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POPULATION STUDIES

COURSE CODE: SGB24SO503ME

Bachelor of Arts in Sociology (Honours)

Major Discipline Specific Elective

Self Learning Material



SREENARAYANAGURU
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The State University for Education, Training and Research in Blended Format, Kerala

SREENARAYANAGURU OPEN UNIVERSITY

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Population Studies

Course Code: SGB24SO503ME

Semester- V

**Major Discipline Specific Elective Course
Four Year Undergraduate Programme
Bachelor of Arts in Sociology (Honours)
Self Learning Material
(with Model Question Paper Sets)**



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BA Sociology (Honours)

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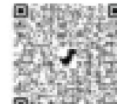
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MESSAGE FROM VICE CHANCELLOR

Dear learner,

It is with great pleasure that I welcome you to the Four Year UG Sociology Programme offered by Sreenarayanaguru Open University.

Established in September 2020, our university aims to provide high-quality higher education through open and distance learning. Our guiding principle, 'access and quality define equity', shapes our approach to education. We are committed to maintaining the highest standards in our academic offerings.

Our university proudly bears the name of Sreenarayanaguru, a prominent Renaissance thinker of modern India. His philosophy of social reform and educational empowerment serves as a constant reminder of our dedication to excellence in all our academic pursuits.

The Four Year UG Sociology Programme covers all relevant areas aligned with sociological theory and research. We have incorporated the latest trends in social studies to ensure a comprehensive and up-to-date curriculum. Moreover, the programme encompasses flexible options for learners to choose from a range of Ability Enhancement Courses, Multi-disciplinary Courses, Value Added Courses, and Skill Enhancement Courses, complemented by discipline-oriented Advanced and Additional Advanced Courses.

Our teaching methodology combines three key elements: Self Learning Material, Classroom Counselling, and Virtual modes. This blended approach aims to provide a rich and engaging learning experience, over-coming the limitations often associated with distance education. We are confident that this programme will enhance your understanding of sociological theories and perspectives, preparing you for various career paths and further academic pursuits.

Our learner support services are always available to address any concerns you may have during your time with us. We encourage you to reach out with any questions or feedback regarding the programme.

We wish you success in your academic journey with Sreenarayanaguru Open University.



Regards,
Dr. Jagathy Raj V. P.

01-07-2026

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BLOCK

Fundamentals of Population Studies



UNIT

Introduction to Population Studies: Scope and Interdisciplinary Relations

Learning Outcomes

On completion of this unit, the learner will be able to:

- ◆ comprehend the various concepts in Demography and Population Studies
- ◆ distinguish and compare between Population Studies and Demography
- ◆ analyse the relation of Population Studies with other disciplines

Prerequisite

Population growth patterns are shaped by uneven rates of development across regions and social groups within a country. While some areas may experience rapid expansion, others may witness slower growth or even decline. This uneven development leads to significant disparities in population growth based on geography and social class. Consequently, governments are concerned not only with the overall rate of population growth but also with its size, distribution, and composition. As a student of Sociology, it is essential to understand the structure of populations in different contexts, along with the key concepts and scope associated with population studies. This unit focuses on the concept, characteristics, and applications of Demography and Population Studies. It also examines the relationship between these two fields and their connections with other academic disciplines. The discussion will cover the core elements of Demography, the scope of Population Studies, and their interdisciplinary linkages.

Keywords

Demography, Population studies, Interdisciplinary, Enumeration, Transition

Discussion

1.1.1 Demography Definition

Where do you call home? How do you behave? What is your income? Excuse the intrusive questions, but gathering demographic data from inquiries like these might help you better understand your community's strengths and weaknesses.

You can better grasp a society's background and characteristics by using demographic data, such as age, race, ethnicity, income, employment situation, marital status, etc. In reality, Demography began to develop when people started building civilized societies. Over time, every community and nation understood the importance of keeping accurate statistics on the human population to ensure efficient administration and address various social and economic issues related to population development. Different nations began tracking important events at various times and for different reasons. As a result, Demography has recently taken on far greater significance.

- ◆ The study of population, particularly its size, density, and dispersion, is known as Demography.
- ◆ When calculating the composition of the human population, we often consider income, birth, and death statistics.
- ◆ Demography essentially examines a culture based on factors like education, nationality, religion, and ethnicity.

- ◆ Demographers can make decisions about the population by taking Demography into account.

John Graunt (1620–1674) is credited with starting modern demographic studies. His famous work, *Natural and Political Observations upon the Bills of Mortality*, published in 1662, made him the acknowledged founder of demographic studies. In this book, he analyzed births, deaths, migrations, family growth, and other issues in specific areas. He also examined the reasons for deaths and the population's readiness for military service. He suggested categorizing people by sex, religion, age, occupation, and social status.

According to John Graunt, migration, death, and reproduction are interconnected processes based on certain assumptions. He noted that, in most communities, the number of male births was higher than female births, and that mortality rates were higher in cities than in rural areas, especially early in life. He also used sample surveys to gather data when records were unavailable. He is praised for creating life tables and is recognized as the founder of Demography for his contributions.

The term 'Demography' was first used by Achille Guillard in 1855. It comes from the Greek words "demos" (population) and "graphy" (describe). Demography is the study and description of populations, focusing on their number, composition, age structure, and geographic distribution. Demographers study how populations grow, change, and reproduce over time, tracking



density, and distribution, whereas Population Studies focus on groups with similar characteristics, such as age, sex, or health status.

- ◆ **Subset vs. Entire Population:** Population Studies concentrate on specific subsets of the population, while Demography examines the entire population.

- ◆ **Focus Areas:** Population Studies explore the connections between social, economic, cultural, and biological forces affecting a population. In contrast, Demography, especially formal Demography, emphasizes measuring population processes.

How Important are Demographics?

Demographics are crucial because they transform a population into measurable data, which can significantly impact services, organizations, and communities.

- ◆ **Average Age Measurement:** The average age of a locality can be measured and compared.

- ◆ **Poverty Assessment:** The percentage of needy families in a community can be calculated.

- ◆ **Service Improvement:** When a population is measurable, improvements can be made to services, organizations, or communities.

- ◆ **Government Use:** Governments can use demographic data to evaluate the need for a community center or apply for funding for new projects.

◆ **Educational Insight:** Demographics can help educators better understand their students' needs.



The Role of Demographics in Society

Demographic characteristics allow scientists to organize data meaningfully and better understand population dynamics. Understanding a population's structure and fundamental challenges is essential for addressing societal needs.

- ◆ This knowledge enables better resource allocation, adjustment of government programs, and more effective service delivery.
- ◆ In managerial roles, it allows for learning new things more effectively and adapting strategies to better serve community needs.

1.1.2 Population Studies

Demography and Population Studies are common terms for the study of the human population. While Demography has already been covered, this section will focus on population studies, including its scope and subject matter.

Demography is derived from the Greek words “demos,” meaning population, and “graphy,” meaning to describe or depict. Over time, demographers have expanded this concept, defining it as both the science of population (population science) and the study of population (population studies). As a result, the terms “Demography” and “Population Studies” are often used interchangeably by some and distinctly by others, leading to confusion.

- ◆ Population Studies is the scientific study of human populations.
- ◆ Key areas of study include population dynamics, fertility and family dynamics, health, aging, mortality, human capital, and labor markets.
- ◆ Demographic studies require a thorough understanding of

the population's size, growth, distribution, and composition.

Population Studies cover four basic topics: size, composition, growth, and distribution.

1. Size

The “size” refers to the total population of a region. Studies focus on questions like how many people belong to a specific demographic group, how the group's size changes, and what factors influence these changes. The population size correlates with the stability or strength of a locality.

2. Composition

“Composition” refers to the division of the population into groups based on characteristics such as age, sex, and marital status. It encompasses all quantifiable traits of individuals in a group. Differences in composition between groups can be analysed to understand national life. Age and sex are the most commonly used factors in population studies. The sex ratio, defined in India as the number of females per thousand males, is a typical method for examining population composition.

3. Distribution

Population Distribution Studies address how people are spread across a region and the nature of changes in this distribution. Distribution can occur in three fundamental ways:

- ◆ **Uniform distribution:**
Individuals are evenly spaced.
- ◆ **Random distribution:**
Individuals are distributed without a discernible pattern.
- ◆ **Clustered distribution:**
Individuals are grouped in clusters.

Demographers analyse population distribution patterns at local, regional, national, and international scales.



4. Growth

Since 1950, the world's population has grown unprecedentedly due to two main trends:

- ◆ Increased average lifespan due to improvements in nutrition, hygiene, public health, and medicine.
- ◆ High levels of population growth rates.

There are strong connections between population size, growth, composition, and distribution. Population growth cannot continue indefinitely in a specific area. The size of the population influences the pace of population growth, which in turn is affected by the population's composition.

Population Pyramids

Population pyramids are used to study a nation's age-sex distribution. The general shape of the pyramid can indicate the potential for future population expansion. Population pyramids are commonly used to represent different rates of population growth, with four typical types of age-sex structures:

1. **Rapid Growth:** A broad base and narrow top, indicating a high birth rate and low life expectancy.
2. **Medium Growth:** A more balanced shape, with a moderately wide base and a gradually narrowing top, reflecting moderate birth and death rates.
3. **Zero Growth:** A relatively uniform shape, suggesting that birth and death rates are balanced, resulting in stable population growth.
4. **Negative Growth:** A narrow base and wider top, showing a decline in population due to low

birth rates and higher mortality or emigration.

Population Density

The term "population density" refers to the number of people residing in a specific area. It is measured in terms of people per square kilometer. To better understand this concept, you can refer to the Census data of 2011.

Activity

Refer to the Indian Census 2011, select an year and conduct a comparative population study across different states, particularly Kerala, Maharashtra, Uttar Pradesh, the National Capital Region (New Delhi), and Sikkim.

1.1.2.1 Subject Matter and Scope of Population Studies

Population studies cover a broad range of topics and provide learners with essential knowledge and insights into various population-related issues both within their country and globally. Through population research, learners gain:

- ◆ A better understanding of current population issues in their own country and around the world.
- ◆ Awareness of the connections between global and local population situations.
- ◆ The ability to make informed, logical decisions regarding family size and local population issues, as well as the state's policies.
- ◆ The knowledge, skills, attitudes, and values needed to assess the effects of population changes on future generations, the well-being

of communities, societies, countries, and the world.

- ◆ Insights into both quantitative and qualitative aspects of population dynamics.

Given the interdisciplinary nature of population studies, it is essential to consider the causes and impacts of social and population phenomena when comparing, contrasting, or explaining them. An interdisciplinary approach is required to analyse populations, incorporating knowledge from various fields, such as:

- ◆ Biology
- ◆ Genetics
- ◆ Mathematics
- ◆ Statistics
- ◆ Economics
- ◆ Sociology
- ◆ Cultural Anthropology
- ◆ Psychology
- ◆ Public Health
- ◆ Politics
- ◆ Geography
- ◆ Ecology

Additionally, the study of fertility, mortality, migration, and social mobility-factors affecting population size, distribution, structure, and characteristics is a key component of population studies.

1.1.3 Relation of Population Studies with other Disciplines

Explaining differences in birth rates cannot be viewed as isolated occurrences. Instead, it is necessary to explore the broader political, social, rural, psychological, and economic contexts in which these differences

occur. Most population trends, including birth and death rates, can be understood through socioeconomic factors.

Although it is possible to discuss the general interactions between population studies and the social and behavioral sciences as a whole, it is more insightful to study each of these disciplines independently to better comprehend their interactions. The distinction between Demography and population studies has been clarified in the previous discussion. We will now explore how population studies interact with other fields.

1.1.3.1 Interdisciplinary Nature of Population Studies

It is logical to conclude that each field of study is closely related to others. No social science can remain confined within rigid boundaries for long, and thus, all these fields tend to overlap. This interdisciplinary approach is what makes social science valuable and effective.

Population Studies, like other scientific fields, relies heavily on insights from various disciplines. Similarly, other fields of science are intertwined with Demography. Below are some fields of knowledge that are examined for the convenience of study, showing how population studies are connected to the study of related subjects and associated facts.

1.1.3.2 Sociology and Population Studies

You already have a clear understanding of what Sociology is and its importance, based on the readings from our course. In this section, we will explore the connection and distinction between Sociology and Population Studies.

According to Sociology, humans are social animals. Similarly, the general public recognizes human beings as part of a group



or social unit in which a person is born, raised, and eventually dies. However, the group, or population, continues to exist.

Sociology is the study of society, which consists of people, while Population Studies focus on groups of social beings. The link between birth and mortality rates determines population growth.

The relationship between Sociology and Population Studies lies in the fact that all issues related to population studies are, in essence, social issues. For instance, birth rates, which are closely tied to marriage, are studied in Population Studies, while sociologists are also deeply interested in examining the institution of marriage.

Key Population Traits of Interest to Sociologists

1. Population size
2. Population distribution

Other significant factors include the connections between population changes and various socio-economic and cultural factors, such as illiteracy, poverty, health, and family structure.

According to Kingsley Davis, the following areas require a synthesis of sociological and demographic knowledge:

1. Fertility in relation to attitudes and social institutions.
2. Population changes in relation to social and economic changes.
3. The labor force in relation to population structure and social organization.
4. The family in relation to demographic behavior.

Social Morphology and Population Studies

Classical sociologist Emile Durkheim focused on population size under the category of “Social Morphology.” He gave special attention to studies on population volume and density, as both factors influence a society’s social structure. Social morphology examines the size, density, and quality of the population to understand how these elements impact social interactions and group dynamics.

Sociological Theory of Population

Sociology also covers the following aspects of population studies:

1. Family composition
2. Community and society
3. Types of religion
4. Education
5. Caste
6. Cultural and social factors

Sociological Perspective on Population Growth

- ◆ **Migration:** A social perspective on migration looks at the sociological components of demographic surveys.
- ◆ **Birth rate:** Male-female sexual interaction influences birth rates, and this interaction is shaped by social norms, traditions, and conventions.
- ◆ **Population growth:** Population growth is considered both a social phenomenon and a biological one.

Despite their close connection, Sociology and Demography are distinct:

- ◆ Demography studies society in terms of types, whereas Sociology examines it as a comprehensive system.

- ◆ Sociological investigation is theoretical and qualitative, while demographic study is statistical.

Broom and Selznick (1973) listed 9 components of sociological analysis, which include social organization, socialization, social stratification, primary group affiliations, collective behavior, culture, ecology, and population. These components are closely linked to population studies.

1.1.3.3 Economics and Population Studies

Economic development and planning have become increasingly important in most developing nations, making the study of population a crucial area of research within Economics. Understanding the relationship between population trends and economic growth is essential for policy formulation and sustainable development.

Over time, several key topics have emerged at the intersection of Economics and Population Studies. These include:

- ◆ Population and development
- ◆ Manpower studies
- ◆ The economics of fertility
- ◆ Comprehensive economic-demographic models

These areas continue to play a significant role in both Economics and demographic research, contributing to a deeper understanding of the relationship between population dynamics and economic growth.

Key Connections between Economics and Population Studies

1. Population size, distribution, and growth vary across nations and significantly affect economic development.

2. Population growth increases the labor force, which, in turn, promotes economic growth.
3. A large population contributes to a larger domestic market, boosting the economy.
4. Population expansion fosters competition, which drives technological development and innovation.

Economists study the following population-related characteristics to understand their economic implications

1. The relationship between the population and employment levels.
2. The standard of living of the population.
3. Income levels within the population.

The relationship between Economics and Demography is essential in studying population trends and economic growth. The size and quality of the population are influenced by economic opportunities and the structure of the economy. It is impossible to fully understand population growth, size, and distribution without considering economic development and growth. Demographic factors such as population growth rate, age, sex, education, occupation, per capita income, and national income are closely tied to economic indicators.

As the population increases, countries may face economic challenges due to slower economic development and workforce shortages. Population growth is considered a primary prerequisite for economic development. The theory of demographic transition has been used to assess its impact on economic growth, highlighting the close relationship between Demography and Economics.



Table 1.1.1 Differences between Economics and Demography

Aspect	Economics	Demography
Focus of Study	Focuses on production as a human economic activity, considering both demand and supply.	Studies production to understand its impact on population quality and well-being.
Birth Rates	Examines birth rates to understand their effects on labor markets, prices, output, consumption, and demand.	Analyzes birth rates to understand their impact on population size and structure.

Differences and Similarities between Economics and Demography

While economics and demography share several common areas of study, there are also key differences:

Both disciplines, though distinct, are interconnected and essential for understanding the broader picture of human development and economic progress.

1.1.3.4 Political Science

Political Science focuses on how individuals interact with their political environment and the various aspects of their social existence, including economic, social, psychological, sociological, historical, and other dimensions. It deals with social groups organized under the sovereignty of the state. Political scientists aim to describe and explain politics. They often seek relationships and patterns in what might initially seem like a series of random events.

As a result, political science has incorporated various theories, concepts, and methodologies from other fields. For example:

- ◆ The structural-functional approach from Sociology and Anthropology
- ◆ The action theory from Sociology

- ◆ System analysis from Communication Sciences

- ◆ Political Demography, among others.

The study of community power structures has become a priority, with emerging concepts such as political culture, political socialization, political communication, and political development gaining traction.

Key Areas in Political Science

- ◆ **Political Demography:** Examines the dynamic relationships between politics, fertility, mortality, migration, and other demographic factors such as age, gender, ethnic and religious diversity, and geographic distribution.
- ◆ **Political Impacts of Population Change:** Focuses on how population change influences government demands, government performance, political power distribution within states, and the distribution of national authority among states.

These demographic traits are connected to a wide range of factors, including gender, religion, productivity, conflict, urbanization, fertility, mortality, and education. The study of elections, social security, economic convergence, political progress, and

environmental degradation also relies on these characteristics.

Among the social sciences, Demography is the most predictable. People born in the last five years will become voters, workers, soldiers, and potential political elites by 2035 and 2050. Governments and politicians frequently use demographic data. For example, a Democratic politician would consider the political leanings of a region when assessing the viability of their campaign. Similarly, local governments may use regional income levels to justify the construction of more low-income housing. Population policies and political ideologies are closely intertwined. Government assistance programs are often implemented based on socio-demographic criteria.

1.1.3.5 Statistics and Population Studies

No social science discipline can thrive without statistics or demographic data. Compared to many other fields, Demography relies more heavily on Statistics. The primary purpose of Statistics is to collect numerical data, while social scientists interpret the data. This is why Statistics is often regarded as value-neutral, and the same applies to Demographics. The main objective of a demographer is to collect population data. Therefore, Demography is connected to or related to all other fields of social science.

If these topics are not thoroughly examined, the results will inevitably be inaccurate.

Importance of Statistics in Demography

Quantification plays a vital role in population studies, as distinct and measurable population data are readily available. Consequently, the relationship between Population Studies and Statistics is crucial. Statistics is primarily used to study population size, growth, structure, and components. Population experts have developed numerous statistical models to analyze population expansion. Therefore, Statistics is an essential tool for investigating and understanding population phenomena.

Statistics has been a key tool in Population Studies. In the nineteenth and twentieth centuries, the advancement of Statistics contributed significantly to the development of Demography. For instance, the study of mortality has greatly benefited from the application of probability theory. Actuarial science, which heavily relies on probability theory, has been instrumental in producing life tables with a high degree of accuracy and sophistication.

In this section, we discussed how various disciplines, including Sociology, Economics, Political Science, and Statistics, are related to Population Studies. You now have an understanding of how population studies intersect with these fields.

Recap

- ◆ Demography refers to the study of human populations, particularly their size, density, and dispersion.
- ◆ John Graunt is recognized as the founder of modern demographic studies for his work in the 17th century.



- ◆ The term “Demography” was coined by Achille Guillard in 1855, derived from Greek words for population and description.
- ◆ Key areas in macro Demography include descriptive, analytical, comparative, and historical Demography.
- ◆ Demographic data collection methods include direct techniques like censuses and indirect techniques when data is incomplete.
- ◆ Population studies focus on subsets of populations, exploring how social, economic, and environmental factors affect groups with shared characteristics.
- ◆ Demographics are essential for understanding societal needs and improving service delivery, resource allocation, and policy adjustments.
- ◆ Sociology studies society; population studies focus on groups and social issues like birth rates, mortality, marriage, and family structures.
- ◆ Sociologists examine population size, distribution, and socio-economic factors like health, poverty, and family structure.
- ◆ Population trends impact economic growth, labor force size, market size, and technological innovation.
- ◆ Statistics quantifies population data, aiding in understanding size, growth, structure, and demographic trends.

Objective Questions

1. In which year did the National Sample Survey (NSS) conduct its initial population count?
2. Who is regarded as the founder of Demography?
3. Which is considered the older demographic approach?
4. Who first used the term Demography ?
5. When was communication research on family planning established?
6. Where is the International Institute for Population Studies (IIPS) located?

Answers

1. 1950
2. John Graunt
3. Formal Demography
4. Achille Guillard
5. 1960
6. Mumbai

Assignments

1. Describe the relationship between Population Studies and Economics, highlighting their interconnectedness and impact on economic development.
2. Explain the significance of Statistics in Population Studies and how statistical methods contribute to understanding demographic trends.
3. Discuss the differences between Demography and Population Studies, focusing on their distinct approaches and areas of focus.
4. Explain the role of Sociology in Population Studies, emphasizing how sociological perspectives contribute to the understanding of demographic issues.
5. Discuss the scope of Population Studies with relevant examples, demonstrating its importance in understanding social trends and challenges.

Suggested Reading

1. United Nations. (1997). *Demographic year book 1995*. United Nations.
2. United Nations Development Programme. (2013). *Human Development Report 2013: The Rise of the South: Human Progress in a Diverse World*. United Nations Development Programme.



3. Ministry of Health and Family Welfare. (2009). *2009 Family Welfare Year Book*. Government of India.
4. Raj, H. (1986). *Demographic principles: population studies with Particular Reference to India*. Surjeet Publication.
5. United Nations. (1994). *International conference on population and development programme of action*. United Nations.

Reference

1. Davis, K. (1959). The Sociology of Demographic Behavior. In R. K. Merton, L. Broom, & L. S. Cottrell Jr. (Eds.), *Sociology today: problems and prospects* (pp. 365-378). Basic Books.
2. Guillard, A. (1855). *Element of human statistics or comparative demography*. Guillaumin et cie.
3. Lorimer, F. (1959). The Development of demography . In P. M. Hauser & O. D. Duncan (Eds.), *Population Research* (pp. 1-21). University of Chicago Press.
4. Misra, D., & Bhaskar, B. (1982). *An Introduction to the study of population*. Orient Longman.
5. Population Foundation of India. (2010). *Advocacy papers on population issues*. Population Foundation of India.
6. Premi, M. K. (1983). *A Social demographic introduction*. Population Research Centre.
7. Sivakumar, A. K., Panda, P., & Ved, R. R. (2013). *Handbook of population and development in India*. Oxford University Press.
8. Srivastava, O. S. (1983). *A textbook of demography*. Himalaya Publishing House.



BLOCK

Methods of Population Data



UNIT

Sources of Population Data-I

Learning Outcomes

On completion of this unit, the learner will be able to:

- ◆ familiarise themselves with the methods of population data collection
- ◆ understand the importance of the census and sample surveys
- ◆ comprehend the basic features of vital statistics and the Dual Register System

Prerequisite

How do you plan a monthly budget at home? What do you consider the most important factor in that process? Typically, household expenses depend on the number of family members. In a similar way, population data serves as a crucial foundation for national planning. Governments rely on detailed population information to design and implement various socio-economic development programmes. Have you ever considered why it is necessary to register births, deaths, and marriages? Why do governments place such importance on recording these events? Beyond the census and sample surveys, there are several other systems used worldwide to maintain population records. It is interesting to note that basic life events such as birth, death, marriage, and divorce provide essential data for planning and policy-making. This highlights the critical importance of accurately registering vital events. Proper documentation of such events is fundamental to effective planning and development. Population data is collected from various sources, including the census, sample surveys, vital statistics, dual reporting systems, population registers, international publications, government reports,

and archival records. These sources provide valuable information about the size, structure, and socio-economic characteristics of the population. This unit focuses primarily on major data sources such as the census and sample surveys, while other sources will be examined in subsequent units.

Keywords

Population data, Demographer, Vital events, Vital records, Vital statistics, NPR, SRS, CRS, NFHS

Discussion

2.1.1 Population Data

Population data refers to the number of people living in a particular area, including details about individuals belonging to different religions and races within that area. "Population data is defined as a set of individuals who share a characteristic or set of characteristics. A population is mainly determined by geography, such as all people in California, or all people in the United States or India. Demographers (people who study human populations) categorize this as the natural population." Influential details such as birth, death, demographic information like age, sex, annual income, occupation, language, and the overall socio-economic, political, and cultural progress of a country are included in population data. Population data provides insights into

the overall development of a country. For example, total resources, utilized resources, and deprived areas can be identified through the analysis of population data.

Population data provides a basic idea about:

- ◆ The total population
- ◆ Distribution of resources
- ◆ Poverty and deprived areas
- ◆ Reasons for under-development
- ◆ The ratio between the number of people and available resources
- ◆ Division based on sex, religion, caste, class, place, etc.

Table 2.1.1 Classifications of Population Data

Primary Sources	Secondary Sources
Data collected directly by a researcher, statistician, or government body	Data obtained from existing sources such as journals, newspapers, magazines, annual research reports, etc.

Data collected directly through sources like the census, sample surveys, etc.	Data not directly collected by a government or research organization
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The main sources of population data are the Census, Sample Surveys, Vital Statistics, Dual Report System, Population Registers, International Publications, Government Publications, and Archives.

the members of a given population. The census is the single largest source of data for population studies worldwide.

Features of Census

2.1.2 Census

According to the Government of India Census website, “Population Census is the total process of collecting, compiling, analyzing, or otherwise disseminating demographic, economic, and social data pertaining, at a specific time, to all persons in a country or a well-defined part of a country.” The United Nations defines the process as “the total process of collecting, compiling, and publishing demographic, economic, and social data pertaining, at a specified time or times, to all persons of a defined territory.” It is a systematic procedure for calculating, acquiring, and recording information about

1. The census is usually conducted by governments.
2. It collects data on many attributes of a population.
3. It gathers information about the number of people, sex, education, employment, race, class, etc.
4. Each person is counted through personal interviews, surveys, or other types of interviews.
5. It collects data on the geographic distribution of the population.

Table 2.1.2 Types of Census Methods

De facto Method	De jure Method
The census is conducted at an individual's current residence.	The census is conducted at a person's permanent residence.
The census is carried out at night, also known as ‘one-night enumeration.’	More practical and scientific, also called ‘period enumeration.’
Conducted in urban regions in high-income countries.	Nepal is one of the few countries that follow this method.

