International Journal of Homoeopathic Sciences

Dr. Minakshi Das
PGT, Department of Homoeopathic Materia Medica, RBTS. Govt. Homoeopathic Medical College and Hospital, Muzaffarpur, Bihar, India

An overview of vital statistics

Dr. Minakshi Das

Abstract
Vital statistics provide essential demographic and health information about populations, enabling researchers, policymakers, and healthcare professionals to understand and address various societal challenges. This paper presents an overview of vital statistics, highlighting their significance, sources, and key indicators. The concept of vital statistics emphasizes their role in capturing vital events, including births, deaths, marriages, divorces, and fetal deaths. These statistics serve as fundamental building blocks for population estimation, demographic analysis, and the formulation of evidence-based policies. The sources of vital statistics have been investigated focusing on civil registration systems, which are the primary mechanism for collecting and recording vital events in many countries. Additionally, the increasing use of electronic health records and other administrative databases is discussed, as they contribute to more comprehensive and timely vital statistics. The interpretation and utilization of these indicators for assessing public health status, monitoring trends, and identifying disparities are also addressed. This paper underscores the pivotal role of vital statistics in understanding population dynamics, monitoring health outcomes, and informing evidence-based decision-making. It also emphasizes the need for robust data collection systems, data quality assurance mechanisms, and international cooperation to harness the full potential of vital statistics for public health and social development.

Keywords: Vital statistics, cause of deaths, health information systems, civil registration systems, sustainable development goals

Introduction
The term "Statistics" originates from the Latin word "Status," which refers to "state or condition". On the other hand, the word "Vital" is derived from the Latin word "Vitalis," which signifies "of or pertaining to life"
The significance of gathering data and evidence related to public health has been acknowledged by the vital statistics system. Vital statistics typically encompass statistical records pertaining to various events such as marriages, births, illnesses, divorces, and deaths. These records enable researchers to analyze the development and well-being of a community. Vital statistics originate as individual vital events that occur within specific geographic areas and are subsequently registered for documentation. Civil registration, which is an administrative system used by governments to record important events that happened in the communities, is the most popular method of gathering information. Vital statistics produced through civil registration systems are the single source of data for the ongoing and comprehensive monitoring of public health programs. An increase in the demand for more and better statistics, which are necessary to track performance and ensure data accountability, has coincided with increases in international funding for health. The Millennium Development Goals, which serve as an example of how to track development, are generating pressure for timely and accurate data for reporting on a country's progress (Boerma *et al.* 2007) [9]. This rapid demand has revealed significant gaps in the supply of reliable health statistics for developing nations but also provides opportunities to investigate accurate data for health statistics.

Objectives
1. The aim of this study is to highlight the purpose of vital statistics, sources, importance of vital statistics in India.
2. The need of vital statistics for enrich the quality of life for the development of country.
3. Method of collecting the Birth & death certificate.

Corresponding Author:
Dr. Minakshi Das
PGT, Department of Homoeopathic Materia Medica, RBTS. Govt. Homoeopathic Medical College and Hospital, Muzaffarpur, Bihar, India

Vital Statistics: Overview

The technical components of civil registration and vital statistics systems can be configured in various ways, and responsibilities for maintaining the system are country specified. According to the United Nations, a vital statistics system is the overall process of (a) collecting data via civil registration on the occurrence or frequency of specified events, as well as any relevant details regarding the occurrences themselves, and (b) assembling, processing, analyzing, assessing, summarizing, displaying, and sharing this information in statistical form. A good statistical system should be adequate, trustworthy, and unbiased in providing information to its users.
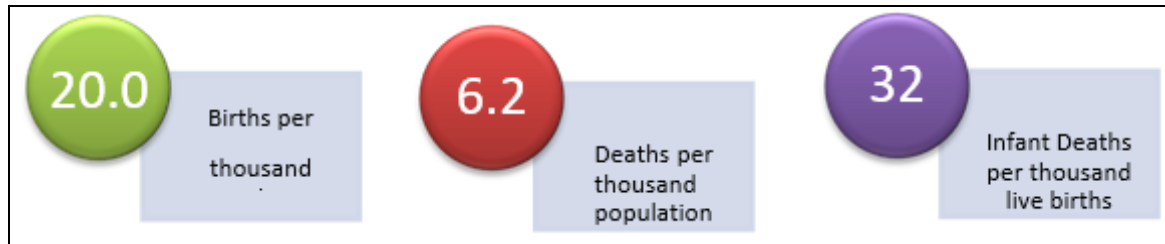

Fig 1: Vital statistics in India at a glance 2018

History of vital statistics in India

1. **In 1939:** The mandatory registration of essential events was recommended by the central advisory council for health.
2. **In 1946:** Bhore committee was constituted
3. **In 1948:** Health ministers appointed a vital statistics committee. The **Census of India Act** passed
4. **In 1951:** Office of the Registrar General of India was created
5. **In 1951:** First census was conducted in Independent India (In 1872, the First census was conducted by the British Government in India).
6. **In 1960:** Vital statistics department transferred in the office of the Registrar General of India
7. **In 1961:** Sample registration system was launched
8. **In 1969:** Registration of Birth & Deaths Act was passed.
9. **In 2005:** National Commission of the population held on 23rd July.
10. **In 2011:** Last census in India.

