|-------|--------|-------|-------|--------|-------|-------|--------|
|                                | Total | Male  | Female | Total | Male  | Female | Total | Male  | Female |
| Below 1                        | 64.4  | 64.3  | 64.5   | 73.5  | 73.3  | 73.6   | 40.7  | 40.7  | 40.7   |
| 1-4                            | 2.5   | 2.2   | 2.8    | 2.9   | 2.4   | 3.5    | 1.5   | 2.0   | 1.0    |
| 0-4                            | 14.8  | 14.4  | 15.2   | 17.3  | 16.7  | 17.9   | 8.8   | 9.1   | 8.6    |
| 5-9                            | 0.9   | 0.7   | 1.1    | 1.0   | 0.8   | 1.3    | 0.6   | 0.5   | 0.7    |
| 10-14                          | 0.9   | 0.8   | 1.0    | 1.2   | 1.0   | 1.3    | 0.4   | 0.5   | 0.2    |
| 15-19                          | 2.0   | 1.8   | 2.1    | 2.0   | 2.0   | 2.1    | 1.8   | 1.3   | 2.3    |
| 20-24                          | 2.5   | 2.5   | 2.4    | 2.5   | 2.8   | 2.1    | 2.4   | 1.8   | 3.0    |
| 25-29                          | 2.7   | 3.1   | 2.4    | 2.9   | 3.2   | 2.6    | 2.4   | 2.9   | 1.9    |
| 30-34                          | 3.5   | 4.6   | 2.4    | 4.0   | 5.5   | 2.5    | 2.4   | 2.6   | 2.2    |
| 35-39                          | 3.6   | 4.9   | 2.4    | 3.6   | 4.9   | 2.4    | 3.6   | 4.7   | 2.5    |
| 40-44                          | 3.9   | 4.7   | 3.1    | 4.4   | 5.2   | 3.6    | 2.9   | 3.7   | 2.0    |
| 45-49                          | 5.1   | 6.4   | 3.5    | 5.3   | 6.2   | 4.0    | 4.8   | 6.7   | 2.5    |
| 50-54                          | 8.8   | 12.0  | 6.4    | 8.4   | 11.7  | 6.1    | 10.0  | 12.9  | 7.2    |
| 55-59                          | 13.9  | 15.6  | 12.0   | 13.6  | 15.3  | 11.7   | 14.9  | 16.8  | 12.9   |
| 60-64                          | 18.3  | 18.8  | 17.8   | 18.5  | 20.7  | 16.4   | 17.7  | 13.2  | 22.2   |
| 65-69                          | 35.2  | 42.4  | 29.1   | 35.0  | 40.7  | 30.0   | 36.1  | 48.8  | 26.0   |
| 70-74                          | 56.5  | 65.0  | 49.1   | 58.5  | 68.2  | 49.8   | 49.5  | 52.5  | 47.0   |
| 75-79                          | 73.0  | 75.9  | 70.5   | 64.6  | 66.8  | 62.6   | 108.6 | 122.5 | 99.5   |
| 80-84                          | 104.0 | 111.7 | 98.3   | 101.7 | 114.2 | 92.1   | 112.3 | 101.6 | 119.3  |
| 85+                            | 149.8 | 108.3 | 180.4  | 143.6 | 87.3  | 187.9  | 171.0 | 193.8 | 157.8  |
| All ages<br>(Crude death rate) | 7.3   | 7.7   | 6.9    | 7.9   | 8.4   | 7.4    | 5.9   | 6.1   | 5.7    |

**Table 2****Under five and infant mortality indicators, 2005****Andhra Pradesh**

| Indicators                     | Total | Rural | Urban |
|--------------------------------|-------|-------|-------|
| Under five mortality rate      | 15    | 17    | 9     |
| Infant mortality rate          | 57    | 63    | 39    |
| Neo-natal mortality rate       | 35    | 43    | 11    |
| Early neo-natal mortality rate | 26    | 32    | 8     |
| Late neo-natal mortality rate  | 9     | 10    | 3     |
| Post neo-natal mortality rate  | 22    | 20    | 28    |
| Peri-natal mortality rate      | 37    | 44    | 15    |
| Still birth rate               | 11    | 12    | 7     |

**Table 1****Age-specific death rate by sex and residence, 2005****Assam**

| Age-group                      | Total |       |        | Rural |       |        | Urban |       |        |
|--------------------------------|-------|-------|--------|-------|-------|--------|-------|-------|--------|
|                                | Total | Male  | Female | Total | Male  | Female | Total | Male  | Female |
| Below 1                        | 81.8  | 80.3  | 83.3   | 87.6  | 86.3  | 89.0   | 36.6  | 33.8  | 39.6   |
| 1-4                            | 4.8   | 5.8   | 3.8    | 5.2   | 6.3   | 4.0    | 1.8   | 1.4   | 2.2    |
| 0-4                            | 19.7  | 20.4  | 19.0   | 21.1  | 21.9  | 20.2   | 8.7   | 7.9   | 9.6    |
| 5-9                            | 2.3   | 2.0   | 2.5    | 2.4   | 2.1   | 2.7    | 1.1   | 1.3   | 0.8    |
| 10-14                          | 1.1   | 1.7   | 0.5    | 1.2   | 1.8   | 0.5    | 0.9   | 1.4   | 0.4    |
| 15-19                          | 2.9   | 2.4   | 3.4    | 3.2   | 2.7   | 3.8    | 0.8   | 0.9   | 0.7    |
| 20-24                          | 1.9   | 2.2   | 1.5    | 2.0   | 2.4   | 1.6    | 1.4   | 1.6   | 1.2    |
| 25-29                          | 3.8   | 4.1   | 3.5    | 4.0   | 4.1   | 3.8    | 2.9   | 3.9   | 2.0    |
| 30-34                          | 3.1   | 2.9   | 3.3    | 3.3   | 2.9   | 3.7    | 2.1   | 2.6   | 1.5    |
| 35-39                          | 4.3   | 5.5   | 2.9    | 4.4   | 5.9   | 2.6    | 4.1   | 4.0   | 4.2    |
| 40-44                          | 5.9   | 4.9   | 7.2    | 6.1   | 4.7   | 7.9    | 5.2   | 5.9   | 4.2    |
| 45-49                          | 9.9   | 11.7  | 7.3    | 11.2  | 13.3  | 8.0    | 4.6   | 4.8   | 4.3    |
| 50-54                          | 11.2  | 14.1  | 9.0    | 11.6  | 14.9  | 9.2    | 9.3   | 10.6  | 8.0    |
| 55-59                          | 21.3  | 25.4  | 16.3   | 23.8  | 28.1  | 18.4   | 8.5   | 11.5  | 4.4    |
| 60-64                          | 22.4  | 27.0  | 17.2   | 22.1  | 26.4  | 17.4   | 23.9  | 30.2  | 16.0   |
| 65-69                          | 42.8  | 44.1  | 41.2   | 44.9  | 45.1  | 44.7   | 31.4  | 38.9  | 23.0   |
| 70-74                          | 65.2  | 61.4  | 69.7   | 68.0  | 63.2  | 73.6   | 47.6  | 50.1  | 44.7   |
| 75-79                          | 88.9  | 93.3  | 84.1   | 92.8  | 94.0  | 91.5   | 68.2  | 89.7  | 44.5   |
| 80-84                          | 122.3 | 135.3 | 110.2  | 122.8 | 134.5 | 112.0  | 119.5 | 140.4 | 99.4   |
| 85+                            | 226.2 | 260.0 | 197.4  | 243.3 | 276.8 | 214.4  | 127.4 | 157.1 | 104.5  |
| All ages<br>(Crude death rate) | 8.7   | 9.3   | 7.9    | 9.2   | 9.8   | 8.5    | 5.6   | 6.6   | 4.6    |

**Table 2****Under five and infant mortality indicators, 2005**

| Indicators                     | Assam |       |       |
|--------------------------------|-------|-------|-------|
|                                | Total | Rural | Urban |
| Under five mortality rate      | 20    | 21    | 9     |
| Infant mortality rate          | 68    | 71    | 39    |
| Neo-natal mortality rate       | 33    | 35    | 18    |
| Early neo-natal mortality rate | 25    | 27    | 10    |
| Late neo-natal mortality rate  | 8     | 8     | 8     |
| Post neo-natal mortality rate  | 34    | 36    | 21    |
| Peri-natal mortality rate      | 34    | 35    | 19    |
| Still birth rate               | 9     | 9     | 9     |

**Table 1****Age-specific death rate by sex and residence, 2005**

| Age-group                      | Bihar |       |        |       |       |        |       |       |        |
|--------------------------------|-------|-------|--------|-------|-------|--------|-------|-------|--------|
|                                | Total |       |        | Rural |       |        | Urban |       |        |
|                                | Total | Male  | Female | Total | Male  | Female | Total | Male  | Female |
| Below 1                        | 67.2  | 66.2  | 68.2   | 69.4  | 68.6  | 70.3   | 45.8  | 43.6  | 48.1   |
| 1-4                            | 7.5   | 6.3   | 8.7    | 7.5   | 6.4   | 8.7    | 7.0   | 5.4   | 8.7    |
| 0-4                            | 20.1  | 19.1  | 21.1   | 20.6  | 19.7  | 21.5   | 15.3  | 13.7  | 17.1   |
| 5-9                            | 2.5   | 2.1   | 3.1    | 2.6   | 2.0   | 3.3    | 1.6   | 2.2   | 1.0    |
| 10-14                          | 1.2   | 1.4   | 1.0    | 1.3   | 1.5   | 1.0    | 0.8   | 0.7   | 0.8    |
| 15-19                          | 2.0   | 2.1   | 1.9    | 2.0   | 2.2   | 1.9    | 1.9   | 1.7   | 2.1    |
| 20-24                          | 2.1   | 1.9   | 2.3    | 2.1   | 1.8   | 2.3    | 2.4   | 2.8   | 2.0    |
| 25-29                          | 2.3   | 1.8   | 2.7    | 2.2   | 1.6   | 2.9    | 3.0   | 4.2   | 1.6    |
| 30-34                          | 2.1   | 2.4   | 1.8    | 2.1   | 2.5   | 1.7    | 2.0   | 1.5   | 2.5    |
| 35-39                          | 3.3   | 3.7   | 2.9    | 3.4   | 4.0   | 2.8    | 2.4   | 1.4   | 3.4    |
| 40-44                          | 3.7   | 4.5   | 2.8    | 3.6   | 4.3   | 2.9    | 4.2   | 6.3   | 1.9    |
| 45-49                          | 5.8   | 7.1   | 4.0    | 5.8   | 7.6   | 3.4    | 5.4   | 3.3   | 8.5    |
| 50-54                          | 9.7   | 10.1  | 9.4    | 10.1  | 10.4  | 10.0   | 5.9   | 7.9   | 4.3    |
| 55-59                          | 13.6  | 12.9  | 14.4   | 13.7  | 13.2  | 14.5   | 12.3  | 10.8  | 14.0   |
| 60-64                          | 24.9  | 23.1  | 26.9   | 24.1  | 21.4  | 27.3   | 31.5  | 38.1  | 24.3   |
| 65-69                          | 32.2  | 38.0  | 26.4   | 33.2  | 39.9  | 26.5   | 22.7  | 20.6  | 24.8   |
| 70-74                          | 58.6  | 60.8  | 55.6   | 60.0  | 63.4  | 55.3   | 45.9  | 35.1  | 58.1   |
| 75-79                          | 67.5  | 78.5  | 55.4   | 68.9  | 80.1  | 56.2   | 56.6  | 64.4  | 49.3   |
| 80-84                          | 116.4 | 117.1 | 115.4  | 115.5 | 118.8 | 111.3  | 124.3 | 102.3 | 154.8  |
| 85+                            | 153.0 | 162.1 | 140.8  | 152.7 | 162.7 | 139.0  | 156.3 | 152.6 | 159.7  |
| All ages<br>(Crude death rate) | 8.1   | 8.2   | 8.0    | 8.3   | 8.4   | 8.1    | 6.6   | 6.5   | 6.7    |

**Table 2****Under five and infant mortality indicators, 2005**

| Indicators                     | Bihar |       |       |
|--------------------------------|-------|-------|-------|
|                                | Total | Rural | Urban |
| Under five mortality rate      | 20    | 21    | 15    |
| Infant mortality rate          | 61    | 62    | 47    |
| Neo-natal mortality rate       | 32    | 34    | 18    |
| Early neo-natal mortality rate | 28    | 29    | 13    |
| Late neo-natal mortality rate  | 5     | 5     | 5     |
| Post neo-natal mortality rate  | 29    | 29    | 30    |
| Peri-natal mortality rate      | 30    | 31    | 14    |
| Still birth rate               | 2     | 2     | 1     |

**Table 1****Age-specific death rate by sex and residence, 2005**

| Age-group                      | Chhattisgarh |       |        |       |       |        |       |       |        |
|--------------------------------|--------------|-------|--------|-------|-------|--------|-------|-------|--------|
|                                | Total        |       |        | Rural |       |        | Urban |       |        |
|                                | Total        | Male  | Female | Total | Male  | Female | Total | Male  | Female |
| Below 1                        | 69.0         | 70.5  | 67.5   | 73.5  | 75.4  | 71.5   | 47.4  | 46.7  | 48.1   |
| 1-4                            | 7.2          | 5.0   | 9.6    | 8.0   | 5.2   | 11.0   | 3.1   | 3.9   | 2.3    |
| 0-4                            | 20.2         | 18.6  | 22.1   | 21.6  | 19.6  | 23.9   | 13.0  | 13.4  | 12.5   |
| 5-9                            | 2.0          | 2.4   | 1.5    | 2.2   | 2.8   | 1.5    | 1.0   | 0.7   | 1.4    |
| 10-14                          | 1.3          | 1.8   | 0.7    | 1.4   | 2.0   | 0.8    | 0.5   | 0.9   | 0.0    |
| 15-19                          | 2.8          | 1.1   | 4.7    | 3.2   | 0.9   | 5.7    | 1.2   | 1.7   | 0.6    |
| 20-24                          | 2.6          | 2.9   | 2.4    | 2.7   | 3.1   | 2.3    | 2.3   | 2.1   | 2.5    |
| 25-29                          | 1.3          | 1.1   | 1.5    | 1.2   | 0.8   | 1.6    | 1.8   | 2.4   | 1.2    |
| 30-34                          | 3.8          | 3.5   | 4.1    | 3.7   | 3.2   | 4.3    | 4.1   | 4.8   | 3.3    |
| 35-39                          | 2.0          | 1.7   | 2.4    | 1.6   | 0.9   | 2.3    | 3.6   | 4.7   | 2.5    |
| 40-44                          | 4.8          | 6.5   | 3.0    | 4.8   | 6.1   | 3.5    | 4.8   | 7.8   | 1.1    |
| 45-49                          | 6.0          | 7.3   | 4.2    | 5.5   | 6.7   | 3.7    | 7.8   | 9.3   | 5.9    |
| 50-54                          | 5.9          | 7.7   | 4.6    | 5.6   | 7.0   | 4.5    | 7.4   | 10.1  | 5.0    |
| 55-59                          | 14.9         | 16.6  | 12.9   | 15.5  | 17.8  | 12.9   | 12.3  | 11.5  | 13.2   |
| 60-64                          | 23.0         | 34.1  | 12.7   | 20.7  | 31.8  | 10.6   | 34.6  | 45.8  | 23.8   |
| 65-69                          | 40.6         | 53.1  | 29.7   | 40.7  | 54.0  | 29.3   | 40.1  | 48.2  | 31.8   |
| 70-74                          | 53.3         | 73.2  | 34.6   | 48.7  | 66.0  | 32.7   | 81.7  | 114.5 | 46.7   |
| 75-79                          | 107.4        | 104.1 | 110.8  | 114.9 | 110.6 | 119.7  | 74.3  | 70.4  | 77.4   |
| 80-84                          | 99.1         | 71.9  | 126.8  | 91.2  | 53.5  | 130.7  | 141.1 | 178.8 | 108.0  |
| 85+                            | 139.2        | 102.4 | 168.1  | 117.5 | 76.9  | 151.9  | 251.8 | 278.6 | 237.7  |
| All ages<br>(Crude death rate) | 8.1          | 8.6   | 7.6    | 8.4   | 8.7   | 8.0    | 6.9   | 8.2   | 5.6    |

**Table 2****Under five and infant mortality indicators, 2005****Chhattisgarh**

| Indicators                     | Chhattisgarh |       |       |
|--------------------------------|--------------|-------|-------|
|                                | Total        | Rural | Urban |
| Under five mortality rate      | 20           | 22    | 13    |
| Infant mortality rate          | 63           | 65    | 52    |
| Neo-natal mortality rate       | 45           | 46    | 36    |
| Early neo-natal mortality rate | 36           | 38    | 25    |
| Late neo-natal mortality rate  | 8            | 8     | 10    |
| Post neo-natal mortality rate  | 19           | 19    | 16    |
| Peri-natal mortality rate      | 53           | 55    | 44    |
| Still birth rate               | 18           | 17    | 19    |

**Table 1****Age-specific death rate by sex and residence, 2005****Delhi**

| Age-group                      | Total |       |        | Rural |       |        | Urban |       |        |
|--------------------------------|-------|-------|--------|-------|-------|--------|-------|-------|--------|
|                                | Total | Male  | Female | Total | Male  | Female | Total | Male  | Female |
| Below 1                        | 34.3  | 31.7  | 37.3   | 39.8  | 46.3  | 32.8   | 33.2  | 29.1  | 38.3   |
| 1-4                            | 2.3   | 2.1   | 2.6    | 6.7   | 7.6   | 5.8    | 1.4   | 0.9   | 1.9    |
| 0-4                            | 8.3   | 7.7   | 8.9    | 12.8  | 14.5  | 10.8   | 7.4   | 6.4   | 8.6    |
| 5-9                            | 0.5   | 0.7   | 0.3    | 0.0   | 0.0   | 0.0    | 0.6   | 0.8   | 0.3    |
| 10-14                          | 0.7   | 0.7   | 0.6    | 2.2   | 2.0   | 2.5    | 0.4   | 0.4   | 0.3    |
| 15-19                          | 1.2   | 0.8   | 1.7    | 1.1   | 0.0   | 2.4    | 1.2   | 1.0   | 1.6    |
| 20-24                          | 0.4   | 0.5   | 0.3    | 0.0   | 0.0   | 0.0    | 0.5   | 0.5   | 0.3    |
| 25-29                          | 2.1   | 2.3   | 1.9    | 2.7   | 2.4   | 3.0    | 2.0   | 2.2   | 1.7    |
| 30-34                          | 1.8   | 2.1   | 1.5    | 1.7   | 3.3   | 0.0    | 1.9   | 1.9   | 1.7    |
| 35-39                          | 2.3   | 2.5   | 2.0    | 0.9   | 1.7   | 0.0    | 2.5   | 2.6   | 2.3    |
| 40-44                          | 4.2   | 4.6   | 3.7    | 2.4   | 4.0   | 0.0    | 4.5   | 4.7   | 4.2    |
| 45-49                          | 4.5   | 5.7   | 2.7    | 1.9   | 3.1   | 0.0    | 4.8   | 6.0   | 3.0    |
| 50-54                          | 5.6   | 5.9   | 5.2    | 3.7   | 4.0   | 3.4    | 5.9   | 6.2   | 5.6    |
| 55-59                          | 11.1  | 10.8  | 11.5   | 2.9   | 4.6   | 0.8    | 12.5  | 11.9  | 13.3   |
| 60-64                          | 20.7  | 23.3  | 17.9   | 40.8  | 33.1  | 50.3   | 17.7  | 21.7  | 13.4   |
| 65-69                          | 29.3  | 24.4  | 34.8   | 46.4  | 29.3  | 65.5   | 26.6  | 23.6  | 30.0   |
| 70-74                          | 46.7  | 42.6  | 51.2   | 33.2  | 20.9  | 45.6   | 48.2  | 44.9  | 51.8   |
| 75-79                          | 78.3  | 84.7  | 71.2   | 139.9 | 171.4 | 102.9  | 68.6  | 70.6  | 66.4   |
| 80-84                          | 72.2  | 84.4  | 59.6   | 61.9  | 86.2  | 39.5   | 74.1  | 84.1  | 63.6   |
| 85+                            | 200.1 | 214.3 | 182.4  | 326.6 | 437.8 | 107.6  | 173.7 | 156.1 | 193.7  |
| All ages<br>(Crude death rate) | 4.6   | 4.7   | 4.6    | 5.5   | 6.0   | 4.9    | 4.5   | 4.5   | 4.5    |