2.1.2.1 Significance of Census

1. Modern census data are used for research, national planning, business marketing, and designing sample surveys.
2. Comprehensive and detailed data on the whole population, including demographic, social,

and economic characteristics at the lowest administrative or geographical level are included.

3. Population rates and indicators such as population growth rates, age and gender composition, educational features, and workforce characteristics are included.

4. It provides necessary data for assessing the population status and monitoring demographic, social, and economic changes in different places within a country.
5. It provides precise data on the immigrant workforce, reducing dependence on estimates.
6. It offers a database necessary for studying specific social phenomena.
7. It provides basic data for all sectors in the country (education, health, population, etc.), contributing to the formulation, monitoring, and evaluation of plans.
8. It offers required frameworks for deriving samples for future field research.
9. It provides data on housing units, their facilities, and features related to living conditions. For example, the basic data needed for developing a clearly defined housing policy and understanding their association with public services.
10. It enables accurate measurement of various phenomena, such as fertility, mortality, and migration, which form the foundation for calculating population growth rates and post-census population estimates.
11. It provides data on the features of buildings in the public and private sectors and their occupancy status to define future requirements.
12. It defines the conditions of economic and social enterprises in the public and private sectors in terms of legal status, economic activity, and workforce size by gender and nationality.

Table 2.1.3 Attributes included in Census

Geographic segmentation attributes	◆ Current residence, permanent residence, place of birth, workplace information, etc.
Personal and demographic details	◆ Age, sex, marital status, literacy, language spoken at home, number of people residing at home, etc.
Economic background	◆ Occupation, the current status of employment, primary source of income, etc.

2.1.3 Sample Survey

Just imagine a situation where data collection is not possible from a very large population. Conditions may arise when census procedures are not applicable. In such situations, data collection on the population is done through surveys. For example, if the total population is 1,000 people, we survey 150 of them. Then, we can take the data from the sample and generalize it to the entire

population. If 10% of the sample belongs to the upper class, it can be assumed that 100 out of a population of 1,000 are upper-class people.

Sample surveys related to Population Studies are called Demographic Sample Surveys. In Sample Surveys, data are obtained from specific samples, and the extent of statistical error is minimized by regulating the sample size. These surveys

primarily gather information on population characteristics and verify the causes and consequences of population change.

2.1.2.2 Features of Sample Survey

1. Surveys have emerged as alternatives to census-taking.
2. They interview only a part of the population of interest to obtain estimates applicable to the whole population.
3. The development of statistical sampling techniques makes the survey process easier.
4. Demographic sample surveys are effective in estimating labor force, economy, health, etc.
5. All samples have a margin of error due to the possibility that samples may differ from the total population.
6. Complications in the survey method arise from the type of sample selection related to the survey.
7. Special field operations are essential to frame an appropriate sample frame by creating up-to-date listings of the population, households, or dwellings.
8. Basic sample questions include inquiries about gender, age, ethnicity, location, education, and marital status.

Example of demographic survey question

Q. "Please specify your ethnicity."

- a. Caucasian
- b. African-American
- c. Latino or Hispanic
- d. Asian
- e. Native American
- f. Native Hawaiian or Pacific Islander
- g. Two or More
- h. Other/Unknown
- i. Prefer not to say

Sampling Strategies

- ◆ Developed and developing countries struggle with the selection of a secure sampling frame or the samples to be selected.
- ◆ Appropriate field operations in population studies are necessary to develop a suitable sample frame.
- ◆ Probability sampling involves randomly selecting the desired number of subjects from a complete list of all similar subjects.
- ◆ Sampled individuals will be interviewed through personal or phone interviews.
- ◆ When cost-saving is prioritized, cluster sampling is also used.
- ◆ Telephone surveys are the most common, fastest, and cheapest way to collect information.

- ◆ Nowadays, the continuous development of personal computers and the availability of laptops and handheld devices further ease survey processing.

Limitations of Sample Surveys

1. Samples can be harmful when taken casually or without suitable knowledge of their effects.
2. Errors in coverage, classification, and sampling of population data can occur.

Sampling is highly subjective, and it is possible to arrive at different data with different samples of the same population.

To study the population, we need data or facts on all aspects of demography. Proper assemblage of information on geographical distribution, population dynamics related to time and space, and accurate numerical data on birth, death, and migration, collected through censuses and sample surveys, can be used for effective planning and nation-building.

2.1.4 Vital Statistics

Apart from the census method and demographic survey method, a very common way of collecting data is through civil registration. Civil registration is an administrative system used by governments to record vital events occurring within their populations. It involves the continuous, permanent, compulsory, and universal recording of the occurrence and characteristics of vital events.

Vital events are events concerning the life and death of individuals, as well as their family and civil status. These events may include live births, deaths, migration, fetal deaths, marriages, and divorces.

Vital statistics provide crucial and critical information on a country's population.

The United Nations defines vital statistics “as the total process of: (a) Collecting information by civil registration or enumeration on the frequency or occurrence of specified and defined vital events, as well as relevant characteristics of the events themselves and the persons concerned, and (b) Compiling, processing, analyzing, evaluating, presenting, and disseminating these data in statistical form.”

Vital Records

1. Birth certificates
2. Marriage licenses, including marriage certificates, separation agreements, and divorce certificates
3. Death certificates

Now you may be wondering how the method of vital statistics differs from population data sources like the census or survey method, isn't it? Here is the explanation. The number of births and deaths can be acquired by recording population details at certain points in time using methods like censuses and surveys, whereas civil registration collects this information on a continuous and regular basis. The important aspect is that it is the only source that provides individuals with a legal document. For example, the importance of birth registration as the first legal recognition of the child is emphasized in Article 7 of the Convention on the Rights of the Child. It states that “the child shall be registered immediately after birth and shall have the right from birth to a name, the right to acquire a nationality, and, as far as possible, the right to know and be cared for by his or her parents.”

Table 2.1.4 Aspects of Vital Statistics

Aspects of Vital statistics	Definitions
Live birth	The complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of pregnancy, which, after such separation, breathes or shows any other evidence of life, such as a beating heart, pulsation of the umbilical cord, or definite movement of voluntary muscles, whether or not the umbilical cord has been cut or the placenta is attached. Each product of such a birth is considered live-born.
Death	The permanent disappearance of all evidence of life at any time after live birth has taken place
Foetal death	death prior to the complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of pregnancy
Marriage	The act, ceremony or process by which the legal relationship of spouses is constituted.
Divorce	The final legal dissolution of a marriage, that is, separation of spouses which confers on the parties the right to remarriage under civil, religious and/or other provisions, according to the laws of each country.
Annulment	the invalidation or voiding of a marriage by a competent authority
Adoption	the legal and voluntary taking and treating of the child of other parents as one's own, insofar as provided by the laws of each country

Importance of Vital Statistics

1. Many civil registration systems also collect information on causes of death, which could be of particular importance in public health.
2. Death registration helps identify the magnitude and distribution of major disease problems and is

vital for the planning, operation, monitoring, and evaluation of health programs and policies.

3. Birth registration supports the wider enjoyment of a child's fundamental rights to benefits such as identity, inheritance, education, health, and other social services.

4. Birth registration also ensures that children are less exposed to abuse and exploitation, especially if separated from their parents.
5. Appropriate vital statistics help a country enforce age-related legal concerns such as schooling, child labor, juvenile justice, early marriage, sexual exploitation, and military recruitment.
6. In the case of natural calamities or disasters, the utility of a birth certificate for reuniting lost children with their families is high.

2.1.5 Dual Register System

Accurate population data is fundamental for effective governance and development planning. In a diverse and populous country like India, collecting reliable demographic data presents unique challenges, particularly in rural and remote areas. To address these challenges, India has implemented the Dual Register System, a method designed to enhance the accuracy and completeness of vital statistics such as births and deaths.

The Dual Register System involves maintaining two separate registers for recording vital events: one at the local level and another at a higher administrative level. This system is designed to provide a mechanism for cross-verification and correction of records, ensuring that no significant demographic event is overlooked. It aims to improve the accuracy and reliability of the population data collected through the Civil Registration System (CRS), which historically has faced issues of under-registration, especially in rural and underdeveloped regions.

Implementation of the Dual Register System in India

The need for a more robust system for recording vital statistics in India became

evident due to the gaps and inaccuracies in the CRS. To enhance data quality, the Dual Register System was introduced with the following key components:

- ◆ **Local Registers:** Maintained by local authorities such as village or municipal offices, these registers record vital events as they occur.
- ◆ **Higher-Level Registers:** Managed by district or state authorities, these registers receive periodic updates from local registers and serve as a backup and verification mechanism.

In this system, each birth and death is recorded in both registers, and discrepancies between the two are resolved through regular audits and cross-checks. This method helps in identifying under-reported or misreported events, thereby improving the overall quality of population data.

Benefits of the Dual Register System

1. **Improved Data Accuracy:** By providing a mechanism for cross-verification, the Dual Register System significantly reduces errors in recording vital events.
2. **Enhanced Coverage:** The system ensures that even in cases where local registration might fail, higher-level registers can compensate for missing data.
3. **Reliable Demographic Analysis:** Accurate data collected through this system supports reliable demographic analysis, which is crucial for planning health services, education, and other public policies.
4. **Timely Updates:** The system allows for more frequent and timely updates of population data,



which is essential for monitoring demographic changes and trends.

Challenges of the Dual Register System

Despite its advantages, the Dual Register System faces several challenges:

- ◆ **Administrative Complexity:** Managing two sets of registers requires additional administrative resources and coordination between different levels of government.
- ◆ **Resource Requirements:** The system demands significant investment in training, infrastructure, and personnel to ensure its effective implementation.
- ◆ **Integration with CRS:** Integrating data from the Dual Register System with the existing Civil Registration System can be complex and requires sophisticated data management tools.
- ◆ **Public Awareness:** Ensuring public cooperation and awareness about the importance of registering vital events remains a challenge, particularly in remote and rural areas.

Dual Register System and Dual Reporting System

There is a difference between the dual register system and the dual reporting system in population studies, though the terms are sometimes used interchangeably or misunderstood due to their similar focus on improving the accuracy of vital statistics. The dual register system improves data accuracy by maintaining redundant records within the civil registration process. The dual reporting system improves data accuracy through a combination of civil registration

and independent surveys, allowing for statistical reconciliation of the data. It involves two collecting methods which, ideally, are independent of each other. The methods include:

- (a) a continuous vital event recording process which may be other than the civil registration system; and
- (b) a periodic household sample survey conducted in the same geographical area.

Methods of improving the estimate of the total number of vital events can be done by checking and matching of the events reported by the two procedures.

Four major sources of vital statistics in India

- a. Sample Registration System (SRS)
- b. Civil Registration System (CRS)
- c. Indirect estimates from the decennial census
- d. Indirect estimates from the National Family Health Surveys (NFHS)

The SRS is the most systematic source of demographic statistics in India. It is grounded on a system of dual recording of births and deaths in equally representative sample units spread all over the country. The methodology of dual reporting system in India is associated with sample registration system (SRS)

Average time to publication of SRS annual reports is about two years. SRS estimates are usually valid and dependable for the country as a whole and for bigger states with more than 10 million population.

The SRS provides annual estimates of

- a. population composition
- b. fertility
- c. mortality
- d. Medical attention at the time of birth or death (which give some idea about access to medical care)

This method has been tested successfully in countries like India, Pakistan, Turkey, Liberia, Colombia, Thailand, Morocco, the Philippines, and Kenya. It is now widely recognized as an effective tool for demographic analysis.

The Dual Reporting System works by recording each birth and death through two separate methods: Civil Registration and Sample Surveys. This system relies on several small geographic areas as samples, where births and deaths are continuously recorded as they occur, along with additional information about each event. Periodic retrospective sample surveys are also conducted in these areas to collect similar data. The information from both methods

is then matched to identify any events that were missed by either method, allowing for a more accurate estimate of total births and deaths in the sample areas.

In India, the Sample Registration System (SRS) was introduced in 1963-64, using the dual reporting system to provide reliable estimates of vital rates such as birth and death rates, and population growth rates for the country and its states. The SRS also helps monitor short-term changes in population growth, assess the impact of the national family planning program, and forecast future population trends. It provides estimates for both rural and urban areas, as well as for different States and Union Territories, and these estimates are considered quite reliable.

Features of Dual Reporting System

1. This method is used in countries where the recording of births and deaths (vital events) is inadequate or absent
2. Single visit or multiple visits to households are ensured in both data collection
3. A third independent check is given on the events to ensure validity

Recap

- ◆ The single largest source of data for population studies worldwide is the census.
- ◆ The census method collects data on the number of people, sex, education, employment, race, class, etc.
- ◆ *De facto* and *de jure* are the two methods of conducting a census.
- ◆ Both the census and demographic surveys help in national planning.



- ◆ Sample surveys lack accuracy compared to the census method.
- ◆ Geographic, personal, and economic attributes are collected in detail through the census method.
- ◆ In a demographic survey, data from a sample is collected, and the result is applied to the larger population.
- ◆ The administrative system used by governments to record vital events, such as births and deaths, is the Civil Registration System.
- ◆ The most systematic source of demographic statistics in India is the SRS (Sample Registration System).
- ◆ The population data source that functions as a database to produce statistical overviews of the population is the population register.
- ◆ The process that involves the simultaneous collection of vital events, mainly births and deaths, is the dual report system.

Objective Questions

1. What is the largest source of population data initiated by the government?
2. Which population data source collects data from every individual?
3. Which population data source collects data from a sample of the whole population?
4. Which population data collection method is subject to errors because only a part or sample of the population is selected for study?
5. What is the main aim of the census and demographic sample surveys?
6. What is the name of the sample survey connected to population or demography?
7. Which method is used in countries where the recording of births and deaths (vital events) is inadequate or absent?
8. Which population data collection method involves the simultaneous collection of vital events?
9. What are the vital events?

Answers

1. Census
2. Census
3. Demographic sample survey
4. Demographic sample survey
5. National planning
6. Demographic sample survey
7. Dual report system
8. Dual report system
9. Birth, death, marriage

Assignments

1. Explain the different methods used for collecting population data and compare the advantages and disadvantages of the Census, Sample Surveys, and Vital Statistics.
2. Discuss the significance of the Dual Register System in improving the accuracy of population data in India. How does this system enhance the reliability of vital statistics and support demographic analysis?
3. Using real-world examples, analyze the role of population data in identifying poverty-stricken areas and understanding the socio-economic disparities within a country.
4. Examine the key features of a census and sample survey. How do the De facto and De jure methods of conducting a census differ?
5. Critically evaluate the importance of vital statistics such as birth, death, and marriage registration in shaping public health policies and social services.

Suggested Reading

1. Agarwal, S. N. (1972). *India's population problems*. Tata McGraw-Hill Publishers.
2. Bose, A. (1967). *Patterns of population change in India*. Allied Publishers.
3. Bose, A. (2018). *India's Quest for population stabilisation*. New Delhi: National Book Trust of India.
4. Mamoria, C. B. (1961). *India's population problems*. New Delhi: Kitab Mahal Pvt. Ltd.
5. Mandelbaum, D. G. (1974). *Human fertility in India*. University of California Press.
6. Thompson, W. S., & Lewis, D. T. (1970). *Population Problems*. McGraw-Hill Publishers.

Reference

1. Bhende, A., & Kanitkar, T. (1978). *Principles of population studies*. Bombay: Himalayan Publishing House.
2. Chandna, RC (2004). *Geography of population*. Kalyani Pub
3. Clarke, J. I. (2013). *Population geography*. Elsevier.
4. Donald, J. Bogue (1969). *Principles of demography*. John Wiley
5. Jhingan, M. L., Bhatt, B. K., & Desai, J. N. (2019). *Demography* (3rd ed.). Vrinda Publications Pvt. Ltd.
6. Srivastava, S. C. (2004). *Studies in demography*. Anmol Publications.



UNIT

Sources of Population Data-II

Learning Outcomes

On completion of this unit, learner will be able to:

- ◆ comprehend basic features of population data sources like Population registers, International publications and Government publications
- ◆ familiarise with the importance of International publications, Government publications in population studies
- ◆ analyse the role of archives as population data source

Prerequisite

Can you imagine a global system for recording population data? Do you think such a system is achievable, and how might it be effectively coordinated? Considering that the world is divided into continents, countries, and vast oceans, collecting population data on a global scale is undoubtedly complex. It is worthwhile to explore how such an effort can be made possible.

International organizations such as the United Nations (UN), the World Health Organization (WHO), and the United Nations Educational, Scientific and Cultural Organization (UNESCO) play a crucial role in this process. These bodies undertake coordinated efforts to collect, compile, and publish population data at regular intervals or as needed. Their work helps in identifying global trends and addressing key issues related to health, education, and resource management.

At the national level, governments also gather and publish population data, which serves as a primary source of information about their populations. In

addition, historical records and archives document important demographic changes and events over time. These sources provide valuable insights into the evolution of populations and contribute to a deeper understanding of both past and present trends. Although the collection of population data on an international scale is challenging due to geographical and political differences, it demonstrates the potential of collaboration between global organizations and national governments. Such coordinated efforts make it possible to develop reliable systems for documenting and analyzing population data worldwide.

Keywords

Population registers, Statistics, Archiving, Documentation, Data sources

Discussion

2.2.1 Population Registers

Have you ever thought about how countries keep track of their people? Population registers, also known as household registers, are an important way to do this. These registers are records that track households and individuals in a community over time. They record details like who joins or leaves a household, helping governments monitor population changes and movements.

Why are these registers important? They don't just manage individual identities; they also provide valuable demographic data that might not be available through methods like the census or vital registration systems. For instance, they can show migration patterns, changes in household structures, and even information about socioeconomic status at a very detailed level.

Did you know that Sweden was one of the first countries to use a population register? This started way back in the 17th century! Today, countries like Finland, Belgium, Israel, Taiwan, and South Korea maintain population registers where every individual

is recorded. These systems work best in countries with small populations and efficient administration.

However, there is a flip side. Some people feel that such detailed records might invade their privacy. This concern has stopped many countries from maintaining comprehensive registers, even though they offer significant benefits.

Let's take India as an example. India has a National Population Register (NPR) that lists all regular residents at local, district, state, and national levels. The NPR is designed to create a database with demographic and biometric details for everyone.

China, too, has a long history of population registration, using it for administrative purposes for centuries. Similarly, in the 18th century, parts of Europe adopted population registers to help manage their populations. Interestingly, Japan introduced a population registration system in the late 17th century to control the spread of Christianity, but it soon became a tool for other administrative purposes.

Even religious leaders in some areas kept population registers, showing how useful these records have been across history and contexts. While population registers are a goldmine of information for governments, there is always a debate about privacy. Striking a balance between collecting useful data and respecting individual freedoms remains a global challenge.

So, what do you think? Are population registers a necessary tool for better planning, or do they raise concerns about privacy?

Definition and Features

As the name suggests, population registers are official records that document details about the residents of a country. Simplified systems for maintaining population information include methods such as censuses, surveys, and vital records. Population registers are often managed at the municipal level. However, advancements in technology and the growth of digitized economies have made it easier to centralize data and establish a national register. National Population Registers (NPRs) have become increasingly common and are now used in many countries, including India.

The United Nations Statistical Office defines population registers as “an individualised data system, that is, a mechanism of continuous recording and/or coordinated linkage of selected information pertaining to each member of the resident population of a country.” Thus, population registers contain detailed information about every individual in a specific country or area. These registers typically include each person’s name, date of birth, current address (as an external identifier), and a personal identification number (PIN) as an internal identifier. The PIN is required to be unique for each individual.

Certain features differentiate population registers from other population data sources.

These include:

1. **Structured Units:** Population registers maintain an organized list of units (e.g., individuals or households).
2. **Defined Attributes:** Each unit is associated with a specific set of attributes.
3. **Accurate Rules:** Units are defined based on a precise set of rules.
4. **Regular Updates:** The system has a defined mechanism for regular updates.
5. **Targeted Information:** The register contains information about a specific population, such as individuals from a particular area.
6. **Statistical Database:** It functions as a database that can generate statistical overviews of the included population.
7. **Computerization:** Technological advancements have optimized the use of population registers, allowing for continuous updates, especially of addresses. This enhances the reliability of the records.

The integration of computerized systems ensures that population registers remain a dependable and efficient tool for collecting and analyzing population data.

Population registers are valuable for estimating the size of a population, understanding its socio-demographic structure, and analyzing population changes and their underlying mechanisms. If the system is fully functional and allows continuous recording of address changes, it serves as a primary source of data on migration trends.



2.2.2 International Publications

Have you ever wondered where to find reliable global demographic data? International organizations, including the United Nations (UN), play a vital role in providing such information. Let's explore some key publications that offer insights into population trends and statistics worldwide.

Demographic Yearbook by the United Nations

This annual publication is a treasure trove of demographic data for the world and individual countries. It covers important topics like:

- ◆ Population size, area, and density
- ◆ Population growth and characteristics
- ◆ Birth and death rates
- ◆ Marriage rates and related statistics

Every year, the Demographic Yearbook focuses on a specific theme, such as fertility, mortality, census figures, or marriage. For instance, the 1974 edition provided detailed information on mortality. This publication is an essential resource for students of population studies and anyone curious about global demographics.

Statistical Yearbook

Published annually by the United Nations, this resource provides diverse data on:

- ◆ National accounts and energy consumption
- ◆ Healthcare facilities and doctor availability
- ◆ Food production and educational facilities
- ◆ Labor force statistics and newspaper circulation

Epidemiological and Vital Records

Published monthly by the World Health Organization (WHO), this periodical offers public health and mortality data from countries around the globe. It is especially useful for understanding global health trends.

Human Development Report

The United Nations Development Programme (UNDP) releases this annual report, which includes data on various social, economic, and demographic factors for different countries.

Other Key Publications

- ◆ **FAO's Production Yearbook:** Focuses on agricultural populations.
- ◆ **International Labor Organization's Yearbook of Labor Statistics:** Covers labor-related data.
- ◆ **UNESCO's Statistical Yearbook:** Provides insights into education and cultural statistics.
- ◆ **WHO's World Health Statistics Annual:** Offers global health statistics.

Importance of International Sources

Population data reflect critical factors like fertility, mortality, migration, age, sex, and marital status. These statistics help shape policies and plans for a country's economic, social, cultural, and political development. Reliable data sources include:

- ◆ Census reports
- ◆ Vital statistics
- ◆ Sample surveys
- ◆ Population registers
- ◆ International publications

These resources not only inform policymakers but also provide valuable

Scope of International Publications

area, density, urban population, population growth, age-sex composition, number of births and birth rates, number of deaths and death rates, and more. Occasionally, these publications focus on specific topics, including fertility, mortality, marriage, divorce, migration, and population census statistics.

Table 2.2.1 Important International Publications

International Publishers	Data published
The United Nations Development Programme (UNDP)	◆ Social, economic and demographic aspects for the world, ◆ Human Development Report
UN	◆ Population and Vital Statistics Report quarterly which includes latest data on total population, ◆ Total mid-year population, ◆ Estimate of population for a recent reference year
UNESCO	◆ Data on education, literacy and school attendance for different countries of the world.
WHO	◆ Data on public health and mortality for different countries of the world
World Bank	◆ Data on various demographic, social and economic aspects in its annual World Development Report.
FAO	◆ Information on agricultural population
ILO	◆ Data on the economically active population.

are reliable resources published by the executive, legislative, and judicial branches of government at all levels—international, national, federal, and local—as well as by intergovernmental organizations. These publications provide valuable information on population matters, including legislation, policies, statistics, parliamentary reports, and discussion papers.

2.2.3 Government Publications and Archives

To access long-term records of historical significance, the National Archives serves as the primary repository. Archives preserve essential records such as letters, reports,



memos, photographs, and other primary sources, offering direct and reliable information about significant events.

The National Archives document crucial historical events and provide valuable data for studying topics like population planning, deaths, migration, and more. Archiving ensures the safe preservation of inactive records, both digital and physical, which are no longer used regularly but hold critical value for research and policy-making.

Features of Archives

- ◆ It protects items to serve as proof that an event occurred;
- ◆ It explains how something happened, whether for personal, financial, or sentimental reasons
- ◆ It may be located in more than one place

Importance of Government Publications and Archives

- 1. Official Record of Activities:** Government publications serve as official records of government activities, forming the foundation for understanding population dynamics and related initiatives.
- 2. Guiding Policy and Governance:** These publications play a key role in shaping policymaking and implementing changes in governance.
- 3. Unique and Comprehensive Data:** Government publications provide access to essential information, such as population census data, that would be difficult to collect without government involvement.

4. Support for Good Governance: Archives are vital for good governance as they contain precise details about population trends during specific periods.

5. Promoting Accountability and Democracy: Archives and government publications help governments remain accountable by offering transparent facts about population statistics, showcasing their commitment to democratic principles.

6. Insight into Government Actions: Properly managed archives and records provide critical information about government actions, planning, and progress. They reveal the “who, when, where, how, and why” of governance, offering clear insights into population growth and decline over time.

- ◆ The National Archives is the U.S. Government’s collection of documents and records of important events in American history.
- ◆ The National Archives and Records Administration (NARA) is the Government agency that conserves and retains these materials and makes them available for research.

Consider a simple example: you might have come across family archives while cleaning your home. These could include a photograph of the day your grandmother graduated or the final certificate of your grandfather’s farm ownership. Such items reflect your grandparents’ education levels and employment status.

In a similar way, National Archives preserve original documents related to significant national events and proceedings. For instance, they may hold applications for land ownership or details of government policies implemented during disasters. National Archives might also store applications from unemployed individuals requesting more job opportunities, providing insights into the socio-economic conditions of the time.

Thus, international publications, government publications, and archives collectively illustrate the state of a region during a specific period. They allow for the analysis of the success and failures of policies, plans, governance, and their applications. By studying these official records, governments can modify future development strategies by learning lessons from the past.

Recap

- ◆ Population Registers serve as a population data source with a fixed set of units and a defined target population.
- ◆ Government Publications provide an official record of activities and serve as a foundation for population-related studies.
- ◆ The United Nations, its various agencies, and other international organizations, such as the World Bank, publish population data for the world.
- ◆ The National Archives is the custodian responsible for the long-term preservation of records deemed valuable by the government.
- ◆ International publications provide data on population size, area, density, urban population, population growth, age-sex composition, number of births and birth rate, number of deaths and death rate, and more.
- ◆ The World Health Organization (WHO) publishes data on public health and mortality for different countries worldwide.
- ◆ The International Labor Organization (ILO) publishes data on the economically active population.