Objectives of vital statistics

1. To provide reliable, adequate, relevant, up-to-date, timely, reasonably complete information/data for health managers.
2. To provide, at periodic intervals, data that will demonstrate the general performance of the health services.
3. To assess the effectiveness of different National health programs.
4. To describe the hereditary nature of the disease.
5. To compare the health status of an individual in one nation to other.
6. It serves as the primary tool in research activities.
7. To plan and assess social and economic development.

Purpose of vital statistics

Vital statistics play a crucial role in enhancing the quality of life and fostering the development of a country. Here are some reasons why vital statistics are needed for this purpose:

1. **Policy Development:** Vital statistics provide essential data that policymakers use to develop evidence-based policies and programs aimed at improving public health and well-being. By understanding trends in areas such as births, deaths, and diseases, governments can allocate resources effectively and implement targeted interventions.
2. **Health Planning:** Vital statistics enable health planners to identify health challenges, assess the impact of diseases, and determine healthcare needs. This information helps in the formulation of strategies for disease prevention, health promotion, and the allocation of healthcare resources.
3. **Monitoring and Evaluation:** Vital statistics serve as a means of monitoring and evaluating the effectiveness of public health initiatives. By tracking changes in vital events over time, governments can assess the impact of interventions, identify areas that require improvement, and adjust policies accordingly.
4. **Resource Allocation:** Vital statistics aid in the equitable allocation of resources across different regions and population groups. They provide insights into disparities in health outcomes, enabling governments to address inequalities and ensure that resources are distributed where they are most needed.
5. **Research and Evidence Generation:** Vital statistics serve as a valuable source of data for researchers and academics. These statistics enable studies on population health, disease patterns, risk factors, and social determinants of health. Such research helps generate evidence for informed decision-making and drives advancements in public health knowledge.

In summary, vital statistics are indispensable for enriching the quality of life and supporting the development of a country. They inform policy development, facilitate health planning, enable monitoring and evaluation, aid in resource allocation, and contribute to research and evidence generation in the field of public health.

Sources of vital statistics in India

In India, vital statistics are collected from various sources to gather information on births, deaths, marriages, and other important events. Here are the key sources of vital statistics in India:

1. **Civil Registration System (CRS):** The Civil Registration System is the primary source of vital statistics in India. It involves the registration of births and deaths under the Registration of Births and Deaths Act, 1969. The system operates through the offices of the Registrar of Births and Deaths located in various

states and districts across the country.
2. **Census:** The decennial population census conducted by the Registrar General and Census Commissioner of India also serves as a significant source of vital statistics. The census collects data on population, births, deaths, and other demographic information through a comprehensive enumeration of households.
3. **Sample Registration System (SRS):** The Sample Registration System, conducted by the Registrar General of India, is a continuous demographic survey that provides vital statistics on births, deaths, and infant mortality. The SRS collects data from a representative sample of households across the country and is considered reliable for estimating demographic indicators.
4. **National Family Health Survey (NFHS):** The NFHS, conducted by the Ministry of Health and Family Welfare, collects information on various health indicators, including fertility, maternal and child health, and family planning. The survey provides valuable vital statistics related to reproductive health and

demographic trends.
5. **Health Management Information System (HMIS):** The HMIS, implemented by the Ministry of Health and Family Welfare, collects data on various health-related indicators, including births, deaths, and diseases. It involves reporting from healthcare facilities, both public and private, and serves as a source of vital statistics at the local and regional levels.
6. **Other Surveys and Studies:** Various other surveys and studies conducted by research organizations, academic institutions, and international agencies contribute to the pool of vital statistics in India. These include studies on specific health conditions, population dynamics, and social determinants of health.