**Table 2****Under five and infant mortality indicators, 2005**

| Indicators                     | Delhi |       |       |
|--------------------------------|-------|-------|-------|
|                                | Total | Rural | Urban |
| Under five mortality rate      | 8     | 13    | 7     |
| Infant mortality rate          | 35    | 44    | 33    |
| Neo-natal mortality rate       | 20    | 17    | 21    |
| Early neo-natal mortality rate | 16    | 10    | 17    |
| Late neo-natal mortality rate  | 4     | 7     | 4     |
| Post neo-natal mortality rate  | 15    | 27    | 13    |
| Peri-natal mortality rate      | 25    | 27    | 25    |
| Still birth rate               | 10    | 17    | 9     |

**Table 1****Age-specific death rate by sex and residence, 2005**

| Age-group                      | Gujarat |       |        |       |       |        |       |       |        |
|--------------------------------|---------|-------|--------|-------|-------|--------|-------|-------|--------|
|                                | Total   |       |        | Rural |       |        | Urban |       |        |
|                                | Total   | Male  | Female | Total | Male  | Female | Total | Male  | Female |
| Below 1                        | 63.0    | 62.8  | 63.3   | 75.2  | 75.5  | 74.9   | 41.5  | 41.1  | 41.9   |
| 1-4                            | 4.0     | 3.3   | 4.8    | 6.1   | 5.3   | 6.8    | 0.5   | 0.0   | 1.1    |
| 0-4                            | 16.0    | 15.3  | 16.8   | 20.3  | 19.7  | 20.9   | 8.6   | 8.0   | 9.3    |
| 5-9                            | 1.2     | 1.2   | 1.2    | 1.5   | 1.4   | 1.5    | 0.8   | 1.0   | 0.6    |
| 10-14                          | 1.0     | 1.1   | 0.8    | 1.1   | 1.6   | 0.6    | 0.7   | 0.3   | 1.1    |
| 15-19                          | 1.3     | 1.2   | 1.4    | 1.4   | 1.6   | 1.2    | 1.1   | 0.7   | 1.7    |
| 20-24                          | 1.9     | 2.1   | 1.6    | 2.0   | 2.0   | 2.0    | 1.6   | 2.1   | 1.0    |
| 25-29                          | 2.3     | 2.8   | 1.7    | 3.0   | 3.6   | 2.4    | 1.3   | 1.8   | 0.8    |
| 30-34                          | 2.5     | 3.1   | 2.0    | 3.2   | 3.9   | 2.4    | 1.7   | 2.0   | 1.3    |
| 35-39                          | 2.9     | 3.5   | 2.2    | 2.9   | 3.2   | 2.5    | 2.9   | 3.8   | 1.8    |
| 40-44                          | 3.4     | 4.3   | 2.5    | 4.2   | 5.0   | 3.3    | 2.4   | 3.4   | 1.3    |
| 45-49                          | 5.0     | 5.9   | 3.9    | 4.7   | 5.8   | 3.3    | 5.3   | 6.0   | 4.6    |
| 50-54                          | 9.4     | 14.0  | 5.4    | 8.8   | 13.7  | 4.8    | 10.4  | 14.4  | 6.5    |
| 55-59                          | 12.9    | 17.7  | 7.5    | 13.1  | 18.3  | 7.6    | 12.4  | 16.8  | 7.4    |
| 60-64                          | 22.3    | 26.9  | 18.0   | 23.7  | 29.8  | 18.0   | 19.8  | 21.6  | 18.1   |
| 65-69                          | 32.3    | 37.8  | 27.2   | 35.7  | 43.3  | 28.9   | 26.4  | 28.6  | 24.1   |
| 70-74                          | 50.7    | 54.7  | 47.3   | 54.7  | 60.1  | 50.0   | 44.2  | 45.9  | 42.7   |
| 75-79                          | 79.3    | 86.9  | 72.7   | 67.5  | 89.7  | 49.2   | 96.5  | 83.2  | 109.0  |
| 80-84                          | 101.9   | 110.8 | 95.1   | 93.7  | 107.7 | 82.9   | 116.6 | 116.3 | 116.8  |
| 85+                            | 159.4   | 185.3 | 144.3  | 181.2 | 208.7 | 164.4  | 126.5 | 146.7 | 115.7  |
| All ages<br>(Crude death rate) | 7.1     | 7.6   | 6.6    | 8.0   | 8.8   | 7.2    | 5.8   | 5.9   | 5.7    |

**Table 2****Under five and infant mortality indicators, 2005**

| Indicators                     | Gujarat |       |       |
|--------------------------------|---------|-------|-------|
|                                | Total   | Rural | Urban |
| Under five mortality rate      | 16      | 20    | 9     |
| Infant mortality rate          | 54      | 63    | 37    |
| Neo-natal mortality rate       | 36      | 40    | 27    |
| Early neo-natal mortality rate | 28      | 31    | 21    |
| Late neo-natal mortality rate  | 8       | 9     | 6     |
| Post neo-natal mortality rate  | 18      | 23    | 9     |
| Peri-natal mortality rate      | 36      | 39    | 29    |
| Still birth rate               | 8       | 8     | 8     |

**Table 1****Age-specific death rate by sex and residence, 2005**

| Age-group                      | Haryana |       |        |       |       |        |       |      |        |
|--------------------------------|---------|-------|--------|-------|-------|--------|-------|------|--------|
|                                | Total   |       |        | Rural |       |        | Urban |      |        |
|                                | Total   | Male  | Female | Total | Male  | Female | Total | Male | Female |
| Below 1                        | 67.9    | 57.4  | 81.1   | 75.3  | 62.1  | 92.4   | 48.6  | 44.3 | 53.4   |
| 1-4                            | 3.6     | 2.4   | 5.0    | 3.6   | 2.6   | 4.9    | 3.4   | 2.1  | 5.1    |
| 0-4                            | 17.8    | 14.6  | 21.7   | 19.7  | 16.1  | 24.3   | 13.0  | 10.8 | 15.5   |
| 5-9                            | 1.2     | 1.3   | 1.2    | 1.3   | 1.4   | 1.3    | 1.0   | 1.2  | 0.9    |
| 10-14                          | 0.4     | 0.2   | 0.6    | 0.4   | 0.2   | 0.8    | 0.3   | 0.2  | 0.3    |
| 15-19                          | 1.3     | 1.4   | 1.2    | 1.1   | 1.2   | 1.0    | 1.7   | 1.6  | 1.7    |
| 20-24                          | 1.5     | 1.1   | 1.9    | 1.7   | 1.5   | 2.0    | 1.0   | 0.3  | 1.7    |
| 25-29                          | 1.9     | 1.6   | 2.2    | 2.1   | 1.5   | 2.7    | 1.4   | 1.9  | 1.0    |
| 30-34                          | 1.7     | 2.4   | 1.0    | 1.7   | 2.2   | 1.2    | 1.6   | 2.8  | 0.4    |
| 35-39                          | 2.9     | 3.5   | 2.3    | 3.1   | 3.7   | 2.5    | 2.5   | 3.0  | 2.0    |
| 40-44                          | 3.9     | 5.4   | 2.1    | 3.9   | 5.3   | 2.3    | 3.8   | 5.6  | 1.8    |
| 45-49                          | 6.4     | 7.4   | 5.0    | 6.6   | 8.1   | 4.4    | 6.0   | 6.1  | 6.0    |
| 50-54                          | 5.0     | 5.7   | 4.3    | 5.5   | 6.1   | 5.0    | 4.0   | 5.1  | 2.7    |
| 55-59                          | 13.1    | 19.1  | 6.3    | 14.5  | 21.4  | 6.6    | 10.3  | 14.2 | 5.6    |
| 60-64                          | 18.6    | 26.9  | 10.4   | 18.8  | 27.4  | 10.5   | 18.1  | 25.9 | 10.1   |
| 65-69                          | 26.6    | 32.1  | 21.6   | 25.2  | 32.0  | 19.2   | 30.3  | 32.5 | 28.2   |
| 70-74                          | 53.7    | 57.9  | 49.2   | 48.5  | 54.0  | 42.5   | 70.1  | 71.2 | 68.9   |
| 75-79                          | 58.7    | 67.5  | 48.7   | 52.5  | 59.4  | 44.2   | 75.1  | 90.8 | 59.4   |
| 80-84                          | 83.7    | 87.5  | 79.4   | 83.9  | 98.2  | 68.2   | 83.0  | 50.6 | 121.9  |
| 85+                            | 203.7   | 183.7 | 228.2  | 222.4 | 215.8 | 231.5  | 154.2 | 78.5 | 221.1  |
| All ages<br>(Crude death rate) | 6.7     | 7.0   | 6.3    | 7.0   | 7.4   | 6.5    | 5.8   | 5.8  | 5.8    |

**Table 2****Under five and infant mortality indicators, 2005**

| Indicators                     | Haryana |       |       |
|--------------------------------|---------|-------|-------|
|                                | Total   | Rural | Urban |
| Under five mortality rate      | 18      | 20    | 13    |
| Infant mortality rate          | 60      | 64    | 45    |
| Neo-natal mortality rate       | 35      | 38    | 27    |
| Early neo-natal mortality rate | 24      | 28    | 11    |
| Late neo-natal mortality rate  | 11      | 10    | 16    |
| Post neo-natal mortality rate  | 25      | 27    | 18    |
| Peri-natal mortality rate      | 30      | 33    | 22    |
| Still birth rate               | 7       | 5     | 11    |

**Table 1****Age-specific death rate by sex and residence, 2005**

| Age-group                      | Himachal Pradesh |       |        |       |       |        |       |       |        |
|--------------------------------|------------------|-------|--------|-------|-------|--------|-------|-------|--------|
|                                | Total            |       |        | Rural |       |        | Urban |       |        |
|                                | Total            | Male  | Female | Total | Male  | Female | Total | Male  | Female |
| Below 1                        | 58.8             | 42.4  | 75.1   | 61.1  | 42.6  | 79.7   | 28.0  | 40.4  | 16.3   |
| 1-4                            | 2.5              | 1.8   | 3.4    | 2.7   | 1.8   | 3.6    | 0.7   | 1.2   | 0.0    |
| 0-4                            | 13.5             | 9.4   | 18.0   | 14.2  | 9.6   | 19.1   | 5.8   | 7.9   | 3.3    |
| 5-9                            | 0.4              | 0.1   | 0.8    | 0.3   | 0.0   | 0.6    | 1.8   | 0.8   | 2.9    |
| 10-14                          | 0.3              | 0.1   | 0.5    | 0.2   | 0.0   | 0.4    | 1.6   | 1.4   | 1.7    |
| 15-19                          | 0.9              | 0.4   | 1.3    | 0.9   | 0.4   | 1.4    | 0.8   | 0.8   | 0.8    |
| 20-24                          | 1.1              | 2.2   | 0.1    | 1.1   | 2.3   | 0.1    | 0.8   | 1.7   | 0.0    |
| 25-29                          | 1.8              | 1.8   | 1.7    | 1.8   | 1.7   | 1.8    | 1.8   | 2.8   | 0.8    |
| 30-34                          | 2.6              | 4.3   | 1.1    | 2.7   | 4.6   | 1.1    | 1.3   | 1.8   | 0.9    |
| 35-39                          | 2.9              | 3.9   | 2.0    | 3.1   | 4.1   | 2.1    | 1.8   | 2.7   | 0.9    |
| 40-44                          | 4.4              | 5.5   | 3.4    | 4.5   | 5.8   | 3.3    | 3.8   | 3.5   | 4.2    |
| 45-49                          | 5.1              | 7.7   | 2.3    | 5.1   | 8.1   | 2.1    | 4.8   | 5.3   | 4.0    |
| 50-54                          | 5.1              | 5.0   | 5.3    | 4.9   | 4.2   | 5.4    | 7.3   | 10.0  | 3.5    |
| 55-59                          | 12.9             | 18.5  | 7.3    | 13.0  | 18.7  | 7.5    | 12.2  | 16.8  | 5.5    |
| 60-64                          | 14.8             | 18.0  | 11.6   | 15.3  | 18.5  | 12.0   | 9.8   | 12.5  | 6.8    |
| 65-69                          | 27.7             | 29.3  | 25.9   | 28.1  | 29.5  | 26.7   | 21.6  | 26.7  | 16.8   |
| 70-74                          | 44.1             | 50.8  | 37.9   | 44.5  | 52.3  | 37.3   | 39.2  | 32.5  | 45.3   |
| 75-79                          | 49.4             | 64.0  | 36.1   | 50.3  | 67.5  | 34.5   | 36.5  | 12.3  | 60.4   |
| 80-84                          | 79.7             | 82.7  | 76.7   | 80.4  | 84.0  | 76.8   | 67.2  | 58.6  | 75.5   |
| 85+                            | 121.8            | 135.9 | 106.4  | 122.8 | 134.9 | 109.2  | 104.0 | 161.7 | 65.1   |
| All ages<br>(Crude death rate) | 6.9              | 7.6   | 6.1    | 7.1   | 7.9   | 6.4    | 4.7   | 5.3   | 4.0    |

**Table 2****Under five and infant mortality indicators, 2005**

| Indicators                     | <b>Himachal Pradesh</b> |       |       |
|--------------------------------|-------------------------|-------|-------|
|                                | Total                   | Rural | Urban |
| Under five mortality rate      | 14                      | 14    | 6     |
| Infant mortality rate          | 53                      | 55    | 29    |
| Neo-natal mortality rate       | 33                      | 35    | 14    |
| Early neo-natal mortality rate | 19                      | 19    | 11    |
| Late neo-natal mortality rate  | 15                      | 16    | 3     |
| Post neo-natal mortality rate  | 20                      | 20    | 14    |
| Peri-natal mortality rate      | 38                      | 39    | 23    |
| Still birth rate               | 19                      | 20    | 11    |

**Table 1****Age-specific death rate by sex and residence, 2005****Jammu &  
Kashmir**

| Age-group                      | Total |       |        | Rural |       |        | Urban |       |        |
|--------------------------------|-------|-------|--------|-------|-------|--------|-------|-------|--------|
|                                | Total | Male  | Female | Total | Male  | Female | Total | Male  | Female |
| Below 1                        | 52.1  | 47.8  | 57.4   | 53.5  | 48.4  | 59.9   | 44.3  | 44.2  | 44.4   |
| 1-4                            | 2.2   | 2.3   | 2.2    | 2.5   | 2.8   | 2.1    | 1.1   | 0.0   | 2.3    |
| 0-4                            | 12.0  | 11.5  | 12.5   | 12.7  | 12.3  | 13.2   | 8.4   | 7.5   | 9.5    |
| 5-9                            | 0.7   | 0.8   | 0.6    | 0.6   | 0.8   | 0.4    | 1.2   | 0.8   | 1.6    |
| 10-14                          | 1.0   | 0.9   | 1.2    | 1.1   | 1.0   | 1.3    | 0.7   | 0.5   | 0.9    |
| 15-19                          | 1.2   | 1.5   | 0.8    | 1.5   | 1.9   | 1.0    | 0.0   | 0.0   | 0.0    |
| 20-24                          | 0.8   | 0.9   | 0.7    | 0.8   | 0.8   | 0.7    | 1.0   | 1.3   | 0.7    |
| 25-29                          | 1.2   | 1.1   | 1.3    | 1.5   | 1.3   | 1.6    | 0.4   | 0.4   | 0.4    |
| 30-34                          | 2.1   | 2.3   | 1.9    | 2.0   | 2.0   | 2.0    | 2.5   | 3.1   | 1.8    |
| 35-39                          | 2.3   | 2.2   | 2.5    | 2.5   | 2.4   | 2.6    | 1.9   | 1.6   | 2.1    |
| 40-44                          | 3.3   | 3.6   | 2.9    | 3.4   | 3.5   | 3.3    | 3.0   | 4.2   | 1.8    |
| 45-49                          | 2.8   | 2.4   | 3.5    | 2.7   | 2.3   | 3.3    | 3.3   | 2.7   | 4.0    |
| 50-54                          | 4.3   | 5.8   | 3.2    | 4.4   | 4.8   | 4.1    | 4.0   | 8.5   | 0.0    |
| 55-59                          | 10.5  | 11.0  | 10.0   | 9.9   | 10.1  | 9.7    | 12.5  | 13.8  | 10.8   |
| 60-64                          | 18.8  | 22.0  | 15.1   | 18.4  | 22.7  | 13.4   | 20.1  | 20.1  | 20.2   |
| 65-69                          | 26.9  | 30.7  | 23.2   | 27.1  | 29.1  | 25.2   | 26.3  | 35.8  | 17.0   |
| 70-74                          | 45.5  | 47.2  | 43.7   | 43.9  | 45.2  | 42.3   | 51.1  | 54.1  | 48.0   |
| 75-79                          | 60.8  | 52.1  | 69.4   | 61.1  | 49.1  | 73.3   | 59.7  | 62.8  | 56.8   |
| 80-84                          | 81.5  | 93.4  | 67.0   | 80.3  | 83.5  | 76.2   | 87.9  | 155.3 | 24.9   |
| 85+                            | 154.1 | 143.8 | 165.7  | 162.3 | 141.5 | 186.6  | 116.5 | 155.6 | 81.7   |
| All ages<br>(Crude death rate) | 5.5   | 5.8   | 5.3    | 5.7   | 5.8   | 5.5    | 5.0   | 5.8   | 4.3    |

**Table 2****Under five and infant mortality indicators, 2005****Jammu &  
kashmir**

| Indicators                     | Total | Rural | Urban |
|--------------------------------|-------|-------|-------|
| Under five mortality rate      | 12    | 13    | 8     |
| Infant mortality rate          | 50    | 53    | 39    |
| Neo-natal mortality rate       | 36    | 37    | 31    |
| Early neo-natal mortality rate | 29    | 31    | 18    |
| Late neo-natal mortality rate  | 7     | 6     | 13    |
| Post neo-natal mortality rate  | 14    | 16    | 8     |
| Peri-natal mortality rate      | 36    | 39    | 23    |
| Still birth rate               | 7     | 8     | 4     |