Objective Questions

1. What is the practice of preserving inactive information in digital and paper formats for future reference?
2. Which international organization and its various organs publish population data for the world?

3. What is the procedure where items or documents are preserved to serve as proof for the future?
4. What are the levels of government publications?
5. Which is the most significant international publication on population data by the United Nations?
6. Which population data source registers births, deaths, marriages, divorces, and separations?
7. Which is the population data system that considers individuals with external identifiers and personal identification numbers (PINs)?

Answers

1. Archives
2. UN
3. Archiving
4. International, national, federal, local government bodies and intergovernmental bodies
5. Demographic Year Book
6. Population registers
7. Population registers

Assignments

1. Explain the importance of the National Population Register (NPR) in India.
2. Discuss how advancements in technology have improved the functionality of population registers.
3. Describe the role of international publications, such as the UN Demographic Yearbook, in understanding global demographic trends.
4. How do government publications and archives contribute to policy-making and good governance?

5. Population registers provide comprehensive data on demographic trends, but some argue that they can lead to increased surveillance. Do you think the benefits outweigh the potential risks? Justify your answer.

Suggested Reading

1. Agarwal, S. N. (1972). *India's population problems*. Tata McGraw-Hill Publishers.
2. Bose, A. (1967). *Patterns of population change in India*. Bengaluru: Allied Publishers.
3. Bose, A. (2018). *India's quest for population stabilisation*. National Book Trust of India.
4. Mamoria, C. B. (1961). *India's population problems*. Kitab Mahal Pvt. Ltd.
5. Mandelbaum, D. G. (1974). *Human fertility in India*. University of California Press.
6. Thompson, W. S., & Lewis, D. T. (1970). *Population problems*. McGraw-Hill Publishers.

Reference

1. Bhende, A., & Kanitkar, T. (1978). *Principles of population studies*. Himalayan Publishing House.
2. Clarke, J. I. (2013). *Population geography*. Elsevier.
3. Jhingan, M. L., Bhatt, B. K., & Desai, J. N. (2019). *Demography* (3rd ed.). Vrinda Publications Pvt. Ltd.
4. Srivastava, S. C. (2004). *Studies in demography*. Anmol Publications.



BLOCK

Theories of Population



UNIT

Population Theories: Growth and Dynamics

Learning Outcomes

On completion of this unit, the learner will be able to:

- ◆ understand the theoretical contributions of Thomas Malthus
- ◆ describe the optimum level of population, under- population, over- population
- ◆ familiarise with the theory of demographic transition

Prerequisite

The rising rate of population growth has become a significant global concern. India ranks among the countries with a high population growth rate, raising important questions about how it can be managed and controlled. Is it possible to regulate this expanding population? Measures such as family planning and birth control have been widely adopted to address this issue. If we look back a few generations, our grandparents or great-grandparents often belonged to large families with seven to ten children. Over time, however, the average family size has declined, largely due to government-led family planning initiatives. This shift prompts important questions: why were such measures introduced, and who advocated for them? To better understand these developments, it is essential to examine the concept of population and explore the various theoretical perspectives that explain population growth and its control

Keywords

Demography, Control, Equilibrium, Mortality, Wellbeing

Discussion

Population theories aim to explain the relationship between population growth and resources, economic development, and societal well-being. Three prominent theories include the Malthusian Theory, Optimum Population Theory, and Demographic Transition Theory.

The Malthusian Theory, proposed by Thomas Robert Malthus in 1798, argues that population growth tends to outpace the growth of food supply, leading to widespread famine, poverty, and disease. Malthus asserted that while population grows geometrically, food production increases arithmetically. To prevent catastrophic outcomes, he advocated for population control through “preventive checks” like delayed marriages and moral restraint, as well as “positive checks” like famine and disease. Critics argue that Malthus underestimated technological advancements in agriculture and human innovation.

The Optimum Population Theory suggests there is an ideal population size that maximises economic welfare and living standards. Too small a population underutilises resources, while an excessively large population strains them. Developed in the early 20th century, this theory emphasises achieving a balance between population size and resource availability, highlighting the importance of policy interventions and technological progress.

The Demographic Transition Theory explains population changes through stages of economic and social development. In its four stages—high birth and death rates, declining death rates, declining birth rates, and low birth and death rates—populations transition from slow to rapid growth and eventually stabilize. This theory, often linked to industrialisation and modernisation, provides a framework to understand population trends across countries but has

limitations in accounting for cultural and regional differences. Together, these theories underscore the dynamic interplay between population, resources, and development. Let us explore each of these theories in detail in this unit.

3.1.1 Malthusian Theory

Thomas Malthus’s theory of a population was a landmark in the history of population studies. Thomas Malthus inculcates his views about population in his book, “*Essay on the Principle of Population*”, published in 1798. In Malthusian theory of population the central theme is linked with the basic necessity of human beings. He proposed that an increasing population disturbs the balance in the availability of resources and food supply. This notion incorporates the relationship between population factor and social change.

Three postulates of the Malthusian theory of population are:

- ◆ Food is essential for human survival.
- ◆ Passion between the sexes is essential for human’s existence.
- ◆ The law of diminishing returns operates in agriculture.

From these postulates, he pointed out that the population rate will increase indefinitely, greater than the production of substances or food supply by nature. The population increases geometrically, such as 1, 2, 4, 8, 16, 32, 64, etc. the population could increase by multiples, every twenty-five years. While food production grows arithmetically, like 1, 2, 3, 4, 5, 6, 7, etc., according to Malthus, the world’s population tends to increase at a faster rate than its food supply.

How will the balance between the population rate and food supply be maintained? According to Malthus, even though the food supply will increase, it

would not be enough to meet the needs of the population. Let us check, did Malthus propose any kind of preventive measures to control population growth?

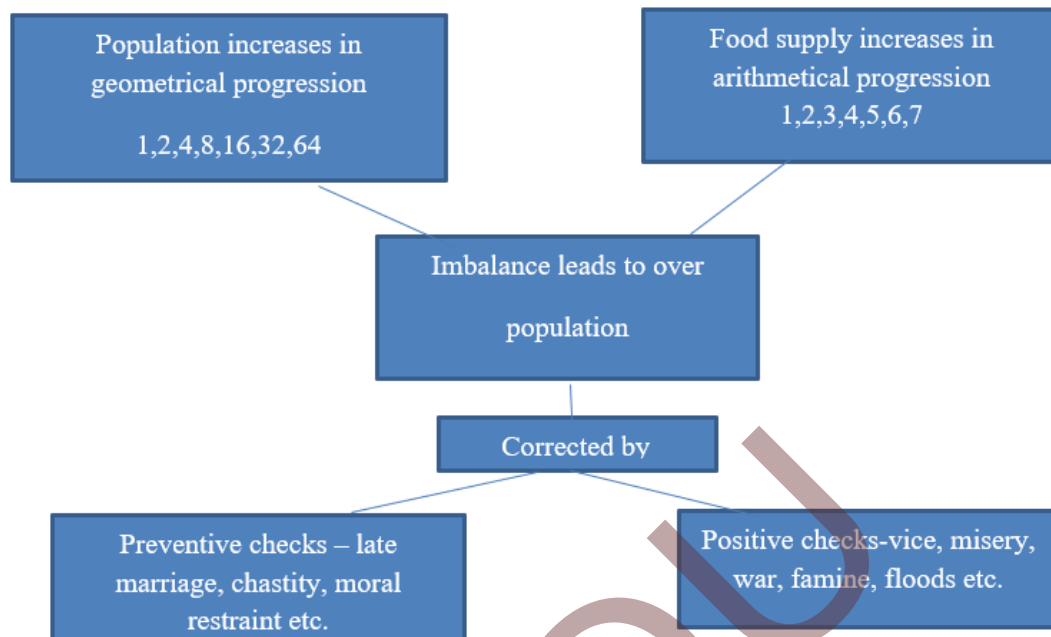


Figure 3.1.1 Malthusian Theory of Population (Srivastava S.C, 2004)

Malthus suggested two measures to control the over-population: Positive checks and Preventive checks.

techniques, including moral restraints such as late marriage, and celibacy.

- ◆ Positive checks are control of population growth by natural calamities that raise the death rate; example widespread famine, pestilence, floods, war.
- ◆ Preventative checks are voluntary

The preventive check is the result of rational thoughts. People anticipate their future life expenditure as per the material and non-material factors. The positive check is a direct consequence such as diseases, famines and wars that reduce population size and maintain balance with resources.

Positive Check Examples:

- ◆ 6,209,687 people have died so far from the corona virus Covid -19 outbreaks.
- ◆ Over 483 people died in the 2018 flood in Kerala.

Preventive Check Examples:

- ◆ Late marriage: Increasing the legal age for marriage to 22 by the government of India.

3.1.1.1 Criticisms of Malthusian Theory

Malthusian theories are widely discussed and criticised even in the 21st century. So what then are the major criticisms of the Malthusian theory of the population?

Malthus neglects the natural foods such as fish, meat, eggs, milk. He gave importance to food grains and agricultural production. Food grains are not enough for livelihood. He has unrealistic views of food production. Mathematical formulations of food supply are wrong. Population progressions in geometrical formula have not been proved empirically.

The Malthusian theory provides a weak relationship between the population and the food supply. In fact, there is a relationship between population factors and the wealth of the country. He neglected the manpower aspect of population growth. He did not emphasise the benefits of an increasing population. An increase in population means an increase in manpower, which may tend to progression in the total wealth.

The narrow vision of Malthus's theory failed to open up new areas. Malthusian theory only focuses on the local conditions of England. Malthusian theory is not applicable to all over the world. In a globalised world, there is no need to worry about starvation and misery. An abundant supply of food has been made possible across the world.

Malthusian theory has not discussed about the declining death rate. A declining death rate is one of the reasons for increasing population growth. Malthus does not predict the advancement in the medical field. This has controlled disease and eased long life expectancy.

Malthus uses the term preventive checks to describe the moral restraint. He could

not foresee the use of contraceptives and family planning techniques. However, moral restraint alone cannot control the birth rate or population growth.

The Malthusian view about sexual desire is the same for all human beings. In fact, it differs from each other on the basis of age, physiological and psychological factors. He is not differentiating sexual desire and desire for children.

He generalises positive checks on natural calamities. He believed that floods, war, famine, disease were to balance the pressure on earth. But all these are not peculiar to over populated areas.

Malthusian theory is not relevant in the modern era. Malthusian theory is not enough to mention the current population problem. The relationship between death rate and birth rate and the effect of migration and urbanisation and the development of a network society could not be defined under the notion of the Malthusian theory of population.

3.1.1.2 Neo-Malthusian Theory

From the criticism of Malthusian theory, a new theory emerged in 1820, popularised in the name Neo- Malthusian theory. Margaret Sanger and Mary Stopes were the main exponents of the neo-Malthusian theory. Neo-Malthusian theorists reject the moral restraints of Malthusian doctrine. According to them, artificial means of birth control help to decrease birth rates. They differentiate sexual desire and procreation. They argue that the sexual urge is natural but it is not the same in all human beings. It affects differently in different people based on cultural and physiological factors. They supported abortions of unwanted childbirths and unwed mothers. Neo -Malthusian theorists argue that adopting birth control measures such as

contraceptives could control the population growth and maintain a balance between food supply and population.

The Malthusian principle of population highlights the significance of maintaining a balanced relationship between population growth and basic means of subsistence as food. Malthus gave rational thought about the welfare of human beings by minimising population growth. His theory of population proposes a notion of sustainable development through balancing the resources and population.

3.1.2 Optimum Population Theory

Let us start by understanding the term “optimum,” meaning the most favourable or ideal condition. Let’s see how it is defined in the case of population. An optimum population is generally used to define “the ideal number of population or a desirable size of population should have considered the available resources or means of production of the country that will yield economic welfare”.

The optimum theory of population developed as a dialogue with the Malthusian theory. This new theory is also known as “the modern theory of population”. Edwin Cannan propounded the optimum theory of population in his book *Wealth* in 1924. Robbins, Dalton, and Carr-Saunders propagated and refined the theory.

The Optimum theory of population is based on the assumptions:

- ◆ The habits and tastes of people, technique of production and working hours do not change.
- ◆ The ratio of the working population to total remains constant even with the growth of the population.

- ◆ Stock of capital, modes of business organisation, natural resources remain unchanged

Let us understand the core theme of the theory of optimum population. We have already discussed the definition of the theory.

Let us check, what are the important elements to define optimum population?

The stock of natural resources, the stock of capital in a country, and the technique of production are influential factors in defining the size of population corresponding to the per capita income of a country. Any changes in the size of the population above or below the optimum level will diminish income per head. Such changes lead to under population and over-population.

Under population: If the per capita income is low due to the population of a country being below the optimum level, it is considered to be under population. In these conditions, resources are overflowed but will not be able to be utilised due to the insufficient number of people to sustain a largescale economy. However, such a country can afford to raise its population until it achieves the optimum number.

Over-population: If the population still goes on increasing and the optimum is exceeded, and the actual population is above the level of the optimum population, there will be an over-population stage. If there are too many people, they work efficiently and produce the maximum amount of goods and the highest per capita income, leading to a shortage of resources. The country will not be able to provide sufficient employment for all. This has caused a diminished per-capita income and a decline of standard of living. Food shortages, diseases and death, overstretched resource and unemployment are the economic effects of over population.



3.1.2.1 Cannan's Explanation of Optimum Population

According to Cannan, at any given time, an increase in labour up to a certain point is attended by increasing proportionate returns, and beyond that point, further increases in labour are attended by diminishing proportionate returns.

The figure represents the optimum theory of the population. OX represents the size of the population. The OY-axis represents income per head. Up to OC, it has been considered an under populated area; the

increase in population leads to a rise in the average product of labour and per capita income. OC is the optimum level of population when the number of population is growing beyond optimum level there will be an over-population stage. Beyond OC, it represents the fall in average product of labour and per capita income.

However, the Optimum level is not constant. Technological improvements resulted in an increase in production that pushed the level of per capita income so that the optimum level rises.

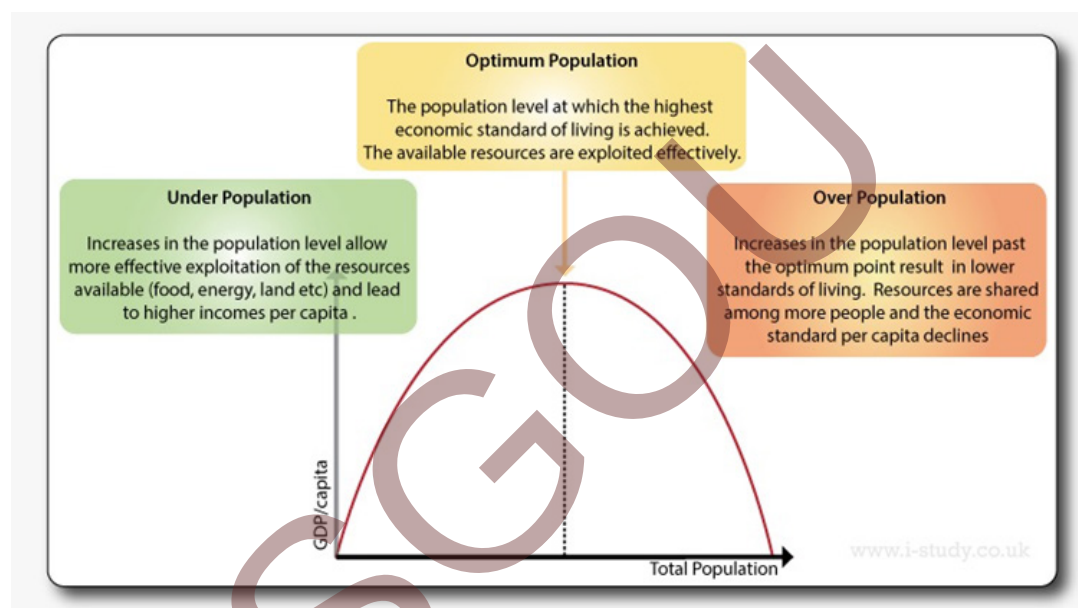


Figure 3.1.2 Levels of Population

3.1.2.2 Dalton's Optimum Level of Population

Dalton uses the term maladjustment to define variations in the optimum level of

population. He proposed a formula $M = \frac{(A - O)}{O}$ (where M represents Maladjustment, O represents Optimum level of population, A is the actual level of population).

Dalton's Formula for Optimum Level of Population

$$M = \frac{A - O}{O}$$

Where:

M – Maladjustment or deviation from optimum population

A – Actual population

O – Optimum population

As stated at the beginning of the theory, the optimum theory of population rejects the ideas of Malthusian theories. Let us check the differences between their themes and views.

- ◆ The optimum level is not stable but its oscillation, techniques and natural resources, and the stock of capital habits of people are changing with time.
- ◆ It does not explain the determinant factors of population growth such as reasons for birth rates and death rates, effects of urbanisation and migration.
- ◆ There is no importance in the state policies aimed to provide employment opportunity, stabilising the income in a country.

3.1.3 Demographic Transition Theory

Demographic transition theory is advocated by W.S Thomson and F.W. Notestein. The demographic transition theory describes the impact of population shifts in terms of birth and death rates. Demographic theory is a population cycle that begins with a decrease in the mortality rate, continues with a period of fast population growth, and ends with a decrease in the birth rate. It is popularly known as population cycle or population stage theory.

Demographic transition stages come in a variety of forms:

- ◆ The optimum theory of population concentrated only on economic factors. It fails to expand their outlook on social, political and institutional conditions. This influences the level of the population.
 - ◆ This theory simply explains the state of the population with reference to per capita income. The theory neglects to take into an account biological and sociological factors.
- with a period of fast population growth and ends with a decrease in the birth rate. It is popularly known as population cycle or population stage theory.
- Demographic transition stages come in a variety of forms:
- ◆ Three stages of the theory were proposed by W.S Thomson and F.W Notestein.
 - ◆ According to C.P. Blacker's theory, population growth occurs in five stages.





Fig 3.1.3 Factors affecting Death Rate and Birth Rate

- ◆ Karl Sax gave the “population explosion” in 1956. He discussed four stages of population growth.

Let’s take a quick look at C.P. Blacker’s five stages of population growth.

He postulated five stages of population growth: High Stationary Stage, Early Expanding Stage, Late Expanding Stage, Lower Stationary Stage, and Population Decline Stage.

3.1.3.1 Demographic Transition Theory Model

1. First Stage- High Stationary Stage

First stage of population theory of demography is explicit in the rural area. What are the features of the rural area? The system of trade and commerce, as well as transportation, is underdeveloped. Agrarian economy is the main source of income for individuals who live in close proximity to nature. The joint family is the

most important social structure, because it provides employment for everyone. For example, A farmer must engage in a variety of agricultural activities for which he requires the assistance of other people. These people are usually members of his family. As a result, the entire family participates in agricultural operations. What can we learn from this? The family itself provides employment for the family members. They have close contact with each other.

In this stage people are guided by customs and traditions; which is transformed by the family. People had great faith in religion, which holds the superstitious beliefs about birth control and promoted the child birth as children are regarded as god given. They do not acquire rational views as a result of their restricted encounters, and their outlook of the outside world is relatively limited. This influences the growth of birth rate.

However, comparatively villagers are small in size. Socio-economic factors influence the population growth rate. Let's have a look at what they are? The services of hospitals and primary health centres were limited. You had to walk long distances to get to the hospital. Self-medication is what people practice the most in the past; you may have heard that women give birth at home.

Superstitious thoughts responsible for high birth rate, at the same time poor medical facilities, non-nutritional food caused the high death rate. They ate the food available to them. They were not aware of nutritional food. If the fertility and mortality rates remain constant over time, a static equilibrium with zero population increase will prevail.

2. Second Stage –Early Expanding Stage

We learned that in the first stage there was an agriculture economy. At the second stage, things started to change. In the early

expanding stage, agricultural economy is transformed to industrial unit. Along with that transportation facilities and sanitation, education, health care sectors improved.

This accompanied with a great deal of changes on the social structure, People began to depend on other areas for work. This leads to the mobility of labour. This tends to change the family structure. Long distance relationship started to distort the chain of joint family. Even though, birth rates remain constant by the customs and beliefs, superstition, myths and dogmas.

Employment opportunities and economic stability provide better standard of living with the improvement of life style. This brings down the mortality rate. As a result of high birth rate and low death rate will lead to the rapid population growth rate. This stage witnessed high population growth rate and population explosion.

3. Third Stage – Late Expanding Stage

In this stage, people become aware of burden of population growth. People use contraceptive devices or drug such as cervical cap, pill, and condoms, Contraceptive implant prevents a woman from becoming pregnant or to limit the birth rate. So the birth rate is declining along with better medical facilities and death rate is declining rapidly, thus the population growth of a country is at a diminishing rate.

4. Fourth Stage –Lower Stationary Stage

In this stage, fertility rate declines and turns equal to death rate and population growth rate is constant. People denied age old customs and beliefs with the expansion of education, technological transformations. Growing mobility of people from one place to another influences the outlooks and people



tend to prefer nuclear families and thus break the chain of joint family. People adopt family planning and prefer late marriage. *Nam onnu Namuk randu* programme was introduced

in Kerala to control the population growth rate through limiting child birth. All these tend to reduce the birth rate and death rate continue as low rate. This stage is known as

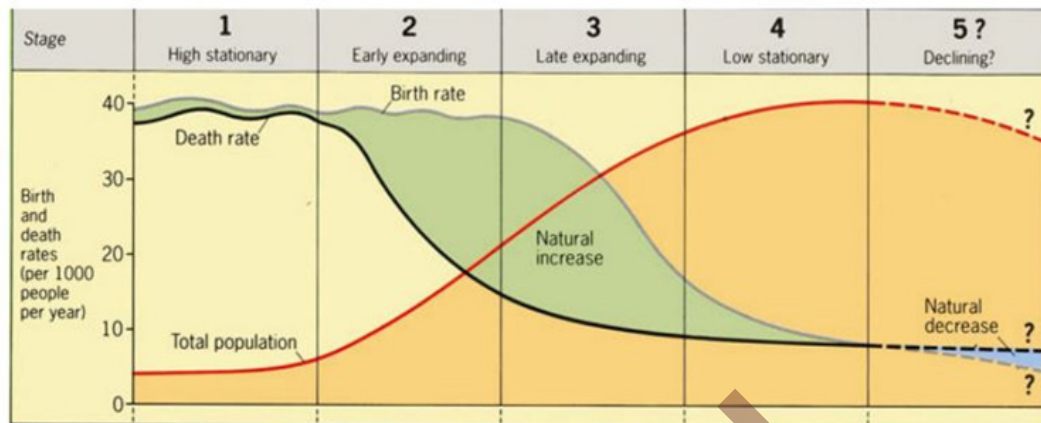


Fig 3.1.4 Graphic Representation of Stages of Population Growth

lower stationary stage. Population is marked as zero population growth.

5. Fifth Stage-Declining Stage of Population

Fifth stage of demographic transition theory is known as declining stage of population. In this stage mortality rate exceeds the birth rate, resulting in a decrease in population growth. For example, as we discussed at the beginning, a disease like corona can cause an increase in the death rate. Similarly, the death rate is higher than the birth rate and the population growth is slower.

3.1.3.2 Criticism of Demographic Transition Theory

Despite its utility as a theory for explaining demographic changes; it has been questioned for the following reasons: Demographic transition theory is not applicable all over the world. Death rate and birth rate may vary on the basis of advancements of country.

Birth rate declined even when mortality rates were high. Birth rate not declined initially in urban areas. According to the theorist firstly, fertility rate declined in the urban area due to expansion of education and standard of living. However, predominantly rural population also experience decline in birth rate.

Demographic transition theory is most acceptable population theory. This proposed stages or circle theory, define the population growth rate, mortality and rate and fertility rate based on the fluctuating elements of a society.

This shows that growing population is tied to economic development, and that every society follows a consistent pattern of population expansion as a function of progress. Death rates are reduced relatively quickly by enhanced illness control, public health, and better nutrition. Logical thinking and standard of living help to reduce birth rates. The rate of population expansion is determined by the surrounding environment and specific patterns.

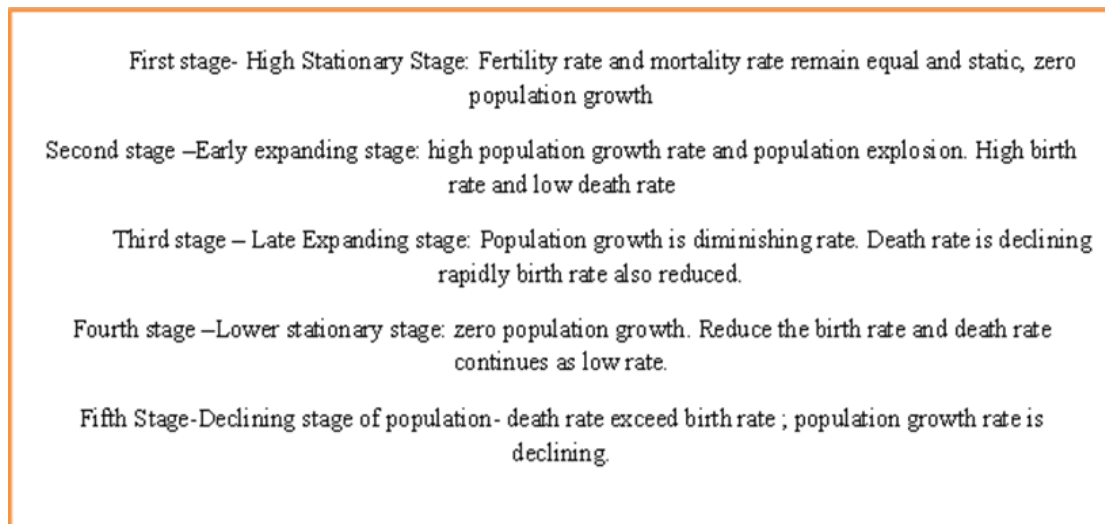


Fig 3.1.5 Stages of Population Growth

Recap

- ◆ Thomas Malthus was an economist noted for the Malthusian growth model, which is an excellent model used to represent population growth.
- ◆ Thomas Malthus's views on population are discussed in his work on "Essay on the Principle of Population", published in 1798.
- ◆ The basis of Malthusian theory depends on two assumptions; food and passion between sexes are essential for human's existence.
- ◆ The disparity between increasing population growth, geometrical progression and a slower rate of food supply arithmetical progression, was the central theme of Malthusian theory.
- ◆ Preventive checks are measures to control population growth through voluntary techniques, including moral restraints such as late marriage, and celibacy.
- ◆ Positive checks are control of population growth by natural calamities that raise the death rate. For example, widespread famine, pestilence, flood, war, etc.
- ◆ Neo-Malthusian theory developed with the reaction of Malthus's notion of population in the 1820's.
- ◆ Edwin Cannan inculcated the optimum theory of population in his book 'Wealth' in 1924.
- ◆ Edwin Cannan and Carr –Saunders, and Robbins, Dalton proposed the

Optimum Theory of Population.