It's important to note that the availability and reliability of vital statistics may vary across different sources and regions in India. Efforts are continually made to improve data collection systems and ensure the accuracy and completeness of vital statistics in the country.
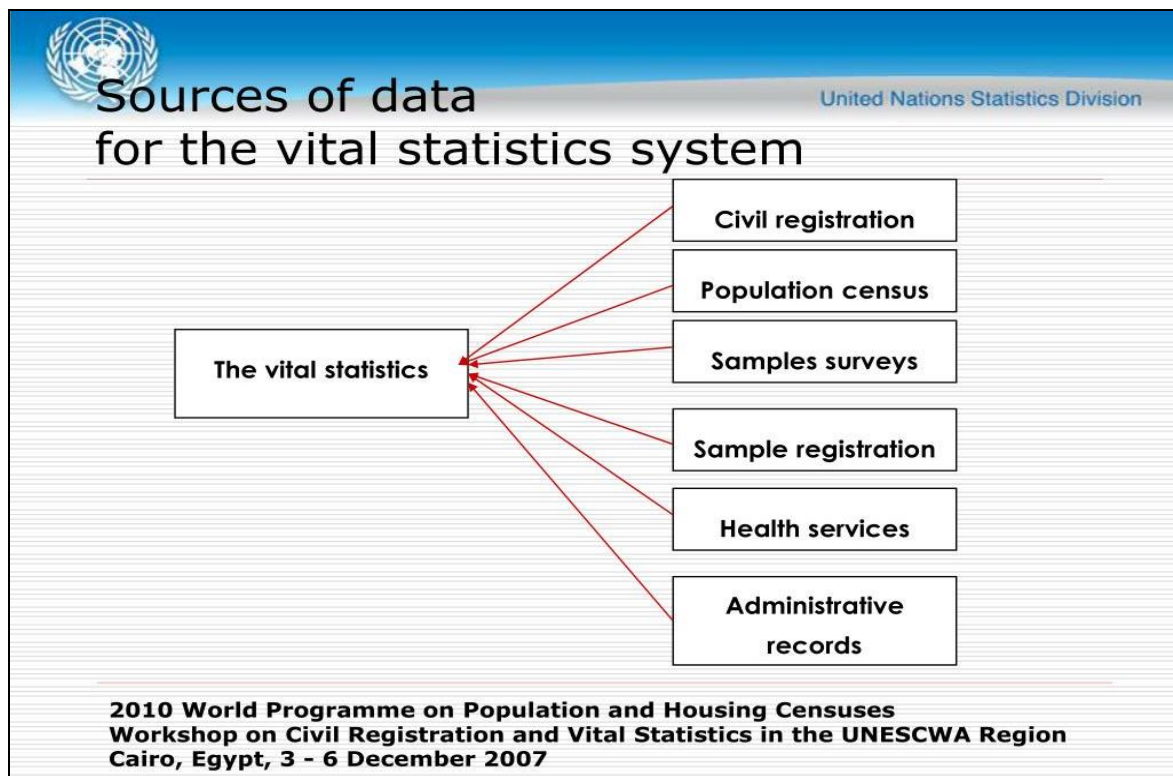

Fig 2: Sources to collect vital statistics

Vital statistics
Main Vital statistics in India are:
1. **Birth:** In 2018, Bihar has the highest birth rate (26.2), and Andaman & Nicobar Islands has the lowest birth rate (11.2).
2. **Death:** In 2018, Delhi scored the lowest death rate at 3.3, while Chhattisgarh had the highest death rate at 8.0.

Other vital statistics are:
1. **Migration:** In 2011, census report, 45.58 core Indians were found migrants.
2. **Fetal death**: Death of fetus prior to the complete expulsion or extraction from its Mother.