**Table 1****Age-specific death rate by sex and residence, 2005**

| Age-group                      | <b>Jharkhand</b> |       |        |       |       |        |       |       |        |
|--------------------------------|------------------|-------|--------|-------|-------|--------|-------|-------|--------|
|                                | Total            |       |        | Rural |       |        | Urban |       |        |
|                                | Total            | Male  | Female | Total | Male  | Female | Total | Male  | Female |
| Below 1                        | 49.5             | 41.4  | 58.3   | 52.6  | 43.4  | 62.8   | 31.0  | 29.3  | 32.8   |
| 1-4                            | 6.5              | 6.3   | 6.8    | 7.2   | 6.7   | 7.7    | 3.3   | 4.1   | 2.4    |
| 0-4                            | 16.1             | 14.1  | 18.3   | 17.5  | 15.1  | 20.3   | 8.8   | 9.0   | 8.5    |
| 5-9                            | 2.2              | 2.7   | 1.7    | 2.4   | 2.8   | 1.9    | 1.4   | 2.1   | 0.7    |
| 10-14                          | 2.1              | 2.1   | 2.2    | 2.4   | 2.4   | 2.4    | 1.0   | 0.6   | 1.4    |
| 15-19                          | 1.9              | 2.1   | 1.7    | 2.0   | 2.1   | 1.9    | 1.7   | 2.2   | 1.1    |
| 20-24                          | 3.1              | 2.4   | 3.9    | 3.4   | 2.1   | 4.8    | 2.1   | 3.3   | 0.8    |
| 25-29                          | 2.6              | 2.5   | 2.6    | 2.8   | 2.5   | 3.1    | 1.7   | 2.7   | 0.5    |
| 30-34                          | 2.9              | 2.7   | 3.1    | 3.1   | 2.9   | 3.2    | 2.5   | 2.2   | 2.8    |
| 35-39                          | 4.0              | 4.0   | 3.9    | 4.4   | 4.1   | 4.7    | 2.4   | 3.7   | 1.1    |
| 40-44                          | 5.2              | 6.2   | 3.9    | 6.0   | 7.0   | 4.7    | 2.4   | 3.3   | 1.4    |
| 45-49                          | 6.9              | 7.0   | 6.8    | 7.1   | 6.5   | 7.8    | 6.6   | 8.5   | 3.8    |
| 50-54                          | 8.9              | 11.1  | 7.4    | 9.4   | 12.9  | 7.0    | 7.2   | 5.5   | 8.8    |
| 55-59                          | 15.5             | 16.0  | 14.9   | 15.6  | 15.3  | 15.9   | 15.4  | 18.1  | 11.2   |
| 60-64                          | 28.1             | 28.6  | 27.7   | 27.6  | 27.4  | 27.7   | 30.6  | 33.3  | 27.4   |
| 65-69                          | 49.1             | 61.1  | 36.0   | 50.9  | 67.3  | 33.3   | 41.2  | 35.5  | 47.9   |
| 70-74                          | 66.5             | 52.9  | 80.8   | 69.9  | 50.4  | 90.4   | 48.7  | 65.5  | 30.4   |
| 75-79                          | 86.9             | 107.7 | 61.6   | 94.4  | 118.6 | 62.7   | 56.2  | 54.3  | 57.9   |
| 80-84                          | 129.7            | 87.7  | 174.9  | 146.8 | 103.6 | 191.9  | 59.5  | 26.8  | 99.3   |
| 85+                            | 81.4             | 104.1 | 47.1   | 41.6  | 66.6  | 0.0    | 225.7 | 269.1 | 179.5  |
| All ages<br>(Crude death rate) | 7.9              | 7.9   | 7.8    | 8.4   | 8.3   | 8.5    | 5.7   | 6.4   | 4.9    |

**Table 2****Under five and infant mortality indicators, 2005**

| Indicators                     | <b>Jharkhand</b> |       |       |
|--------------------------------|------------------|-------|-------|
|                                | Total            | Rural | Urban |
| Under five mortality rate      | 16               | 18    | 9     |
| Infant mortality rate          | 50               | 53    | 33    |
| Neo-natal mortality rate       | 28               | 30    | 16    |
| Early neo-natal mortality rate | 22               | 24    | 12    |
| Late neo-natal mortality rate  | 6                | 6     | 4     |
| Post neo-natal mortality rate  | 22               | 23    | 17    |
| Peri-natal mortality rate      | 22               | 24    | 12    |
| Still birth rate               | 0                | 0     | 0     |

**Table 1****Age-specific death rate by sex and residence, 2005****Karnataka**

| Age-group                      | Total |       |        | Rural |       |        | Urban |       |        |
|--------------------------------|-------|-------|--------|-------|-------|--------|-------|-------|--------|
|                                | Total | Male  | Female | Total | Male  | Female | Total | Male  | Female |
| Below 1                        | 60.4  | 57.3  | 63.9   | 69.9  | 66.5  | 73.8   | 42.2  | 40.0  | 44.8   |
| 1-4                            | 1.8   | 1.6   | 2.1    | 2.5   | 1.9   | 3.1    | 0.7   | 1.0   | 0.4    |
| 0-4                            | 13.1  | 12.5  | 13.7   | 15.6  | 14.7  | 16.6   | 8.5   | 8.5   | 8.4    |
| 5-9                            | 0.9   | 1.0   | 0.9    | 1.0   | 1.3   | 0.6    | 0.8   | 0.3   | 1.4    |
| 10-14                          | 0.4   | 0.4   | 0.4    | 0.4   | 0.4   | 0.3    | 0.5   | 0.5   | 0.5    |
| 15-19                          | 1.3   | 0.7   | 1.9    | 1.3   | 0.6   | 2.0    | 1.3   | 0.8   | 1.8    |
| 20-24                          | 2.3   | 2.1   | 2.5    | 2.9   | 2.6   | 3.1    | 1.3   | 1.2   | 1.4    |
| 25-29                          | 2.1   | 2.2   | 1.9    | 2.8   | 3.0   | 2.5    | 1.0   | 1.0   | 1.0    |
| 30-34                          | 2.4   | 2.6   | 2.3    | 3.0   | 3.4   | 2.7    | 1.5   | 1.5   | 1.6    |
| 35-39                          | 3.1   | 3.9   | 2.3    | 3.4   | 3.7   | 3.0    | 2.6   | 4.2   | 1.0    |
| 40-44                          | 4.3   | 5.7   | 2.8    | 4.7   | 6.0   | 3.3    | 3.7   | 5.3   | 1.8    |
| 45-49                          | 8.3   | 11.1  | 4.9    | 8.9   | 11.8  | 5.0    | 7.4   | 9.9   | 4.6    |
| 50-54                          | 9.7   | 12.8  | 7.2    | 11.1  | 15.3  | 8.0    | 6.9   | 8.6   | 5.2    |
| 55-59                          | 11.2  | 15.4  | 6.6    | 11.6  | 14.8  | 8.1    | 10.5  | 16.6  | 3.6    |
| 60-64                          | 20.4  | 23.6  | 17.1   | 23.7  | 27.6  | 19.8   | 13.0  | 14.7  | 11.4   |
| 65-69                          | 31.6  | 37.7  | 26.3   | 29.4  | 34.9  | 24.7   | 36.6  | 43.9  | 30.0   |
| 70-74                          | 56.6  | 53.2  | 59.6   | 56.7  | 55.0  | 58.2   | 56.2  | 48.9  | 63.3   |
| 75-79                          | 76.7  | 101.3 | 54.7   | 77.2  | 94.4  | 60.8   | 75.8  | 118.4 | 42.3   |
| 80-84                          | 89.0  | 83.7  | 93.1   | 92.1  | 94.7  | 89.9   | 81.2  | 53.6  | 100.6  |
| 85+                            | 196.6 | 226.9 | 178.2  | 192.6 | 174.6 | 203.7  | 205.6 | 347.5 | 123.2  |
| All ages<br>(Crude death rate) | 7.1   | 7.6   | 6.6    | 7.9   | 8.3   | 7.5    | 5.6   | 6.3   | 4.9    |

**Table 2****Under five and infant mortality indicators, 2005****Karnataka**

| Indicators                     | Total | Rural | Urban |
|--------------------------------|-------|-------|-------|
| Under five mortality rate      | 13    | 16    | 8     |
| Infant mortality rate          | 50    | 54    | 39    |
| Neo-natal mortality rate       | 28    | 34    | 15    |
| Early neo-natal mortality rate | 23    | 27    | 13    |
| Late neo-natal mortality rate  | 5     | 7     | 2     |
| Post neo-natal mortality rate  | 21    | 20    | 24    |
| Peri-natal mortality rate      | 36    | 43    | 18    |
| Still birth rate               | 13    | 16    | 6     |

**Table 1****Age-specific death rate by sex and residence, 2005**

| Age-group                      | <b>Kerala</b> |       |        |       |       |        |       |       |        |
|--------------------------------|---------------|-------|--------|-------|-------|--------|-------|-------|--------|
|                                | Total         |       |        | Rural |       |        | Urban |       |        |
|                                | Total         | Male  | Female | Total | Male  | Female | Total | Male  | Female |
| Below 1                        | 13.4          | 13.0  | 13.9   | 13.9  | 13.8  | 14.1   | 11.8  | 10.4  | 13.2   |
| 1-4                            | 0.9           | 1.2   | 0.6    | 1.1   | 1.4   | 0.8    | 0.3   | 0.5   | 0.0    |
| 0-4                            | 3.4           | 3.5   | 3.3    | 3.7   | 3.9   | 3.6    | 2.5   | 2.4   | 2.6    |
| 5-9                            | 0.4           | 0.3   | 0.5    | 0.5   | 0.4   | 0.5    | 0.2   | 0.0   | 0.4    |
| 10-14                          | 0.4           | 0.4   | 0.5    | 0.5   | 0.5   | 0.5    | 0.2   | 0.0   | 0.4    |
| 15-19                          | 0.6           | 0.4   | 0.7    | 0.5   | 0.3   | 0.7    | 0.8   | 0.8   | 0.8    |
| 20-24                          | 1.0           | 1.3   | 0.7    | 1.1   | 1.6   | 0.7    | 0.6   | 0.4   | 0.7    |
| 25-29                          | 1.1           | 1.7   | 0.6    | 1.1   | 2.0   | 0.4    | 1.0   | 0.8   | 1.1    |
| 30-34                          | 1.3           | 1.6   | 1.0    | 1.3   | 1.7   | 1.0    | 1.0   | 1.3   | 0.8    |
| 35-39                          | 2.0           | 2.8   | 1.4    | 2.3   | 3.1   | 1.5    | 1.4   | 1.8   | 1.1    |
| 40-44                          | 1.9           | 3.2   | 0.8    | 2.1   | 3.2   | 1.0    | 1.5   | 3.2   | 0.0    |
| 45-49                          | 3.7           | 5.8   | 1.8    | 3.8   | 5.6   | 2.0    | 3.7   | 6.5   | 1.1    |
| 50-54                          | 5.9           | 10.1  | 2.0    | 5.5   | 9.0   | 2.3    | 6.9   | 13.4  | 1.0    |
| 55-59                          | 9.1           | 13.9  | 4.4    | 9.5   | 14.5  | 4.5    | 8.0   | 12.2  | 4.0    |
| 60-64                          | 14.4          | 20.1  | 9.3    | 14.6  | 21.2  | 8.8    | 13.9  | 16.8  | 11.1   |
| 65-69                          | 24.8          | 35.9  | 15.5   | 22.9  | 33.2  | 14.4   | 30.8  | 44.4  | 19.1   |
| 70-74                          | 41.2          | 52.8  | 32.0   | 39.8  | 47.3  | 34.0   | 45.4  | 70.7  | 26.0   |
| 75-79                          | 58.9          | 67.6  | 52.5   | 53.5  | 64.5  | 45.1   | 77.9  | 79.5  | 76.7   |
| 80-84                          | 84.2          | 105.0 | 69.3   | 77.9  | 96.3  | 64.8   | 107.7 | 137.5 | 86.1   |
| 85+                            | 169.5         | 173.5 | 167.1  | 169.8 | 180.4 | 163.4  | 168.4 | 145.4 | 180.9  |
| All ages<br>(Crude death rate) | 6.4           | 7.6   | 5.2    | 6.3   | 7.6   | 5.2    | 6.5   | 7.8   | 5.3    |

**Table 2****Under five and infant mortality indicators, 2005**

| Indicators                     | <b>Kerala</b> |       |       |
|--------------------------------|---------------|-------|-------|
|                                | Total         | Rural | Urban |
| Under five mortality rate      | 3             | 4     | 3     |
| Infant mortality rate          | 14            | 15    | 12    |
| Neo-natal mortality rate       | 11            | 11    | 10    |
| Early neo-natal mortality rate | 9             | 8     | 10    |
| Late neo-natal mortality rate  | 2             | 3     | 0     |
| Post neo-natal mortality rate  | 3             | 4     | 2     |
| Peri-natal mortality rate      | 17            | 18    | 14    |
| Still birth rate               | 9             | 10    | 4     |

**Table 1****Age-specific death rate by sex and residence, 2005**

| Age-group                      | Madhya Pradesh |       |        |       |       |        |       |       |        |
|--------------------------------|----------------|-------|--------|-------|-------|--------|-------|-------|--------|
|                                | Total          |       |        | Rural |       |        | Urban |       |        |
|                                | Total          | Male  | Female | Total | Male  | Female | Total | Male  | Female |
| Below 1                        | 86.5           | 86.4  | 86.6   | 93.4  | 93.1  | 93.8   | 56.7  | 57.8  | 55.5   |
| 1-4                            | 7.1            | 6.4   | 7.8    | 8.0   | 7.4   | 8.6    | 3.5   | 2.5   | 4.5    |
| 0-4                            | 24.6           | 23.9  | 25.4   | 27.3  | 26.6  | 28.0   | 14.3  | 13.4  | 15.2   |
| 5-9                            | 2.2            | 2.3   | 2.2    | 2.6   | 2.6   | 2.5    | 0.9   | 1.0   | 0.8    |
| 10-14                          | 1.7            | 1.5   | 1.9    | 1.9   | 1.8   | 2.1    | 0.7   | 0.5   | 1.0    |
| 15-19                          | 2.5            | 2.3   | 2.7    | 2.7   | 2.4   | 3.0    | 1.8   | 1.9   | 1.6    |
| 20-24                          | 3.1            | 2.6   | 3.5    | 3.4   | 2.8   | 4.0    | 2.0   | 2.1   | 1.9    |
| 25-29                          | 2.8            | 2.8   | 2.7    | 3.2   | 3.1   | 3.3    | 1.5   | 2.1   | 1.0    |
| 30-34                          | 3.1            | 3.2   | 3.0    | 3.3   | 3.4   | 3.2    | 2.4   | 2.5   | 2.2    |
| 35-39                          | 3.4            | 4.0   | 2.9    | 3.8   | 4.0   | 3.6    | 2.3   | 3.7   | 0.8    |
| 40-44                          | 4.9            | 6.3   | 3.4    | 5.0   | 6.2   | 3.6    | 4.8   | 6.3   | 2.9    |
| 45-49                          | 6.3            | 6.5   | 6.0    | 6.8   | 6.9   | 6.7    | 5.0   | 5.5   | 4.3    |
| 50-54                          | 8.7            | 12.1  | 6.0    | 9.2   | 13.1  | 6.3    | 7.2   | 9.2   | 5.1    |
| 55-59                          | 17.5           | 20.3  | 14.2   | 19.3  | 22.4  | 15.9   | 11.2  | 13.4  | 8.6    |
| 60-64                          | 24.4           | 29.9  | 18.8   | 25.6  | 31.5  | 19.6   | 20.0  | 24.3  | 16.0   |
| 65-69                          | 34.9           | 38.6  | 31.2   | 38.2  | 40.4  | 36.0   | 23.1  | 32.2  | 13.8   |
| 70-74                          | 53.9           | 66.3  | 40.9   | 51.7  | 66.5  | 35.8   | 62.1  | 65.3  | 59.1   |
| 75-79                          | 89.7           | 86.8  | 92.4   | 96.3  | 99.2  | 93.7   | 67.9  | 46.4  | 88.2   |
| 80-84                          | 118.1          | 110.4 | 126.0  | 117.2 | 109.2 | 126.0  | 121.4 | 115.6 | 125.7  |
| 85+                            | 171.0          | 174.0 | 168.2  | 192.6 | 199.3 | 186.4  | 89.1  | 77.1  | 100.1  |
| All ages<br>(Crude death rate) | 9.0            | 9.2   | 8.6    | 9.8   | 10.1  | 9.5    | 6.1   | 6.4   | 5.7    |

**Table 2****Under five and infant mortality indicators, 2005**

| Indicators                     | Madhya Pradesh |       |       |
|--------------------------------|----------------|-------|-------|
|                                | Total          | Rural | Urban |
| Under five mortality rate      | 25             | 27    | 14    |
| Infant mortality rate          | 76             | 80    | 54    |
| Neo-natal mortality rate       | 51             | 54    | 36    |
| Early neo-natal mortality rate | 38             | 40    | 28    |
| Late neo-natal mortality rate  | 13             | 14    | 8     |
| Post neo-natal mortality rate  | 25             | 26    | 18    |
| Peri-natal mortality rate      | 45             | 46    | 43    |
| Still birth rate               | 8              | 7     | 15    |

**Table 1****Age-specific death rate by sex and residence, 2005****Maharashtra**

| Age-group                      | Total |       |        | Rural |       |        | Urban |       |        |
|--------------------------------|-------|-------|--------|-------|-------|--------|-------|-------|--------|
|                                | Total | Male  | Female | Total | Male  | Female | Total | Male  | Female |
| Below 1                        | 33.4  | 32.5  | 34.4   | 39.7  | 39.1  | 40.3   | 24.8  | 23.4  | 26.3   |
| 1-4                            | 2.0   | 2.3   | 1.7    | 2.4   | 2.9   | 1.8    | 1.5   | 1.3   | 1.6    |
| 0-4                            | 8.6   | 8.6   | 8.6    | 9.8   | 10.1  | 9.5    | 6.7   | 6.2   | 7.2    |
| 5-9                            | 0.8   | 0.6   | 1.0    | 0.9   | 0.6   | 1.1    | 0.6   | 0.5   | 0.8    |
| 10-14                          | 0.9   | 1.0   | 0.7    | 1.0   | 1.2   | 0.7    | 0.7   | 0.7   | 0.7    |
| 15-19                          | 1.5   | 1.6   | 1.3    | 1.8   | 1.9   | 1.6    | 1.1   | 1.2   | 0.9    |
| 20-24                          | 1.9   | 2.1   | 1.6    | 1.8   | 2.0   | 1.6    | 1.9   | 2.1   | 1.7    |
| 25-29                          | 1.6   | 1.6   | 1.6    | 1.7   | 1.5   | 1.9    | 1.5   | 1.7   | 1.3    |
| 30-34                          | 2.4   | 3.7   | 1.0    | 2.3   | 3.7   | 1.0    | 2.5   | 3.8   | 1.0    |
| 35-39                          | 3.5   | 5.3   | 1.6    | 3.9   | 5.9   | 1.9    | 3.0   | 4.6   | 1.3    |
| 40-44                          | 4.2   | 5.6   | 2.6    | 4.9   | 6.5   | 3.3    | 3.3   | 4.6   | 1.8    |
| 45-49                          | 5.2   | 6.7   | 3.3    | 5.5   | 6.5   | 4.2    | 4.9   | 7.0   | 2.3    |
| 50-54                          | 8.3   | 10.7  | 6.4    | 8.0   | 9.6   | 6.9    | 8.6   | 11.7  | 5.6    |
| 55-59                          | 12.3  | 14.5  | 9.8    | 13.3  | 15.4  | 11.0   | 10.7  | 13.1  | 7.8    |
| 60-64                          | 17.7  | 20.2  | 15.4   | 17.3  | 20.4  | 14.7   | 18.4  | 20.0  | 16.7   |
| 65-69                          | 29.1  | 33.4  | 25.2   | 30.7  | 38.0  | 24.3   | 25.9  | 25.0  | 26.8   |
| 70-74                          | 46.6  | 56.0  | 37.5   | 47.5  | 58.3  | 37.0   | 44.7  | 50.9  | 38.7   |
| 75-79                          | 81.3  | 93.1  | 69.4   | 80.9  | 96.8  | 64.1   | 81.9  | 86.1  | 78.0   |
| 80-84                          | 82.0  | 85.6  | 78.9   | 76.7  | 74.4  | 78.8   | 91.6  | 106.3 | 79.1   |
| 85+                            | 194.9 | 196.5 | 193.7  | 181.6 | 196.7 | 170.9  | 221.1 | 196.2 | 239.4  |
| All ages<br>(Crude death rate) | 6.7   | 7.4   | 5.9    | 7.4   | 8.3   | 6.5    | 5.7   | 6.2   | 5.1    |

**Table 2****Under five and infant mortality indicators, 2005****Maharashtra**

| Indicators                     | Total | Rural | Urban |
|--------------------------------|-------|-------|-------|
| Under five mortality rate      | 9     | 10    | 7     |
| Infant mortality rate          | 36    | 41    | 27    |
| Neo-natal mortality rate       | 25    | 30    | 19    |
| Early neo-natal mortality rate | 20    | 23    | 15    |
| Late neo-natal mortality rate  | 6     | 7     | 3     |
| Post neo-natal mortality rate  | 10    | 12    | 9     |
| Peri-natal mortality rate      | 31    | 35    | 26    |
| Still birth rate               | 12    | 13    | 11    |