- ◆ The Optimum Theory of Population was popularised in the name of the modern theory of population.
- ◆ The Optimum theory of population is that an ideal number of population produces a maximum standard of living.
- ◆ Underpopulation- the size of the population is below the optimum level of the population.
- ◆ Overpopulation the population under these circumstances would be over populated.
- ◆ W.S Thomson and F.W. Notestein popularised the demographic transition theory.
- ◆ The demographic transition theory is popularly known as population cycle.
- ◆ Population growth rate is declining due to death rate exceeding birth rate in the fifth stage of demographic transition.
- ◆ Major criticism against death rate and birth rate may vary on the basis of advancements of a country so that theory is not applicable to all.

Objective Questions

1. In which book Malthus discussed population theory?
2. What is essential for human survival?
3. Who defined population growth and food supply in a mathematical formula?
4. Write any one measure proposed by Malthus to balance population growth?
5. Which measure controls population growth through voluntary techniques like moral restraints such as late marriage, and celibacy?
6. Write an example of positive checks?
7. Who are the exponent of neo-Malthusian theory?
8. In which book, Cannan discusses the optimum level of population theory?
9. Who are the exponents of an optimum theory of population?

10. What is optimum theory of population?
11. Which word does Dalton use to define the variance in the optimum level of population?
12. What is Dalton's formula to define the optimum level of population?
13. Who are the exponent of demographic transition theory?
14. In which stage of population transition theory explicit population explosion?
15. Which stages represent zero population?
16. When will be the population growth of a country at a diminishing rate?

Answers

1. *Essay on the Principle of Population*
2. *Food*
3. *Thomas Malthus*
4. *Preventive checks or Positive check*
5. *Preventive checks*
6. *Natural calamities like famine, pestilence, flood, war*
7. *Margaret Sanger and Mary Stopes*
8. *Wealth in 1924*
9. Edwin Cannan and Carr –Saunders, Robbins, Dalton
10. Optimum population is the “population that produces maximum economic welfare”
11. Maladjustment
12. $((M=A-O)/O)$
13. W.S Thomson and F.W. Notestein
14. Second stage: Early expanding stage
15. High stationary stage, low stationary stage
16. Birth rate starts declining together with death rate declining rapidly

Assignments

1. Identify the central idea of Malthusian theory and discuss the effectiveness of the preventive measures to control population growth.
2. Discuss in your own words the Neo-malthusian theory.
3. Describe the elements to define Optimum population.
4. Compare and examine Cannan and Dalton's Optimum theory of population.
5. List and discuss the five stages of Demographic transition theory.

Suggested Reading

1. Malthus, T. (1798). *Essay on the principle of population*, printed for J Johnson, in St. Paul's Church –Yard.
2. Srivastava, S.C. (2004). *Studies in demography*. Anmol publications.
3. Burger, R. J. (2020). *Malthus on population*. Duke University Population Research Institute. Durham, USA.

Reference

1. Weir, D. R. (1991). Malthus's Theory of Population. In J. Eatwell, M. Milgate, & P. Newman (Eds.), *The World of Economics* Palgrave Macmillan. https://doi.org/10.1007/978-1-349-21315-3_52
2. Dunsdorfs, E. (1953). The Optimum Theory of Population. *Weltwirtschaftliches Archiv*, 71, 221–233. <http://www.jstor.org/stable/40435087>
3. Kirk, D. (1996). Demographic transition theory. *Population studies*, 50(3), 361–387. <http://www.jstor.org/stable/2174639>



BLOCK

Dynamics of Population



UNIT

Measures of Population

Learning Outcomes

On completion of this unit, the learner will be able to:

- ◆ get a conceptual understanding about the different measures of population
- ◆ understand the social implications of these measures
- ◆ analyse the social, cultural, economic and political factors of fertility and mortality

Prerequisite

A proper understanding of key concepts such as fertility, fecundity, mortality, and morbidity requires a basic grounding in demographic and biological terminology. Fertility refers to the actual reproductive performance of individuals or populations, whereas fecundity denotes the biological capacity to reproduce. Mortality relates to patterns of death within a population, while morbidity concerns the incidence and prevalence of disease and illness. These concepts are closely interconnected and play a crucial role in shaping population dynamics.

Before examining these ideas in detail, it is important to have a basic understanding of human biology, especially the reproductive system. Familiarity with demographic indicators such as birth rates, death rates, and life expectancy is also essential for meaningful analysis. Equally important is an awareness of how socio-economic, environmental, and cultural factors influence health and reproductive behaviour, thereby affecting population outcomes. Furthermore, knowledge of global health issues, historical developments in population studies, and the role of public health interventions provides valuable context. Basic statistical literacy

is also beneficial, as the study of these concepts often involves interpreting data and trends. This foundational understanding will support a comprehensive analysis of how fertility and mortality shape population growth, as well as the complex interactions between healthcare, education, lifestyle, and policy in influencing these processes.

Keywords

Birth, Death, Public health, Disease, Reproduction, Population

Discussion

The concepts such as Fertility, Fecundity, Morality, Morbidity are important to understand the nature of demography of the population. By having a proper understanding about these we will be able to understand about the quality of the population and how this implicates the social setting of that particular country. It is often stated that in order to know the real situation of a country we only need to look at the plight of women of that country, this will speak volumes; likewise by understanding these basic concepts and measures of population one will be able to link several events of the society to demography.

4.1.1 Fertility

In India, the current population is 1,458,800,433 as of February 9, 2025, based on Worldometer's elaboration of the latest United Nations data with a projected increase of 17% to 1,679,589,259 by 2050. The population growth rate of India as of 2023 is at 0.89% since 2022 there has been a +0.094 percentage points. Fertility is the ability of an individual or couple to reproduce through regular sexual activity. Approximately 90% of healthy, fertile women can conceive within a year if they engage in

regular, unprotected intercourse. Biologically normal fertility depends on several factors, including the production of sufficient healthy sperm in males, viable eggs in females, the successful journey of sperm through open ducts from the male testes to the female fallopian tubes leads to the fertilisation of the egg, and implantation of the fertilised egg in the uterine lining. Any issue in these processes can result in infertility. The other factors inhibiting fertility shall be explored when we discuss the factors affecting fertility and mortality. Let us explore some key terms related to fertility:

1. **Fertility Rate:** The average number of children born per woman within a specific population during her reproductive years. Since 2022 the fertility rate of India stands at 2.01 births per woman. Crude Birth Rate (CBR) and Total Fertility Rate (TFR) are the common measures of fertility rate. Crude Birth Rate (CBR) is the number of live births per 1,000 people in a year. The current crude birth rate of India is 16.27 births per 1000 people and CBR of Kerala is at 12.82



per 1000 people as of 2022, this has increased slightly from 11.94 birth per 1000 people in 2021. Total Fertility Rate (TFR) is the average number of children a woman is expected to have during her lifetime, based on current birth rates. The TFR of Kerala is at 1.8% (2023).

2. **Natural Fertility:** It refers to fertility levels in populations where no deliberate birth control methods are used. This concept helps distinguish between natural reproductive capacity and fertility influenced by family planning.
3. **Infertility:** The inability to conceive after 12 months (or 6 months for women over 35) of regular, unprotected intercourse. It is categorized as primary and secondary infertility. Primary Infertility is when a couple has never achieved pregnancy and Secondary Infertility is when a couple cannot conceive after previously having a child, this is often caused by reproductive tract infections and is the most prevalent type of female infertility worldwide. The World Health Organization (WHO) estimates that India's infertility rate is between 3.9% and 16.8% (2023). Thus, Infertility is a medical condition defined by the inability to achieve a clinical pregnancy after 12 months of regular, unprotected sexual intercourse. It is estimated to impact 8–12% of couples of reproductive ages globally. Men are solely responsible for 20–30% of infertility cases and contribute to 50% of cases overall. The primary factors affecting the natural likelihood of conception include the duration of unintended non-conception, the female partner's age, and infertility related to underlying health conditions.
4. **Subfertility:** It refers to reduced fertility or difficulty in conceiving, often due to factors like low sperm count, irregular ovulation, or age-related decline in reproductive health.
5. **Fertility Transition:** Fertility Transition is the shift from high fertility rates to lower rates, often observed during socioeconomic development. This is a key concept in demography and population studies.
6. **Assisted Reproductive Technologies (ART):** ART means the use of medical techniques to aid conception, such as In vitro fertilisation (IVF), intrauterine insemination (IUI), and egg or sperm donation. The American Center for Disease Control (CDC) defines it as any fertility treatment carried out to manipulate the egg or embryo. There are five types of ART: In vitro fertilization-embryo transfer (IVF), Intrauterine Insemination (IUI), Intracytoplasmic Sperm Injection (ICSI), Frozen embryo transfer (FET).
7. **Replacement Level Fertility:** It is the level of fertility at which a population exactly replaces itself from one generation to the next, typically 2.1 children per woman in most societies.
8. **Parity** refers to the number of

times a woman has given birth to a baby of viable gestation or fetal weight, regardless of the birth outcome (still or live born). If a woman has given birth to one child then they are referred to as first parity and if two then second parity and so on.

9. **Stillbirth:** Stillbirth occurs when a baby dies after 28 weeks of pregnancy, but before or during birth, is classified as a stillbirth. There are nearly 2 million stillbirths every year – one every 16 seconds. Over 40% of all stillbirths occur during labour – a loss that could be avoided with improved quality and respectful care during childbirth including routine monitoring and timely access to emergency obstetric care when required. According to the National Family Health Survey the stillbirth rate in India was 9.7 stillbirths per 1,000 births from 2016–2021.

10. **Livebirth:** Livebirth refers to the complete extraction of a human fetus from its mother, regardless of the duration of the pregnancy, where the fetus exhibits signs of life after expulsion or extraction. These signs include breathing, heartbeat, pulsation of the umbilical cord, or definite movement of voluntary muscles, regardless of whether the umbilical cord is cut or the placenta remains attached.

4.1.1.1 Factors Affecting Fertility

1. Biological Factors

- a. **Age:** Female fertility is highly influenced by age. Women are

born with a finite number of eggs, which decline in both quantity and quality over time. This decline is gradual during early adulthood but accelerates after the mid-30s, reducing the chances of conception and increasing miscarriage risks. Male fertility also decreases with age, though to a lesser extent.

- b. **Hormonal Function:** Proper regulation of hormones such as follicle-stimulating hormone (FSH), luteinizing hormone (LH), and progesterone is essential for ovulation and implantation. Imbalances can disrupt the menstrual cycle and impair fertility.
- c. **Reproductive Anatomy:** Conditions like blocked fallopian tubes, uterine abnormalities, or scarring (e.g., from infections or surgery) can hinder fertilisation or embryo implantation.
- d. **Egg and Sperm Quality:** With age or certain conditions, the quality of eggs and sperm can decline, reducing the likelihood of successful fertilisation. Poor sperm motility, count, or morphology also impacts male fertility.
- e. **Medical Conditions:** Disorders like polycystic ovary syndrome (PCOS), endometriosis, thyroid dysfunction, and vitamin D deficiency can interfere with ovulation, implantation, or pregnancy maintenance.
- f. **Previous Pregnancy:** A history of pregnancy (even without live birth) indicates reproductive potential, making



future conception more likely. Couples who have previously achieved pregnancy together are more likely to conceive compared to those who have not.

2. Social Factors

- a. Religion-Religion significantly influences fertility by shaping attitudes, norms, and behaviors related to family planning, contraception, and the ideal family size. Religious beliefs often emphasise the importance of procreation and may encourage larger families, as children are considered a blessing or divine responsibility in many faiths. Religious beliefs will influence the use of contraception from a religious perspective for instance Catholicism and Islam, may discourage or restrict the use of modern contraceptive methods, leading to higher fertility rates among adherents. Conversely, more liberal religious groups may permit contraception, allowing for greater family planning. Religious doctrines often promote early marriage and prioritise childbearing within marriage. This can result in longer reproductive periods and higher fertility rates, particularly in communities where religious teachings strongly influence personal choices. Culturally practices may be aligned with this to reinforce procreation as religious teachings often align with cultural norms, reinforcing traditional gender roles that encourage women to prioritise motherhood over careers or other pursuits. Participation in religious activities often

correlates with higher fertility, as such communities may promote family-oriented values and discourage delaying childbirth. From the perspective of secularisation in more secular societies, declining religious influence often coincides with lower fertility rates due to increased acceptance of contraception, delayed childbearing, and smaller family sizes.

- b. Caste System-The caste system, particularly in societies like India, plays a significant role in shaping fertility patterns by influencing marriage practices, social norms, and access to resources. In many cases the existing discriminatory practices found in caste system may be reciprocated in the matter of fertility. The caste system emphasises endogamy, restricting marriage within the same caste. This can limit individual choices, lead to early marriages, and promote larger families as a marker of social status or lineage preservation within the caste. Fertility rates are not often standard among groups rather it varies across caste groups due to differences in their socioeconomic status. In India the lower-caste groups tend to have higher fertility rates due to limited access to education, healthcare, and family planning services. This forces many parents to give away their daughters at a younger age for marriage, while upper-caste groups, with better resources and awareness, prefer smaller families. The girls from the upper caste families are educated irrespective of their rural or urban

manage their fertility. This will improve their health outcome enabling educated women to seek prenatal and postnatal care, which can enhance fertility and reduce risks associated with pregnancy. They are also more likely to avoid harmful practices or behaviors that may impact reproductive health. Most importantly education empowers women to take an active role in family planning and reproductive decisions, reducing the influence of traditional or societal pressures to have large families. This may have intergenerational implications as well, as educated parents will prioritise their children's education and well-being, which may reinforce smaller family sizes and focus on quality over quantity. Thus, Education plays a transformative role in reducing fertility rates, especially in regions where access to education for women and girls has historically been limited.

4. Economic Factors

Economic conditions play a significant role in shaping fertility rates by influencing family planning decisions, access to resources, and societal priorities. Income and Financial Stability are key factors in fertility. Higher income levels are often associated with lower fertility rates, wealthier families may prioritise career advancement, education, or lifestyle over having more children. Conversely, financial instability in lower-income groups may lead to higher fertility due to limited access to contraception or cultural norms favoring larger families. The rising expenses of childcare, education, healthcare, and housing as in the cost of raising children deter families from having more children, especially in urbanised and developed economies. Generous parental leave, childcare subsidies, and other government support programs can encourage higher fertility rates by reducing the economic burden of raising children. Apart from this dual-income households and career-oriented lifestyles may lead to delayed parenthood and fewer children.



Women in particular may tend to postpone or forgo childbearing to focus on professional growth. Economic disparities affect access to contraception, fertility treatments, and reproductive healthcare, influencing fertility rates. Wealthier individuals tend to have better access to family planning services, leading to more controlled fertility patterns. Economic factors are deeply intertwined with social and cultural dynamics, shaping fertility trends across regions and populations.

4.1.2 Fecundity

Demographers define “fertility” as actual reproductive performance, while “fecundity” refers to biological capacity. This distinction can be confusing because the medical field often uses “fertility” in the same way demographers use “fecundity.” For instance, physicians typically describe couples unable to conceive after 12 months of trying as “infertile,” whereas demographers would classify them as “infecund.” A woman is considered to have impaired fecundity if she believes she cannot have a baby, has been advised by a physician to avoid pregnancy due to health risks, or has been married for at least 36 months, has not used contraception, and has not conceived during that time. So, fertility refers to the ability to produce offspring, while fecundity is the likelihood of achieving pregnancy through unprotected intercourse within a month, taking into account factors like age and ovarian reserve.

Fecundity marks the biological potential for reproduction that is the capacity to produce offspring. Different factors such as biological, environmental, behavioral and physiological factors contribute to fecundity. Biological factors such as age, health, genetics and hormonal balance, environmental factors such as resource availability, climate and habitat conditions, behavioral factors such as intimacy, mating behavior, parental

investment and social structures and lastly physiological factors such as sperm count, egg production rate and gestation period.

4.1.3 Mortality and Morbidity

Mortality refers to the occurrence of death within a population. It is a key demographic indicator used to measure the health status, life expectancy, and overall well-being of a society. Mortality can be studied in various contexts, including individual causes of death, age-specific death rates, and trends over time. Mortality is influenced by several factors, including access to healthcare, socioeconomic status, environmental conditions, disease prevalence, and lifestyle choices. Understanding mortality trends helps inform public health policies and interventions aimed at reducing preventable deaths and improving overall life expectancy. Let us explore the different measures of mortality.

- 1. Infant Mortality Rates:** Infant Mortality Rate (IMR): The number of deaths of infants under one year of age per 1,000 live births in a given year. As of 2022 the Infant Mortality rate was around 25.5 deaths per 1000 live births.
- 2. Neonatal Mortality Rate:** The neonatal mortality rate refers to the number of deaths within the first 28 days of life per 1,000 live births. As of 2022 according to WHO the neonatal mortality rate of India stands at 18.13 per 1,000 live births. The National Health Mission (NHP) has set a target of 16 per 1,000 live births by later 2025. The infant mortality rate of Kerala is at 6 per 1000 birth as of 2020.

3. **Child Mortality Rate** also known as Under – Five Mortality rate (U5MR) measures the probability of children dying between birth and the age of five per 1,000 live births. For India the rate stands at 29.06 deaths per 1000 births (2022).

4. **Crude Death Rate (CDR):** The number of deaths occurring in a population per 1,000 individuals per year. The CDR of India as of 2022 is at 9.074 per 1000 people and the CDR of Kerala is at 9.66 as of 2021.

5. **Maternal Mortality Rate (MMR):** The number of deaths of women due to pregnancy-related causes per 100,000 live births. There has been a steady decline in this rate in the past few years in India which is indicative of the better health care system, facilities and awareness. From 384 in 2000 the rate currently stands at 97 per 100,000 live births as of 2020. Among the states of India, Kerala records the lowest maternal mortality rate with 19 per 100,000 births (2025). Recently the state of Kerala has seen an increase in the maternal mortality rate authorities have correlated this to the fact that there are fewer livebirth in Kerala which is also indicative of the declining fertility levels of the state.

6. **Life Expectancy:** A statistical measure indicating the average number of years a person is expected to live based on current mortality rates. In India, life

expectancy at birth has improved by 4.11 years from 63.2 [62.6 - 63.8] years in 2000 to 67.3 [66.9 - 67.8] years in 2021. According to the latest WHO data published in 2021, life expectancy in India is 65.8 years for males, 69 years for females, and 67.3 years overall, placing India 123 in the World Life Expectancy rankings. Kerala has a high life expectancy, with an average of 77.28 years at birth. This surpasses the national average life expectancy in India, which is 70.77 years.

Morbidity refers to the presence or occurrence of illness, disease, or medical conditions within a population or an individual. It encompasses both acute (short-term) and chronic (long-term) conditions and is often used to measure the overall health burden in a community. Examples of common morbidities include diabetes, heart disease, obesity, asthma, chronic kidney disease, mental health disorders, and infections like the flu or COVID-19. Understanding morbidity helps public health officials and policymakers assess healthcare needs, allocate resources, and implement strategies to prevent and manage diseases effectively.

Morbidity is commonly expressed in terms of incidence and prevalence:

- ◆ **Incidence:** The number of new cases of a particular disease or condition occurring within a specific period in a defined population.
- ◆ **Prevalence:** The total number of existing cases of a disease or condition in a population at a given time.

4.1.3.1 Factors Affecting Mortality

1. Biological Factors

Mortality rates are higher in infants - children under five (due to diseases like pneumonia, diarrhea, and malnutrition), and the elderly (due to chronic conditions and weakened immunity) making the age of an individual an important factor. Biologically women often have lower mortality rates than men due to biological advantages, although maternal mortality in some regions increases female death rates. Biologically human beings are fragile and susceptible to diseases and disorders by design as there is the possibility that one may fall sick or have some genetic disorder which makes hereditary diseases such as sickle cell anemia, cystic fibrosis, or congenital heart defects leading to higher mortality.

2. Environmental Factors

The nature or the ecosystem that we live in is an interlinked network which is composed of different living and non-living organism. This ecosystem is structured in such a way that it is essential we maintain harmony. At present most of the natural elements around us such as the water bodies and air are polluted, the natural resources are fast depleting; all of these have adverse effect on the quality of life. It is essential that people have access to clean drinking water and air for survival. But the fast-paced urbanisation and unethical industrial practices has led to the intense pollution of air and water bodies and there is a lack of safe drinking water. High levels of pollution increase respiratory and cardiovascular diseases, leading to premature deaths. The living conditions in low income areas lack proper sanitation facilities thus contributing to diseases like cholera and dysentery. These may be deemed as man made calamities and natural problems. Apart from this man is susceptible to natural disasters such as

earthquake, floods, hurricane, all causing direct fatalities. For example, the landslide in Wayanad and the Kerala floods of 2018 and 2019.

3. Socioeconomic Factors

Income, education, and employment significantly influence mortality rates. Poverty restricts access to essential resources like healthcare, nutritious food, and education, heightening mortality risks. Conversely, higher education levels, particularly among women, enhance awareness of health, hygiene, and nutrition, leading to improved survival outcomes. Additionally, job insecurity and unsafe working conditions can increase vulnerability to health risks, further elevating the likelihood of mortality.

4. Culture and Religious Practices

Cultural and religious practices can play a significant role in shaping health outcomes and mortality rates. Traditional beliefs and practices, while deeply rooted in cultural identity, may sometimes lead to delayed or inadequate healthcare. In certain societies, a strong reliance on traditional medicine or faith-based healing methods over modern medical treatments can result in delayed diagnoses and untreated conditions, increasing the likelihood of preventable deaths. While traditional practices may offer some benefits, they can also pose risks if they discourage or replace evidence-based medical interventions.

Similarly, dietary practices influenced by religious or cultural norms can impact nutrition and overall health. Restrictions on certain foods, such as meat, dairy, or specific nutrients, may lead to deficiencies or imbalances, particularly if alternatives are not adequately incorporated. For example, strict vegetarian or fasting practices, if not managed properly, could result in deficiencies in iron, vitamin B12, or protein, increasing

vulnerability to health issues. Conversely, overindulgence in culturally celebrated foods high in sugar, salt, or fats can contribute to obesity and chronic illnesses such as diabetes and heart disease. Addressing these factors requires culturally sensitive health education and interventions that respect traditions while promoting balanced nutrition and timely access to modern healthcare.

5. Healthcare Access and Quality

Access to quality health care services is essential, affordability of health care, limited access to healthcare services, including hospitals, lack of skilled birth attendants, and medications, contributes to preventable deaths, particularly maternal and infant mortality. Even though it is the fundamental right of every individual to have access to proper healthcare, in many situations that isn't the case. Lack of access and awareness hinders the quality of medical care each individual has access to. In order to ensure that every individual is protected, governments across the globe promote immunization from the time of birth against infectious diseases. This plays a vital role in reducing child mortality. Psychological wellbeing is as important as physiological wellbeing. Stress and poor mental health can lead to chronic stress and mental illnesses such as depression which can indirectly contribute to mortality by increasing the risk of heart disease, substance abuse, and suicide.

6. Pandemic

Pandemics significantly impact mortality rates by causing widespread disease outbreaks that strain healthcare systems and disrupt daily life. Key ways in which pandemics influence mortality include: High disease transmission, burdened healthcare system, comorbidities and vulnerable population, Delayed Treatment for Non-Pandemic Illnesses, etc. High Disease Transmission

or Pandemics, such as COVID-19, influenza, and HIV/AIDS, spread rapidly across populations, leading to a sharp increase in mortality rates within a short time frame. Such outbreaks due to a surge in cases often overwhelms healthcare facilities, resulting in inadequate care for both pandemic-related and unrelated medical conditions, increasing deaths. During times like these individuals with preexisting conditions such as diabetes or heart disease and vulnerable groups like the elderly, pregnant women, infants and immunocompromised individuals face a higher risk of severe disease and mortality. The social circumstances, preventive measures and fear of exposure may delay diagnosis and treatment for chronic and acute conditions, can indirectly increase mortality. In the event of such pandemics or outbreak there may be large-scale socioeconomic disruptions which will often exacerbate poverty, unemployment, and food insecurity, indirectly contributing to deaths from malnutrition, stress, and lack of access to care. The psychological toll of pandemics, including anxiety, depression, and social isolation, can lead to an increase in suicide rates and other stress-related conditions. Pandemics profoundly affect mortality rates both directly, through infection and disease, and indirectly, by disrupting healthcare, economies, and social systems.

7. Human Conflict or War

Wars significantly impact mortality by causing a dramatic increase in deaths within a short timeframe. Armed conflicts often result in large-scale casualties among both military personnel and civilians. For instance, the Ukraine - Russia War or Israel – Palestine Conflict both of these have raised significant death toll. These deaths were caused not only by combat but also by bombings, genocide, starvation, and disease outbreaks triggered by the war's widespread devastation.

Beyond wars, terrorism also contributes to elevated mortality rates. Acts of terrorism



inflict immediate fatalities and long-term psychological and economic repercussions, destabilising societies and creating conditions that can lead to further deaths through displacement, poverty, and healthcare disruption. Similarly, human trafficking indirectly increases mortality rates as well. Trafficked individuals, particularly women and children, are exposed to violence, exploitation, and poor living conditions.

They often face limited access to healthcare, malnutrition, and mental health challenges, which can result in premature deaths. Together, wars, terrorism, and human trafficking underscore how human-driven conflicts and exploitation profoundly impact mortality, causing not only direct deaths but also long-term suffering and systemic destabilisation.

Recap

- ◆ Fertility is the ability of an individual or couple to reproduce through regular sexual activity.
- ◆ Fertility rate is the average number of children born per woman within a specific population during her reproductive years.
- ◆ Crude Birth Rate (CBR) is the number of live births per 1,000 people in a year.
- ◆ Total Fertility Rate (TFR) is the average number of children a woman is expected to have during her lifetime, based on current birth rates.
- ◆ Infertility is the inability to conceive after 12 months (or 6 months for women over 35) of regular, unprotected intercourse.
- ◆ Subfertility refers to reduced fertility or difficulty in conceiving, often due to factors like low sperm count, irregular ovulation, or age-related decline in reproductive health.
- ◆ Fertility Transition is the shift from high fertility rates to lower rates.
- ◆ Assisted Reproductive Technologies (ART) is when medical techniques are used to aid conception.
- ◆ Replacement Level Fertility is the level of fertility at which a population exactly replaces itself from one generation to the next, typically 2.1 children per woman in most societies.
- ◆ Parity refers to the number of times a woman has given birth to a baby of viable gestation or fetal weight, regardless of the birth outcome.
- ◆ Stillbirth occurs when a baby dies after 28 weeks of pregnancy, but before or during birth, is classified as a stillbirth.
- ◆ Livebirth refers to the complete extraction of a human fetus from its mother, regardless of the duration of the pregnancy.