3. **Marriage:** In 2011, census report, 49.9% women are married & 43.6% male are married. Age of marriage in females 18.3 to 19.3 years (2001 to 2011), whereas in males it increase 22.6 to 23.3 years (2001 to 2011).
4. **Divorce:** In 2011, census report, divorced women, 68% are Hindu, 23.3% are Muslim. Total of 8.5 Lakh are divorced person. Maharashtra has most divorced women & in Gujarat has most divorced man. In Goa, has lowest rate of divorced.
5. **Life expectancy:** In 2011-15, Life expectancy at birth has been 66.9 years & 70.0 years for males and females respectively.
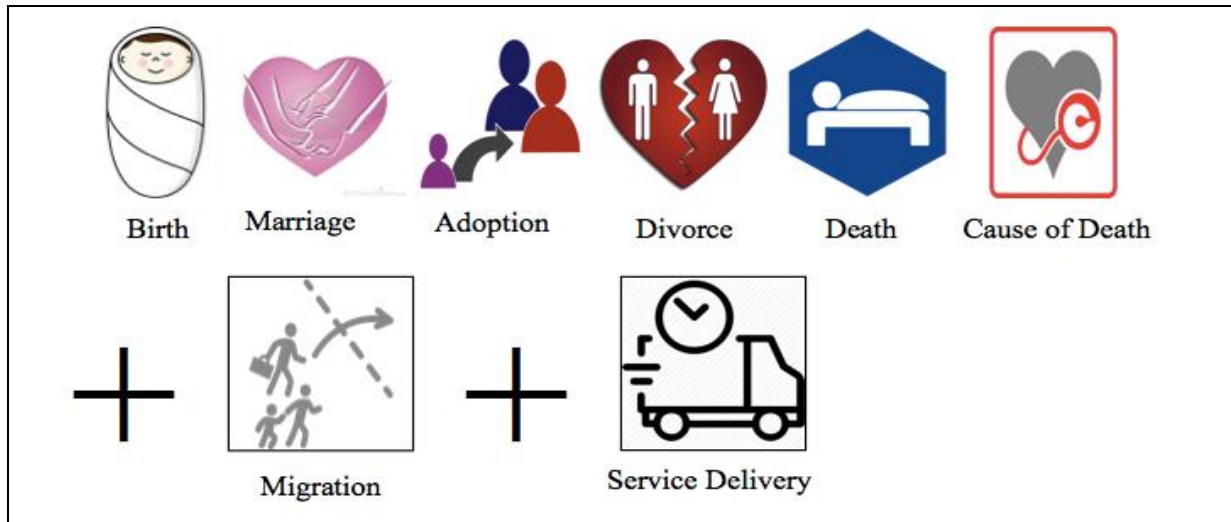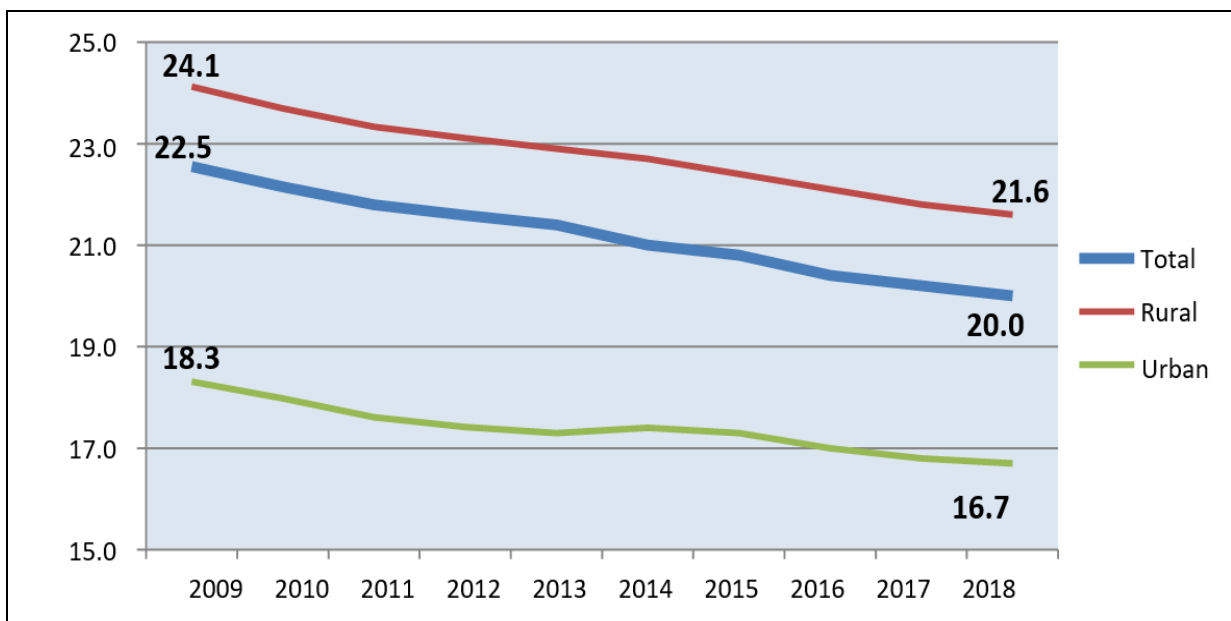
Fig 3: Vital statistics
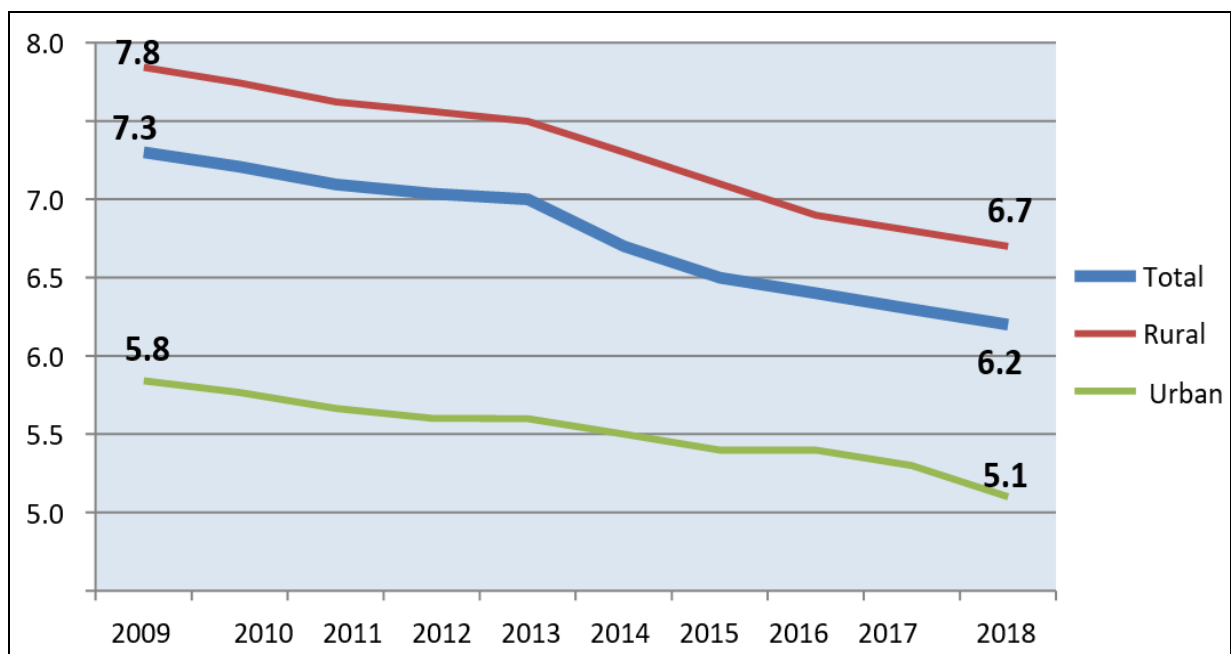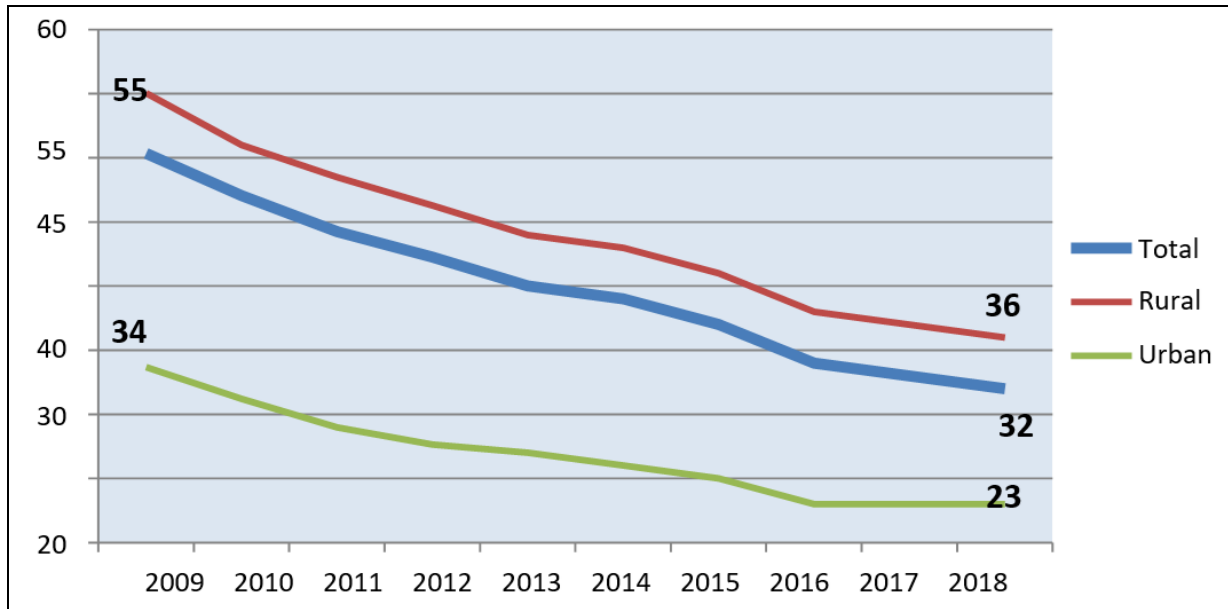