**Table 1****Age-specific death rate by sex and residence, 2005**

| Age-group                      | Orissa |       |        |       |       |        |       |      |        |
|--------------------------------|--------|-------|--------|-------|-------|--------|-------|------|--------|
|                                | Total  |       |        | Rural |       |        | Urban |      |        |
|                                | Total  | Male  | Female | Total | Male  | Female | Total | Male | Female |
| Below 1                        | 77.0   | 77.6  | 76.3   | 79.9  | 81.7  | 78.1   | 53.2  | 46.6 | 60.7   |
| 1-4                            | 5.9    | 5.6   | 6.3    | 6.3   | 6.0   | 6.7    | 3.4   | 3.1  | 3.7    |
| 0-4                            | 21.4   | 21.3  | 21.6   | 22.6  | 22.6  | 22.5   | 13.2  | 11.9 | 14.6   |
| 5-9                            | 1.5    | 1.5   | 1.4    | 1.5   | 1.6   | 1.4    | 1.5   | 1.3  | 1.7    |
| 10-14                          | 1.8    | 1.5   | 2.1    | 2.0   | 1.6   | 2.3    | 0.6   | 0.6  | 0.7    |
| 15-19                          | 1.9    | 2.1   | 1.6    | 1.8   | 2.2   | 1.5    | 2.2   | 1.8  | 2.7    |
| 20-24                          | 2.7    | 2.7   | 2.6    | 2.8   | 2.8   | 2.7    | 2.1   | 2.3  | 1.9    |
| 25-29                          | 3.4    | 4.1   | 2.9    | 3.5   | 4.0   | 3.0    | 3.1   | 4.5  | 1.8    |
| 30-34                          | 2.5    | 3.2   | 1.7    | 2.5   | 3.1   | 1.8    | 2.5   | 3.7  | 1.2    |
| 35-39                          | 3.6    | 4.3   | 2.8    | 3.6   | 4.4   | 2.8    | 3.1   | 3.4  | 2.8    |
| 40-44                          | 6.0    | 7.1   | 4.7    | 5.9   | 7.0   | 4.6    | 6.5   | 7.9  | 4.8    |
| 45-49                          | 7.9    | 9.8   | 5.5    | 8.4   | 10.6  | 5.6    | 5.4   | 5.9  | 4.8    |
| 50-54                          | 10.2   | 12.7  | 8.3    | 10.6  | 13.5  | 8.5    | 8.0   | 8.7  | 7.3    |
| 55-59                          | 12.6   | 13.1  | 12.0   | 12.3  | 12.5  | 12.1   | 14.3  | 17.5 | 10.8   |
| 60-64                          | 28.4   | 29.2  | 27.6   | 29.7  | 30.4  | 29.0   | 18.7  | 20.4 | 16.9   |
| 65-69                          | 38.6   | 43.6  | 34.1   | 38.5  | 43.9  | 33.6   | 39.8  | 41.1 | 38.3   |
| 70-74                          | 56.9   | 64.9  | 49.5   | 58.6  | 68.5  | 49.3   | 44.0  | 36.5 | 50.7   |
| 75-79                          | 76.9   | 80.3  | 73.7   | 74.4  | 77.8  | 71.2   | 95.6  | 98.2 | 93.1   |
| 80-84                          | 127.1  | 123.6 | 130.8  | 133.0 | 127.1 | 139.5  | 84.4  | 96.6 | 73.1   |
| 85+                            | 188.9  | 146.9 | 240.0  | 195.2 | 156.2 | 244.2  | 146.1 | 76.9 | 215.2  |
| All ages<br>(Crude death rate) | 9.5    | 10.1  | 8.8    | 9.9   | 10.5  | 9.2    | 7.0   | 7.2  | 6.8    |

**Table 2****Under five and infant mortality indicators, 2005**

| Indicators                     | Orissa |       |       |
|--------------------------------|--------|-------|-------|
|                                | Total  | Rural | Urban |
| Under five mortality rate      | 21     | 23    | 13    |
| Infant mortality rate          | 75     | 78    | 55    |
| Neo-natal mortality rate       | 53     | 56    | 32    |
| Early neo-natal mortality rate | 41     | 44    | 15    |
| Late neo-natal mortality rate  | 12     | 11    | 17    |
| Post neo-natal mortality rate  | 22     | 22    | 23    |
| Peri-natal mortality rate      | 54     | 57    | 34    |
| Still birth rate               | 14     | 13    | 20    |

**Table 1****Age-specific death rate by sex and residence, 2005**

| Age-group                      | Punjab |       |        |       |       |        |       |       |        |
|--------------------------------|--------|-------|--------|-------|-------|--------|-------|-------|--------|
|                                | Total  |       |        | Rural |       |        | Urban |       |        |
|                                | Total  | Male  | Female | Total | Male  | Female | Total | Male  | Female |
| Below 1                        | 45.8   | 44.0  | 47.7   | 51.1  | 49.4  | 53.3   | 36.6  | 33.9  | 39.3   |
| 1-4                            | 2.7    | 1.8   | 3.8    | 3.0   | 2.1   | 4.1    | 2.2   | 1.2   | 3.3    |
| 0-4                            | 11.3   | 10.1  | 12.8   | 12.8  | 11.8  | 14.1   | 8.9   | 7.2   | 10.8   |
| 5-9                            | 0.7    | 1.0   | 0.4    | 0.9   | 1.2   | 0.4    | 0.5   | 0.6   | 0.4    |
| 10-14                          | 0.6    | 0.6   | 0.6    | 0.4   | 0.4   | 0.3    | 0.9   | 0.8   | 1.0    |
| 15-19                          | 1.0    | 1.1   | 0.9    | 1.2   | 1.4   | 0.8    | 0.8   | 0.5   | 1.0    |
| 20-24                          | 1.3    | 1.1   | 1.5    | 1.2   | 1.0   | 1.5    | 1.4   | 1.2   | 1.6    |
| 25-29                          | 1.8    | 2.5   | 1.0    | 2.2   | 3.2   | 1.2    | 1.1   | 1.6   | 0.7    |
| 30-34                          | 2.0    | 2.2   | 1.8    | 2.1   | 2.7   | 1.5    | 1.9   | 1.6   | 2.2    |
| 35-39                          | 3.5    | 4.1   | 2.8    | 4.6   | 5.3   | 3.8    | 1.9   | 2.4   | 1.3    |
| 40-44                          | 3.0    | 4.0   | 1.9    | 3.4   | 4.7   | 1.9    | 2.6   | 3.0   | 2.1    |
| 45-49                          | 4.9    | 6.8   | 2.5    | 5.8   | 7.8   | 3.0    | 3.7   | 5.2   | 1.9    |
| 50-54                          | 7.8    | 8.6   | 7.0    | 9.4   | 9.9   | 8.9    | 5.1   | 6.5   | 3.5    |
| 55-59                          | 11.3   | 11.1  | 11.5   | 12.1  | 11.8  | 12.3   | 10.0  | 9.9   | 10.2   |
| 60-64                          | 18.7   | 22.5  | 15.1   | 18.1  | 23.3  | 13.2   | 19.9  | 21.1  | 18.9   |
| 65-69                          | 30.1   | 35.8  | 24.5   | 26.6  | 29.3  | 24.1   | 36.8  | 48.2  | 25.4   |
| 70-74                          | 36.1   | 40.1  | 31.3   | 33.1  | 34.7  | 31.1   | 43.6  | 54.0  | 32.0   |
| 75-79                          | 55.4   | 62.5  | 47.8   | 45.2  | 51.5  | 38.1   | 78.4  | 88.3  | 68.4   |
| 80-84                          | 91.0   | 99.8  | 82.1   | 90.8  | 87.3  | 94.4   | 91.6  | 138.2 | 48.8   |
| 85+                            | 158.9  | 174.5 | 144.0  | 154.8 | 180.2 | 130.4  | 169.2 | 159.6 | 178.0  |
| All ages<br>(Crude death rate) | 6.7    | 7.2   | 6.1    | 7.2   | 7.8   | 6.6    | 5.8   | 6.2   | 5.4    |

**Table 2****Under five and infant mortality indicators, 2005**

| Indicators                     | Punjab |       |       |
|--------------------------------|--------|-------|-------|
|                                | Total  | Rural | Urban |
| Under five mortality rate      | 11     | 13    | 9     |
| Infant mortality rate          | 44     | 49    | 37    |
| Neo-natal mortality rate       | 30     | 33    | 23    |
| Early neo-natal mortality rate | 18     | 24    | 8     |
| Late neo-natal mortality rate  | 12     | 9     | 15    |
| Post neo-natal mortality rate  | 15     | 15    | 13    |
| Peri-natal mortality rate      | 32     | 39    | 20    |
| Still birth rate               | 14     | 15    | 12    |

**Table 1**  
**Age-specific death rate by sex and residence, 2005**

| Age-group                      | Rajasthan |       |        |       |       |        |       |       |        |
|--------------------------------|-----------|-------|--------|-------|-------|--------|-------|-------|--------|
|                                | Total     |       |        | Rural |       |        | Urban |       |        |
|                                | Total     | Male  | Female | Total | Male  | Female | Total | Male  | Female |
| Below 1                        | 70.9      | 66.4  | 76.1   | 78.2  | 73.9  | 83.2   | 43.7  | 37.6  | 50.4   |
| 1-4                            | 5.3       | 4.3   | 6.5    | 6.3   | 5.1   | 7.8    | 2.1   | 1.8   | 2.4    |
| 0-4                            | 20.3      | 18.5  | 22.4   | 23.1  | 21.1  | 25.4   | 10.8  | 9.3   | 12.4   |
| 5-9                            | 1.3       | 1.1   | 1.5    | 1.4   | 1.2   | 1.5    | 0.9   | 0.6   | 1.1    |
| 10-14                          | 1.0       | 1.0   | 1.0    | 1.2   | 1.2   | 1.2    | 0.2   | 0.0   | 0.4    |
| 15-19                          | 1.3       | 0.9   | 1.8    | 1.4   | 1.3   | 1.5    | 1.3   | 0.0   | 2.7    |
| 20-24                          | 1.5       | 1.3   | 1.6    | 1.4   | 0.9   | 1.8    | 1.8   | 2.3   | 1.3    |
| 25-29                          | 1.9       | 2.5   | 1.3    | 1.9   | 2.4   | 1.4    | 1.8   | 2.7   | 0.9    |
| 30-34                          | 1.7       | 2.1   | 1.4    | 1.8   | 1.9   | 1.6    | 1.6   | 2.6   | 0.6    |
| 35-39                          | 2.3       | 2.6   | 2.0    | 2.2   | 2.5   | 1.9    | 2.7   | 2.9   | 2.5    |
| 40-44                          | 3.3       | 4.6   | 1.8    | 2.8   | 3.6   | 1.8    | 4.4   | 6.9   | 1.6    |
| 45-49                          | 6.5       | 8.0   | 4.5    | 5.6   | 7.0   | 3.7    | 8.6   | 10.4  | 6.3    |
| 50-54                          | 7.2       | 9.8   | 5.0    | 6.4   | 8.1   | 5.2    | 9.3   | 13.9  | 4.3    |
| 55-59                          | 11.6      | 12.5  | 10.5   | 11.0  | 11.2  | 10.9   | 13.1  | 16.6  | 9.3    |
| 60-64                          | 18.2      | 23.0  | 13.4   | 17.6  | 23.4  | 12.0   | 19.9  | 22.0  | 17.9   |
| 65-69                          | 28.6      | 32.2  | 25.5   | 27.3  | 29.8  | 25.2   | 32.5  | 39.1  | 26.4   |
| 70-74                          | 44.6      | 47.5  | 41.6   | 46.1  | 47.8  | 44.3   | 40.5  | 46.6  | 34.3   |
| 75-79                          | 72.0      | 78.1  | 66.0   | 72.7  | 88.6  | 58.0   | 70.0  | 52.0  | 90.9   |
| 80-84                          | 121.2     | 119.7 | 122.6  | 113.4 | 114.2 | 112.6  | 147.9 | 139.0 | 155.0  |
| 85+                            | 167.5     | 181.2 | 157.2  | 157.8 | 150.8 | 163.6  | 192.7 | 282.0 | 143.0  |
| All ages<br>(Crude death rate) | 7.0       | 7.0   | 6.9    | 7.2   | 7.2   | 7.2    | 6.2   | 6.5   | 5.9    |

**Table 2**  
**Under five and infant mortality indicators, 2005**

| Indicators                     | Rajasthan |       |       |
|--------------------------------|-----------|-------|-------|
|                                | Total     | Rural | Urban |
| Under five mortality rate      | 20        | 23    | 11    |
| Infant mortality rate          | 68        | 75    | 42    |
| Neo-natal mortality rate       | 43        | 47    | 25    |
| Early neo-natal mortality rate | 33        | 38    | 16    |
| Late neo-natal mortality rate  | 9         | 10    | 9     |
| Post neo-natal mortality rate  | 25        | 27    | 17    |
| Peri-natal mortality rate      | 44        | 49    | 27    |
| Still birth rate               | 11        | 11    | 11    |

**Table 1**  
**Age-specific death rate by sex and residence, 2005**

| <b>Tamil Nadu</b>              |       |       |        |       |       |        |       |       |        |
|--------------------------------|-------|-------|--------|-------|-------|--------|-------|-------|--------|
| Age-group                      | Total |       |        | Rural |       |        | Urban |       |        |
|                                | Total | Male  | Female | Total | Male  | Female | Total | Male  | Female |
| Below 1                        | 38.8  | 36.6  | 41.1   | 40.2  | 40.2  | 40.3   | 36.6  | 31.3  | 42.3   |
| 1-4                            | 1.5   | 1.9   | 1.1    | 1.9   | 2.1   | 1.8    | 0.8   | 1.6   | 0.0    |
| 0-4                            | 9.0   | 8.9   | 9.2    | 9.8   | 9.9   | 9.7    | 8.0   | 7.5   | 8.4    |
| 5-9                            | 0.5   | 0.7   | 0.3    | 0.8   | 1.0   | 0.5    | 0.1   | 0.2   | 0.0    |
| 10-14                          | 1.0   | 1.3   | 0.7    | 1.0   | 1.2   | 0.8    | 1.1   | 1.5   | 0.6    |
| 15-19                          | 1.6   | 1.2   | 2.0    | 2.0   | 1.8   | 2.3    | 0.9   | 0.4   | 1.5    |
| 20-24                          | 1.7   | 1.7   | 1.8    | 2.3   | 2.4   | 2.2    | 0.9   | 0.7   | 1.2    |
| 25-29                          | 1.9   | 2.0   | 1.8    | 2.3   | 1.8   | 2.7    | 1.5   | 2.3   | 0.8    |
| 30-34                          | 2.5   | 3.4   | 1.6    | 3.0   | 4.0   | 2.0    | 1.9   | 2.7   | 1.1    |
| 35-39                          | 3.0   | 4.2   | 1.9    | 3.4   | 4.1   | 2.8    | 2.5   | 4.3   | 0.8    |
| 40-44                          | 4.0   | 5.0   | 3.0    | 4.0   | 4.7   | 3.3    | 4.0   | 5.3   | 2.5    |
| 45-49                          | 5.6   | 7.1   | 3.8    | 6.4   | 7.6   | 5.1    | 4.4   | 6.4   | 2.1    |
| 50-54                          | 7.9   | 9.8   | 6.3    | 8.2   | 10.8  | 6.2    | 7.4   | 8.4   | 6.4    |
| 55-59                          | 12.5  | 14.9  | 10.0   | 13.8  | 15.4  | 12.2   | 10.7  | 14.3  | 6.8    |
| 60-64                          | 21.8  | 24.2  | 19.4   | 23.2  | 25.1  | 21.3   | 19.7  | 22.9  | 16.5   |
| 65-69                          | 30.6  | 31.1  | 30.2   | 34.2  | 35.8  | 32.6   | 25.4  | 23.8  | 26.8   |
| 70-74                          | 49.4  | 51.8  | 47.2   | 50.8  | 48.3  | 53.2   | 47.3  | 57.8  | 38.2   |
| 75-79                          | 73.6  | 78.7  | 68.2   | 83.1  | 85.4  | 80.5   | 60.8  | 69.2  | 52.6   |
| 80-84                          | 108.5 | 121.1 | 97.0   | 106.0 | 113.0 | 99.4   | 112.7 | 135.1 | 93.1   |
| 85+                            | 188.5 | 200.0 | 177.7  | 198.5 | 217.9 | 179.5  | 174.6 | 173.8 | 175.3  |
| All ages<br>(Crude death rate) | 7.4   | 8.0   | 6.7    | 8.2   | 8.7   | 7.6    | 6.2   | 7.1   | 5.4    |

**Table 2**  
**Under five and infant mortality indicators, 2005**

| <b>Tamil Nadu</b>              |       |       |       |
|--------------------------------|-------|-------|-------|
| Indicators                     | Total | Rural | Urban |
| Under five mortality rate      | 9     | 10    | 8     |
| Infant mortality rate          | 37    | 39    | 34    |
| Neo-natal mortality rate       | 26    | 31    | 19    |
| Early neo-natal mortality rate | 19    | 23    | 13    |
| Late neo-natal mortality rate  | 7     | 8     | 6     |
| Post neo-natal mortality rate  | 11    | 8     | 15    |
| Peri-natal mortality rate      | 30    | 38    | 19    |
| Still birth rate               | 11    | 15    | 6     |

**Table 1**  
**Age-specific death rate by sex and residence, 2005**

| Age-group                      | Uttar Pradesh |       |        |       |       |        |       |       |        |
|--------------------------------|---------------|-------|--------|-------|-------|--------|-------|-------|--------|
|                                | Total         |       |        | Rural |       |        | Urban |       |        |
|                                | Total         | Male  | Female | Total | Male  | Female | Total | Male  | Female |
| Below 1                        | 85.7          | 82.1  | 90.1   | 89.3  | 84.8  | 94.7   | 66.9  | 67.1  | 66.6   |
| 1-4                            | 7.8           | 6.4   | 9.4    | 8.2   | 6.8   | 9.7    | 5.9   | 4.2   | 7.7    |
| 0-4                            | 24.7          | 23.2  | 26.3   | 26.0  | 24.4  | 27.7   | 18.2  | 17.0  | 19.5   |
| 5-9                            | 2.0           | 1.8   | 2.3    | 2.1   | 1.9   | 2.4    | 1.6   | 1.4   | 1.8    |
| 10-14                          | 1.4           | 1.2   | 1.7    | 1.5   | 1.3   | 1.8    | 1.1   | 1.1   | 1.1    |
| 15-19                          | 2.0           | 1.7   | 2.4    | 2.1   | 1.8   | 2.5    | 1.5   | 1.1   | 1.9    |
| 20-24                          | 2.3           | 2.1   | 2.6    | 2.5   | 2.2   | 2.7    | 1.9   | 1.4   | 2.5    |
| 25-29                          | 2.6           | 2.1   | 3.0    | 2.9   | 2.4   | 3.3    | 1.5   | 1.2   | 1.8    |
| 30-34                          | 3.1           | 3.7   | 2.5    | 3.5   | 4.1   | 2.8    | 1.7   | 2.1   | 1.3    |
| 35-39                          | 3.6           | 4.1   | 3.1    | 3.7   | 3.9   | 3.5    | 3.1   | 4.5   | 1.7    |
| 40-44                          | 3.8           | 4.3   | 3.3    | 4.0   | 4.5   | 3.3    | 3.4   | 3.4   | 3.3    |
| 45-49                          | 7.0           | 7.0   | 6.9    | 7.7   | 7.1   | 8.6    | 4.7   | 6.9   | 1.7    |
| 50-54                          | 8.7           | 10.3  | 7.5    | 8.8   | 9.4   | 8.4    | 8.3   | 13.2  | 3.6    |
| 55-59                          | 15.0          | 17.1  | 12.6   | 15.6  | 18.4  | 12.5   | 12.3  | 11.8  | 12.9   |
| 60-64                          | 22.9          | 25.1  | 20.5   | 23.9  | 26.0  | 21.8   | 18.0  | 21.4  | 14.3   |
| 65-69                          | 35.3          | 39.9  | 30.3   | 34.9  | 39.9  | 29.5   | 37.1  | 40.0  | 34.0   |
| 70-74                          | 57.9          | 57.3  | 58.7   | 58.4  | 56.4  | 60.7   | 55.7  | 62.3  | 48.6   |
| 75-79                          | 69.4          | 85.4  | 51.3   | 67.2  | 84.0  | 48.1   | 79.6  | 92.6  | 65.8   |
| 80-84                          | 127.4         | 142.4 | 111.2  | 127.3 | 146.1 | 106.5  | 128.1 | 123.1 | 133.0  |
| 85+                            | 149.9         | 147.2 | 152.8  | 141.1 | 139.4 | 143.1  | 194.6 | 190.8 | 198.3  |
| All ages<br>(Crude death rate) | 8.7           | 8.8   | 8.6    | 9.1   | 9.2   | 9.1    | 6.8   | 7.0   | 6.5    |