- ◆ Biological factors such as age, hormone levels, reproductive anatomy, egg and sperm quality, medical conditions and previous pregnancy affect fertility.
- ◆ Education helps to spread awareness about family planning, contraception, and the economic and social benefits of having a smaller family.
- ◆ Mortality refers to the occurrence of death within a population.
- ◆ Morbidity refers to the presence or occurrence of illness, disease, or medical conditions within a population or an individual.
- ◆ Morbidity is commonly expressed in terms of incidence and prevalence.

Objective Questions

1. What is the terminology used when the level of fertility at which a population exactly replaces itself from one generation to the next?
2. What is the term used to refer to the number of times a woman has given birth to a baby of viable gestation?
3. What is the expansion of IVF?
4. Give an example for human conflict affecting mortality
5. Define Infant Mortality Rate
6. The biological capacity to reproduce is known as?
7. Which demographic indicator is used to measure the health status, life expectancy, and overall well-being of a society?
8. What is the measure used to evaluate the overall health burden in a community?
9. The total number of existing cases of a disease or condition in a population at a given time is known as what?
10. What is Crude Birth Rate (CBR)?

Answers

1. Replacement level fertility
2. Parity
3. In Vitro Fertilization
4. Russia- Ukraine or Israel – Palestine
5. The number of deaths of infants under one year of age per 1,000 live births in a given year
6. Fecundity
7. Mortality
8. Morbidity
9. Prevalence
10. CBR is the number of live births per 1,000 people in a year

Assignments

1. Explain the concept of Total Fertility Rate (TFR). What are the major factors influencing fertility trends in developed and developing countries? Provide examples to support your analysis.
2. Based on your understanding of mortality, discuss the key determinants of mortality and how socioeconomic factors and healthcare access impact mortality rates.
3. Kerala stands at a higher ranking regarding non communicable disease, based on this compare the prevalence of two major non-communicable diseases (e.g., diabetes and cardiovascular diseases) and their impact on public health and how this affects the morbidity rate.
4. Identify the family planning policies adopted in India and Kerala, assess how it is implemented and evaluate its effectiveness.
5. Analyse the relationship between maternal health and fertility. How does maternal morbidity influence fertility decisions and outcomes in different parts of the world? Provide evidence-based examples.

Suggested Reading

1. Clarke J.I. (2013). *Population geography*. Elsevier.
2. Srivastava S.C.(2004). *Studies in demography*. Anmol Publications.
3. Jhingan, M.L., Bhatt, B. K. &Desai, J.N. (2019). *Demography*. (3rd ed). Vrindra Publication Pvt. Ltd.
4. Bose, A. (2018). *India's quest for population stabilisation*. National Book Trust of India.

Reference

1. Kundu, S., Ali, B., & Dhillon, P. (2023). Surging trends of infertility and its behavioral determinants in India. *PLoS ONE*, 18(7), <https://doi.org/10.1371/journal.pone.0289096>
2. Maya, C. (2025, January 13). In Kerala, declining fertility levels push up maternal mortality ratio. *The Hindu*. <https://www.thehindu.com/news/national/kerala/declining-fertility-levels-push-up-keralas-maternal-mortality-rate/article69091856.ece>
3. Weeks, J. R. (2005). Demography. In K. Kempf-Leonard (Ed.), *Encyclopedia of Social Measurement* (pp. 645–658). Elsevier. <https://doi.org/10.1016/B0-12-369398-5/00273-5>
4. World Health Organization. (2025). *India [Country overview]*. data.who.int. Retrieved January 21, 2025, from <https://data.who.int>



UNIT

Migration and Demography

Learning Outcomes

On completion of this unit, the learner will be able to:

- ◆ understand the concept of migration
- ◆ analyse the global, national and regional trends of migration
- ◆ examine the societal implications of migration

Prerequisite

Susan received her offer letter today; she has been selected to work as a surgical nurse at a leading hospital in London. She shared the news with her sister, Leah, who is employed as a software engineer in Bangalore. Although both Susan and Leah come from a small nuclear family in Kerala, they now live in different places Leah in Bangalore and Susan preparing to move to London. This situation illustrates the concept of migration, as both have moved away from their original place of residence. Migration refers to the movement of people from one place, locality, or country to another, where they establish a new residence. In contemporary society, migration is a common phenomenon, with individuals moving within states, across countries, and internationally for various reasons such as education, employment, marriage, and family needs. This unit will explore the concept of migration, its different types, and the factors that influence migration patterns

Keywords

Relocating, Opportunity, Diaspora, Demographic transition, Cultural exchange, Policy

Discussion

In the present world we live in, migration holds an important meaning. For some it maybe moving from their home land to a different country or locality for better opportunity and for some it may be seeking asylum from a war-torn country or threatening situation. Whichever it maybe, migration essentially means the same as they are leaving their birth place or permanent residence either temporarily or permanent for a special purpose. Such cases of migration can bring forth changes in the society they live in and migrate to. To simply state the demography transition, financial implications, cultural changes, policy implication, etc. are huge for the home state/country and to the state or country where one may migrate to. In the event of Russia Ukraine war, we saw reports of large scale migration to neighboring countries like Poland or the fact that locally in our state we witness migration to foreign countries for higher education or work. So how do we identify or term these cases of migration and how does it affect the social fabric. In this unit we shall discuss what is migration, the different types of migration and factors affecting migration.

4.2.1 Migration

Migration refers to the movement of people from their usual place of residence to a new location, either across international borders or within a country. While there is no universally accepted definition of “migration” or “migrant,” various widely recognised definitions exist across different contexts. For instance, the United Nations Department of Economic and Social Affairs defines a long-term migrant as someone who resides outside their country of origin for at least 12 months.

The term ‘migrant’ is commonly defined as “any person who lives temporarily or

permanently in a country where they were not born and has established significant social ties in that country.” However, this definition may be too narrow, as some national policies consider individuals born within the country as migrants under specific circumstances.

The UN Convention on the Rights of Migrants defines a migrant worker as “a person who is to be engaged, is engaged, or has been engaged in a remunerated activity in a State of which they are not a national.” This leads to a broader understanding of the term ‘migrant’, as outlined in Article 1.1(a): “The term ‘migrant’ should encompass all cases where the decision to migrate is made freely by the individual, based on personal convenience and without coercive external factors.” This definition excludes refugees, displaced persons, or others forced to leave their homes due to external pressures. Migrants are individuals who decide when to leave and where to go, even when these choices are constrained by challenging circumstances. Some scholars distinguish between voluntary and involuntary migration. While voluntary migration is characterized by personal choice and relative freedom, involuntary migration arises from external pressures, such as conflict or disaster, where individuals are compelled to relocate. In some cases, these categories blur, particularly when people face extreme conditions that limit their ability to make free decisions about their movement.

From a demographic perspective, migration can be categorised into two main types: international and internal. International migration involves crossing national boundaries to live in another country for a specified minimum duration. Internal migration refers to the movement of individuals within the borders of the same



within their country are sometimes referred to as “internal migrants” and also face significant challenges. In addition to conflict persecution, and disasters, there are many other reasons why people migrate. Each year, millions of individuals worldwide relocate in response to or in anticipation of climate change and environmental pressures. Others, such as migrant workers, move for seasonal or temporary employment, taking on jobs that are tied to specific seasonal conditions and can only be carried out during certain times of the year. Seasonal workers are particularly prevalent in industries such as agriculture and tourism. Thus, some of the reasons why people migrate maybe as follows:

1. Better employment opportunities
2. Education
3. To overcome poverty and improve quality of life
4. For security and safety
5. Marriage and family reunification
6. Better healthcare
7. Religious, cultural, and lifestyle reasons
8. Political instability and turmoil
9. Environmental Factors: natural disasters and climate
10. Discrimination and disharmony

Some migration routes are safer and more aligned with formal migration governance systems than others. Whenever possible, individuals prefer to migrate through regular channels, such as using visas. However, migrants' experiences vary greatly and are often influenced by the specific pathway they take. Migration not only affects those who

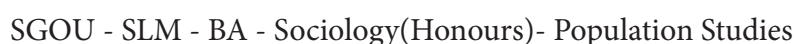
of their fundamental rights through diplomatic agreements, visas, or other arrangements.

This broad definition of migrants reflects the difficulty in distinguishing between those who leave their home countries due to political persecution, conflicts, economic hardship, environmental issues, or a combination of these factors, and those who migrate in search of better conditions for survival or well-being. It also seeks to define migrant populations in a way that accounts for new situations. Migration itself refers to the movement across the boundaries of a political or administrative unit for a minimum period of time. It encompasses the movement of refugees, displaced persons, uprooted people, and economic migrants. Internal migration involves the movement of people from one area within a country to another, such as between provinces, districts, or municipalities. International migration, on the other hand, involves the relocation of people between different countries. Two types of movement are excluded from this broad definition: first, territorial movement that does not alter social ties and thus has little impact on either the individual or society, such as tourism; and second, relocation where individuals or groups are passive participants rather than active agents, such as the organized transfer of refugees from their country of origin to a safe haven.

4.2.2 Types of Migration

4.2.2.1 Emigration

- Emigration is when a person leaves one's own country to settle in a different country. From the perspective of the country of departure, the act of moving from one's country of nationality or usual residence to another country, so that the country of destination effectively becomes his or her new country of usual residence. Emigration is the process where individuals leave their



home country and relinquish their citizenship to settle in another country. There are various reasons for emigration. Some people may seek a fresh start in a new land, drawn by the promise of better opportunities. Others may be dissatisfied with the political or social conditions in their home country and choose to relocate elsewhere in search of a more favorable environment. Brain Drain is a term associated with emigration as it refers to the emigration of highly skilled, educated, or talented individuals from their home country to another country in search of better opportunities, typically for work, education, or living conditions. This phenomenon often leads to a loss of intellectual and professional capital in the country of origin, as skilled workers such as doctors, engineers, scientists, and other professionals seek improved career prospects, higher wages, or a better quality of life in more developed nations. While brain drain can benefit the destination countries by enriching their workforce, it can create challenges for the countries of origin, particularly in terms of economic growth, innovation, and development. The following may be considered as the primary reasons for Emigration:

- ◆ Seek better economic opportunities
- ◆ Avoid poverty and economic hardship
- ◆ Send remittances
- ◆ Seek better cost of living
- ◆ Gain access to credit and financial services
- ◆ Pursue better education
- ◆ Escape from economic discrimination

4.2.2.2 Immigration

Immigration, in its most basic sense, refers to the movement of people from one location or country to another. It is a fundamental and long-standing part of human history. The concept of immigration predates modern laws. In ancient times, nomadic tribes would travel from place to place in search of fertile land, grazing pastures for their livestock, and abundant hunting and fishing grounds. Immigration involves individuals

Table 4.2.1 Difference between Immigration and Emigration

Immigration	Emigration
Immigration is the act of moving to a new country.	Emigration is the act of leaving one's home country.
Immigration can be considered as in-migration which means a person who has moved to a separate country.	Emigration is when one leaves their own country and settle elsewhere permanently.
Example: A person leaving India to settle in Australia for a better life, that person is an immigrant of Australia.	Example: A person leaving India to settle in Australia for a better life, that person is an emigrant to India.

moving to a new country in search of better job opportunities, an improved lifestyle, or to reunite with family. The immigration process can vary significantly, with factors such as required skills for certain jobs, age restrictions, and waiting lists playing a role.

The economic effects of immigration have influenced global industries for years, contributing to positive changes around the world. Global migration is a significant issue, with an estimated 272 million international migrants, making up 3.5% of the world's population. While this percentage may appear small, the actual number of migrants has already exceeded some projections for 2050. A 2020 United Nations report revealed that one in every 30 people globally is an international migrant. Europe and Asia collectively host about 82 to 84 million immigrants, while North America is home to nearly 52 million international migrants. Each year, the number of people crossing borders increases, profoundly affecting a country's population, cultural diversity, and economic productivity.

4.2.2.3 Push–Pull Factor

Migration is generally defined as a permanent or semi-permanent relocation of one's residence. The factors influencing migration are categorised as push and pull factors. Push factors compel people to leave their current residence, while pull factors attract them to a new location. These factors can be economic, political, cultural, or environmental in nature.

Push factors encourage people to leave their points of origin and settle elsewhere, while pull factors attract migrants to new areas. For example, high unemployment is a common push factor, while an abundance of jobs is an effective pull factor. Push factors are conditions that drive people to leave their home country, often due to unfavorable circumstances. These factors can include a

lack of sufficient job opportunities, poverty, rapid population growth exceeding available resources, substandard living conditions, desertification, famines, droughts, fear of political persecution, inadequate healthcare, loss of wealth, and natural disasters.

Pull factors are the opposite of push factors; they draw people to a specific location. Common examples of pull factors include greater job opportunities, improved living conditions, access to land for settlement and farming, political and religious freedom, better education and social services, advanced transportation and communication infrastructure, superior healthcare, a more relaxed environment, and enhanced security.

4.2.2.4 In–Migration

In-migration refers to the movement of people into a particular area or country from another region or country. It is a key aspect of the migration process, involving the influx of individuals or groups into a specific destination, whether for temporary or permanent relocation. In migration typically involves individuals moving for various personal, social, political, or economic reasons and can vary widely in terms of scale and duration. The following are the different types of In-migration:

- a. **Voluntary In-Migration:** This type occurs when people move into a new area by choice, often for reasons like better job opportunities, higher educational prospects, better living standards, or improved quality of life.
- b. **Forced In-Migration:** People migrate involuntarily due to factors like war, conflict, natural disasters, or persecution. Refugees and displaced individuals typically fall under this category.

- At the destination, migrants contribute to economic growth, cultural diversity, and population stabilisation, though challenges such as job competition, social tensions, and pressure on infrastructure may arise. Notable examples include rural-to-urban migration in India, Latin American migration to the U.S., and the brain drain from developing countries like India and Nigeria. While out-migration can bring benefits to individuals and economies, it requires effective policies to address its challenges and maximise its positive impact.

Migration or the need to move from one place to another either within or outside the country may be motivated by different factors, some may migrate seeking better opportunity, safety or lifestyle. It is estimated that more than 280 million people worldwide are migrants, meaning approximately 3.6 percent of the global population resides outside their country of birth. For centuries, human mobility has been influenced by factors such as income inequality, conflict, climate change, and demographic pressures. India, the world's most populous country, also has the largest number of migrants globally. Largely this movement is influenced by a variety of factors, which can be classified into push factors (which drive people away from a place) and pull factors (which attract people to a new location) which we have discussed already. So additionally, other factors such as economy, social, political, environmental and demography may influence migration. Let us explore each in detail:

Out-migration refers to the movement of people from one region, state, or country to another due to various economic, social, political, or environmental factors. It can be classified as internal (within a country) or international (between countries), and may be temporary (seasonal or student migration) or permanent. The reasons for out-migration are driven by push factors such as economic hardships, political instability, environmental issues, social problems, and poor living conditions, while pull factors include better job opportunities, improved quality of life, political stability, education, and family reunification.

4.2.3.1 Economic Factors

Economic considerations are one of the most significant drivers of migration. People move in search of better job opportunities, higher wages, and improved living standards. Employment opportunity, equal pay, cost of

living and economic crises are the economic motivators for migration.

- ◆ Employment Opportunities is the primary motivation for migration. Regions with booming industries, high job availability, and better wages attract migrants. For example, migration from rural areas to urban centers or gulf migration in search of jobs.
- ◆ Income disparities are another contributor. Countries with significant wage gaps experience migration flows, such as workers from developing nations moving to developed countries. In India unequal pay is still a problem, as women and men who are employed in the same sector are paid differently solely based on their gender.
- ◆ The increasing cost of living force migration in some cases. High living costs in some areas push people to migrate to places where expenses are more affordable.
- ◆ Economic Crises such as financial downturns, inflation, or lack of investment in a region lead to job losses and out-migration.

4.2.3.2 Social and Cultural Factors

Social and cultural factors play a crucial role in migration decisions, often influencing people to move based on lifestyle, family ties, and societal norms. Education and healthcare is a prime reason. Regions with better educational institutions and healthcare facilities attract migrants, such as students moving abroad for higher education. Overall there are 13.2 lakh Indian students currently studying abroad. The geographic distributions are mainly around USA, Canada, Gulf

Countries, UK and Australia. Currently there are 4.6 lakh Indian students studying in USA which account for 35.2% of total Indian students studying abroad. After USA, Canada accounts for 1.83 lakh students (13.8% Indian students abroad). Nearly half of the Indian students abroad are in North America. Quality of Life is another factor leading people to migrate to places with better infrastructure, sanitation, safety, and social amenities. Cultural Connections prompts people to migrate to areas where they find cultural similarities, such as shared language, traditions, and communities. Lastly, discrimination and Social Conflicts related to religion, ethnicity, or gender can force individuals or groups to migrate to more tolerant societies.

4.2.3.3 Political Factors

Political stability and government policies significantly affect migration patterns. Political instability or conflicts like war, civil unrest, and government oppression force people to migrate as refugees or asylum seekers. Government Policies and Immigration Laws in some countries may be favorable for migrants. In such instances those countries with favorable immigration policies attract migrants, while strict visa regulations discourage movement. Persecution and human rights violations such as discrimination based on race, religion, or political beliefs often leads to forced migration. Lastly legal and illegal migration occur when some people migrate legally with work or student visas, while others cross borders illegally due to restrictive immigration policies.

4.2.3.4 Environmental Factors

Natural and human-induced environmental changes are increasingly influencing migration. These may be holistically considered as natural disasters, climate



change, depleting resources, and industry led pollution. Natural disasters such as earthquakes, floods, hurricanes, and droughts displace people and force them to relocate. For example: Wayanad due to its geographical location and nature is volatile making it difficult to inhabitant thus forcing people to migrate internally to elsewhere. Climate change has induced different changes such as rising sea levels, desertification, and extreme weather conditions contributing to migration, particularly in coastal and agricultural regions. E.g.: Maldives is a country at risk due to rising sea level. Resource availability is an increasing crisis, the depletion of natural resources, such as water shortages and deforestation, pushes people to migrate in search of better living conditions. Industrial Pollution and Environmental degradation affect some areas by increased pollution, hazardous waste, or land degradation cause an outflow of people seeking healthier environments.

4.2.3.5 Demographic Factors

Population dynamics, including age, gender, and family structure, influence migration patterns. Overpopulation increases the density of population and this in turn will lead to limited opportunities and resources prompting migration to less populated regions. Some countries due to their birth control policies and intense migration are faced with the issue of aging population. Such countries attract young migrants to fill labor shortages. E.g. Germany and Japan. In general, younger individuals are more likely to migrate for employment, education, and adventure, whereas older populations tend to remain in familiar locations. Historically, men migrated more for work, but due to globalization there has been significant increase in female migration, particularly in domestic and healthcare sectors.

4.2.3.6 Technological and Infrastructure Factors

Advancements in technology and transportation have made migration easier and more accessible. Improved transportation, affordable and fast travel options (airplanes, trains, and highways) have increased migration rates. Growing and established digital infrastructure and internet based connectivity and social media inform potential migrants about job opportunities, quality of life, and migration processes thus providing remote work opportunities. This digital growth has led to the rise of digital nomadism allowing people to migrate while working online, eliminating location constraints.

4.2.3.7 Psychological and Personal Factors

Personal choices, ambitions, and experiences also shape migration decisions. Desire for adventure and exploration motivate some people to migrate as they seek personal growth, new experiences, or lifestyle changes. Family Reunification is another reason, many migrants move to join family members already settled in another region or country. Marriage and relationships in some cases promote migration as in to live with a partner is common, particularly in international relationships.

Migration is a complex phenomenon influenced by multiple factors, including economic opportunities, social conditions, political stability, environmental changes, demographic trends, and technological advancements. While some factors push people away from their place of origin, others attract them to new destinations. Understanding these factors helps governments, policymakers, and societies to develop effective migration policies to manage both the challenges and benefits associated with population movement.

Recap

- ◆ Migration refers to the movement of people from their usual place of residence to a new location, either across international borders or within a country.
- ◆ The term 'migrant' is commonly used for any person who lives temporarily or permanently in a country where they were not born and has established significant social ties in that country.
- ◆ An estimated 281 million people are international migrants, representing 3.6% of the global population.
- ◆ The International Migration Outlook 2023 has tagged India as the leading source of migrants to Organization for Economic Co-operation and Development (OECD) countries.
- ◆ Most international migration is driven by reasons such as work, family, and education, and these processes generally occur without major challenges for migrants or the host countries.
- ◆ Emigration is when a person leaves one's own country to settle in a different country.
- ◆ Brain Drain refers to the emigration of highly skilled, educated, or talented individuals from their home country to another country in search of better opportunities.
- ◆ Immigration, in its most basic sense, refers to the movement of people from one location or country to another.
- ◆ Push factors compel people to leave their current residence, while pull factors attract them to a new location.
- ◆ In-migration refers to the movement of people into a particular area or country from another region or country.
- ◆ Out-migration refers to the movement of people from one region, state, or country to another due to various economic, social, political, or environmental factors.
- ◆ Employment opportunity, equal pay, cost of living and economic crises are the economic motivators for migration.
- ◆ People move in search of better job opportunities, higher wages, and improved living standards.



Answers

1. Migration
2. India
3. Push factor
4. Pull factor
5. Emigration
6. Immigration
7. Out – migration
8. Brain drain
9. Voluntary in-migration
10. Forced in-migration

Assignments

1. In view of the increased migration of youth to abroad for education, assess the implication of this in the Kerala society.
2. Assess and critically evaluate the repercussion on the resettlement countries that take in refugees and asylum seekers. Give examples and emphasise on how it alters their social and political fabric.
3. Evaluate if age and migration are interconnected, state your opinion and justify your assessment.
4. Brain drain has been a disadvantage for developing countries and a gain for developed countries, from this perspective assess and evaluate how India has been affected by brain drain, propose a solution to possibly rectify this.

Suggested Reading

1. Jhingan, M.L., Bhatt, B. K. & Desai, J.N. (2019). *Demography*. (3rd ed). Vrindra Publication Pvt. Ltd.
2. Clarke J.I. (2013). *Population geography*. Elsevier.
3. Das, V. (2006). *Handbook of Indian Sociology*. Oxford University Press.

Reference

1. International Organization for Migration (IOM). (2024). *Migration and migrants: A global overview*. In M. McAuliffe & L. A. Oucho (Eds.), *World migration report 2024*. IOM.
2. Ak, M. M., Cömert, T., & Kanat, M. H. (2024). Paradigm shifts in migration and education research. *International Journal of Field Education*, 10(3), 55–79.
3. McAuliffe, M., & Oucho, L. A. (2024). Report overview: Migration continues to be part of the solution in a rapidly changing world, but key challenges remain. In M. McAuliffe & L. A. Oucho (Eds.), *World migration report 2024*. International Organization for Migration. <https://www.iom.int/fundamentals-migration>



BLOCK

Structure and Characteristics of Indian Population



UNIT

Population Composition: Age, Gender, and Social Factors

Learning Outcomes

On completion of this unit, the learner will be able to:

- ◆ familiarise the sex and age structure of Indian population
- ◆ understand the importance of sex and age characteristics of Indian population
- ◆ explain the population characteristics like marital status, education, occupation and religion of Indian population
- ◆ assess the features and importance of Indian population

Prerequisite

Imagine a place where the population consists largely of older people rather than younger individuals, and where women outnumber men. What kinds of needs might arise in such a context? A society with a higher proportion of elderly people would require improved basic amenities and accessibility in public spaces, transportation, and healthcare services. It would also need more welfare schemes and support systems specifically designed for senior citizens, as they represent a segment of the population that requires greater care and assistance.

Similarly, in a patriarchal society, a higher proportion of women may highlight the need for enhanced access to basic facilities, as well as policies such as reservations and concessions to promote equality and empowerment. Understanding the composition of a population in terms of age and sex is therefore essential for effective planning and development initiatives. Populations are not homogeneous; they vary across dimensions such as age, sex, race or ethnicity, and marital status. Among these, the age-sex structure is particularly significant for shaping policies and development strategies. This unit focuses on the age and sex characteristics of the Indian population and their broader implications.

Keywords

Population dynamics, Age structure, Sex structure, Age-sex pyramid, Literacy, Census

Discussion

The population composition according to age and sex is known as the age and sex structure. The age-sex distribution shows the relative numbers of children, young people and old people and the balance between men and women at different ages. Almost all population characteristics differ significantly with different ages. As it is a main component of population analysis, most of the analysis is based on the age-sex structure of the population. The demographic processes are all affected directly by sex and by age, and these influences occur via biological, psychological, cultural, and social variables.

5.1.1 Age Structure

The age structure of a population is the distribution of people of various ages which explains population trends like rates of births and deaths. Age structure is a convenient tool for sociologists, social scientists, public health care experts, policy

analysts, and policy-makers. It implicates social and economic aspects in society, like understanding the resources that must be allocated for child care, schooling, and health care, familial issues. It also indicates greater social implications of whether there are more children or elderly people in society.

Age structure is portrayed as an age pyramid in graphic form. It shows the youngest age cohort at the bottom, with each further layer showing the next oldest cohort. Females are indicated on the right and males on the left.

5.1.1.1 Age Structure and Age Pyramid

Age structure and age pyramids take different forms based on birth and death trends of population and social reasons.