Fig 4: Birth Rate, 2009-2018

Fig 5: Death Rate, 2009-2018

Fig 6: Infant Mortality Rate, 2019-2018

Important vital Statistics

Important vital statistics include various demographic indicators that provide insights into the population's health, well-being, and development. Here are some of the key vital statistics:

1. **Birth Rate:** The birth rate represents the number of live births per 1,000 individuals in a population within a specific time period. It is an essential indicator of population growth and fertility levels.
2. **Death Rate:** The death rate indicates the number of deaths per 1,000 individuals in a population within a given time frame. It reflects the overall mortality or survival rates within a population.
3. **Infant Mortality Rate (IMR):** The infant mortality rate measures the number of deaths of infants under one year of age per 1,000 live births in a given year. It is a critical indicator of the health and well-being of newborns and the effectiveness of healthcare systems.
4. **Maternal Mortality Ratio (MMR):** The maternal mortality ratio represents the number of maternal deaths per 100,000 live births during pregnancy, childbirth, or within 42 days postpartum. It is a vital statistic that reflects the quality of maternal healthcare and the risks faced by women during pregnancy and childbirth.
5. **Life Expectancy:** Life expectancy is the average number of years a person is expected to live from birth. It provides an overall measure of population health and longevity and is influenced by factors such as healthcare, lifestyle, and socioeconomic conditions.
6. **Total Fertility Rate (TFR):** The total fertility rate represents the average number of children a woman is expected to have during her reproductive years. It is an important indicator of population growth and can provide insights into demographic trends and family planning needs.
7. **Age-Specific Fertility Rate (ASFR):** The age-specific fertility rate refers to the number of births per 1,000 women in specific age groups. It helps in analyzing fertility patterns across different age cohorts and understanding variations in childbearing behavior.
8. **Marriage Rate:** The marriage rate indicates the number of marriages per 1,000 individuals in a