**Table 2**  
**Under five and infant mortality indicators, 2005**

| Indicators                     | Uttar Pradesh |       |       |
|--------------------------------|---------------|-------|-------|
|                                | Total         | Rural | Urban |
| Under five mortality rate      | 25            | 26    | 18    |
| Infant mortality rate          | 73            | 77    | 54    |
| Neo-natal mortality rate       | 45            | 48    | 33    |
| Early neo-natal mortality rate | 32            | 35    | 18    |
| Late neo-natal mortality rate  | 13            | 13    | 15    |
| Post neo-natal mortality rate  | 28            | 30    | 21    |
| Peri-natal mortality rate      | 41            | 45    | 23    |
| Still birth rate               | 10            | 11    | 5     |

**Table 1**  
**Age-specific death rate by sex and residence, 2005**

| Age-group                      | West Bengal |       |        |       |       |        |       |       |        |
|--------------------------------|-------------|-------|--------|-------|-------|--------|-------|-------|--------|
|                                | Total       |       |        | Rural |       |        | Urban |       |        |
|                                | Total       | Male  | Female | Total | Male  | Female | Total | Male  | Female |
| Below 1                        | 41.0        | 41.3  | 40.7   | 44.6  | 45.7  | 43.4   | 28.1  | 25.4  | 31.0   |
| 1-4                            | 2.7         | 2.5   | 2.9    | 3.1   | 3.1   | 3.2    | 1.1   | 0.4   | 1.8    |
| 0-4                            | 10.0        | 9.9   | 10.1   | 11.0  | 11.2  | 10.8   | 6.2   | 5.1   | 7.4    |
| 5-9                            | 1.5         | 1.5   | 1.4    | 1.7   | 1.8   | 1.6    | 0.6   | 0.6   | 0.6    |
| 10-14                          | 0.6         | 0.6   | 0.7    | 0.8   | 0.6   | 0.9    | 0.3   | 0.4   | 0.2    |
| 15-19                          | 1.2         | 1.0   | 1.4    | 1.3   | 1.1   | 1.5    | 0.8   | 0.8   | 0.8    |
| 20-24                          | 1.6         | 1.6   | 1.6    | 1.5   | 1.4   | 1.6    | 1.7   | 1.9   | 1.6    |
| 25-29                          | 2.0         | 2.1   | 2.0    | 2.0   | 2.2   | 1.8    | 2.0   | 1.7   | 2.3    |
| 30-34                          | 1.7         | 1.2   | 2.1    | 1.7   | 1.1   | 2.2    | 1.7   | 1.6   | 1.8    |
| 35-39                          | 2.3         | 2.7   | 1.9    | 2.3   | 2.5   | 2.1    | 2.4   | 3.2   | 1.6    |
| 40-44                          | 3.7         | 4.3   | 3.0    | 4.3   | 5.0   | 3.3    | 2.6   | 2.8   | 2.3    |
| 45-49                          | 5.3         | 6.5   | 3.4    | 5.2   | 5.8   | 4.0    | 5.7   | 7.7   | 2.4    |
| 50-54                          | 8.0         | 11.7  | 5.4    | 8.2   | 12.6  | 5.4    | 7.6   | 10.2  | 5.5    |
| 55-59                          | 12.1        | 13.5  | 10.3   | 12.4  | 13.4  | 11.2   | 11.5  | 13.7  | 8.3    |
| 60-64                          | 19.6        | 23.8  | 15.0   | 20.7  | 24.9  | 16.1   | 17.6  | 21.7  | 12.6   |
| 65-69                          | 29.8        | 34.9  | 24.8   | 30.0  | 33.5  | 26.7   | 29.6  | 37.4  | 21.0   |
| 70-74                          | 58.3        | 69.0  | 47.6   | 63.6  | 76.6  | 50.9   | 48.2  | 54.9  | 41.1   |
| 75-79                          | 80.5        | 93.0  | 67.7   | 80.9  | 95.9  | 65.4   | 79.8  | 87.8  | 71.8   |
| 80-84                          | 120.5       | 141.3 | 101.6  | 121.6 | 134.6 | 110.4  | 118.6 | 151.7 | 86.3   |
| 85+                            | 197.0       | 212.2 | 186.6  | 201.0 | 208.1 | 195.7  | 190.6 | 219.5 | 173.4  |
| All ages<br>(Crude death rate) | 6.4         | 7.0   | 5.7    | 6.3   | 6.8   | 5.7    | 6.6   | 7.5   | 5.6    |

**Table 2**  
**Under five and infant mortality indicators, 2005**

| Indicators                     | West Bengal |       |       |
|--------------------------------|-------------|-------|-------|
|                                | Total       | Rural | Urban |
| Under five mortality rate      | 10          | 11    | 6     |
| Infant mortality rate          | 38          | 40    | 31    |
| Neo-natal mortality rate       | 30          | 32    | 20    |
| Early neo-natal mortality rate | 23          | 25    | 14    |
| Late neo-natal mortality rate  | 7           | 7     | 6     |
| Post neo-natal mortality rate  | 9           | 8     | 11    |
| Peri-natal mortality rate      | 31          | 34    | 21    |
| Still birth rate               | 9           | 9     | 7     |

*Source: SRS-2005*

## Annexure-5

Table

## Percentage distribution of deaths to total deaths by residence, sex and age-group, 2005

| Age group    | Total |       |        | Rural |       |        | Urban |       |        |
|--------------|-------|-------|--------|-------|-------|--------|-------|-------|--------|
|              | Total | Male  | Female | Total | Male  | Female | Total | Male  | Female |
| <b>India</b> |       |       |        |       |       |        |       |       |        |
| Below 1      | 18.5  | 17.3  | 19.9   | 20.1  | 19.0  | 21.3   | 12.6  | 11.3  | 14.4   |
| 1-4          | 5.4   | 4.5   | 6.4    | 6.1   | 5.2   | 7.2    | 2.9   | 2.3   | 3.8    |
| 0-4          | 23.8  | 21.8  | 26.3   | 26.1  | 24.1  | 28.5   | 15.6  | 13.6  | 18.1   |
| 5-9          | 2.5   | 2.2   | 2.8    | 2.8   | 2.5   | 3.1    | 1.5   | 1.3   | 1.6    |
| 10-14        | 1.6   | 1.6   | 1.7    | 1.8   | 1.7   | 1.9    | 1.1   | 1.0   | 1.2    |
| 15-19        | 2.3   | 2.0   | 2.7    | 2.4   | 2.2   | 2.6    | 2.2   | 1.7   | 2.8    |
| 20-24        | 2.4   | 2.2   | 2.7    | 2.3   | 2.1   | 2.6    | 2.7   | 2.5   | 3.0    |
| 25-29        | 2.6   | 2.4   | 2.7    | 2.6   | 2.3   | 2.8    | 2.6   | 2.8   | 2.3    |
| 30-34        | 2.4   | 2.6   | 2.1    | 2.3   | 2.5   | 2.1    | 2.6   | 3.0   | 2.1    |
| 35-39        | 2.9   | 3.3   | 2.3    | 2.7   | 3.1   | 2.3    | 3.4   | 4.3   | 2.3    |
| 40-44        | 2.9   | 3.5   | 2.2    | 2.7   | 3.2   | 2.2    | 3.6   | 4.5   | 2.5    |
| 45-49        | 3.4   | 4.3   | 2.4    | 3.2   | 3.9   | 2.3    | 4.4   | 5.7   | 2.7    |
| 50-54        | 4.8   | 5.0   | 4.5    | 4.5   | 4.5   | 4.4    | 5.8   | 6.8   | 4.5    |
| 55-59        | 5.6   | 6.3   | 4.7    | 5.4   | 6.1   | 4.6    | 6.2   | 7.2   | 4.9    |
| 60-64        | 7.4   | 7.8   | 6.9    | 7.2   | 7.6   | 6.8    | 7.9   | 8.2   | 7.6    |
| 65-69        | 8.3   | 8.7   | 8.0    | 8.1   | 8.5   | 7.7    | 9.1   | 9.1   | 9.2    |
| 70-74        | 9.6   | 9.6   | 9.5    | 9.4   | 9.6   | 9.2    | 10.1  | 9.8   | 10.5   |
| 75-79        | 6.4   | 6.6   | 6.1    | 5.9   | 6.3   | 5.4    | 8.1   | 7.4   | 8.9    |
| 80-84        | 5.6   | 5.4   | 6.0    | 5.4   | 5.2   | 5.6    | 6.5   | 5.8   | 7.4    |
| 85+          | 5.5   | 4.7   | 6.4    | 5.1   | 4.5   | 5.8    | 6.6   | 5.2   | 8.3    |
| All ages     | 100.0 | 100.0 | 100.0  | 100.0 | 100.0 | 100.0  | 100.0 | 100.0 | 100.0  |

## Andhra Pradesh

|         |      |      |      |      |      |      |      |      |      |
|---------|------|------|------|------|------|------|------|------|------|
| Below 1 | 14.8 | 14.2 | 15.6 | 16.0 | 15.2 | 16.9 | 11.1 | 10.8 | 11.4 |
| 1-4     | 2.3  | 2.0  | 2.7  | 2.5  | 1.9  | 3.1  | 1.8  | 2.3  | 1.2  |
| 0-4     | 17.2 | 16.2 | 18.2 | 18.5 | 17.1 | 20.0 | 12.9 | 13.1 | 12.6 |
| 5-9     | 1.3  | 1.0  | 1.6  | 1.3  | 1.0  | 1.7  | 1.0  | 0.8  | 1.2  |
| 10-14   | 1.3  | 1.1  | 1.5  | 1.5  | 1.2  | 1.8  | 0.6  | 0.8  | 0.4  |
| 15-19   | 2.7  | 2.4  | 3.0  | 2.6  | 2.5  | 2.6  | 3.2  | 2.2  | 4.2  |
| 20-24   | 3.2  | 3.0  | 3.3  | 2.8  | 3.0  | 2.6  | 4.2  | 3.1  | 5.5  |
| 25-29   | 3.5  | 3.6  | 3.3  | 3.3  | 3.3  | 3.3  | 4.1  | 4.7  | 3.4  |
| 30-34   | 3.7  | 4.6  | 2.6  | 3.8  | 4.9  | 2.5  | 3.3  | 3.6  | 3.0  |
| 35-39   | 3.7  | 4.7  | 2.6  | 3.4  | 4.2  | 2.4  | 4.8  | 6.2  | 3.4  |
| 40-44   | 3.2  | 3.7  | 2.6  | 3.2  | 3.6  | 2.8  | 3.1  | 4.0  | 2.1  |
| 45-49   | 3.6  | 4.7  | 2.4  | 3.4  | 4.2  | 2.4  | 4.3  | 6.3  | 2.1  |
| 50-54   | 5.7  | 6.3  | 4.9  | 5.2  | 5.6  | 4.8  | 7.1  | 8.6  | 5.4  |
| 55-59   | 6.7  | 7.4  | 5.9  | 6.4  | 7.1  | 5.6  | 7.6  | 8.3  | 6.8  |

|          |       |       |       |       |       |       |       |       |       |
|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 60-64    | 7.4   | 7.0   | 7.9   | 7.4   | 7.5   | 7.3   | 7.5   | 5.3   | 9.8   |
| 65-69    | 9.8   | 10.2  | 9.4   | 9.9   | 10.0  | 9.8   | 9.5   | 10.9  | 8.0   |
| 70-74    | 10.9  | 11.0  | 10.8  | 11.5  | 11.9  | 11.0  | 9.0   | 8.1   | 10.0  |
| 75-79    | 6.3   | 5.7   | 7.0   | 5.9   | 5.5   | 6.4   | 7.6   | 6.5   | 8.8   |
| 80-84    | 5.7   | 4.9   | 6.5   | 5.7   | 5.2   | 6.2   | 5.6   | 3.8   | 7.5   |
| 85+      | 4.3   | 2.5   | 6.3   | 4.1   | 2.1   | 6.5   | 4.8   | 3.8   | 5.8   |
| All ages | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

**Assam**

|          |       |       |       |       |       |       |       |       |       |
|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Below 1  | 19.6  | 17.9  | 21.7  | 20.5  | 19.0  | 22.4  | 10.6  | 8.2   | 14.3  |
| 1-4      | 4.8   | 5.3   | 4.2   | 5.1   | 5.7   | 4.3   | 2.1   | 1.3   | 3.3   |
| 0-4      | 24.4  | 23.1  | 25.9  | 25.6  | 24.7  | 26.7  | 12.7  | 9.6   | 17.6  |
| 5-9      | 3.3   | 2.7   | 4.0   | 3.5   | 2.8   | 4.3   | 1.8   | 1.9   | 1.7   |
| 10-14    | 1.5   | 2.1   | 0.7   | 1.5   | 2.1   | 0.7   | 1.6   | 2.1   | 0.8   |
| 15-19    | 3.5   | 2.7   | 4.5   | 3.7   | 2.9   | 4.7   | 1.4   | 1.3   | 1.6   |
| 20-24    | 2.0   | 2.1   | 1.9   | 2.0   | 2.1   | 1.8   | 2.3   | 2.1   | 2.5   |
| 25-29    | 4.1   | 3.9   | 4.3   | 4.0   | 3.7   | 4.3   | 5.3   | 5.6   | 4.9   |
| 30-34    | 2.6   | 2.2   | 3.1   | 2.5   | 2.1   | 3.1   | 3.2   | 3.5   | 2.9   |
| 35-39    | 3.6   | 4.5   | 2.5   | 3.3   | 4.3   | 2.1   | 6.3   | 5.4   | 7.8   |
| 40-44    | 3.5   | 2.9   | 4.2   | 3.2   | 2.5   | 4.1   | 6.0   | 6.4   | 5.3   |
| 45-49    | 4.6   | 5.9   | 3.0   | 4.6   | 6.0   | 2.9   | 4.3   | 4.5   | 4.1   |
| 50-54    | 5.2   | 5.1   | 5.3   | 5.0   | 4.9   | 5.1   | 7.2   | 6.9   | 7.5   |
| 55-59    | 6.5   | 7.8   | 4.9   | 6.8   | 8.1   | 5.1   | 4.4   | 5.6   | 2.5   |
| 60-64    | 5.7   | 6.5   | 4.6   | 5.3   | 6.0   | 4.4   | 9.2   | 10.7  | 7.0   |
| 65-69    | 6.9   | 6.9   | 6.9   | 6.7   | 6.7   | 6.8   | 8.4   | 9.0   | 7.4   |
| 70-74    | 8.2   | 7.6   | 9.1   | 8.2   | 7.5   | 9.0   | 8.7   | 8.3   | 9.5   |
| 75-79    | 4.9   | 4.9   | 5.0   | 4.8   | 4.6   | 5.0   | 6.3   | 7.2   | 5.0   |
| 80-84    | 4.3   | 4.1   | 4.5   | 4.1   | 3.9   | 4.3   | 6.2   | 5.9   | 6.7   |
| 85+      | 5.1   | 4.9   | 5.5   | 5.2   | 5.0   | 5.5   | 4.5   | 4.0   | 5.3   |
| All ages | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

**Bihar**

|         |      |      |      |      |      |      |      |      |      |
|---------|------|------|------|------|------|------|------|------|------|
| Below 1 | 22.9 | 22.3 | 23.6 | 23.5 | 22.8 | 24.2 | 17.1 | 16.7 | 17.7 |
| 1-4     | 9.5  | 7.8  | 11.5 | 9.5  | 7.8  | 11.5 | 9.5  | 7.4  | 11.7 |
| 0-4     | 32.5 | 30.1 | 35.1 | 33.0 | 30.6 | 35.7 | 26.7 | 24.1 | 29.4 |
| 5-9     | 5.0  | 4.0  | 6.2  | 5.2  | 3.9  | 6.6  | 3.3  | 4.6  | 2.0  |
| 10-14   | 1.8  | 2.1  | 1.4  | 1.8  | 2.2  | 1.4  | 1.4  | 1.4  | 1.5  |
| 15-19   | 2.6  | 2.9  | 2.2  | 2.5  | 2.8  | 2.1  | 3.3  | 3.2  | 3.4  |
| 20-24   | 2.0  | 1.7  | 2.3  | 1.9  | 1.5  | 2.3  | 3.1  | 3.7  | 2.4  |
| 25-29   | 2.3  | 1.7  | 2.9  | 2.1  | 1.4  | 3.0  | 3.6  | 5.1  | 2.0  |
| 30-34   | 1.6  | 1.7  | 1.5  | 1.6  | 1.7  | 1.4  | 1.9  | 1.4  | 2.5  |
| 35-39   | 2.5  | 2.7  | 2.2  | 2.5  | 2.9  | 2.1  | 2.4  | 1.4  | 3.4  |
| 40-44   | 2.0  | 2.5  | 1.5  | 1.9  | 2.2  | 1.5  | 3.3  | 5.1  | 1.5  |
| 45-49   | 2.5  | 3.3  | 1.5  | 2.4  | 3.4  | 1.3  | 3.3  | 2.3  | 4.4  |
| 50-54   | 4.3  | 3.5  | 5.2  | 4.4  | 3.5  | 5.5  | 3.6  | 4.2  | 2.9  |
| 55-59   | 5.0  | 5.0  | 5.0  | 4.9  | 5.0  | 4.9  | 5.5  | 5.1  | 5.9  |
| 60-64   | 7.0  | 6.5  | 7.6  | 6.7  | 5.9  | 7.5  | 10.9 | 13.4 | 8.3  |
| 65-69   | 7.0  | 7.8  | 6.1  | 7.1  | 8.0  | 6.1  | 5.7  | 5.1  | 6.4  |
| 70-74   | 8.5  | 9.5  | 7.4  | 8.6  | 9.8  | 7.3  | 7.6  | 6.0  | 9.3  |

|          |       |       |       |       |       |       |       |       |       |
|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 75-79    | 4.5   | 5.1   | 3.7   | 4.4   | 5.1   | 3.6   | 4.8   | 5.1   | 4.4   |
| 80-84    | 4.8   | 5.1   | 4.5   | 4.7   | 5.0   | 4.3   | 5.9   | 5.5   | 6.4   |
| 85+      | 4.2   | 4.8   | 3.5   | 4.3   | 5.0   | 3.5   | 3.6   | 3.3   | 3.9   |
| All ages | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