The following table is an implication of the various forms

Table 5.1.1 Forms of Age Structure and Age Pyramid

Age structure/ pyramid	Patterns
Stable	Patterns of birth and death are unchanging over time
Stationary	Both low birth and death rates (they slope gently inward and have a rounded top)
Expansive	Slope dramatically inward and upward from the base, indicating that a population has both high birth and death rates

Constrictive

- ◆ named so because they are constricted at the bottom
- ◆ Signalling low birth and death rates, and expanding outward from the base before sloping inward to achieve a rounded peak at the top

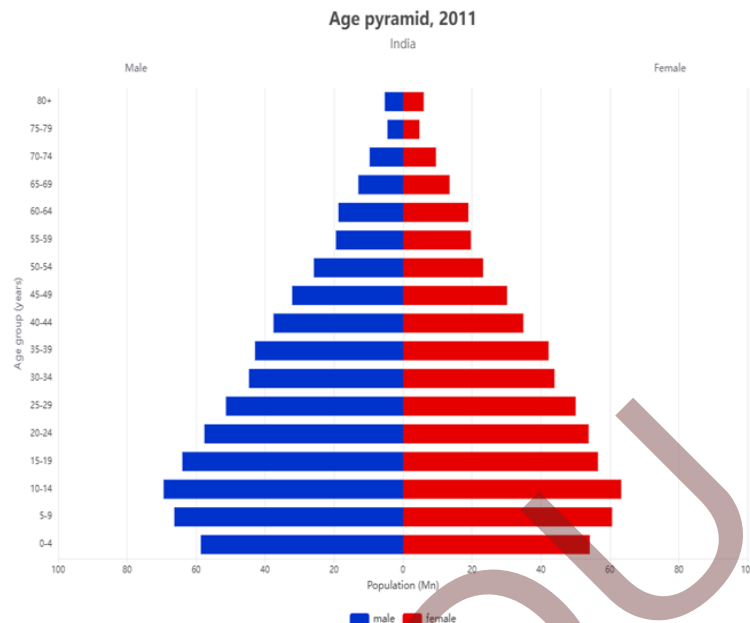


Fig. 5.1.1 Age Pyramid of India (Source: <https://censusindia.gov.in>)

5.1.1.2 Age Characteristics

Age characteristics define the macro-demographic framework of a population, mapping the distribution of individuals across distinct chronological intervals to assess a society's productive capacity, dependency burdens, and institutional requirements. Demographers structurally categorize age composition into three functional socio-economic cohorts: the dependent youth (ages 0–14), the productive or working-age population (ages 15–59, as typically classified in Indian planning, or 15–64 globally), and the geriatric population (ages 60 and above). The proportional configuration of these cohorts determines the societal dependency ratio, an instrumental index measuring the economic pressure exerted by non-productive dependents on the working-age population. Recent data from the SRS Statistical Report indicates that India is undergoing a profound demographic transition; the national Total Fertility Rate (TFR) has collapsed to 1.9,

falling below the replacement level of 2.1. Consequently, the structural composition of the population is shifting: the dependent youth cohort has shrunk to roughly 24%, the working-age population has expanded to 66.4%, and the geriatric segment has climbed toward 9.7%.

The societal and policy implications of these age characteristics are fundamentally governed by institutional mechanisms and shifting social factors that dictate life-course transitions. For decades, India's young age structure necessitated massive public expenditure on primary pediatrics, universal immunization, maternal health (such as the Janani Suraksha Yojana), and foundational schooling. The current expansion of the working-age cohort comprising a massive youth bulge of individuals in the 15–29 age bracket presents a time-bound demographic dividend. This window of accelerated macroeconomic growth can only be realized if institutional frameworks actively convert

this age cohort into high-value human capital through targeted investments in higher education, technical skilling, and job creation.

India faces a dual challenge due to widening regional disparities in age characteristics. Northern states like Bihar and Uttar Pradesh maintain higher fertility rates and an expansive, youthful age structure. In contrast, southern states like Kerala and Tamil Nadu are rapidly moving into an advanced stage of population stabilization characterized by a contractive age pyramid and a prominent senior citizen bulge (with Kerala's elderly population exceeding 15%). This demographic divergence forces an unprecedented policy realignment. While younger states must focus on educational infrastructure and employment generation, aging states must rapidly pivot resources toward expanding pension solvency, managing non-communicable diseases, and developing robust geriatric healthcare and social safety nets. This transition is further complicated by rising female educational attainment and a changing mean age at marriage for women (now averaging 23.1 years), which effectively compresses the reproductive window and accelerates the nationwide transition toward an aging society.

5.1.2 Sex Structure

The population composition according to sex is known as the sex structure. It is the classification of male, female or transgender in the population. It is important in implying socioeconomic and demographic development labour force participation and gender relations.

The sex structure interact with the demographic processes like fertility, mortality and migration. The demographic processes are all affected directly by sex and by age, and these influences occur via biological, psychological, cultural, and social variables.

In the case of fertility, more males are born than females, i.e. 105 males for every 100 females. Similarly most births occur to females when they are between the ages of 15-49, in the case of males, they are productive usually between the ages of 15-79.

- ◆ Sex is defined much more direct than most demographic variables.
- ◆ Sex is an ascribed characteristic
- ◆ It is for the most part unchangeable.
- ◆ With a few exclusions, sex is permanent at birth.
- ◆ Migration also differs by sex. Traditionally, males and females have not migrated to the same places in equal numbers.

5.1.2.1 Sex Characteristics

In the framework of demography, sex characteristics constitute a foundational biological axis of population composition, representing the structural distribution of males and females within a given society. Measured primarily through the sex ratio conventionally expressed in India as the number of females per 1,000 males this demographic variable is highly sensitive to the interplay between biological baselines and socio-cultural determinants. Naturally, the human species exhibits a slight masculine bias at birth, translating to a natural baseline of approximately 952 girls per 1,000 boys. Macro-demographic data from the National Family Health Survey (NFHS-5) and the Sample Registration System (SRS) reveal severe distortions in India's secondary sex ratio (at birth), which averages around 918 females per 1,000 males. This imbalance highlights how biological constants are aggressively modified by patriarchal social



structures. Deep-seated cultural phenomena such as institutionalized son preference, patrilineal land inheritance rules, and the socio-economic burdens of the dowry system have historically interacted with the proliferation of affordable reproductive diagnostic technologies, leading to systemic female feticide and an artificial masculinization of early cohorts.

As a population cohort advances through the life course, this structural equilibrium is dynamically reshaped by gender-differentiated mortality, lifestyle factors, and migration. In stable demographic regimes, women demonstrate a distinct biological longevity advantage over men. In India, this creates a stark cross-sectional contrast: while the youth sex ratio remains deficit-ridden, the macro-population exhibits an increasing "feminization of aging," particularly visible in states with advanced demographic transitions like Kerala. Furthermore, regional variations in sex characteristics are heavily driven by economic variables, most notably gender-segregated labor migration. The structural demands of urban industrialization and service sectors frequently pull young, working-age males away from rural agrarian economies. This spatial polarization creates deep geographical imbalances: urban centers experience an artificial masculinity bulge, while rural regions undergo a distinct "feminization of agriculture" where women, children, and the elderly become the primary demographic residents, left to manage subsistence farming and local community structures.

5.1.3 Age and Sex Structure in India

According to 2011 census, sex ratio of India's total population is 108 males per 100 females. The percentage of female population is 48.04% compared to 51.96%

male population. In India, the male to female ratio has amplified from 104.40 in 1950 to a peak value of 108.47 in 2008. There are 717.10 million males and 662.90 million females in India.

INDIA-2011 CENSUS

- ◆ 717,100,970 males
- ◆ 662,903,415 females
- ◆ Rural India has 21,813,264 more males than females
- ◆ Urban India has 13,872,275 more males than females

In India, the male to female ratio has increased from 104.40 in 1950 to a peak value of 108.47 in 2008. This ratio is anticipated to decline at 103.36 in 2092. The percentage of the female population is 48.04 percent and percentage of male population is 51.96 percent. India is at 189th position out of 201 countries/territories in terms of female to male ratio. Among Asian countries, its position is 42nd out of 51 countries/territories.

In India, about 110 boys are born for every 100 girls. India has the world's 5th most skewed sex ratio at birth after China, Azerbaijan, Viet Nam, and Armenia. During the time period 1990-05 this ratio was 111. The males to females ratio is at the highest point of 112.54 for the age group 20-24. With 110.37 boys per 100 girls (0-14 age group), India has the 8th most skewed child sex ratio.

The men to women ratio is 108.89 for the group aged 15-64 and 93.4 for those over 65. India has more males than females aged below 70 years. Women outnumber men by a ratio of 2-to-1 for centenarians.

INDIA Census 2011- Gender Ratio

- ◆ 943 females per 1000 males
- ◆ 949 females to 1000 men in rural areas
- ◆ 929 females to 1000 males in urban areas

It is after 1950 that the demographers identified the implications of changes in fertility and mortality on the age structure of the population. Estimation of the relative contributions of fertility and mortality to the age structure of any population gives more understanding of population structure.

5.1.4 Significance of Age-Sex Structure

1. It mirrors the important features or the natural attributes of a group of a specific population that influence not only its demographic but also the social, economic, and political structure of a population over the past period.
2. It signifies the number of people at given age and sex in society and is framed from the input of births, deaths, and migration of each age.
3. It impacts birth and death rate, the composition of marital status, workforce, the gross domestic product, planning of educational medical services and housing etc.
4. Projecting and valuing upcoming trend in age and structure is advantageous for development purposes.
5. It is more effective in business and marketing and allied commerce field as it is crucial in the need of the consumers in the quantitative term.
6. It is the sturdy display of the number of people found in each age group of the population by sex.
7. The age-sex structure is suitable in the planning of social services, for example, maternal, child care or for elderly population
8. A stationary age structure of the population is one in which birth and death rate remains unchanged over a lengthy period.
9. In the area of social welfare, the development of social services has to be based on the age-sex distribution of the population. For example, welfare projects for mothers and children, and for the aged.
10. The approach of society towards children, youth, and elderly is inclined by the age-sex distribution of the population.
11. All the rate and ratio in demography are comprehensive for either age or sex or both, and hence age-sex structure is important

The two characteristics of sex and age together outline a biological unit to which the population's sustenance organization is or must be adapted. Both age and sex characteristics are the central demographic characteristics of human populations and demographic statistics. It plays an imperative role for the development of any society.



The economic and cultural life of society depends upon the age and sex structure of the population. The planning process of a region makes use of this data commonly for the improvement of the economy, culture and individuals. Developed countries and international agencies study the distribution of the population by sex and age across countries as it has impact to the world population graph. The future size and structure of the population is influenced by the present age-sex structure of the population. Additionally, in the current context of world-wide concerns of environmental degradation and climate change, the age-sex structure and its future growth carry an important role in the global sustainability.

Marital Factors Affecting Fertility

- ◆ Marital status distribution,
- ◆ Proportion of people who have never married,
- ◆ The proportion of people in reproductive age groups (15 to 44 or 49)
- ◆ Age at marriage
- ◆ The proportion of people whose marriages have been dissolved by divorce

5.1.5 Marital Status, Education, Occupation and Religion

5.1.5.1 Marital Status

The classification and distribution of people based on marital status is an important component in studying population. Just think how marital status differs from other population characteristics like sex or age.

Sex and age are unchangeable; i.e. acquired by birth. But marital status is an ascribed status. It is not a genetic trait. It is helpful to study a population's marital status for a wide range of reasons. They are:

- ◆ Marriage is the first step toward establishing a biological family.
- ◆ Most societies prohibit reproduction outside of marriage and hence marital status is crucial.

See this example, as per the Hindu religion marriage is obligatory for a Hindu man for executing and accomplishing duties associated with both 'Grihasdhaashram' stage and progeny. India has 82.17% Hindu population and hence the proportion of never-married women in India is significantly lower than that of other countries. Thus pattern of marital status is strictly influenced by several biological, social, economic, religious and legal factors.

Marital status influences population structure through:

- ◆ Family planning acceptance
- ◆ Women's status
- ◆ Religious beliefs

The main source of marital status information is National periodic census which collects information on the marital status.

United Nations Classifies Individuals According to their Marital Status as Follows:

- ◆ Not married (never married);
- ◆ Married but not legally separated;
- ◆ Divorced and unmarried
- ◆ Have been divorced and have not remarried
- ◆ Married but legally separated from one another.

- ◆ Women who were graduates or had completed additional education had the highest average age at marriage
- ◆ Women who were illiterate or semi-literate had the lowest average age at marriage
- ◆ There are direct and indirect links between women's educational attainment and fertility.
- ◆ There is a direct link between educational attainment and family planning
- ◆ Infant mortality rates were lower when mothers were either matriculated or had completed additional education.

5.1.5.2 Education

One interesting research result related to fertility and reproduction in relation to educational status is of negative correlation. Education influences demographic behaviour like fertility, marriage, number of children, mortality, migration and labour force participation. Higher educational attainment is associated with lower frequency of these demographic changes. The age at which females get married is also influenced by the level of education. The mortality rates of new-borns are much lower in the cases with educated mothers.

Research evidences of the above mentioned matters provide scientific support for several of these connections.

See the following table:

Findings of the Fertility and Family Planning Survey of the International Institute for Population Studies, conducted in Greater Bombay in 1966

5.1.5.2.1 Importance of Education Structure in Population Studies

- a. Helps to compare the level of social progress in various countries, regions, and even within the same country.
- b. Literacy and educational attainment statistics can be used for a wide variety of nation building purposes.
- c. The national census is the primary source of data on literacy and educational accomplishment in the population.
- d. This data is generally collected during census operations in countries throughout the world.

5.1.5.2.2 Literacy and Education

Literacy indicates a person's ability to read and write; and education refers to the process of acquiring knowledge, skills,



values, morals, habits, and beliefs. Education states the overall progress of a person with regard to his knowledge, intellect, behaviour and sensibility. Therefore, literacy is just one step towards education. However, the two terms do not mean the same.

Literacy is defined by the United Nations as a person's capacity to read and write a brief straightforward statement about his or her daily life while comprehending it. The ability to read and write may not always lead to changes in demographic behaviours, but the influence of literacy in providing awareness of everyday social events cannot be neglected. For example, a person who can read religious or literary books with 'understanding' and critical view or can memorise passages is not just a 'literate' person but an 'educated' person. Education can contribute to reflective and critical thinking which may directly influence population decisions and reflections.

Since 1872, literacy data have been gathered as part of the Indian Census. The overall literacy rate in India according to 2011 census was 74.04 %, with males at 82.14 % and females at 65.46% indicating a substantial gender gap of 16.68%. The female literacy rate showed notable improvement, rising from 54.16% in 2001 to 65.46% in 2011 reflecting gradual progress in women's education. Several socio-economic factors influenced these literacy patterns including economic conditions, accessibility of schools in rural areas, prevalence of early marriage, gender based discrimination, poverty and traditional social norms. These factors particularly affected female education, creating barriers to achieving universal literacy.

5.1.5.2.3 'Literate but without Formal Education'-Category

How is male and female educational fulfilment critical for population research? This question has various levels of perceptions. The level of educational

attainment is calculated or quantified among the literate population above the age of 10 or 15. The category of "literate but without formal education" should be established to verify the exact range of male-female educational fulfilment. It is because a large proportion of females lack schooling facilities. The number of female "illiterates" with only basic reading and writing skills is higher than that of males due to gender discrimination and restricted access to formal education. Overall, one-fourth of India's literate population lacks literacy due to the absence of formal education.

5.1.5.3 Occupation

Agriculture, manufacturing and transport establish the main occupational structure of a nation.

Developed countries have the major share of working population in technology and research. In the case of developing countries like India, majority works in agricultural and manufacturing divisions.

5.1.5.3.1 Types of Occupations

Occupations in a country are divided as primary, secondary and tertiary. Primary occupations include agriculture, animal husbandry, constructions etc. Manufacturing and servicing industries comprise of secondary occupations. The tertiary sector includes population working in transport, administrations, service division etc.

According to the 2011 Census of India, the workforce was distributed into four major occupational categories, reflecting the country's economic and occupational diversity. Cultivators, who were engaged in cultivating their own or leased land, accounted for approximately 118.8 million individuals, making up 24.6% of the workforce. Agricultural labourers, working on another person's land for wages, formed a larger segment, with around 144.3 million people, constituting 30.0% of the

workforce. Household industry workers, involved in small-scale production within household industries, comprised about 18.3 million individuals, representing 3.8% of the total workforce. The largest category, termed as “Other Workers,” included factory workers, professionals, service sector employees, and those engaged in various non-agricultural occupations. This group

made up approximately 200.4 million individuals, accounting for 41.6% of the workforce. While agriculture remained a significant source of employment, the data also highlighted the growing importance of non-agricultural occupations, indicating a shift in India’s employment structure towards industrial and service sectors.

Table 5.1.2
Percentage of different categories of Workers: 2001 to 2011

Census Year	Workers	Cultivators (Percentage)	Agricultural Labourers (Percentage)	Workers in Household Industry (Percentage)	Other Workers (Percentage)
2001	275,014,476	31.1	20.8	3.2	44.9
2011	331,939,875	24.9	24.9	2.9	47.2

Source: <http://censusmp.nic.in/>

These figures indicate a shift in India’s occupational structure between 2001 and 2011. Notably, there was a decline in the proportion of cultivators from 31.7% to 24.6%, while the share of agricultural labourers increased from 26.7% to 30.0%. This suggests a movement of individuals from owning or leasing land to working as labourers on others’ lands. Additionally, the proportion of workers in non-agricultural sectors (household industries and other workers) rose from 41.6% to 45.4%, reflecting ongoing diversification in India’s employment landscape. These trends highlight the evolving nature of employment in India, with a gradual transition from traditional agricultural roles to more diverse occupations in various sectors.

its study. In the last decade (2001-2011) the growth rate of various religions has declined.

The following table shows the growth rate of religious population from 1991 to 2011 in percentage.

Table 5.1.3
**Growth rate of Religious
Population from 1991-2011(in%)**

Religion	1991	2001	2011
Hindu	25.1	20.3	16.8
Muslim	34.5	29.5	24.6
Buddhist	35.3	24.5	6.1
Christian	21.5	22.6	15.5
Sikh	24.3	18.2	8.4
Jain	4.6	26	5.4

Source: Census 2011

5.1.5.4 Religion

Indian cultural and political life is greatly influenced by religion. The ability of religion in influencing every aspect of people’s family and community life shows the importance of

Religion significantly influences various demographic behaviors within a population, impacting factors such as marriage, fertility, mortality, and migration. While



sociologists examine religion through diverse lenses, demographers utilize it as a crucial variable in their analyses. Studies have extensively explored the link between religious affiliations and fertility patterns, with religious precepts significantly shaping societal norms surrounding marriage. Consequently, investigating factors like age at marriage, marital dissolution, widow remarriage, and the prevalence of polygamy within different religious contexts is crucial for understanding fertility trends.

Furthermore, understanding marriage traditions is essential for studying social fertility, as factors like family planning acceptance, women's status, and religious beliefs are intricately intertwined. Religious affiliations also play a significant role in mortality patterns, influencing factors such as dietary habits, hygiene practices, and overall lifestyle. Religion significantly impacts both internal and international migration patterns, solidifying the importance of "faith" as a key variable in demographic research.

While collecting and classifying religious affiliation data at a global level presents challenges, such studies are commonly conducted at the national level. In India, religion plays a pivotal role in the social structure, and religious data has been collected since the inception of census operations. Prior to independence, religious affiliation data was extensively analyzed, cross-referenced

with other factors like age, sex, marital status, literacy, and rural-urban residence. However, post-independence, the focus of census data analysis shifted towards economic aspects of the population. Demographic analyses of religion often involve describing the percentage distribution of individuals across different religious groups. These analyses are typically conducted by sex and rural-urban habitation, often down to the district level within states and union territories

Sociologists study religion, marital status, education, occupation etc. in multiple perspectives, whereas demographers incorporate it into their analysis on fertility, marriage, mortality, migration, etc. There is close relation in religious affiliation and fertility behaviour. Religious beliefs on marriage traditions even decide the age of marriage, widow remarriage, fertility, dissolution and many other aspects. Polygamy, the practice of being married to more than one person at the same time have religious notions attached to it, which finally influences demography. Religious affiliation-related factors even influence food, customs, and personal and communal hygiene practises. Domestic and international migrations are also influenced by the variable "faith" in religion. Vibrant researches have been conducted by collecting and classifying data on people's religious affiliations at a national level to study population characteristics.

Recap

- ◆ The population composition according to age and sex is known as the age and sex structure.
- ◆ The age-sex distribution shows the relative numbers of children, young people and old people and the balance between men and women at different ages.

- ## Objective Questions

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4. Which is the age pyramid when it slopes dramatically inward and upward from the base, indicating that a population has both high birth and death rates?
5. Which is the age pyramid when it is signalling low birth and death rates, and expanding outward from the base before sloping inward to achieve a rounded peak at the top?
6. Which demographic structure interact with the demographic processes like fertility, mortality and migration?
7. Which census identifies sex ratio of India's total population as 108 males per 100 females?
8. Which is the sturdy display of the number of people found in each age group of the population by sex?
9. Which is the recent category in the education characteristic of population?
10. Which is called the distribution of specific personal characteristics such as gender, age, marital status, education, occupation, and relationships with the head of household within a group of people?
11. What is the range of growth rate of various religions in the decade 2001-2011?
12. Which is the primary source of data on literacy and educational accomplishment in the population?
13. What indicates a person's ability to read and write?
14. What refers to the process of acquiring knowledge, skills, values, morals, habits, and beliefs?
15. Which occupation sector in India is active as per the census of 2011?

Answers

1. Age structure
2. Stable
3. Stationary
4. Expansive
5. Constrictive

6. Sex structure
7. 2011
8. Age-sex structure
9. Literate but without formal education
10. Population composition
11. Decline
12. The national census
13. Literacy
14. Education
15. Agriculture

Assignments

1. Discuss the age and sex structure of population.
2. Examine the significance of studying age and sex structure of the population.
3. Explain the role of education structure in population studies.
4. Assess the occupation structure and the types of occupation.
5. Discuss the changing age structure of the Indian population. Analyse the impact of this changing structure on the Indian economy, social structure, and healthcare system.

Suggested Reading

1. Bhende, A. & Kanitkar T. (1978). *Principles of population studies*. Himalayan Publishing House.



2. Bose, A. (2018). *India's quest for population stabilisation*. National Book Trust of India.
3. Thompson & Lewis. (1970). *Population problems*. McGraw hill Publishers.
4. Jhingan, M.L., Bhatt, B. K. & Desai, J.N. (2019). *Demography*. (3rd ed). Vrindra Publication Pvt. Ltd.

Reference

1. Agarwal S.N. (1972). *India's population problems*. New Delhi: Tata McGraw Hill Publishers.
2. Bose A. (1967). *Patterns of population change in India*. Bengaluru: Allied Publishers.
3. Clarke J.I. (2013). *Population geography*. Elsevier.
4. Mandelbaum, D.G. (1974). *Human fertility in India*. University of California.
5. Srivastava S.C. (2004). *Studies in demography*. Anmol Publications.



BLOCK

Population Policies and Programmes



UNIT

Managing Population: Policies on Mortality, Fertility, and Migration

Learning Outcomes

On completion of this unit, the learner will be able to:

- ◆ understand different types of population policies
- ◆ analyse the activities and recommendations of the planning committee and population sub-committees during the period of independence
- ◆ familiarise with national health policy and recommendations for national population policy in India

Prerequisite

How does India, one of the most populous countries in the world, manage its expanding population while striving for sustainable development? With a population exceeding a billion, the country faces complex challenges related to fertility, mortality, and migration. To address these issues, India has introduced a range of policies aimed at regulating birth rates, improving healthcare systems, and managing both internal and international migration. Understanding these policy measures is essential for analysing how demographic trends influence economic growth, social structures, and regional inequalities.

A sound understanding of India's demographic patterns provides the basis for examining these policies in detail. Initiatives such as fertility regulation programmes, maternal and child healthcare services, and public awareness campaigns play a significant role in shaping population growth. At the same time, declining mortality rates, driven by improvements in healthcare, underscore the importance of effective public health interventions. Migration whether from rural to urban areas or across national borders also has a profound impact on labour markets, urbanisation, and socio-economic disparities. Studying these policies offers valuable insights into how India addresses the challenges of population management while working towards inclusive and sustainable development.

Keywords

Population policy, Pro-natalist, Anti-natalist, Five-year plan, National health policy

Discussion

6.1.1 Population Policies

A population policy is a series of policies implemented by a government to alter the way its population fluctuates, either by supporting large families or immigration to increase population growth or by advocating birth control to lower population size. A population policy may also seek to alter the demographic distribution across the country by encouraging migration or displacing people. Population policy can be defined as deliberately constructed or modified institutional arrangements and/or specific proportions through which governments influence, directly or indirectly, demographic change. The policy must be founded on scientific evidence and testable hypotheses about causes and effects but it also necessitates value judgments. A positive population policy is aimed at lowering the birth rate and eventually stabilising the population growth rate.

Population policy within a defined geographical area primarily focuses on managing changes in the number of people residing within that territory. This population size is directly influenced by two key factors: population gains through births and immigration and population losses through deaths and emigration. While a narrower focus might solely concentrate on these quantitative aspects, a broader perspective recognizes the importance of influencing the qualitative characteristics of these demographic processes. This includes shaping fertility patterns, managing

international migration flows, and ultimately affecting the composition of the population in terms of age, sex, and spatial distribution.

6.1.1.1 Population Policy in India-Pre-Independent India

The process of formulating population policies for the country began even before independence. To understand the origins of population policy, we need to know about the activities of national leaders during British rule. Indian national congress set up national planning committees chaired by Jawaharlal Nehru to evaluate and plan how the country should move forward after independence. There were several sub-committees formed to meet the countries' integration and development. In 1939, the national congress set up three sub-committees, which were land policy, population, and public finance.

The population committee was part of the national planning committee and sub-committee formed by the national leaders for the formation of the country. Additionally, the views and contributions of the national leaders, as well as their writings and time-bound actions, were crucial in understanding the origin of India's population strategy. Indian social Scientists, observers and decision makers identified the necessity of population policies even before independence. Scholars and politicians such as P.K Watal wrote about population problems in 1916, and followed by R.D Karve, Rabindranath Tagore, P. N Saprú, Jawaharlal Nehru and the Bhore committee, discussed birth control. Let's

take a closer look at policies and committees that deal with population issues.

Radha Kamal Mukharjee Committee

In response to the country's significant population expansion since 1921, the Indian National Congress appointed a population sub-committee headed by Radhakamal Mukherjee in 1940 to analyse the country's population problems. Let us learn more about the Radha Kamal Mukharjee committee's major recommendation:

- ◆ The size of the Indian population is the fundamental concern in national economic planning. Improving quality of life and limiting the excessive population is necessary for the country's economic development.
- ◆ Establish a central nutrition board to control malnutrition and prevent under-nutrition. The board will collaborate with the Departments of Agriculture and Public Health to produce a national nutritional policy.
- ◆ Spread the knowledge about birth control.
- ◆ The committee recommended raising the marriage age to reduce family size.
- ◆ Encourage late marriage along with discouraging polygamy; the committee also support inter-caste marriage.
- ◆ Remove social disabilities such as untouchability and inequality on the basis of gender.
- ◆ It is crucial to maintain vital information and conduct frequent demographic surveys in order to analyse the country's population growth rate.