population within a specific time period. It provides insights into marriage trends, social norms, and family structures.
9. **Divorce Rate:** The divorce rate represents the number of divorces per 1,000 married individuals in a population within a given time frame. It reflects marital dissolution patterns and can provide insights into social and cultural factors affecting marriages.

These vital statistics, among others, are crucial for policymakers, researchers, and public health officials to assess the demographic, health, and social conditions of a population. They inform decision-making, aid in resource allocation, and facilitate the development of targeted interventions to improve the overall well-being of communities.

Demographic features of India as per the Civil Registration System (CRS)		
	2015	**2016**
Registration of Births		
Estimated Mid-Year Population (in '000)	12,59,108	12,73,986
Estimated Live Births	2,61,89,446	2,59,89,314
Number of Registered Births#	2,31,36,145	2,22,00,991
Level of Registration	88.3	86.0
Registration of Deaths		
Estimated Deaths	81,84,202	81,53,510
Number of Registered Deaths#	62,67,685	63,49,259
Level of Registration	76.6	78.1
Registration of Infant Deaths		
Number of Registered Infant Deaths	1,82,988	1,45,767
Percentage of infant death to total deaths	2.9	2.3
Gross Natural Addition to Population		
Person	1,68,68,460	1,58,51,732
Sex Ratio at Birth		
Number of Registered Male Births	1,16,24,918	1,11,53,903
Number of Registered Female Births	1,02,40,904	97,77,121
Sex Ratio at Birth	881	877

Note: In India 2009, TFR is 2.6, Bihar reported the highest 3.9, whereas Kerala & TN the lowest 1.7

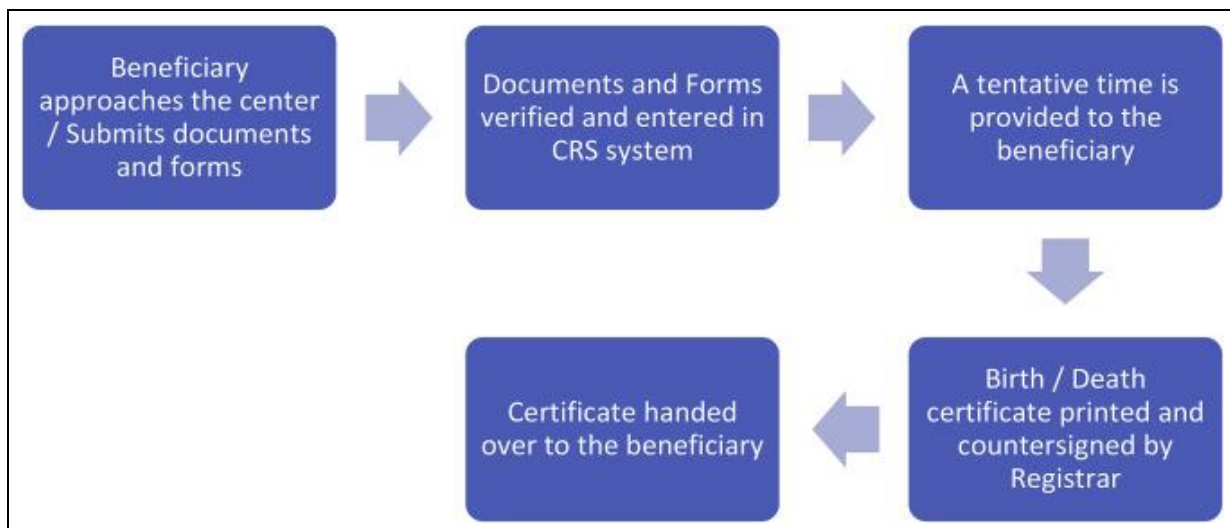**Fig 7:** Civil Registration System of India, at a glance