### Chhattisgarh

|          |       |       |       |       |       |       |       |       |       |
|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Below 1  | 21.3  | 20.7  | 22.0  | 22.6  | 22.5  | 22.6  | 14.9  | 12.6  | 18.5  |
| 1-4      | 8.3   | 5.5   | 11.5  | 9.3   | 6.0   | 12.9  | 3.4   | 3.6   | 3.1   |
| 0-4      | 29.6  | 26.2  | 33.5  | 31.8  | 28.5  | 35.5  | 18.3  | 16.2  | 21.6  |
| 5-9      | 2.9   | 3.3   | 2.4   | 3.1   | 3.9   | 2.3   | 1.5   | 0.8   | 2.5   |
| 10-14    | 1.8   | 2.5   | 1.0   | 2.0   | 2.8   | 1.2   | 0.7   | 1.2   | 0.0   |
| 15-19    | 3.5   | 1.3   | 6.2   | 3.9   | 1.1   | 7.0   | 1.9   | 2.3   | 1.2   |
| 20-24    | 2.7   | 2.7   | 2.6   | 2.6   | 2.8   | 2.3   | 3.2   | 2.4   | 4.3   |
| 25-29    | 1.3   | 1.0   | 1.6   | 1.1   | 0.7   | 1.6   | 2.2   | 2.4   | 1.9   |
| 30-34    | 3.4   | 2.8   | 4.0   | 3.1   | 2.5   | 3.9   | 4.6   | 4.5   | 4.8   |
| 35-39    | 1.8   | 1.4   | 2.2   | 1.3   | 0.7   | 2.0   | 4.0   | 4.3   | 3.6   |
| 40-44    | 3.3   | 4.4   | 2.2   | 3.1   | 3.9   | 2.3   | 4.4   | 6.4   | 1.2   |
| 45-49    | 3.1   | 4.0   | 2.0   | 2.6   | 3.5   | 1.6   | 5.4   | 6.1   | 4.4   |
| 50-54    | 3.0   | 3.1   | 2.9   | 2.8   | 2.8   | 2.7   | 4.1   | 4.4   | 3.7   |
| 55-59    | 5.6   | 6.2   | 5.0   | 5.7   | 6.7   | 4.7   | 5.1   | 4.2   | 6.6   |
| 60-64    | 7.6   | 10.0  | 4.8   | 6.9   | 9.5   | 3.9   | 11.2  | 12.0  | 9.9   |
| 65-69    | 9.8   | 11.1  | 8.3   | 10.0  | 11.6  | 8.2   | 8.8   | 8.9   | 8.6   |
| 70-74    | 8.4   | 10.4  | 6.1   | 8.0   | 9.9   | 5.9   | 10.8  | 12.9  | 7.5   |
| 75-79    | 6.0   | 5.5   | 6.7   | 6.3   | 6.0   | 6.6   | 4.6   | 3.2   | 6.8   |
| 80-84    | 4.0   | 2.7   | 5.5   | 3.7   | 2.1   | 5.5   | 5.4   | 5.3   | 5.5   |
| 85+      | 2.2   | 1.3   | 3.2   | 1.9   | 1.1   | 2.7   | 3.8   | 2.4   | 6.0   |
| All ages | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

### Delhi

|         |      |      |      |      |      |      |      |      |      |
|---------|------|------|------|------|------|------|------|------|------|
| Below 1 | 14.0 | 12.9 | 15.4 | 15.1 | 15.6 | 14.3 | 13.8 | 12.3 | 15.6 |
| 1-4     | 4.1  | 3.5  | 4.7  | 11.5 | 11.7 | 11.2 | 2.5  | 1.7  | 3.5  |
| 0-4     | 18.1 | 16.4 | 20.1 | 26.6 | 27.4 | 25.5 | 16.3 | 13.9 | 19.1 |
| 5-9     | 1.2  | 1.6  | 0.6  | 0.0  | 0.0  | 0.0  | 1.4  | 2.0  | 0.8  |
| 10-14   | 1.5  | 1.6  | 1.5  | 4.6  | 3.9  | 5.6  | 0.9  | 1.0  | 0.8  |
| 15-19   | 2.8  | 1.9  | 3.9  | 2.3  | 0.0  | 5.6  | 2.9  | 2.3  | 3.5  |
| 20-24   | 0.9  | 1.1  | 0.6  | 0.0  | 0.0  | 0.0  | 1.1  | 1.3  | 0.8  |
| 25-29   | 4.6  | 4.9  | 4.2  | 4.8  | 3.9  | 6.0  | 4.6  | 5.1  | 3.9  |
| 30-34   | 3.2  | 3.6  | 2.7  | 2.3  | 3.9  | 0.0  | 3.4  | 3.6  | 3.2  |
| 35-39   | 3.7  | 3.9  | 3.4  | 1.1  | 2.0  | 0.0  | 4.2  | 4.3  | 4.0  |
| 40-44   | 5.5  | 6.1  | 4.7  | 2.3  | 3.9  | 0.0  | 6.1  | 6.6  | 5.5  |
| 45-49   | 4.2  | 5.8  | 2.3  | 1.1  | 2.0  | 0.0  | 4.9  | 6.7  | 2.7  |
| 50-54   | 4.3  | 4.2  | 4.4  | 2.3  | 2.0  | 2.8  | 4.7  | 4.7  | 4.7  |
| 55-59   | 5.9  | 5.8  | 6.0  | 1.3  | 2.0  | 0.4  | 6.8  | 6.7  | 7.1  |
| 60-64   | 8.7  | 9.3  | 8.0  | 12.8 | 9.8  | 17.1 | 7.8  | 9.1  | 6.2  |
| 65-69   | 8.4  | 6.7  | 10.5 | 10.4 | 5.9  | 16.7 | 8.0  | 6.9  | 9.3  |
| 70-74   | 8.8  | 7.6  | 10.1 | 3.6  | 2.0  | 6.0  | 9.8  | 8.9  | 10.9 |
| 75-79   | 7.7  | 7.9  | 7.4  | 10.7 | 12.0 | 8.8  | 7.0  | 7.0  | 7.1  |
| 80-84   | 4.4  | 4.7  | 4.0  | 3.5  | 3.9  | 2.8  | 4.6  | 4.9  | 4.2  |
| 85+     | 6.4  | 6.9  | 5.7  | 10.3 | 15.6 | 2.8  | 5.5  | 4.9  | 6.3  |

|          |       |       |       |       |       |       |       |       |       |
|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| All ages | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|

### Gujarat

|          |       |       |       |       |       |       |       |       |       |
|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Below 1  | 17.8  | 16.7  | 19.1  | 19.9  | 18.4  | 21.8  | 13.3  | 13.1  | 13.6  |
| 1-4      | 4.4   | 3.5   | 5.6   | 6.2   | 5.1   | 7.6   | 0.7   | 0.0   | 1.4   |
| 0-4      | 22.2  | 20.2  | 24.7  | 26.1  | 23.5  | 29.4  | 13.9  | 13.1  | 15.0  |
| 5-9      | 1.9   | 1.8   | 1.9   | 2.1   | 1.9   | 2.4   | 1.3   | 1.6   | 1.0   |
| 10-14    | 1.4   | 1.5   | 1.2   | 1.5   | 2.0   | 0.9   | 1.1   | 0.4   | 1.8   |
| 15-19    | 1.8   | 1.6   | 2.1   | 1.8   | 1.8   | 1.7   | 1.9   | 1.1   | 2.8   |
| 20-24    | 2.6   | 2.7   | 2.5   | 2.4   | 2.1   | 2.7   | 3.1   | 4.0   | 2.0   |
| 25-29    | 2.8   | 3.2   | 2.2   | 3.0   | 3.3   | 2.6   | 2.2   | 2.9   | 1.4   |
| 30-34    | 2.7   | 3.0   | 2.3   | 2.8   | 3.1   | 2.5   | 2.4   | 2.8   | 1.9   |
| 35-39    | 2.8   | 3.2   | 2.3   | 2.4   | 2.5   | 2.3   | 3.7   | 4.8   | 2.4   |
| 40-44    | 2.8   | 3.3   | 2.3   | 3.0   | 3.2   | 2.6   | 2.5   | 3.4   | 1.5   |
| 45-49    | 3.4   | 3.9   | 2.7   | 2.7   | 3.3   | 1.9   | 4.8   | 5.4   | 4.2   |
| 50-54    | 5.9   | 7.3   | 4.1   | 5.0   | 6.2   | 3.5   | 7.7   | 9.7   | 5.3   |
| 55-59    | 5.8   | 7.6   | 3.7   | 5.6   | 7.2   | 3.6   | 6.4   | 8.5   | 3.8   |
| 60-64    | 8.0   | 8.4   | 7.5   | 8.1   | 8.7   | 7.2   | 7.9   | 7.7   | 8.2   |
| 65-69    | 8.6   | 8.6   | 8.5   | 8.8   | 8.9   | 8.7   | 8.0   | 8.0   | 8.1   |
| 70-74    | 9.4   | 8.4   | 10.7  | 9.3   | 8.4   | 10.5  | 9.8   | 8.6   | 11.1  |
| 75-79    | 6.5   | 5.9   | 7.2   | 4.8   | 5.1   | 4.4   | 10.1  | 7.7   | 12.9  |
| 80-84    | 5.8   | 4.9   | 6.9   | 5.0   | 4.4   | 5.7   | 7.5   | 6.0   | 9.3   |
| 85+      | 5.6   | 4.3   | 7.3   | 5.6   | 4.4   | 7.2   | 5.6   | 4.1   | 7.3   |
| All ages | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

### Haryana

|          |       |       |       |       |       |       |       |       |       |
|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Below 1  | 21.7  | 18.3  | 26.1  | 23.7  | 19.4  | 29.2  | 16.3  | 14.9  | 18.0  |
| 1-4      | 4.0   | 2.7   | 5.7   | 3.9   | 2.7   | 5.5   | 4.3   | 2.7   | 6.2   |
| 0-4      | 25.8  | 21.0  | 31.8  | 27.6  | 22.2  | 34.7  | 20.7  | 17.6  | 24.2  |
| 5-9      | 2.1   | 2.2   | 2.0   | 2.2   | 2.2   | 2.1   | 1.9   | 2.2   | 1.5   |
| 10-14    | 0.7   | 0.3   | 1.2   | 0.8   | 0.3   | 1.5   | 0.5   | 0.5   | 0.5   |
| 15-19    | 2.2   | 2.2   | 2.1   | 1.8   | 1.9   | 1.7   | 3.1   | 3.1   | 3.1   |
| 20-24    | 2.2   | 1.6   | 3.0   | 2.4   | 2.0   | 3.0   | 1.7   | 0.5   | 3.1   |
| 25-29    | 2.4   | 1.9   | 3.0   | 2.5   | 1.7   | 3.6   | 2.2   | 2.7   | 1.5   |
| 30-34    | 1.9   | 2.4   | 1.2   | 1.8   | 2.0   | 1.5   | 2.2   | 3.6   | 0.5   |
| 35-39    | 3.0   | 3.3   | 2.6   | 2.9   | 3.2   | 2.6   | 3.1   | 3.6   | 2.6   |
| 40-44    | 3.3   | 4.4   | 1.9   | 3.0   | 3.9   | 1.8   | 4.1   | 5.8   | 2.1   |
| 45-49    | 3.8   | 4.5   | 2.8   | 3.3   | 4.2   | 2.1   | 5.0   | 5.4   | 4.6   |
| 50-54    | 3.1   | 2.9   | 3.2   | 3.1   | 2.7   | 3.7   | 2.9   | 3.6   | 2.1   |
| 55-59    | 4.9   | 6.9   | 2.5   | 5.0   | 6.9   | 2.4   | 4.8   | 6.7   | 2.6   |
| 60-64    | 6.4   | 8.3   | 4.1   | 6.2   | 7.9   | 4.1   | 6.9   | 9.4   | 4.1   |
| 65-69    | 6.8   | 6.9   | 6.6   | 6.3   | 6.7   | 5.9   | 7.9   | 7.6   | 8.3   |
| 70-74    | 11.9  | 11.8  | 12.1  | 11.1  | 11.4  | 10.8  | 14.1  | 13.0  | 15.5  |
| 75-79    | 5.9   | 6.5   | 5.2   | 5.2   | 5.7   | 4.6   | 7.9   | 8.9   | 6.7   |
| 80-84    | 6.1   | 6.1   | 6.2   | 6.5   | 7.0   | 5.9   | 5.0   | 3.1   | 7.2   |
| 85+      | 7.6   | 6.7   | 8.6   | 8.1   | 8.1   | 8.2   | 6.0   | 2.7   | 9.8   |
| All ages | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

### Himachal Pradesh

|          |       |       |       |       |       |       |       |       |       |
|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Below 1  | 15.5  | 10.3  | 21.9  | 16.1  | 10.3  | 22.9  | 8.1   | 9.6   | 6.0   |
| 1-4      | 2.8   | 1.9   | 3.8   | 2.9   | 1.9   | 4.1   | 0.8   | 1.4   | 0.0   |
| 0-4      | 18.3  | 12.1  | 25.8  | 19.0  | 12.2  | 27.0  | 8.9   | 11.0  | 6.0   |
| 5-9      | 0.6   | 0.1   | 1.2   | 0.4   | 0.0   | 0.9   | 3.3   | 1.4   | 6.0   |
| 10-14    | 0.5   | 0.2   | 0.8   | 0.3   | 0.0   | 0.6   | 3.2   | 2.7   | 4.0   |
| 15-19    | 1.3   | 0.6   | 2.1   | 1.2   | 0.5   | 2.1   | 1.6   | 1.4   | 2.0   |
| 20-24    | 1.4   | 2.5   | 0.1   | 1.4   | 2.5   | 0.1   | 1.6   | 2.7   | 0.0   |
| 25-29    | 2.2   | 1.8   | 2.5   | 2.1   | 1.7   | 2.6   | 3.3   | 4.1   | 2.0   |
| 30-34    | 2.9   | 4.1   | 1.4   | 2.9   | 4.2   | 1.4   | 2.4   | 2.7   | 2.0   |
| 35-39    | 3.0   | 3.5   | 2.4   | 3.0   | 3.4   | 2.4   | 3.3   | 4.1   | 2.0   |
| 40-44    | 3.9   | 4.4   | 3.3   | 3.7   | 4.3   | 3.0   | 6.5   | 5.5   | 8.0   |
| 45-49    | 3.6   | 5.2   | 1.8   | 3.4   | 5.0   | 1.5   | 6.5   | 6.9   | 6.0   |
| 50-54    | 3.5   | 2.8   | 4.4   | 3.2   | 2.2   | 4.4   | 8.2   | 11.0  | 4.0   |
| 55-59    | 6.5   | 8.6   | 4.0   | 6.3   | 8.3   | 4.0   | 8.9   | 12.3  | 4.0   |
| 60-64    | 6.4   | 7.1   | 5.5   | 6.5   | 7.2   | 5.6   | 4.9   | 5.5   | 4.0   |
| 65-69    | 9.1   | 9.0   | 9.2   | 9.1   | 9.0   | 9.2   | 8.1   | 8.2   | 8.0   |
| 70-74    | 11.5  | 11.7  | 11.3  | 11.4  | 11.9  | 10.9  | 12.2  | 8.2   | 17.9  |
| 75-79    | 7.1   | 8.0   | 6.0   | 7.3   | 8.5   | 5.7   | 4.9   | 1.4   | 10.0  |
| 80-84    | 8.7   | 8.1   | 9.3   | 8.9   | 8.4   | 9.4   | 5.7   | 4.1   | 8.0   |
| 85+      | 9.7   | 10.3  | 8.9   | 9.9   | 10.5  | 9.1   | 6.5   | 6.9   | 6.0   |
| All ages | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

### Jammu & Kashmir

|          |       |       |       |       |       |       |       |       |       |
|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Below 1  | 17.3  | 16.2  | 18.6  | 18.9  | 17.9  | 20.0  | 11.1  | 10.1  | 12.5  |
| 1-4      | 3.0   | 3.0   | 3.0   | 3.5   | 3.9   | 3.0   | 1.3   | 0.0   | 3.1   |
| 0-4      | 20.3  | 19.2  | 21.7  | 22.3  | 21.7  | 23.0  | 12.3  | 10.1  | 15.6  |
| 5-9      | 1.4   | 1.5   | 1.2   | 1.2   | 1.6   | 0.7   | 2.0   | 1.3   | 3.1   |
| 10-14    | 2.1   | 1.8   | 2.6   | 2.4   | 2.0   | 2.7   | 1.3   | 0.8   | 2.0   |
| 15-19    | 2.5   | 3.2   | 1.8   | 3.2   | 4.1   | 2.2   | 0.0   | 0.0   | 0.0   |
| 20-24    | 1.4   | 1.5   | 1.3   | 1.3   | 1.3   | 1.2   | 2.1   | 2.3   | 1.8   |
| 25-29    | 2.0   | 1.7   | 2.3   | 2.3   | 2.0   | 2.6   | 0.7   | 0.6   | 0.9   |
| 30-34    | 2.6   | 2.7   | 2.5   | 2.3   | 2.2   | 2.3   | 3.8   | 4.2   | 3.3   |
| 35-39    | 2.9   | 2.6   | 3.3   | 3.0   | 2.8   | 3.1   | 2.9   | 2.0   | 4.0   |
| 40-44    | 3.1   | 3.4   | 2.8   | 2.9   | 3.0   | 2.8   | 3.9   | 4.7   | 2.7   |
| 45-49    | 2.1   | 1.9   | 2.3   | 1.8   | 1.7   | 1.9   | 3.3   | 2.7   | 4.2   |
| 50-54    | 3.5   | 3.8   | 3.1   | 3.4   | 3.0   | 3.8   | 4.0   | 6.7   | 0.0   |
| 55-59    | 6.0   | 6.3   | 5.5   | 5.3   | 5.5   | 5.0   | 8.6   | 9.0   | 8.1   |
| 60-64    | 8.1   | 9.4   | 6.6   | 7.4   | 9.3   | 5.3   | 10.9  | 9.6   | 12.6  |
| 65-69    | 8.5   | 8.9   | 8.0   | 8.0   | 8.1   | 8.0   | 10.3  | 11.7  | 8.2   |
| 70-74    | 11.4  | 11.5  | 11.3  | 10.6  | 11.0  | 10.2  | 14.7  | 13.4  | 16.6  |
| 75-79    | 7.6   | 5.9   | 9.5   | 7.4   | 5.6   | 9.4   | 8.4   | 7.2   | 10.1  |
| 80-84    | 6.7   | 7.7   | 5.4   | 6.9   | 7.6   | 6.2   | 5.6   | 8.1   | 2.0   |
| 85+      | 7.8   | 7.1   | 8.7   | 8.5   | 7.5   | 9.6   | 5.2   | 5.6   | 4.7   |
| All ages | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

### Jharkhand

|          |       |       |       |       |       |       |       |       |       |
|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Below 1  | 17.1  | 14.4  | 20.1  | 18.2  | 15.5  | 21.0  | 10.8  | 8.8   | 13.8  |
| 1-4      | 7.8   | 7.6   | 8.1   | 8.4   | 8.2   | 8.6   | 4.6   | 5.0   | 4.0   |
| 0-4      | 25.0  | 22.0  | 28.1  | 26.6  | 23.7  | 29.6  | 15.4  | 13.8  | 17.8  |
| 5-9      | 4.0   | 4.8   | 3.1   | 4.2   | 5.0   | 3.4   | 2.9   | 3.8   | 1.6   |
| 10-14    | 3.3   | 3.3   | 3.3   | 3.5   | 3.7   | 3.4   | 2.0   | 1.1   | 3.3   |
| 15-19    | 2.6   | 2.9   | 2.2   | 2.5   | 2.7   | 2.2   | 3.3   | 3.9   | 2.5   |
| 20-24    | 3.3   | 2.4   | 4.3   | 3.3   | 1.9   | 4.7   | 3.6   | 5.0   | 1.6   |
| 25-29    | 2.7   | 2.7   | 2.8   | 2.7   | 2.4   | 3.1   | 2.6   | 3.8   | 0.8   |
| 30-34    | 2.4   | 2.1   | 2.7   | 2.3   | 2.1   | 2.5   | 2.9   | 2.2   | 4.0   |
| 35-39    | 3.3   | 3.3   | 3.3   | 3.4   | 3.2   | 3.6   | 3.0   | 3.9   | 1.7   |
| 40-44    | 3.2   | 4.0   | 2.3   | 3.4   | 4.3   | 2.4   | 2.3   | 2.8   | 1.6   |
| 45-49    | 3.4   | 3.9   | 2.8   | 3.0   | 3.2   | 2.7   | 5.6   | 7.2   | 3.3   |
| 50-54    | 4.5   | 4.4   | 4.5   | 4.3   | 4.6   | 3.9   | 5.6   | 3.3   | 9.1   |
| 55-59    | 6.1   | 6.8   | 5.4   | 5.6   | 6.0   | 5.2   | 9.2   | 11.1  | 6.5   |
| 60-64    | 8.1   | 7.8   | 8.4   | 7.5   | 7.1   | 8.0   | 11.5  | 11.5  | 11.5  |
| 65-69    | 9.7   | 12.0  | 7.0   | 9.5   | 12.8  | 6.1   | 10.5  | 8.3   | 13.8  |
| 70-74    | 8.0   | 6.3   | 9.9   | 8.2   | 6.0   | 10.6  | 6.6   | 7.8   | 4.9   |
| 75-79    | 4.8   | 6.3   | 3.2   | 4.9   | 6.9   | 2.9   | 4.2   | 3.3   | 5.7   |
| 80-84    | 4.2   | 2.8   | 5.7   | 4.5   | 3.2   | 5.8   | 2.6   | 1.1   | 4.8   |
| 85+      | 1.4   | 2.1   | 0.7   | 0.7   | 1.3   | 0.0   | 5.9   | 6.1   | 5.7   |
| All ages | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