Bhore Committee

The Bhore committee was set up by the British government of India in October 1943 to analyse the existing health conditions and position of health organisations in British India. This Health Survey and Development committee was chaired by Sir Joseph Bhore to make recommendations for future development and submit the report in 1946.

The committee observed that the death rate in British India was 22.4, the Infant Mortality rate was 162, and the life expectancy at birth was 26.91 for boys and 26.56 for females, according to the committee. Cholera 2.4, smallpox 1.1, plague 0.5, fever 58.4, dysentery 4.2, respiratory disease 7.6, and others 25.8 were the leading causes of mortality in British India.

The Bhore committee discovered that the poor state of public health, as evidenced by high mortality and morbidity, was preventable and was primarily caused by a lack of environmental hygiene, adequate nutrition, adequate preventive and curative health services, and intelligent cooperation from the people themselves. Literacy, unemployment, poverty, the purdha system, and early marriages are all possible factors.

Let us check the major recommendations of the Bhore committee:

- ◆ Provide services of laboratory and institutional facilities for proper diagnosis and treatment.
- ◆ No one should be denied adequate medical care due to a lack of financial resources.
- ◆ Provide medical relief and preventive health care to the vast communities or rural population of the country.
- ◆ Promote health education and stimulate health consciousness

- ◆ A healthy lifestyle requires suitable housing, clean surroundings and a safe drinking water supply.

6.1.1.2 Five Year Plan and Population Policies

In 1952, as part of the first five-year plan, India launched its first family planning programme and became one of the first countries in the world to adopt a state-sponsored population. The programme also attempted to help the national economy by lowering the birth rate simultaneously with the mortality rate to keep the population stable.

also adopted during the third five year plan in 1965. The family planning department was established as a separate entity. Birth control methods were encouraged in the fourth five-year plan.

Recommendations that are included in population policy:

- ◆ Providing financial incentives for employing birth control.
- ◆ Improving women's literacy levels through both formal and informal channels.
- ◆ Population was made a concern in deciding the quantum of central assistance to states.
- ◆ Using the various forms of media to promote family welfare programmes.
- ◆ Familiarising population education into the formal education system.

This five-year plan period was crucial for India. The country witnessed a national



emergency, so the concerned authority terminated the fifth five-year plan. After the emergency, the Morarji Desai government renamed the family planning programme as the family welfare programme in 1977.

The sixth, seventh, and eighth plans were long-term demographic goals. The National

Health Policy was implemented in the sixth five-year plan period. This specifically encompassed “twenty-point programmes” to improve the country’s socio-economic and health sectors. It aimed to achieve the goal of “By 2000, India to achieve health for all through comprehensive primary health care services.”

National Health Policy -1983

Goals to be achieved by 2000

- ◆ Reduce the infant mortality rate from 125 to less than 60.
- ◆ Reduce the maternal mortality rate from 4.5 to less than 2
- ◆ To raise the life expectancy at birth from 52.6 to 64 years.
- ◆ To reduce the crude death rate from 14 to 9.
- ◆ To reduce the birth rate from 35 to 21.
- ◆ To achieve a net reproductive rate of 1.
- ◆ To provide potable water to the entire rural population.

The seventh plan prioritized greater coordination and linkages with poverty alleviation programmes and greater involvement of NGOs in family planning programmes.

Eight five year plan were ultimately aimed at human development. The focus shifted away from the couple protection rate toward lowering birth rates. Non-governmental organisation and community leaders on population control programmes were involved. It is primarily focused on improving women’s social status through poverty alleviation, employment generation, and participation in panchayath institutions, etc. Improvement of basic inputs such as information, education and communication were also concerns of the plan. The

Reproductive and Child Health Care Scheme, Integrated Child Development Services, Child Survival and Safe Motherhood Scheme (launched in 1992-93), Mid-Day Meal Scheme, etc., were part of the eighth five year plan.

India adopted a Target Free Approach for implementing the Reproductive and Child Health (RCH) programme, which focuses on reproductive and child health care. The RCH was established with the goal of increasing the quality and coverage of family welfare services through decentralised area-specific Marco-planning and implementation. Some of the welfare measures required to improve the quality and coverage of health care for women, children, and adolescents include child survival, safe motherhood, control of

survival, and control of sexually transmitted illnesses and reproductive tract infections. As part of the programme, all the districts in India were declared target-free in April 1996. As a result, from 1996-1997, there was a significant drop in performance.

During the Ninth Five Year Plan period (1997-2002) the government implemented a need assessment and decentralised area-specific planning to reduce inter- and intra-state differences in vital statistics. Through this, the government creates a district-level database on quality and coverage indicators for the monitoring of the programme. Ninth five year plan is basically aimed at a rapid decline in population growth. It also stresses improved access and quality of services to women and children.

The Tenth Plan attempted to carry on the paradigm change that had been started by the Ninth Plan. The transition was from:

- ◆ Demographic targets designed to help couples achieve their reproductive goals.
- ◆ Encourage the use of contraceptive methods in order to meet all unmet contraception needs and reduce unwanted pregnancies.
- ◆ A diverse range of vertical programs, including family planning, maternal and child health and integrated women's and children's health care.
- ◆ Centrally defined targets for assessing community needs and decentralised area-specific micro-planning and implementation of a women's and children's health care programme to reduce infant mortality and high fertility.
- ◆ Predominantly women-centred programmes to fulfil the health-care needs of the family, with

a focus on men's involvement in Planned Parenthood.

The major objectives of the Tenth Plan were to reduce fertility, mortality and the population growth rate. Furthermore, the tenth Plan aimed to mobilise efforts to:

- ◆ Assess and address unmet contraception needs;
- ◆ Reduce high desired fertility levels through IMR and maternal mortality ratio (MMR) reduction programs
- ◆ Empower families to achieve their reproductive goals.

The number of married women using contraception has grown, according to the eleventh plan document. The fact that female sterilisation remains the most relevant technique in family planning, despite being the most intrusive and time-consuming contraceptive intervention, indicates a gender imbalance in the family planning programme. Condom or male sterilisation usage was relatively low. There are significant variations in the quantity of unmet contraceptive needs between states. The role of auxiliary nurse midwives (ANM) and accredited social health activists (ASHA) is used to identify the unmet needs and concerns of couples.

The eleventh plan emphasises voluntary fertility control by implementing the following measures:

- ◆ Increasing the number of contraceptive options or choices
- ◆ Promote the social marketing
- ◆ Upsurge male involvement
- ◆ Enhance the role of the media in promoting behavioural change.

TFR is to be reduced to 2.1 by 2012 under the eleventh plan. (By 2010, the national



population policy planned to reach a TFR of 2.1 and a population that was stable by 2045).

6.1.1.3 National Population Policy 2000

The National Population Policy finally came into force in 2000. The basic aim of the policy is to access and make reproductive health care affordable for all and to raise awareness about various issues of maternal health and child health care and contraception. The National Population Policy 2000 sets a policy framework for advancing goals and prioritising initiatives over the next decade in order to meet the people of India's reproductive and child health requirements, as well as to reach net replacement levels, often known as lower total fertility rate (TFR), by 2010.

The policy's immediate goal was to address contraception, healthcare infrastructure, healthcare personnel, and integrated service delivery needs. The policy's medium-term goal is to bring the TFR to replacement levels-two (or, to be precise, 2.1) children per couple –by 2010 through aggressive implementation of sectoral strategies, and the long-term goal is to achieve a stable population by 2045.

- ◆ Identify the unfulfilled needs for basic reproductive and child health services, supplies and infrastructure.
- ◆ Allow free and compulsory education until the age of 14 to reduce dropout rates in primary and secondary schools to less than 20 %for both boys and girls.
- ◆ Reduce infant mortality rate to less than 30 per 1000 live births and maternal mortality to less than 100 per lakh live births.

- ◆ Promote late marriage for girls, preferably after the age of 20, rather than before the age of 18.
- ◆ Ensure universal access to information services and counselling on fertility regulation and contraception with a diverse range of options.
- ◆ Attain 100% accuracy in recording birth, death, marriage, and pregnancies accurately.
- ◆ Promote the National AIDS Control Organisation.
- ◆ Control communicable diseases.

Recognise the 12 strategic themes along with inter-sectoral programmes according to achieving the national-socio demographic goals for 2010:

- ◆ Decentralised programmes and planning for implementation.
- ◆ Convergence of service delivery at village levels
- ◆ Empowering women for improved health and nutrition.
- ◆ Child health and survival
- ◆ Meeting the unmet needs for family welfare services
- ◆ Under-served population groups
- ◆ Diverse healthcare providers
- ◆ Collaboration with and commitments from non-government organisations and the private sectors
- ◆ Mainstreaming Indian system of medicine and homoeopathy
- ◆ Contraceptive technology and research on reproductive child health

- ◆ Roving for the older population
- ◆ Information education and communication

6.1.2 Elements of Population Policy

Population dynamics consist of three key elements: fertility, mortality, and migration. Demographic changes in a society are the outcome of the interplay among these three components. These three variables are fundamental drivers of population change, making them central considerations in the development and implementation of effective population policies. Therefore, before developing any population policy, the primary step is to analyse the past and present demographic trends and their influencing factors within a country. This is followed by evaluating the potential future demographic changes if current trends persist, along with their social and economic implications. Based on these assessments, suitable measures are devised to guide demographic changes in the desired direction.

6.1.2.1 Fertility Influencing Policies

Policies that aim at influencing fertility may be of two types: pro-natalist and anti-natalist.

1. Pro-Natalist Policies

Pro-natalist policies are designed with the purpose of increasing the fertility or birth rate of an area. Those countries that have low birth rates or a reduction in the total population are basically adopting pro-natalist policies. It is a policy to increase the overall population growth rate. Pro-natalist countries are countries with low birth rates and policies that they implement as a means of increasing the birth rates. When a country has a very slow rate of births and a fast rate of ageing,

it may become a pro-natalist country in order to keep the population growth steady. This is for a variety of reasons: to increase tax revenue, improve the economy, and keep families stable overall. These policies might involve incentives for bigger families or taxes for couples without children. Such countries promote immigration by allowing more immigrants. For example, countries like Canada are less populous, promoting immigration and allowing permanent citizenship.

Let us discuss the policies of some of the countries that have adopted pro-natalist and anti-natalist policies.

Sweden: Sweden's population policy prioritizes individual welfare and personal freedom above national expansionism. Guided by the recommendations of its 1935 and 1941 Population Commissions, the government focuses on voluntary parenthood and child welfare.

This approach emphasizes:

- ◆ **Access to Contraception:** Ensuring widespread access to contraception empowers individuals to make informed choices about family planning.
- ◆ **Relaxed Abortion Laws:** Recognizing the importance of reproductive autonomy and minimizing the risks associated with unsafe abortions.
- ◆ **Comprehensive Sex Education:** Providing young people with accurate information about sexuality and responsible decision-making.

These measures aim to improve the quality of life for individuals and families, rather than solely focusing on increasing population size. This distinctive approach positions Swedish population policy as a model for

France: France provides a notable example of a modern pro-natalist policy aimed at addressing the challenges of an ageing population and declining birth rates. This policy focuses on encouraging family formation and childbearing through a multifaceted approach:

- Family allowances: Monthly payments to families based on the number of children, increasing with each child.
- Parental leave: Generous maternity and paternity leave provisions.
- Tax benefits: Reduced taxes for families with children.
- Government loans: Financial assistance for families for various purposes.

- **Childcare subsidies:** To make childcare more affordable and accessible.
- **Parental leave policies:** Flexible leave options to support both parents.
- **Support for single-parent families:** Specific allowances and benefits for single-income households.

Japan: Japan's population policy has undergone significant shifts throughout the 20th century. Initially influenced by eugenic ideas, it aimed to promote a "racially pure" population. Following World War II, Japan adopted an anti-natalist policy, leading to a decline in fertility rates. However, concerns about an ageing population and a shrinking workforce prompted a shift towards a pro-natalist approach in the late 1960s. At the same time, presented as welfare measures, initiatives like the Child Allowance Scheme aimed to encourage couples to have more children. Despite these efforts, Japan continues to grapple with a low fertility rate, posing challenges for its future economic and social development.

The high-fertility countries adopt the anti-natalist approach in order to restrain growth in their populations. Anti-natalist policies aim to reduce the general population growth rate by preventing families from having a large number of children. Taxes on larger families, access to contraception, allowing abortion, pushing sterilization, and immigration restrictions are all possibilities. Countries with anti-natalist policies frequently face development issues since a rising population threatens to negatively impact the country's social, economic, and environmental conditions. For example, the Chinese Communist Party's "One Child Policy" and in India, the policy of having two children in a family.

Direct measures include initiatives such as:

- ♦ **Expanding Access to Contraceptives:** Making various birth control methods readily available and affordable.
- ♦ **Liberalizing Abortion Laws:** Ensuring safe and legal access to abortion services.
- ♦ **Raising the Legal Age of Marriage:** Delaying marriage can reduce the reproductive window for women.

Indirect measures focus on addressing underlying social and economic factors that influence fertility decisions. These include:

- ♦ **Empowering Women:** Improving women's education, employment opportunities, and overall social and economic status.
- ♦ **Strengthening Healthcare systems:** Enhancing maternal and child healthcare services, reducing infant mortality rates, and improving access to quality healthcare.
- ♦ **Providing Social Security:** Implementing robust social safety nets, such as pensions and old-age care, to reduce reliance on children for support in old age.
- ♦ **Promoting Population Education:** Integrating comprehensive sex education and family planning information into school and college curricula.

Furthermore, various incentives and disincentives, such as financial rewards for smaller families or limitations on benefits for larger families, are employed to encourage or discourage certain fertility behaviors.

6.1.2.2 Mortality

The primary objective of mortality policies has always been to reduce mortality rates. Following World War II, the World

Health Organization (WHO) pioneered a revolutionary public health approach, aiming to eradicate disease and promote a state of “positive health” – a holistic concept encompassing physical, mental, and social well-being beyond the mere absence of illness. This vision has driven numerous national programs worldwide to combat infectious diseases like malaria, smallpox, and cholera. Remarkably, even developing countries have embraced this concept, leading to significant reductions in mortality rates across the globe, irrespective of their socioeconomic development level.

India's population policies focus significantly on reducing mortality rates. India's National Population Policy (NPP) of 2000 includes policies to reduce infant and maternal mortality rates.

Mortality reduction goals:

- ♦ Reduce infant mortality rate (IMR) to less than 30 per 1,000 live births
- ♦ Reduce maternal mortality ratio (MMR) to less than 100 per 100,000 live births

6.1.2.3 Migration

Population policies encompass both international and internal migration. In India, migration has long been a significant aspect of population dynamics, with internal and international migration playing critical roles in shaping demographic patterns, labor markets, and urbanization. While India does not have a standalone migration policy, various population and development policies address migration indirectly through labor, urban, and rural development initiatives.

Internal Migration

1. Rural-to-Urban Migration

- ♦ Policies aim to manage the challenges associated with



rural-to-urban migration, such as overcrowding in cities, slum formation, and pressure on urban infrastructure.

- ◆ Programs like the Smart Cities Mission and Pradhan Mantri Awas Yojana (Urban) focus on improving urban infrastructure and affordable housing to accommodate migrant populations.

2. Reverse Migration

- ◆ During the COVID-19 pandemic, reverse migration highlighted the vulnerabilities of migrant workers. In response, schemes like the Garib Kalyan Rojgar Abhiyan were launched to provide employment and support for returning migrants.
- ◆ Efforts to strengthen rural employment through programs like MGNREGA (Mahatma Gandhi National Rural Employment Guarantee Act) aim to reduce the push factors driving migration.

3. Interstate Migration

- ◆ The Interstate Migrant Workmen Act of 1979 regulates the conditions of work and employment for interstate migrant labourers.
- ◆ The National Sample Survey Office (NSSO) and Census data inform policies to address regional disparities that drive migration.

International Migration

1. Out-Migration

- ◆ The Emigration Act of 1983 governs the migration of Indian

workers abroad, ensuring protection and welfare.

- ◆ Initiatives such as the Pravasi Bharatiya Divas and the Overseas Indian Affairs Ministry aim to strengthen ties with the Indian diaspora.

2. In-Migration

- ◆ Policies regarding the regulation of immigration into India focus on national security and border control.
- ◆ Specific provisions exist to address refugees and asylum seekers, although India lacks a formal refugee policy.

Policy Challenges and Opportunities

- ◆ **Social Protection:** Ensuring access to healthcare, education, and social security for internal migrants remains a key challenge.
- ◆ **Urban-Rural Balance:** Reducing regional inequalities through rural development policies can minimize distress migration.
- ◆ **Data-Driven Planning:** Strengthening migration data collection through the Census and NSSO is crucial for evidence-based policymaking.

While migration policies in India are fragmented across various domains, there is a growing recognition of the need for comprehensive migration management frameworks to address the complex interplay between migration, development, and population dynamics.

To conclude this unit, the news report mentioned in the perquisites states “Public interest litigation in the Supreme Court seeking direction to the central government

to enforce the policy of having two children in a family. The petition also seeks that the government not provide facilities to those

who have more than two children". Still, it is relevant for our country to focus on population policies and effective implementation.

Recap

- ◆ Fertility, mortality, and migration are key elements.
- ◆ Pro-natalist policies encourage births and immigration.
- ◆ India enacts Anti -natalist policy.
- ◆ During the independent period, the Bhole committee and Radhakamal Mukharjee committees discussed birth control.
- ◆ The world's first family planning programme was launched in 1952.
- ◆ In 1952, a family planning programme aimed to reduce birth rates in order to stabilise the population.
- ◆ National health policy was established in 1983, with the goal of achieving replacement levels of total fertility rate (TFR) by 2000.
- ◆ The long -term goal of the national population policy is to achieve a stable population by 2045.

Objective Questions

1. Who wrote about population problems in 1916?
2. Who was the head of the population sub-committee appointed by the Indian National Congress in 1940?
3. Which committee was appointed by the British government of India to analyse the existing health conditions and position of health organisations in British India?
4. When did India's first family planning begin?
5. Which was the first country in the world to launch a national programme emphasising family planning?
6. Which policy was aimed at achieving the replacement level of total fertility by 2000?

Answers

1. P.K Wattal
2. Radhakamal Mukherjee
3. Bhore committee
4. 1952
5. India
6. National health policy in 1983

Assignments

1. Discuss the difference between Pro natalist and Anti natalist Policies.
2. Examine the population policies of India in Pre Independent India.
3. Describe the importance of National Population Policy 2000.
4. Analyse the impact of five year plans on population policies.
5. Explain the major elements of population policy.

Suggested Reading

1. Bhende, A. & Kanitkar T. (1978). *Principles of population studies*. Himalayan Publishing House.
2. Bose, A. (2018). *India's quest for population stabilisation*. National Book Trust of India.
3. Thompson & Lewis. (1970). *Population problems*. McGraw hill Publishers.
4. Jhingan, M.L., Bhatt, B. K. & Desai, J.N. (2019). *Demography*. (3rd ed). Vrindra Publication Pvt. Ltd.

Reference

1. Bose A. (1967). *Patterns of population change in India*. Allied Publishers.
2. Clarke J.I. (2013). *Population geography*. Elsevier.
3. Mandelbaum, D.G. (1974). *Human fertility in India*. University of California.
4. Srivastava S.C.(2004).*Studies in demography*. Anmol Publications.

SGOU



UNIT

Population Control and Growth Trends in India

Learning Outcomes

On completion of this unit, the learner will be able to:

- ◆ familiarise with the importance of population control
- ◆ understand the social and economic measures for population control in India
- ◆ describe the requirements and features of family planning programmes in India

Prerequisite

In 2019, media reports brought attention to a proposed population bill that sought to disqualify individuals with more than two children from accessing certain government subsidies and benefits. What might have prompted such a proposal? The central objective was to reduce birth rates and thereby slow the pace of population growth in India. However, population management extends beyond legislation alone. A variety of strategies and initiatives are being implemented to address demographic challenges. What are the key factors that make population control necessary? Which measures are currently in place to regulate population growth? This unit will explore these important questions by examining both the underlying reasons for population control efforts and the range of approaches adopted across India to manage its population effectively

Keywords

Population control, Family planning, Contraceptives, Sterilisation, Late marriage

Discussion

6.2.1 Measures of Population Control

In the previous unit, we discussed population policies. From there, we understood that India was the first country to introduce family planning in the world. Now we have to study population control. What is population control? Many people die from diseases like Covid-19, floods, and other natural calamities, resulting in declining population rates. Is it a population control method? No, it's an example of a natural process. While someone artificially brought into practice to control, the population is called population control. This means artificially controlling or altering the growth rate of the population. One of the examples is the use of birth control methods. It may be individual efforts, or the state and other authorities may make efforts. State authorities aim to minimise population growth. For example, in the case of Kerala, in 1958, just after two years of state formation, the

Kerala government made an effort to alter the population growth rate for that state and established a state family planning board and district committee. The state endows its efforts to alter population growth and improve the state's healthcare system. As a result, the first family planning Mela in India was held at Ernakulam in 1971, and 417210 surgeries were done.

To study the Indian population control methods, it is necessary to know the current population status. Let's look at it now. According to the 2011 census, India's population was 1.21 billion (121 crores). India became the world's most populated country in April 2023, surpassing China's population. Despite occupying only 2.4 percentage of the world's surface area, India is home to more than 17.5 percentage of the world's population. India's population has grown from 36 million in 1951 to 121 million in 2011.

Table 6.2.1. Population Growth in India

Census Year	Population (in crores)	Decadal Growth (%)	Average Annual Exponential Growth(%)
1971	54.82	24.80	2.20
1981	68.83	24.66	2.22
1991	84.64	23.87	2.16
2001	102.87	21.54	1.97
2011	121.02	17.64	1.64

Which elements influence the population growth rate? The crude birth rate, total fertility rate, unmet need for family

planning, contraceptive use, and spacing are key factors that determine the current population boom. All these were learned in



the previous unit. According to the official records of the government of India, the following data defines India's population growth rate percentage.

- ◆ Unmet family planning needs have decreased from 13.9 to 12.9
- ◆ Age at marriage and first childbirth -The average age of marriage has substantially decreased from 47.4% to 26.8%.
- ◆ In addition, out of the total number of deliveries, teenagers account for 7.9% of the population, which has also decreased significantly from 16 percentages.
- ◆ Spacing between births- there should be a healthy amount of time between two childbirths. The proportion of people (a three-year or longer time period is preferred) has risen from 42.6 percentage in the 2011 SRS to 51.9 percentage of people (SRS 2016).

6.2.1.1 What is the Necessity for Population Control?

People are a country's resources; from an economic and social perspective, in population studies, people are categorised as unproductive and productive. We know that a productive population contribute to the economic development. Who is the productive population? That people who belong to the category of contributing to the economic development of a country. Children and the elderly are generally considered as unproductive labour. They are an asset and benefit to the country. But as we all know, anything in excess of a population is a burden. A population explosion in India has proved to be a severe obstacle to economic

growth. Let us check the factors to control population growth in India.

a. Unemployment

According to the Centre for Monitoring the Indian Economy, as of December 2021, 53 million individuals were unemployed in India, with a large number of them being women. With the rapid expansion of the population, the most difficult task for India is to provide employment for all. As a result, the country's productive population cannot contribute to its economic development. Besides, the unemployed population becomes functionally part of the unproductive category.

b. Formation of Capital

As we discussed the unemployment problem, in India, children under the age of fourteen account for 35% of the total population. They are unproductive and old people and children are hindrance to the prosperity of the country. They are primarily responsible for the low rates of savings and investment. However, due to a deficiency of capital resources, it becomes challenging to offer lucrative employment to the entire working population.

c. Poverty

According to the United Nations Millennium Development Goals programme, 80 million Indians (approximately 6.7 percentage of the population) lived below the poverty line of \$1.25 in 2018-2019. Inequitable income distribution and disparities within the country are widening in the face of a rapidly rising population. Due to a lack of resources, which are also concentrated in the hands of a few, India's expanding population is experiencing worsening poverty. Furthermore, people must devote a significant portion of their income to raising their dependents.

d. Inflation

Generally, higher inflation is correlated with a higher share of the dependent population. The population has been growing, and neither food production nor distribution has been able to keep up. As a result, production expenses have gone up. Specifically, we can say that when the population of working age is larger, its results are disinflationary.

e. Maternity Incentives

In India, a high birth rate has resulted in population growth. A high birth rate has an impact on women's health and well-being. Recurrent pregnancy without a sufficient break is harmful to both the mother and the child's health. As a result of early marriage, high death rate among women of procreative age. Hence, to improve the status of women, we have to lower the birth rate.

f. Social Problems

We already discussed that unemployment and poverty are the major outputs of the population explosion. All of this causes frustration and resentment among the literate youth. This unhealthy environment or social system leads to robbery, prostitution and other crimes. Overcrowding, traffic congestion, frequent accidents and pollution in large cities are the immediate results of overpopulation. It causes the migration of people from rural areas to urban areas, causing the creation of slum areas. This tends to force people to live in the most unhygienic circumstances.

6.2.2 Population Control Measures in India

Population growth is a social issue with deep roots. As a result, efforts must be made to alleviate the country's social burdens.

a. Minimum Marriage Age

According to the National Family Health Survey-5 (NFHS-5) conducted during the period between 2019-2021, women aged 20-24 who married before turning 18 make up 14.7 percentage of urban women and 27 percentage of rural women. 3.8 percentage (urban) and 7.9 percentage (rural) of women aged 15-19 years were already mothers or pregnant. Women's marriageable age used to be 10 years in the nineteenth century, and 15 years from 1949 forward. However, in 1978, the Child Marriage Restraint Act (CMRA) was amended to raise the marriageable age for girls to 18 years of age. In 2006, the Indian government passed the Prevention of Child Marriage Act (PCMA), which superseded the CMRA with the goal of ending child marriage.