Method of collection
1. Census.
2. Registration.
3. Adhoc survey.
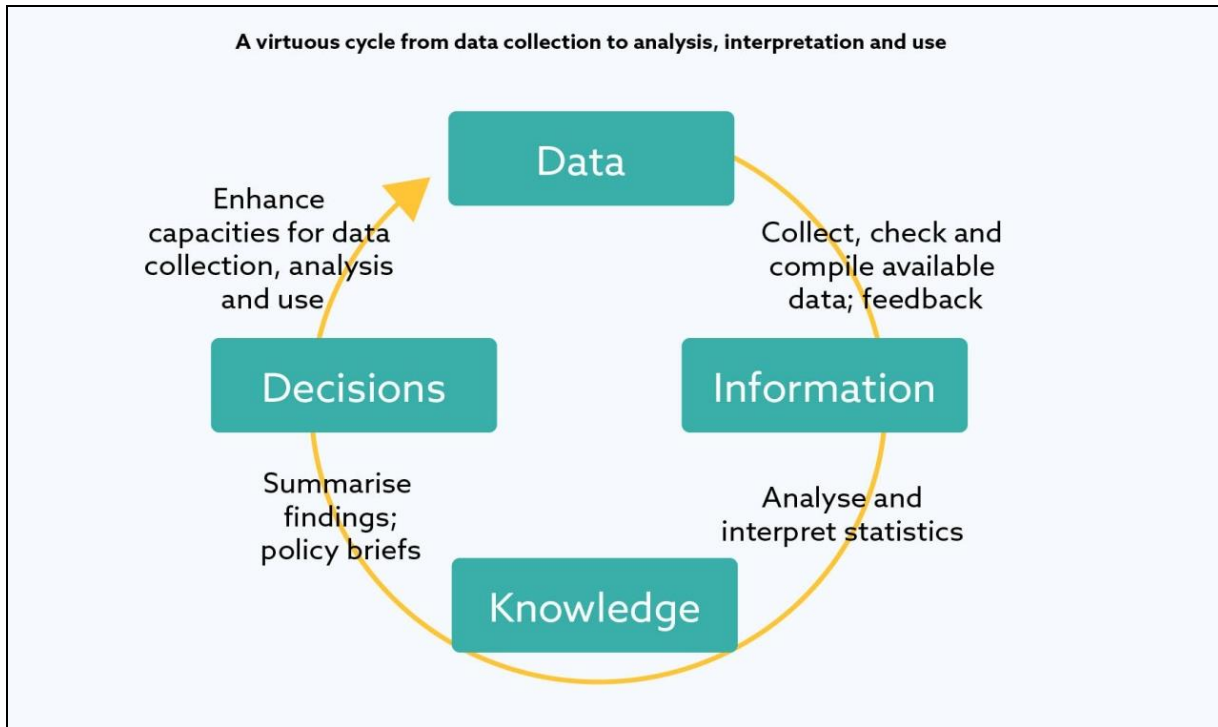
Fig 8: Method of Data collection

Process of Birth/Death certificate Issue

Fig 9: Process of Birth/Death certificate issue in India

Why counting birth & death registration is important?
Counting birth and death registrations is important for several reasons:
1. **Public Health Planning:** Accurate and comprehensive birth and death registration data is crucial for public health planning. It helps in identifying health trends, patterns of diseases, and mortality rates. This information enables authorities to allocate resources effectively, develop appropriate healthcare policies, and implement targeted interventions to improve public health outcomes.
2. **Monitoring Population Dynamics:** Birth and death registration data provide insights into population dynamics, such as population growth rates, fertility rates, and age-specific mortality patterns. These statistics are essential for understanding demographic changes, projecting future population trends, and making informed decisions related to social and economic development.
3. **Policy Formulation:** Birth and death registration data play a key role in formulating evidence-based policies in various sectors. They inform policymaking related to education, healthcare, social welfare, and family planning. Governments and organizations rely on accurate birth and death data to develop strategies that address the needs of specific age groups, improve

maternal and child health, and promote overall well-being.

4. **Legal and Administrative Purposes:** Birth and death registration data serve important legal and administrative purposes. Birth registration establishes legal identity, citizenship, and entitlements for individuals. Death registration is essential for legal processes, including inheritance, property rights, and settling insurance claims. Accurate and timely registration of births and deaths ensures that individuals have access to their rights and benefits as per the law.

5. **Vital Statistics and Research:** Birth and death registration data contribute to the generation of vital statistics, which are valuable for research purposes. Researchers use this data to study trends, analyze health outcomes, and conduct studies on various topics, such as disease patterns, life expectancy, and social determinants of health. Vital statistics derived from birth and death registration data form the basis for evidence-based research and policy recommendations.

6. **International Comparisons:** Counting birth and death registrations allows for meaningful international comparisons. It enables countries to assess their demographic indicators, health outcomes, and social development in relation to global standards. Accurate registration data also supports international efforts in monitoring progress towards achieving sustainable development goals (SDGs) related to health, education, and well-being.

In summary, counting birth and death registrations is important for public health planning, monitoring population dynamics, informing policy formulation, fulfilling legal and administrative requirements, facilitating research, and enabling international comparisons. It ensures accurate data collection, which is essential for evidence-based decision-making and the development of effective interventions to improve the overall well-being of individuals and communities.