### Karnataka

|          |       |       |       |       |       |       |       |       |       |
|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Below 1  | 14.5  | 13.5  | 15.6  | 15.2  | 14.5  | 16.0  | 12.5  | 11.1  | 14.4  |
| 1-4      | 1.9   | 1.5   | 2.3   | 2.2   | 1.7   | 2.9   | 0.9   | 1.2   | 0.5   |
| 0-4      | 16.3  | 15.0  | 17.9  | 17.4  | 16.2  | 18.9  | 13.4  | 12.3  | 15.0  |
| 5-9      | 1.3   | 1.3   | 1.2   | 1.2   | 1.6   | 0.8   | 1.4   | 0.4   | 2.7   |
| 10-14    | 0.6   | 0.6   | 0.6   | 0.5   | 0.5   | 0.5   | 0.9   | 0.8   | 1.1   |
| 15-19    | 1.9   | 0.9   | 3.0   | 1.7   | 0.8   | 2.8   | 2.3   | 1.2   | 3.7   |
| 20-24    | 3.1   | 2.6   | 3.7   | 3.3   | 2.9   | 3.8   | 2.5   | 2.0   | 3.2   |
| 25-29    | 2.8   | 2.7   | 2.9   | 3.1   | 3.1   | 3.1   | 1.8   | 1.6   | 2.1   |
| 30-34    | 2.6   | 2.6   | 2.6   | 2.7   | 2.8   | 2.5   | 2.3   | 2.0   | 2.7   |
| 35-39    | 3.3   | 3.8   | 2.7   | 3.1   | 3.2   | 3.0   | 3.7   | 5.2   | 1.6   |
| 40-44    | 3.6   | 4.7   | 2.4   | 3.5   | 4.3   | 2.5   | 4.1   | 5.6   | 2.1   |
| 45-49    | 5.9   | 7.9   | 3.3   | 5.4   | 7.6   | 2.8   | 7.1   | 8.7   | 4.8   |
| 50-54    | 6.3   | 6.9   | 5.7   | 6.7   | 7.3   | 6.0   | 5.5   | 5.9   | 4.8   |
| 55-59    | 5.1   | 6.8   | 3.1   | 4.9   | 6.1   | 3.4   | 5.7   | 8.3   | 2.1   |
| 60-64    | 7.8   | 8.4   | 7.2   | 8.7   | 9.5   | 7.7   | 5.7   | 5.5   | 5.9   |
| 65-69    | 8.6   | 8.8   | 8.4   | 7.7   | 7.9   | 7.5   | 11.1  | 11.1  | 11.2  |
| 70-74    | 11.0  | 9.0   | 13.5  | 11.0  | 9.3   | 13.0  | 11.2  | 8.3   | 15.0  |
| 75-79    | 7.2   | 8.3   | 6.0   | 6.9   | 7.8   | 6.0   | 8.0   | 9.5   | 5.9   |
| 80-84    | 5.4   | 4.1   | 6.9   | 5.5   | 4.8   | 6.3   | 5.0   | 2.4   | 8.6   |
| 85+      | 7.2   | 5.8   | 8.9   | 6.7   | 4.4   | 9.4   | 8.4   | 9.1   | 7.5   |
| All ages | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

**Kerala**

|          |       |       |       |       |       |       |       |       |       |
|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Below 1  | 3.4   | 2.9   | 4.1   | 3.6   | 3.1   | 4.3   | 2.7   | 2.2   | 3.5   |
| 1-4      | 0.9   | 1.1   | 0.7   | 1.2   | 1.3   | 1.0   | 0.2   | 0.4   | 0.0   |
| 0-4      | 4.3   | 4.0   | 4.8   | 4.8   | 4.4   | 5.3   | 3.0   | 2.6   | 3.5   |
| 5-9      | 0.5   | 0.4   | 0.7   | 0.6   | 0.5   | 0.8   | 0.2   | 0.0   | 0.6   |
| 10-14    | 0.6   | 0.4   | 0.7   | 0.6   | 0.6   | 0.8   | 0.3   | 0.0   | 0.6   |
| 15-19    | 0.7   | 0.5   | 1.1   | 0.6   | 0.3   | 1.1   | 1.0   | 0.9   | 1.2   |
| 20-24    | 1.4   | 1.5   | 1.2   | 1.6   | 1.8   | 1.2   | 0.7   | 0.4   | 1.2   |
| 25-29    | 1.4   | 1.8   | 0.9   | 1.5   | 2.1   | 0.7   | 1.3   | 0.9   | 1.8   |
| 30-34    | 1.6   | 1.6   | 1.5   | 1.7   | 1.7   | 1.7   | 1.3   | 1.3   | 1.2   |
| 35-39    | 2.5   | 2.7   | 2.3   | 2.8   | 3.0   | 2.4   | 1.7   | 1.7   | 1.8   |
| 40-44    | 2.1   | 2.9   | 1.1   | 2.3   | 2.9   | 1.4   | 1.8   | 3.0   | 0.0   |
| 45-49    | 3.6   | 4.7   | 2.0   | 3.6   | 4.6   | 2.3   | 3.5   | 5.2   | 1.2   |
| 50-54    | 5.3   | 7.6   | 2.3   | 5.1   | 6.8   | 2.6   | 6.2   | 9.9   | 1.2   |
| 55-59    | 6.4   | 8.3   | 3.7   | 6.5   | 8.5   | 3.7   | 6.0   | 7.7   | 3.6   |
| 60-64    | 7.6   | 8.6   | 6.1   | 7.7   | 9.1   | 5.7   | 7.3   | 7.3   | 7.2   |
| 65-69    | 11.3  | 12.9  | 9.1   | 10.5  | 12.0  | 8.6   | 13.6  | 15.6  | 10.8  |
| 70-74    | 12.9  | 12.6  | 13.3  | 12.6  | 11.4  | 14.2  | 13.8  | 16.1  | 10.7  |
| 75-79    | 13.0  | 11.0  | 15.8  | 12.2  | 11.0  | 13.9  | 15.3  | 10.8  | 21.5  |
| 80-84    | 9.9   | 8.9   | 11.2  | 9.6   | 8.6   | 11.0  | 10.8  | 10.0  | 11.9  |
| 85+      | 14.9  | 9.7   | 22.0  | 15.8  | 10.8  | 22.6  | 12.3  | 6.5   | 20.3  |
| All ages | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

**Madhya Pradesh**

|          |       |       |       |       |       |       |       |       |       |
|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Below 1  | 24.8  | 23.4  | 26.5  | 25.8  | 24.3  | 27.5  | 19.6  | 18.6  | 20.8  |
| 1-4      | 7.1   | 6.1   | 8.3   | 7.6   | 6.7   | 8.6   | 4.7   | 3.3   | 6.5   |
| 0-4      | 31.9  | 29.5  | 34.8  | 33.4  | 31.0  | 36.1  | 24.3  | 21.9  | 27.2  |
| 5-9      | 3.2   | 3.2   | 3.3   | 3.5   | 3.5   | 3.6   | 1.6   | 1.7   | 1.5   |
| 10-14    | 2.2   | 2.0   | 2.5   | 2.4   | 2.2   | 2.6   | 1.4   | 0.8   | 2.0   |
| 15-19    | 2.9   | 2.7   | 3.1   | 2.8   | 2.6   | 3.1   | 3.1   | 3.3   | 3.0   |
| 20-24    | 3.1   | 2.5   | 3.7   | 3.0   | 2.4   | 3.8   | 3.4   | 3.3   | 3.5   |
| 25-29    | 2.6   | 2.5   | 2.6   | 2.6   | 2.5   | 2.8   | 2.2   | 2.9   | 1.5   |
| 30-34    | 2.4   | 2.3   | 2.5   | 2.3   | 2.2   | 2.4   | 3.0   | 2.9   | 3.0   |
| 35-39    | 2.5   | 2.9   | 2.2   | 2.5   | 2.6   | 2.4   | 2.7   | 4.1   | 1.0   |
| 40-44    | 2.9   | 3.6   | 2.0   | 2.5   | 3.1   | 1.8   | 4.7   | 6.2   | 3.0   |
| 45-49    | 2.6   | 3.0   | 2.2   | 2.4   | 2.7   | 2.1   | 3.6   | 4.1   | 3.0   |
| 50-54    | 3.7   | 4.3   | 3.0   | 3.6   | 4.1   | 3.0   | 4.5   | 5.3   | 3.5   |
| 55-59    | 5.5   | 6.4   | 4.6   | 5.6   | 6.4   | 4.7   | 5.2   | 6.2   | 4.0   |
| 60-64    | 6.7   | 7.6   | 5.5   | 6.5   | 7.5   | 5.3   | 7.7   | 8.4   | 6.9   |
| 65-69    | 6.7   | 6.8   | 6.5   | 6.8   | 6.6   | 6.9   | 6.1   | 7.9   | 4.0   |
| 70-74    | 7.4   | 8.6   | 5.9   | 6.6   | 8.3   | 4.8   | 11.4  | 10.7  | 12.4  |
| 75-79    | 5.4   | 4.7   | 6.3   | 5.3   | 4.9   | 5.8   | 6.1   | 3.7   | 9.0   |
| 80-84    | 4.3   | 3.8   | 5.0   | 4.0   | 3.7   | 4.4   | 6.1   | 4.5   | 8.1   |
| 85+      | 3.9   | 3.5   | 4.3   | 4.1   | 3.8   | 4.4   | 2.7   | 2.0   | 3.5   |
| All ages | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

### Maharashtra

|          |       |       |       |       |       |       |       |       |       |
|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Below 1  | 10.1  | 9.1   | 11.5  | 10.9  | 10.0  | 12.2  | 8.7   | 7.6   | 10.3  |
| 1-4      | 2.3   | 2.4   | 2.2   | 2.6   | 3.0   | 2.1   | 1.8   | 1.5   | 2.2   |
| 0-4      | 12.4  | 11.5  | 13.6  | 13.5  | 12.9  | 14.3  | 10.5  | 9.1   | 12.5  |
| 5-9      | 1.1   | 0.8   | 1.6   | 1.2   | 0.8   | 1.8   | 1.0   | 0.7   | 1.3   |
| 10-14    | 1.3   | 1.4   | 1.2   | 1.5   | 1.6   | 1.2   | 1.1   | 1.0   | 1.3   |
| 15-19    | 2.2   | 2.3   | 2.1   | 2.4   | 2.5   | 2.4   | 1.8   | 1.9   | 1.6   |
| 20-24    | 2.6   | 2.6   | 2.7   | 2.1   | 2.1   | 2.2   | 3.5   | 3.5   | 3.5   |
| 25-29    | 2.1   | 1.8   | 2.4   | 1.7   | 1.3   | 2.3   | 2.6   | 2.6   | 2.5   |
| 30-34    | 2.8   | 3.8   | 1.3   | 2.2   | 3.0   | 1.2   | 3.7   | 5.3   | 1.6   |
| 35-39    | 3.7   | 5.0   | 1.9   | 3.5   | 4.7   | 1.9   | 4.0   | 5.6   | 1.9   |
| 40-44    | 3.8   | 4.6   | 2.7   | 3.8   | 4.4   | 2.9   | 3.7   | 4.8   | 2.2   |
| 45-49    | 3.7   | 4.6   | 2.3   | 3.2   | 3.8   | 2.4   | 4.4   | 6.0   | 2.2   |
| 50-54    | 5.7   | 5.7   | 5.7   | 4.8   | 4.1   | 5.8   | 7.2   | 8.5   | 5.5   |
| 55-59    | 6.4   | 7.0   | 5.7   | 6.6   | 6.9   | 6.2   | 6.2   | 7.2   | 4.8   |
| 60-64    | 7.9   | 7.6   | 8.3   | 7.7   | 7.3   | 8.3   | 8.3   | 8.1   | 8.5   |
| 65-69    | 10.6  | 10.1  | 11.4  | 11.5  | 11.7  | 11.2  | 9.1   | 7.2   | 11.7  |
| 70-74    | 11.4  | 11.8  | 10.9  | 12.5  | 13.2  | 11.6  | 9.6   | 9.4   | 9.9   |
| 75-79    | 9.1   | 9.1   | 9.0   | 8.9   | 9.6   | 8.0   | 9.3   | 8.2   | 10.7  |
| 80-84    | 5.2   | 4.5   | 6.2   | 4.9   | 4.0   | 6.2   | 5.8   | 5.4   | 6.3   |
| 85+      | 8.0   | 5.8   | 10.8  | 7.7   | 6.0   | 10.0  | 8.4   | 5.5   | 12.2  |
| All ages | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

### Orissa

|          |       |       |       |       |       |       |       |       |       |
|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Below 1  | 17.8  | 17.2  | 18.4  | 18.3  | 17.9  | 18.9  | 12.8  | 11.4  | 14.5  |
| 1-4      | 4.9   | 4.4   | 5.4   | 5.1   | 4.6   | 5.6   | 3.3   | 2.9   | 3.7   |
| 0-4      | 22.7  | 21.6  | 23.8  | 23.4  | 22.5  | 24.5  | 16.1  | 14.3  | 18.2  |
| 5-9      | 1.8   | 1.7   | 1.8   | 1.8   | 1.8   | 1.8   | 2.0   | 1.7   | 2.3   |
| 10-14    | 2.0   | 1.6   | 2.4   | 2.1   | 1.7   | 2.6   | 0.9   | 0.8   | 0.9   |
| 15-19    | 2.0   | 2.1   | 1.9   | 1.8   | 2.0   | 1.6   | 3.3   | 2.5   | 4.2   |
| 20-24    | 2.5   | 2.2   | 2.8   | 2.4   | 2.2   | 2.7   | 2.9   | 2.9   | 2.8   |
| 25-29    | 3.2   | 3.5   | 3.0   | 3.1   | 3.2   | 3.0   | 4.4   | 5.9   | 2.8   |
| 30-34    | 1.9   | 2.3   | 1.4   | 1.8   | 2.1   | 1.4   | 2.9   | 4.2   | 1.4   |
| 35-39    | 2.7   | 3.1   | 2.2   | 2.6   | 3.1   | 2.1   | 3.5   | 3.8   | 3.3   |
| 40-44    | 3.5   | 4.1   | 2.7   | 3.2   | 3.7   | 2.6   | 6.0   | 7.6   | 4.2   |
| 45-49    | 3.8   | 5.0   | 2.4   | 3.8   | 5.0   | 2.3   | 4.0   | 4.6   | 3.3   |
| 50-54    | 4.7   | 4.7   | 4.6   | 4.6   | 4.7   | 4.6   | 4.9   | 5.0   | 4.7   |
| 55-59    | 4.6   | 4.7   | 4.5   | 4.4   | 4.3   | 4.5   | 6.2   | 7.6   | 4.7   |
| 60-64    | 8.9   | 8.6   | 9.3   | 9.2   | 8.7   | 9.7   | 6.9   | 7.2   | 6.6   |
| 65-69    | 9.2   | 9.3   | 9.1   | 9.1   | 9.2   | 9.0   | 10.0  | 10.1  | 9.8   |
| 70-74    | 10.1  | 10.4  | 9.7   | 10.3  | 10.9  | 9.6   | 8.4   | 6.3   | 10.8  |
| 75-79    | 6.4   | 6.1   | 6.7   | 6.1   | 5.8   | 6.4   | 9.1   | 8.8   | 9.3   |
| 80-84    | 5.7   | 5.4   | 6.1   | 5.8   | 5.5   | 6.3   | 4.4   | 4.6   | 4.2   |
| 85+      | 4.4   | 3.6   | 5.4   | 4.5   | 3.7   | 5.3   | 4.2   | 2.1   | 6.5   |
| All ages | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

**Punjab**

|          |       |       |       |       |       |       |       |       |       |
|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Below 1  | 12.0  | 10.8  | 13.7  | 12.6  | 11.8  | 13.8  | 10.7  | 8.7   | 13.5  |
| 1-4      | 2.8   | 1.8   | 4.2   | 2.9   | 2.0   | 4.2   | 2.6   | 1.4   | 4.2   |
| 0-4      | 14.8  | 12.5  | 17.9  | 15.6  | 13.8  | 18.0  | 13.4  | 10.1  | 17.7  |
| 5-9      | 1.0   | 1.4   | 0.6   | 1.2   | 1.6   | 0.6   | 0.8   | 0.9   | 0.6   |
| 10-14    | 0.9   | 0.9   | 0.9   | 0.6   | 0.6   | 0.5   | 1.6   | 1.4   | 1.9   |
| 15-19    | 1.6   | 1.6   | 1.5   | 1.7   | 2.0   | 1.3   | 1.3   | 0.9   | 1.8   |
| 20-24    | 1.9   | 1.5   | 2.5   | 1.7   | 1.3   | 2.2   | 2.4   | 1.9   | 3.0   |
| 25-29    | 2.3   | 3.0   | 1.4   | 2.6   | 3.4   | 1.5   | 1.8   | 2.3   | 1.2   |
| 30-34    | 2.2   | 2.2   | 2.2   | 2.1   | 2.3   | 1.7   | 2.4   | 1.9   | 3.1   |
| 35-39    | 3.7   | 3.9   | 3.3   | 4.3   | 4.5   | 4.1   | 2.4   | 2.7   | 1.9   |
| 40-44    | 2.8   | 3.5   | 2.0   | 2.8   | 3.6   | 1.7   | 3.0   | 3.3   | 2.5   |
| 45-49    | 3.4   | 4.7   | 1.8   | 3.5   | 4.8   | 1.7   | 3.4   | 4.6   | 1.9   |
| 50-54    | 5.5   | 5.2   | 5.9   | 6.3   | 5.4   | 7.4   | 4.0   | 4.6   | 3.1   |
| 55-59    | 5.2   | 4.8   | 5.7   | 5.0   | 4.6   | 5.5   | 5.6   | 5.1   | 6.2   |
| 60-64    | 7.4   | 7.6   | 7.2   | 7.1   | 7.7   | 6.2   | 8.2   | 7.4   | 9.3   |
| 65-69    | 11.0  | 11.3  | 10.7  | 9.7   | 9.1   | 10.5  | 13.8  | 15.8  | 11.1  |
| 70-74    | 9.6   | 10.1  | 8.9   | 9.4   | 9.5   | 9.3   | 10.0  | 11.5  | 8.1   |
| 75-79    | 7.4   | 7.6   | 7.1   | 6.2   | 6.5   | 5.8   | 9.7   | 9.6   | 9.9   |
| 80-84    | 8.5   | 8.3   | 8.9   | 9.4   | 8.2   | 11.1  | 6.7   | 8.5   | 4.3   |
| 85+      | 10.6  | 9.9   | 11.5  | 11.1  | 11.1  | 11.1  | 9.6   | 7.5   | 12.3  |
| All ages | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

**Rajasthan**

|          |       |       |       |       |       |       |       |       |       |
|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Below 1  | 27.8  | 26.3  | 29.6  | 31.1  | 30.1  | 32.3  | 16.3  | 13.4  | 19.9  |
| 1-4      | 7.1   | 5.8   | 8.6   | 8.3   | 6.9   | 9.9   | 2.9   | 2.3   | 3.6   |
| 0-4      | 35.0  | 32.1  | 38.2  | 39.4  | 37.0  | 42.2  | 19.2  | 15.7  | 23.4  |
| 5-9      | 2.5   | 2.1   | 2.9   | 2.7   | 2.4   | 3.1   | 1.6   | 1.2   | 2.1   |
| 10-14    | 1.8   | 1.7   | 1.8   | 2.2   | 2.3   | 2.1   | 0.3   | 0.0   | 0.7   |
| 15-19    | 2.0   | 1.5   | 2.6   | 2.0   | 1.9   | 2.0   | 2.2   | 0.0   | 5.0   |
| 20-24    | 1.9   | 1.7   | 2.2   | 1.7   | 1.2   | 2.2   | 2.9   | 3.5   | 2.1   |
| 25-29    | 2.2   | 2.9   | 1.5   | 2.1   | 2.7   | 1.6   | 2.6   | 3.5   | 1.4   |
| 30-34    | 1.7   | 2.0   | 1.4   | 1.6   | 1.7   | 1.5   | 1.9   | 2.9   | 0.7   |
| 35-39    | 2.0   | 2.3   | 1.8   | 1.8   | 2.1   | 1.5   | 2.9   | 2.9   | 2.8   |
| 40-44    | 2.2   | 3.1   | 1.2   | 1.8   | 2.3   | 1.2   | 3.8   | 5.8   | 1.4   |
| 45-49    | 3.4   | 4.5   | 2.1   | 2.6   | 3.6   | 1.5   | 6.1   | 7.6   | 4.3   |
| 50-54    | 4.0   | 4.6   | 3.2   | 3.4   | 3.6   | 3.3   | 5.7   | 8.1   | 2.8   |
| 55-59    | 4.5   | 4.9   | 4.1   | 4.2   | 4.2   | 4.1   | 5.8   | 7.0   | 4.3   |
| 60-64    | 6.0   | 7.1   | 4.7   | 5.7   | 7.1   | 4.1   | 7.0   | 7.0   | 7.1   |
| 65-69    | 6.9   | 6.8   | 6.9   | 6.3   | 6.1   | 6.5   | 9.0   | 9.3   | 8.5   |
| 70-74    | 7.7   | 7.9   | 7.5   | 7.5   | 7.6   | 7.4   | 8.3   | 8.7   | 7.8   |
| 75-79    | 5.5   | 5.6   | 5.4   | 5.3   | 5.9   | 4.6   | 6.4   | 4.7   | 8.5   |
| 80-84    | 6.1   | 5.2   | 7.1   | 5.7   | 5.1   | 6.3   | 7.7   | 5.8   | 9.9   |
| 85+      | 4.7   | 4.1   | 5.4   | 4.1   | 3.4   | 4.9   | 6.7   | 6.4   | 7.1   |
| All ages | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

### Tamil Nadu

|          |       |       |       |       |       |       |       |       |       |
|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Below 1  | 8.3   | 7.3   | 9.5   | 8.0   | 7.6   | 8.5   | 8.8   | 6.8   | 11.5  |
| 1-4      | 1.2   | 1.5   | 1.0   | 1.5   | 1.5   | 1.5   | 0.8   | 1.3   | 0.0   |
| 0-4      | 9.5   | 8.8   | 10.5  | 9.5   | 9.1   | 10.0  | 9.5   | 8.1   | 11.5  |
| 5-9      | 0.6   | 0.8   | 0.4   | 0.9   | 1.1   | 0.6   | 0.1   | 0.2   | 0.0   |
| 10-14    | 1.2   | 1.5   | 0.9   | 1.1   | 1.3   | 0.9   | 1.4   | 1.8   | 0.9   |
| 15-19    | 1.9   | 1.4   | 2.5   | 2.3   | 2.0   | 2.6   | 1.3   | 0.5   | 2.4   |
| 20-24    | 2.3   | 2.0   | 2.7   | 2.8   | 2.7   | 2.9   | 1.5   | 0.9   | 2.3   |
| 25-29    | 2.5   | 2.3   | 2.7   | 2.5   | 1.9   | 3.3   | 2.4   | 3.0   | 1.5   |
| 30-34    | 2.8   | 3.4   | 1.9   | 2.8   | 3.5   | 2.0   | 2.7   | 3.4   | 1.8   |
| 35-39    | 3.1   | 3.9   | 2.2   | 3.0   | 3.3   | 2.7   | 3.3   | 4.9   | 1.2   |
| 40-44    | 3.7   | 4.3   | 2.9   | 3.2   | 3.6   | 2.8   | 4.6   | 5.5   | 3.3   |
| 45-49    | 4.2   | 5.2   | 2.9   | 4.2   | 5.0   | 3.3   | 4.1   | 5.5   | 2.1   |
| 50-54    | 5.9   | 6.1   | 5.7   | 5.6   | 6.0   | 5.1   | 6.4   | 6.1   | 6.8   |
| 55-59    | 7.0   | 7.8   | 6.1   | 7.1   | 7.4   | 6.6   | 6.9   | 8.4   | 5.0   |
| 60-64    | 10.3  | 10.3  | 10.2  | 10.4  | 10.4  | 10.3  | 10.1  | 10.1  | 10.1  |
| 65-69    | 9.6   | 8.6   | 10.8  | 9.9   | 9.6   | 10.3  | 8.9   | 6.9   | 11.7  |
| 70-74    | 12.2  | 11.2  | 13.3  | 12.0  | 10.5  | 13.6  | 12.5  | 12.3  | 12.7  |
| 75-79    | 8.6   | 8.5   | 8.6   | 8.7   | 8.7   | 8.6   | 8.4   | 8.2   | 8.6   |
| 80-84    | 7.9   | 7.7   | 8.1   | 7.5   | 7.3   | 7.8   | 8.5   | 8.3   | 8.8   |
| 85+      | 6.8   | 6.3   | 7.4   | 6.5   | 6.6   | 6.4   | 7.3   | 5.9   | 9.3   |
| All ages | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

### Uttar Pradesh

|          |       |       |       |       |       |       |       |       |       |
|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Below 1  | 25.6  | 25.1  | 26.2  | 26.4  | 25.9  | 27.0  | 20.9  | 20.5  | 21.4  |
| 1-4      | 8.4   | 6.8   | 10.3  | 8.6   | 7.1   | 10.3  | 7.3   | 5.0   | 9.9   |
| 0-4      | 34.0  | 31.9  | 36.4  | 35.1  | 33.1  | 37.3  | 28.2  | 25.5  | 31.4  |
| 5-9      | 3.4   | 3.0   | 3.8   | 3.4   | 3.1   | 3.9   | 2.9   | 2.5   | 3.4   |
| 10-14    | 2.1   | 1.9   | 2.5   | 2.2   | 1.9   | 2.6   | 2.0   | 1.9   | 2.0   |
| 15-19    | 2.6   | 2.3   | 3.0   | 2.6   | 2.3   | 3.0   | 2.6   | 1.9   | 3.4   |
| 20-24    | 2.3   | 2.0   | 2.6   | 2.2   | 2.0   | 2.4   | 2.7   | 2.0   | 3.7   |
| 25-29    | 2.3   | 1.9   | 2.9   | 2.4   | 2.0   | 2.9   | 1.8   | 1.4   | 2.4   |
| 30-34    | 2.2   | 2.5   | 1.9   | 2.3   | 2.6   | 2.0   | 1.7   | 1.9   | 1.4   |
| 35-39    | 2.5   | 2.7   | 2.2   | 2.4   | 2.5   | 2.3   | 2.9   | 3.9   | 1.8   |
| 40-44    | 2.0   | 2.2   | 1.8   | 1.9   | 2.2   | 1.6   | 2.6   | 2.5   | 2.7   |
| 45-49    | 2.8   | 3.0   | 2.5   | 2.8   | 2.8   | 2.8   | 2.9   | 4.5   | 1.0   |
| 50-54    | 3.7   | 3.7   | 3.7   | 3.5   | 3.1   | 4.0   | 4.7   | 6.7   | 2.3   |
| 55-59    | 4.7   | 5.3   | 4.0   | 4.6   | 5.4   | 3.7   | 5.0   | 4.7   | 5.3   |
| 60-64    | 6.3   | 6.7   | 5.9   | 6.4   | 6.7   | 6.1   | 5.8   | 6.7   | 4.8   |
| 65-69    | 7.0   | 7.7   | 6.3   | 6.8   | 7.6   | 5.9   | 8.4   | 8.5   | 8.4   |
| 70-74    | 8.2   | 8.2   | 8.3   | 8.2   | 8.0   | 8.4   | 8.4   | 8.9   | 7.7   |
| 75-79    | 4.5   | 5.5   | 3.3   | 4.2   | 5.3   | 3.0   | 5.9   | 6.4   | 5.2   |
| 80-84    | 5.2   | 5.7   | 4.7   | 5.1   | 5.8   | 4.3   | 5.8   | 5.0   | 6.8   |
| 85+      | 4.0   | 3.9   | 4.2   | 3.7   | 3.7   | 3.8   | 5.6   | 4.9   | 6.5   |
| All ages | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

### West Bengal

|          |       |       |       |       |       |       |       |       |       |
|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Below 1  | 11.4  | 10.3  | 12.7  | 13.5  | 12.7  | 14.4  | 6.0   | 4.7   | 8.0   |
| 1-4      | 3.1   | 2.7   | 3.8   | 4.0   | 3.7   | 4.4   | 1.0   | 0.3   | 1.9   |
| 0-4      | 14.5  | 13.0  | 16.5  | 17.5  | 16.4  | 18.9  | 7.0   | 5.0   | 9.9   |
| 5-9      | 2.4   | 2.3   | 2.6   | 3.1   | 3.0   | 3.2   | 0.8   | 0.7   | 1.0   |
| 10-14    | 1.1   | 0.9   | 1.3   | 1.4   | 1.1   | 1.7   | 0.4   | 0.5   | 0.2   |
| 15-19    | 1.9   | 1.5   | 2.4   | 2.2   | 1.7   | 2.8   | 1.2   | 1.0   | 1.4   |
| 20-24    | 2.2   | 1.9   | 2.6   | 2.1   | 1.7   | 2.6   | 2.4   | 2.2   | 2.7   |
| 25-29    | 3.0   | 2.7   | 3.4   | 3.0   | 2.9   | 3.1   | 3.0   | 2.2   | 4.1   |
| 30-34    | 2.0   | 1.3   | 2.8   | 1.9   | 1.2   | 2.9   | 2.1   | 1.7   | 2.7   |
| 35-39    | 2.9   | 3.1   | 2.6   | 2.7   | 2.8   | 2.6   | 3.2   | 3.7   | 2.4   |
| 40-44    | 3.4   | 3.9   | 2.8   | 3.7   | 4.4   | 2.9   | 2.7   | 2.7   | 2.7   |
| 45-49    | 3.9   | 5.2   | 2.2   | 3.5   | 4.4   | 2.2   | 4.9   | 7.0   | 2.0   |
| 50-54    | 6.0   | 6.3   | 5.6   | 5.7   | 6.1   | 5.2   | 6.7   | 6.8   | 6.6   |
| 55-59    | 6.6   | 7.4   | 5.5   | 6.3   | 6.9   | 5.5   | 7.2   | 8.5   | 5.3   |
| 60-64    | 8.0   | 9.0   | 6.6   | 7.8   | 8.8   | 6.6   | 8.5   | 9.7   | 6.8   |
| 65-69    | 8.6   | 8.9   | 8.3   | 8.0   | 7.7   | 8.3   | 10.3  | 11.5  | 8.5   |
| 70-74    | 11.8  | 12.4  | 11.2  | 11.8  | 12.6  | 10.8  | 11.9  | 11.7  | 12.1  |
| 75-79    | 8.4   | 8.6   | 8.1   | 7.6   | 8.2   | 6.8   | 10.5  | 9.7   | 11.6  |
| 80-84    | 6.6   | 6.5   | 6.8   | 5.8   | 5.3   | 6.4   | 8.6   | 9.2   | 7.8   |
| 85+      | 6.7   | 5.2   | 8.8   | 5.9   | 4.7   | 7.4   | 8.8   | 6.4   | 12.4  |
| All ages | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

**Table**  
**Birth rate, death rate and infant mortality rate by NSSO natural division, 2005**

| Bigger states   | Name of the natural division | Number of units | Estimated vital rates |            |                       |
|-----------------|------------------------------|-----------------|-----------------------|------------|-----------------------|
|                 |                              |                 | Birth rate            | Death rate | Infant mortality rate |
| Andhra Pradesh  | Inland Northern              | 58              | 20.3                  | 8.3        | 67                    |
|                 | Coastal                      | 63              | 19.7                  | 8.0        | 64                    |
|                 | Inland Southern              | 59              | 20.2                  | 7.6        | 57                    |
|                 | South Western                | 55              | 20.7                  | 6.5        | 48                    |
|                 | <b>Total</b>                 | <b>235</b>      | <b>20.1</b>           | <b>7.9</b> | <b>63</b>             |
| Assam           | Plain Western                | 44              | 27.7                  | 9.2        | 72                    |
|                 | Plain Eastern                | 46              | 25.2                  | 9.1        | 70                    |
|                 | <b>Total</b>                 | <b>90</b>       | <b>26.6</b>           | <b>9.2</b> | <b>71</b>             |
| Bihar           | Nothern                      | 104             | 31.6                  | 8.0        | 66                    |
|                 | Central                      | 96              | 30.5                  | 8.8        | 56                    |
|                 | <b>Total</b>                 | <b>200</b>      | <b>31.2</b>           | <b>8.3</b> | <b>62</b>             |
| Gujarat         | Dry Area                     | 38              | 27.5                  | 6.8        | 71                    |
|                 | Plain Northern               | 46              | 25.2                  | 8.8        | 69                    |
|                 | South Eastern                | 58              | 26.8                  | 8.8        | 65                    |
|                 | Sourashtra                   | 73              | 22.3                  | 6.5        | 39                    |
|                 | <b>Total</b>                 | <b>215</b>      | <b>25.5</b>           | <b>8.0</b> | <b>63</b>             |
| Haryana         | Eastern                      | 48              | 26.7                  | 7.0        | 62                    |
|                 | Western                      | 52              | 24.1                  | 7.0        | 67                    |
|                 | <b>Total</b>                 | <b>100</b>      | <b>25.7</b>           | <b>7.0</b> | <b>64</b>             |
| Jammu & Kashmir | Jhelam Valley                | 44              | 20.8                  | 6.2        | 59                    |
|                 | Outer Hills                  | 63              | 20.7                  | 4.9        | 51                    |
|                 | Mountainous                  | 43              | 18.0                  | 4.9        | 32                    |
|                 | <b>Total</b>                 | <b>150</b>      | <b>20.2</b>           | <b>5.7</b> | <b>53</b>             |
| Karnataka       | Inland Northern              | 50              | 25.2                  | 8.0        | 59                    |
|                 | Inland Southern              | 63              | 19.5                  | 8.1        | 51                    |

|                |                 |            |             |            |           |
|----------------|-----------------|------------|-------------|------------|-----------|
|                | Inland Eastern  | 97         | 16.5        | 8.2        | 44        |
|                | Coastal & Ghats | 120        | 16.9        | 6.4        | 30        |
|                | <b>Total</b>    | <b>330</b> | <b>22.1</b> | <b>7.9</b> | <b>54</b> |
| Kerala         | Northern        | 36         | 17.4        | 5.5        | 18        |
|                | Southern        | 114        | 13.6        | 6.9        | 13        |
|                | <b>Total</b>    | <b>150</b> | <b>15.1</b> | <b>6.3</b> | <b>15</b> |
| Madhya Pradesh | Malwa           | 41         | 30.3        | 9.1        | 88        |
|                | Vindhya         | 28         | 34.8        | 10.7       | 89        |
|                | Central         | 29         | 32.1        | 11.4       | 83        |
|                | Northern        | 36         | 32.1        | 9.9        | 81        |
|                | South           | 41         | 30.0        | 9.5        | 77        |
|                | South Western   | 45         | 29.1        | 7.3        | 47        |
|                | <b>Total</b>    | <b>220</b> | <b>31.6</b> | <b>9.8</b> | <b>80</b> |
| Maharashtra    | Inland Eastern  | 37         | 19.7        | 8.1        | 50        |
|                | Eastern         | 29         | 16.1        | 6.8        | 43        |
|                | Inland Central  | 28         | 22.0        | 6.8        | 49        |
|                | Inland Northern | 43         | 21.6        | 7.1        | 38        |
|                | Coastal         | 60         | 17.3        | 9.8        | 32        |
|                | Inland Western  | 53         | 18.8        | 6.7        | 32        |
|                | <b>Total</b>    | <b>250</b> | <b>19.6</b> | <b>7.4</b> | <b>41</b> |
| Orissa         | Southern        | 67         | 28.3        | 11.4       | 92        |
|                | Northern        | 112        | 22.2        | 9.7        | 75        |
|                | Coastal         | 111        | 20.9        | 9.0        | 70        |
|                | <b>Total</b>    | <b>290</b> | <b>23.2</b> | <b>9.9</b> | <b>78</b> |
| Punjab         | Nothern         | 85         | 18.5        | 7.6        | 46        |
|                | Southern        | 65         | 19.3        | 6.7        | 52        |
|                | <b>Total</b>    | <b>150</b> | <b>18.8</b> | <b>7.2</b> | <b>49</b> |
| Rajasthan      | Southern        | 61         | 32.6        | 9.4        | 90        |
|                | South Eastern   | 65         | 27.1        | 8.1        | 87        |
|                | Western         | 68         | 30.8        | 6.3        | 72        |
|                | North Eastern   | 56         | 29.9        | 7.1        | 69        |
|                | <b>Total</b>    | <b>250</b> | <b>30.2</b> | <b>7.2</b> | <b>75</b> |
| Tamil Nadu     | Inland          | 47         | 16.7        | 8.6        | 54        |
|                | Southern        | 71         | 16.4        | 8.6        | 52        |

|               |                  |            |             |            |           |
|---------------|------------------|------------|-------------|------------|-----------|
|               | Coastal Northern | 67         | 17.4        | 7.8        | 32        |
|               | Coastal          | 65         | 16.8        | 8.0        | 27        |
|               | <b>Total</b>     | <b>250</b> | <b>16.9</b> | <b>8.2</b> | <b>39</b> |
| Uttar Pradesh | Central          | 80         | 28.3        | 9.6        | 77        |
|               | Eastern          | 100        | 31.6        | 9.0        | 77        |
|               | Western          | 95         | 32.4        | 9.1        | 77        |
|               | Southern         | 75         | 27.5        | 8.9        | 71        |
|               | <b>Total</b>     | <b>350</b> | <b>31.3</b> | <b>9.1</b> | <b>77</b> |
| West Bengal   | Himalayan        | 77         | 21.5        | 7.0        | 54        |
|               | Eastern Plains   | 60         | 22.9        | 6.5        | 46        |
|               | Western Plains   | 76         | 21.0        | 6.6        | 40        |
|               | Central Plains   | 97         | 19.8        | 5.7        | 32        |
|               | <b>Total</b>     | <b>310</b> | <b>21.2</b> | <b>6.3</b> | <b>40</b> |

**Birth rate, death rate and infant mortality rates for  
Metro cities Chennai, Delhi, Kolkata and Mumbai, 2005**

|         | <u>Birth rate</u> | <u>Death rate</u> | <u>Infant mortality rate</u> |
|---------|-------------------|-------------------|------------------------------|
| Chennai | 16.8              | 5.3               | 17                           |
| Delhi   | 18.5              | 4.5               | 34                           |
| Kolkata | 10.3              | 7.4               | 20                           |
| Mumbai  | 16.4              | 6.3               | 20                           |















INTERNATIONAL FORM OF MEDICAL CERTIFICATE OF DEATH

| Cause of death                                                                                                                                                     |                                                    | Approximate<br>Interval between<br>onset and death |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|----------------------------------------------------|
| <p><b>I</b><br/>Disease or condition directly<br/>leading to death *)</p>                                                                                          | <p>a).....<br/>due to (or as a consequence of)</p> | <p>.....</p>                                       |
| <p><b>Antecedent causes</b><br/>Morbid conditions, if any,<br/>giving rise to the above cause,<br/>stating the underlying<br/>condition last</p>                   | <p>b).....<br/>due to (or as a consequence of)</p> | <p>.....</p>                                       |
|                                                                                                                                                                    | <p>c).....<br/>due to (or as a consequence of)</p> | <p>.....</p>                                       |
|                                                                                                                                                                    | <p>d).....</p>                                     | <p>.....</p>                                       |
| <p><b>II</b><br/>Other significant conditions<br/>contributing to the death, but<br/>not related to the disease or<br/>conditions causing it</p>                   |                                                    | <p>.....</p>                                       |
|                                                                                                                                                                    |                                                    | <p>.....</p>                                       |
| <p><i>*This does not mean the mode of dying, e.g. heart failure, respiratory failure.<br/>It means the disease, injury, or complication that caused death.</i></p> |                                                    |                                                    |