Overview of vital statistics procedure
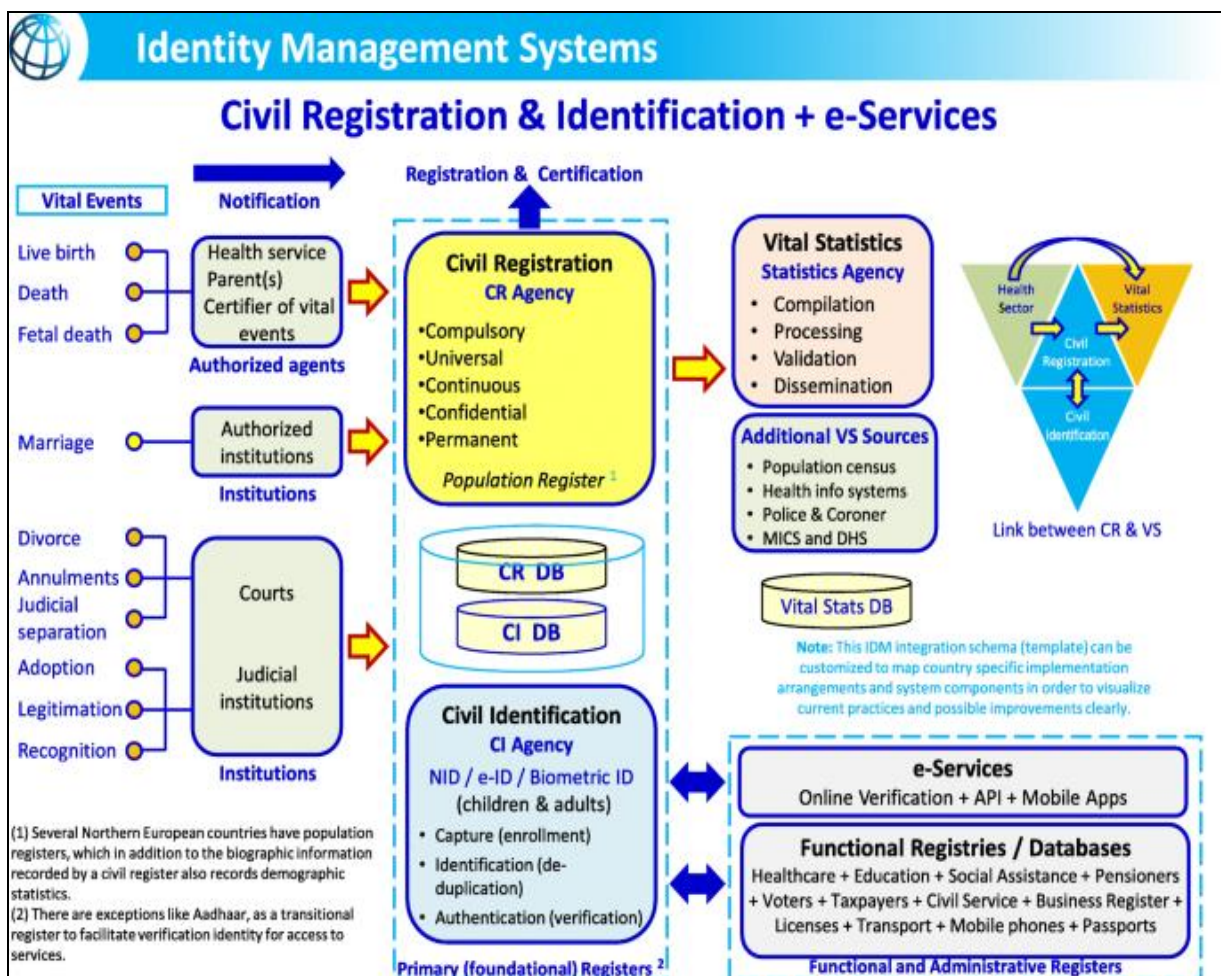
Fig 10: Vital statistics registration process

How vital statistics improve the quality of life?
Vital statistics is a vital process to improve the quality of life with development of any country. The main aim of this, to provide a better life with reduce the mortality & morbidity rate. The every citizen of the country is benefited by it. Government use this to record data & it have huge role to make a healthy country.

1. Determination of health status of an individual or community, health problem, health needs.
2. Making different health programme to improve quality of life.
3. For research purpose, to determine new disease or health problem.
4. To determine the communicable or no communicable

disease.

5. To know the mental health, occupational health, genetic status, financial condition of an individual.

Conclusions

Vital statistics the key of development of any country. Census & sample survey are the important source of it. The method of collection should be done in an appropriate way, data must be high enough quality to have utility & be used for policy purpose. Each & every individual data should be monitored & recorded. The Government should be take more steps for quality of data collection.

Conflict of Interest

Not available

Financial Support

Not available

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