The age of marriage has an impact on fertility. People who marry at a young age lack knowledge about family planning. India, men have been married for 21 years while women have been married for 18 years. In India the government has decided to rise the legal age of marriage for women from 18 to 21 years in order to bring them on par with males. This led to gender neutrality, early marriage, and consequent pregnancies. They also had an impact on the nutritional level of mothers and children and their overall health and well-being. It has also had an impact on the infant mortality rate and maternal mortality rate, as well as the empowerment of women who are denied access to education and empowerment due to early marriage.

b. Spread of Education and Awareness

Educated people have awareness and consciousness about social systems and problems. So they want to put off marriage



and stick to nuclear family values. They are career-focused and most probably prefer late marriage. Moreover, those who have received an education are health-conscious. They are aware of hygiene and lifestyle diseases. Education helps to reduce pregnancies; hence the birth rate is reduced. Besides that, as part of the decentralised method, village-level awareness programmes should be conducted properly, and ASHA workers or Anganwadi workers should provide proper awareness classes and medical aid for adolescent girls and women. This will help to be aware of contraceptive methods, and it's important for a hygienic life.

c. Urbanisation

It is generally said that the birth rate is lower among urban residents than among rural residents. Through greater participation in employment and education, urbanisation is linked to greater economic development. As a result, fertility rates decline. Advanced medical facilities in urban areas help to reduce the fertility rate in particular areas. However, migration triggers the higher economic development and population growth rate of the urban dwellers. On the other hand, the contemporary rural population has benefited through the awareness class provided by the integrated child development services schemes and decentralisation.

d. Late Marriage

Late marriage is the best approach to slowing down the population growth rate. Late marriage and delaying having children lowers the total number of children a couple has in their lifetime. Due to lower birth rates during a particular period and a decline in fertility rates, the population's growth rate and size have decreased. This is because women who married at a younger age had the possibility of having more children than those who married later. Women who married at age eighteen give birth to an average of

26.4 percentages more live children than those who married at age 24 or later, all other things being equal.

e. Incentives

The government may use a variety of incentives to encourage people to use birth control. The working class can be provided with financial incentives as well as other benefits like leave and promotions if they follow modest family norms.

f. Advertisement

To educate the public and raise awareness of the need for population control, the government is implementing it through advertisement. For example, posters, TV advertisements, magazine cover pages, and radio shows were created, and specific websites were created for family planning and campaigning.

6.2.3 Family Planning and Welfare Programmes in India

We have already learned that India's government has made efforts to control population growth since independence. This can be evidently seen in the five-year plans of India. In the first five-year plan, the government introduced a family planning programme. India was renowned as the first country in the world to implement a "National Family Planning Programme." What did you think about the current status of healthcare services in India? Is there any difference between available health services for rural and urban populations? We know the majority of the Indian population still lives in rural areas. There is a disparity between available facilities in rural and urban areas, so think about the period of independence when rural populations were struggling to access proper health services. Therefore, the morbidity and mortality rate among them was high. There is a necessary need for a plan to stabilise population growth and

improve the health sector. We already learned and discussed efforts by the authorities to bring population stabilisation through family planning programmes and the health sector before and after independence from the previous unit.

Now, we have to understand what “family planning” is. A broad definition of family planning includes the use of contraceptives, fertility levels, trends and determinants, adolescent pregnancy, abortion, public policies and legal matters affecting child-bearing programme operation, development and evaluation, information education, sexually transmitted diseases and reproductive maternal and child health. This means that, through family planning, couples can anticipate and achieve their desired number of children, as well as the spacing and timing of their deliveries. This is accomplished by using contraceptive methods and by treating unintentional infertility. The number of pregnancies a woman can space out and have directly affects both the outcome of each pregnancy and her health and wellbeing.

Necessity for Family Planning

- ◆ Family planning encourages responsible parenting and assists couples in making decisions about their sexual and reproductive health.
- ◆ Couples can plan for their kids and guarantee healthy child spacing with the aid of family planning information and services.
- ◆ Family planning decreases the number of births, which lowers the risk of disease and mortality among women during pregnancy and childbirth.
- ◆ Family planning also avoids unintended, risky, or unwanted

pregnancies. Many of them pose a danger to the woman’s life and health.

6.2.3.1 Family Planning Methods

Did you notice the advertisements for condoms and contraceptive pills? There are several methods prevailing under the national family planning programmes, such as the use of contraceptive techniques, sterilisation, etc... This is the most common method of preventing unwanted pregnancies. This allows the couple to adopt the Spacing method, which is broadly defined as allowing certain space in between birth. Most probably, it promoted two or three year’s years’ gaps at birth.

1. Injectable Contraception

The injection works well as a method of birth control. A three-month pregnancy prevention period is provided by each injection of contraception. Currently, government facilities offer a wide range of intramuscular injections without any charge. It is a secure way to keep the space at birth. This method can be used by lactating women six weeks following delivery since it has no impact on breast milk production or composition. The health of the youngster is ensured. Usually, 7 to 10 months following the final dosage of the vaccine, a woman becomes pregnant. After ceasing to use this approach, a woman’s body begins to get ready for pregnancy.

2. Oral Contraceptive Pill

Two hormones are used in this method: oestrogen and progestin. This method prevents ovulation and fertilisation. Such pills do not damage the foetus if a woman conceives while taking them or mistakenly takes them while pregnant. Currently, ASHA has a programme where OCPs are delivered

to beneficiaries' doorsteps for a small fee. All public healthcare facilities offer the "MALA-N" brand for free.

3. Emergency Contraceptive Pill

Women who have engaged in unprotected sex might adopt birth control methods such as the emergency contraceptive pill (EC pill) to avoid becoming pregnant. After unprotected sex, the recommended time frame for taking it is 72 hours. The tablet loses some of its potency after 72 hours.

4. PPIUCD and IUCD

Long-term protection against pregnancy is possible with an IUCD. A tiny gadget called an intrauterine copper device (IUCD) is constructed of plastic and copper. IUCD is a successful method of avoiding unintended pregnancy. Long-term birth spacing can be achieved with great success using IUCDs that include copper.

5. Condom

These are barrier methods of contraception which offer the dual protection of preventing unwanted pregnancies as well as the transmission of sexually transmitted infection (STI) including HIV. The brand "Nirodh" is available free of cost at government health facilities and supplied at doorstep by ASHAs at minimal cost.

6. Female Sterilisation

Female sterilisation is a permanent form of contraception. It's a surgical procedure to block the fallopian tubes that carry the egg to the uterus. For women who decide against having more children, sterilisation is a possible choice. There are two ways of female sterilisation. Intermittent sterilisation can be performed at any time after six weeks of delivery. Postpartum sterilisation after childbirth is possible within seven days of delivery.

7. Male Sterilisation (Vasectomy)

Vasectomy is a permanent form of male contraception. It involves cutting and sealing the vas deferens, the tubes that carry sperm from the testicles to the urethra. There are two types of vasectomy: Conventional vasectomy with incision and Vasectomy without scalpel (NSV). The non-scalpel vasectomy (NSV) is a quick, secure treatment that doesn't involve making an incision.

8. Pregnancy Testing Kits (PTKs)

Nishchay - Home based Pregnancy Test Kits (PTKs) was launched under NRHM in 2008 across the country and anchored with the Family Planning Division on 24th January, 2012. The PTKs have been made available at Sub Centers and to the ASHAs. The PTKs facilitate the early detection and decision making for the outcomes of pregnancy.

6.2.3.2 New Interventions Under Family Planning

The government is introducing various schemes and programmes for improving access to quality family planning services.

1. Mission Parivar Vikas

The government launched the Mission Parivar Vikas on 26th September 2016 to substantially increase access to contraceptives and family planning services in 146 high-fertility districts with a Total Fertility Rate (TFR) of above three. The identified 146 districts are from seven high-focus states. These states, which together account for 44% of the nation's population, include Uttar Pradesh, Bihar, Rajasthan, Madhya Pradesh, Chhattisgarh, Jharkhand, and Assam.

Initiatives under Mission Parivar Vikas

- a. **Saas Bahu Sammelan:** Young married women and their mother-in-law can freely discuss issues

the current compensation package for the 11 high focus states: Uttar Pradesh , Bihar, Madhya Pradesh, Rajasthan, Chhattisgarh, Jharkhand , Odisha, Uttarakhand , Assam, Haryana and Gujarat.

- ## 5. National Family Indemnity Scheme

2. Expansion of Basket of Choice

6. Redesigned Contraceptive Packaging

3. Family Planning Logistics Management Information System (FP-LMIS)

- ## 7. The Scheme for Clinical Outreach Teams (COT)

The FP-LMIS has been launched to manage the distribution of contraceptives and strengthen the supply-chain management system. It aims to serve as a decision-making tool for policy makers, program managers and logistics personnel to monitor and manage the flow of contraceptive supplies, in order to reduce stock-outs and overstocks, and improve the program's effectiveness and contraceptive security.

- #### 4. Compensation Plan for Sterilisation Acceptors

8. New Family Planning Media Campaign

A 360 degree media campaign has been launched to generate contraceptive demand. The first phase of the campaign was launched in 2016 and the second phase (comprising of TVCs, posters and hoardings, yearlong Radio show, and a dedicated website on Family Planning) was launched in 2017.

- ## 9. Emphasis on Post pregnancy Family Planning services

This includes promotion of Post-Partum and Post-Abortion contraception



(Post-Partum Intra Uterine Contraceptive Devices- PPIUCD, Post Abortion Intra Uterine Contraceptive Devices-PAIUCD)

10. Promotion of Intra Uterine Contraceptive Devices (IUCDs) as a Spacing Method

Introduction of Copper IUCD-375 (5 years effectivity) under the Family Planning Programme.

11. Home Delivery of Contraceptives (HDC)

The scheme was launched to utilize the services of ASHAs to deliver contraceptives at the doorstep of beneficiaries. The scheme is operational in the entire country

12. Scheme to Guarantee Spacing at Birth

Under this scheme, the services of ASHAs are utilized for counselling newly married couples to ensure spacing of 2 years after marriage and couples with 1 child to have spacing of 3 years after the birth of 1st child. The scheme is operational in 18 States

13. Observation of World Population Day & Fortnight (July 11-July 24)

The month long World Population Day campaign is a step to boost Family Planning efforts all over the country. It comprises:

June 27 to July 10: “Dampati Sampark Pakhwada” or “Mobilisation Fortnight”

July 11 to July 24 “Jansankhya Sthirtha Pakhwada” or “Population Stabilisation Fortnight”

14. Observation of Vasectomy Fortnight (November 21-December 4)

The vasectomy fortnight is held in an effort to enhance male participation and

revitalise the NSV programme, whereby male sterilisation services would be provided to clients at health facilities.

6.2.3.3 Women and Family Planning

Family planning programs profoundly impact women’s health by ensuring universal access to counseling and comprehensive healthcare services addressing sexual and reproductive challenges. Women’s agency, freedom of choice, and access to high-quality reproductive care remain paramount concerns in these initiatives. Effective family planning access stands as not only crucial for individual and societal wellbeing but also for national development trajectories. Indeed, such access represents a fundamental human right, recognizing that reproductive autonomy and health services are essential components of dignity and self-determination in modern society.

An unsafe pregnancy or abortion kills a woman every eight minutes in a developing country, according to the World Health Organization. Though Medical Termination of Pregnancy (MTP) has been legalised in India since 1971, the access to services is still a challenge, especially in the rural and remote regions of the country. While there is a desire for small families or preventing unwanted pregnancy, this has not translated into contraception usage. Further, no contraceptive is 100% effective and therefore, safe abortion services would always be a necessary component of reproductive healthcare. Ensuring Comprehensive Abortion Care (CAC) services is now an integral component of the efforts made by the Government of India to bring down maternal mortality and morbidity in the country.

In the majority of family planning programmes, women are emphasised as the primary users of contraception and men are emphasised as supportive partners.

Family planning programmes should redesign their communication strategies and tactics to involve men as both enablers and beneficiaries in order to make men responsible participants. In order to expand the range of male contraception methods, it is also critical to involve men and young boys in family planning programmes, government policies, and research.

6.2.3.4 Population Control Laws

The government developed better strategies to slow down the population boom in the 1970s. These include the Medical Termination of Pregnancy Act (1971), posters and slogans for birth control, minimum age for marriage, and contraception. Recently, there has been discussion about population bills and laws. The Population Control Bill, 2019 (or, Population Regulation Bill, 2019) is a proposed bill introduced in the Rajya Sabha in July 2019. The proposed bill on population control emphasises on disincentivising couples from giving birth to more than two children. The Population Control Bill, 2019, which was withdrawn in 2022, also proposed to incentivize the adoption of the policy through educational benefits, home loans, better employment opportunities, free healthcare, and tax cuts.

6.2.3.4.1 State-Level Population Control Laws

Several states have introduced laws linking government benefits to family size:

- ◆ **Uttar Pradesh:** In 2021, proposed a draft bill that would deny government jobs, promotions, and welfare benefits to those with more than two children. Also included incentives for those following two-child norms.
- ◆ **Assam:** Approved a policy in 2021 making those with more

than two children ineligible for government jobs and benefits under specific schemes.

- ◆ **Rajasthan:** Introduced the Two-Child Policy for government employees in 2017, making those with more than two children ineligible for government jobs.
- ◆ **Maharashtra:** The Maharashtra Civil Services Rules bar individuals with more than two children from government employment.
- ◆ **Madhya Pradesh:** Has policies providing incentives to public servants who voluntarily adopt the two-child norm.

6.2.4 Trends in Population Growth in India (1900-2011)

India's population has witnessed significant growth over the 20th and early 21st centuries, shaped by various socio-economic, political, and health-related factors. In 1901, India's population was approximately 238 million, and by 2011, it had surged to 1.21 billion, marking a fivefold increase. The country's demographic trends have varied over different decades, influenced by improvements in healthcare, changes in birth and death rates, and government policies on population control.

6.2.4.1 Growth Pattern

In 1901, the total population of India was 238 million, which increased to 361 million in 1951. By 1991, the population had grown to 843 million, and by March 2011, it reached 1.027 billion. The annual growth rate from 1971 onward exceeded 2%, contributing to rapid population expansion. However, a significant shift occurred between 2001 and 2011, when the growth rate declined to 1.76%, reflecting the impact of family planning initiatives, improved literacy rates,



and socio-economic changes. While the population continues to grow, the declining growth rate indicates a gradual move toward demographic stabilization in the coming decades.

There are several stages for the demographic transition in India. See the following table.

1. Stagnant Population (1901–1921):

This period saw slow population growth due to high mortality rates caused by famines, epidemics (such as the Spanish flu of 1918), and poor healthcare. The population even declined between 1911 and 1921.

2. Steady Growth of Population (1921–1951):

After 1921, mortality rates began to decline due to improvements in medical care, sanitation, and food production, while birth rates remained high, leading to gradual population growth. The 1921 Census is known as the “Year of Great Divide” as it marked the beginning of continuous population increase.

3. Rapid Growth (1951–1981):

Following independence, India’s population grew rapidly due to declining death rates and high fertility rates. Government initiatives in healthcare, vaccination, and disease control significantly reduced infant and maternal mortality, leading to a population explosion. The 1970s saw the introduction of aggressive family planning measures, including forced sterilizations during the Emergency period (1975–1977), which led to public resistance.

4. Slowing Growth (1981–2011):

Since the 1980s, India’s population growth rate has been gradually declining due to the adoption of family planning, increased literacy (especially among women), urbanization, and economic development. The Total Fertility Rate (TFR) dropped from about 4.5 in 1981 to 2.4 in 2011, indicating progress toward population stabilization.

By 2011, India’s population growth rate had slowed significantly, though regional variations remain. States like Kerala and Tamil Nadu have achieved near-replacement-level fertility, while states like Bihar and Uttar Pradesh continue to experience high birth rates. The trend suggests that India is moving toward demographic stabilization, with the possibility of reaching a peak population in the coming decades.

6.2.4.3 State Wise Distribution of Population

India has 28 states and 8 union territories. The Union territories are small when compared to the states. The states are very large when compared to the states. The administration of the UTs are done by the Central Government. The population of Indian states and the range of distribution are very interesting. The state of Uttar Pradesh has a population of 199.58 million, whereas Sikkim has only 607,688 as population.

The states has variations in geographical size, population count, population density and socio-economic conditions. The cultural practices, educational status, social norms related to marriage and status of women in society also vary. The productive health of women along with health and survival status of the female child are also different in various states. The percentage of decadal growth rates of U.P, Maharashtra, West

Bengal, Andhra Pradesh, Madhya Pradesh and Bihar deteriorated during 2001-2011. These are the six populated Indian states. Researchers say that it is difficult to comprise population growth even though there is a moderate decline in fertility.

Projections until 2025 (with the total population estimated at 1,380 million) reveal that it will be difficult to contain population growth even under assumptions of a moderate decline in fertility. Experts say that this is because of the high fertility rate of the past decades and the later push of population growth. This characteristic is clearly manifested, especially in the Hindi-speaking states of the North. Though there were declines in fertility, as shown in the projections, chances to reduce population growth are uncertain. The combined population of the populous states are around 536 million.

6.2.4.4 Demographic Indicators

Demographic characteristics of a country provide an overview of its population size, composition, territorial distribution, changes therein and the components of changes such as natality, mortality, and social mobility. This section on demographic indicators has been subdivided into two parts - Population Statistics and Vital Statistics. Population statistics include indicators that measure the population size, sex ratio, density and dependency ratio while vital statistics include indicators such as birth rate, death rate, and natural growth rate, life expectancy at birth, mortality and fertility rates

1. Birth and Death Rates

As India is a developing country the birth and death rates in India are very high compared to other countries in the world. Birth rate is defined as the number of children

born per 1,000 persons in a year. India's birth rate has declined drastically over the last four decades from 36.9 in 1971 to 20.0 in 2018. Bihar (26.2) continues to remain at the top of list in birth rate while Andaman and Nicobar (11.2) is at the bottom. Death rate means the number of people dying per 1,000 persons in a year. The death rate of India has witnessed a significant decline over the last four decades from 14.9 in 1971 to 6.2 in 2018. In the last decade, death rate at an all-India level has declined from 7.3 to 6.2

2. Density of Population

The average number of people living per square kilometre is defined as the density of the population. It is calculated by dividing the total population by the total area. From 1901 to 2011, there was a steady increase in the density of Indian population. Population density was 267 in 1931 and it increased to 382 in 2011.

3. Sex Ratio

The number of females per 1,000 males is called the sex ratio. The world population statistics sex ratio is 986 females for 1000 males. The overall world report shows that males outnumber females. 2001 census shows that the sex ratio in India was 933 females to 1,000 males. This increased to '940 females to 1000 males' ratio in 2011. The sex ratio in India is highly twisted.

In the state of Kerala, females have outnumbered males. According to the census of 2001, the sex ratio in Kerala was 1,058 females per 1,000 males which became 1,048 in 2011. The sex ratio is lowest in Haryana where there is only 877 females per 1,000 males. Since 2001 census, overall national sex ratio has increased as the highest ever, by 7 points. Jammu & Kashmir, Bihar and Gujarat have declined sex ratio.



Table 6.2.2 Sex Ratio of Population from 1901 to 2011

Year	Sex Ratio
1901	972 females per 1,000 males
1971	930 females per 1,000 males
1981	934 females per 1,000 males
1991	927 females per 1,000 males
2001	933 females per 1,000 males
2011	940 females per 1,000 males

Since independence, the child sex ratio in India is lowest. The increased trend in child sex ratio is seen in Punjab, Tamil Nadu, Haryana, Himachal Pradesh, Gujarat, Mizoram and Andaman Nicobar Islands. At the same time child sex ratio declined over 2001 census in the other remaining states and UTs. Coming to the gender perspective, females in India possessed much lower social status, which results in low self-esteem, lack of control in decision making, lower literacy, poor nutrition, higher fertility and mortality levels especially during the reproductive age. Statistics show that female foeticide using ultrasonography is much greater in the large metropolitan cities of Mumbai, Kolkata, Delhi, Chennai and Bangalore. The states of Haryana and Punjab are also having a high frequency of female foeticide.

4. Fertility

India's Total Fertility Rate (TFR) dropped from 6.18 in the 1950s to 1.9 in 2021, below the replacement level of 2.1. By 2100, the TFR in India is projected to fall further to 1.04 (barely one child per woman). Southern states like Kerala, Tamil Nadu, and Karnataka achieved replacement-level fertility earlier than northern states. Because of the effective birth control measures, Indian fertility rates have been gradually declining.

5. Literacy

2011 census shows that the population above the age of 7 has 74% literacy. In 2001

the literacy rate was 64.88%, and in 2011, the literacy rate was 74.04%. It is clear that there is an increase of 9.21%. The literacy rates of males and females are 82.14 per cent and 65.46 per cent, respectively. The increase in literacy rate in males and females during 2001-2011 has been of the order of 6.88 and 11.79 per cent respectively.

The highest literacy rate is in Kerala being 93.91 per cent. Lakshadweep takes the second place with 92.28%, then comes Mizoram with 91.58%. The female literacy rate is also uppermost in Kerala (91.98%). The lowest literacy rate is in Bihar (63.82%).

The average female literacy rate is 65.46 per cent. The female literacy rate is also the highest in Kerala (91.98%), second stands Mizoram (89.40%) and third Lakshadweep (88.25%). When it comes to male literacy the highest male literacy was in Kerala (96%), followed by Mizoram (93.7%) and Tripura (92.2%). Then 82.1% was the overall male literacy rate. The states of Bihar (63.82%), Rajasthan (67.06%), Andhra Pradesh (67.66%), and Arunachal Pradesh (66.95%) Jharkhand, J&K and Uttar Pradesh have low literacy rates than the nationwide average (74%). Regardless of all these achievements, there are 272, 950, 015 (26%) illiterates in the country.

6. Life Expectancy

The average life of the people of a country is called the life expectancy. As per the 2011

census the life expectancy is 66 years. When compared to other countries, this is much less. For example, Canada, Japan, England, America and Australia have life expectancy above 80 years. There is an increase in the average life span of a child born in India over the past 40 years. The implementation of various health schemes and programmes and control over communicable diseases have largely contributed to an increase in life expectancy. In 1991, life expectancy was over 65 years, only in Kerala and Punjab. The states which has low life expectancy were Uttar Pradesh, Chhattisgarh, Jharkhand, Gujarat, Assam, Bihar, Madhya Pradesh, Orissa and Rajasthan.

7. Age Structure/Composition

In an economic context, age structure of a country may denote the extent to which different age groups in a population is productive. The population between the age group 15 to 60 years is considered as working population, while the population between the age group 0 to 14 and above 60 years is regarded as non- working or dependent population. A higher percentage of the working population is inevitable for the economic development of the country. The percentage of population above 60 years is very high and the population in the age group between 0 to 14 years is still high. This trend indicates higher life expectancy and reduction in death rate in the country.

8. Rural-Urban Differentiation

The level of industrialisation and the ratio of urban population are directly linked. The percentage of urban population in a country can be an index to the range of urbanization. As industries are growing, the ratio of urban population is also increasing. As India is an agricultural country, the ratio of the urban population is less than that of the rural population. But there are certain features related to rural-urban differentiation.

They are:

- i. As per the census report of 2011, 70% of people are living in rural areas. The remaining 30% are living in urban areas
- ii. The percentage of urban population has increased from 13% to 30%. This proves that in the economic life of India, the role of cities is increasing.
- iii. India is developing country and hence the number of cities and the ratio of population living in urban areas are very low. Just about 30 percent of population today lives in urban areas in India.
- iv. Mumbai has 1.64 crore population as per 2001 census. Among the cities, Mumbai ranked first. Kolkata has second place with a population of 1.33 crore, and Delhi possess third with a population of 1.28 crore.
- v. Main cause of rise in urban population in India is Migration Effect. It means rural life suffers from countless difficulties like opportunities of employment, low level of income, lack of educational and training facilities, lack of health and medical facilities, etc. To overcome such difficulties people migrate to urban places.

India's population growth rate has been slowing down for the past few years. This decline is credited to lessening the rate of poverty, rising education levels specifically among women; and higher rate of urbanization. As per the Government survey in 22 major Indian states, urban fertility has fallen below replacement level, i.e. to 1.7 children per woman. The fertility rate has fallen down to an average of 2.2. The replacement fertility level denotes to



the number of children born per woman so that one generation exactly substitutes the preceding one.

To conclude, although the population is still increasing, it is happening at a slower rate. Demographic behaviour is positive in many ways as it tries to achieve major gains in average life expectancy, decrease rates of child and infant mortality, and

increase the proportion of school-going children. The ability of countries to support and accommodate growing population is improved when those countries achieve a sufficient, reasonable distribution of wealth along with technological development, effective government, strong institutions and social stability. All provide ground for optimism about human well-being.

Recap

- ◆ A productive population helps to advance social and economic development.
- ◆ Children and elderly people belong to the unproductive population.
- ◆ Rise the legal age of marriage for women to achieve gender neutrality.
- ◆ Family planning is the most popular methods of birth control in India.
- ◆ Contraception, oral pills and condom, sterilisations are important family planning methods.
- ◆ India was the first nation to introduce a “National Family Planning Programme.”
- ◆ Family planning avoids unintended, risky, or unwanted pregnancies.
- ◆ Oral contraceptive pills do not damage the foetus if a woman conceives while taking them or mistakenly takes them while pregnant.
- ◆ “Nirodh” provide dual protection.
- ◆ Intermittent sterilisation and postpartum sterilisation are two ways of female sterilisation.
- ◆ Postpartum sterilisation is possible within seven days of delivery.
- ◆ Male sterilisation is a long-term form of male contraception.
- ◆ The compensation plan for acceptors of sterilisation services was further improved as of September 7, 2007.
- ◆ The “Dampati Sampark Pakhwada” or “Mobilization Fortnight” and the “Jansankhya Sthirtha Pakhwada” or “Population Stabilization Fortnight” are organised as part of the celebration of population control day.
- ◆ ASHA workers are the primary level service provider at village level.
- ◆ Birth rate is defined as the number of children born per 1,000 persons

in a year.

- ◆ Death rate means the number of people dying per 1,000 persons in a year.
- ◆ Every year 23 children are born per thousand persons on an average in India.
- ◆ The average number of people living per square kilometre is defined as the density of the population.
- ◆ According to the census of 2011, the sex ratio in Kerala is 1,048.
- ◆ The states of Haryana and Punjab have high frequency of female foeticide.
- ◆ A person above the age of seven years, who can read and write in any language, is called literate.
- ◆ 2011 census shows that the population above the age of 7 has 74% literacy.
- ◆ A higher proportion of the working population is beneficial for the economic development of the country.
- ◆ As per the census report of 2011, 70% of people are living in rural areas. The remaining 30% are living in urban areas.
- ◆ National policy was formulated after independence with the objective to check the increase in birth rate and improve the standard of living of people.
- ◆ The New population Policy of 2000, affirms its commitment towards voluntary consent of citizens and also reproductive health care services.

Objective Questions

1. What is India's population according to the 2011 census?
2. In between which years has India's population grown from 36 million to 121 million?
3. What percentage of the world population lives in India?
4. Which authority stated that "India has 53 million unemployed individuals as of December 2021"?
5. Where was the first family planning mela in India held?



6. According to the United Nations Millennium Development Goals Programme how many people in India lived below the poverty line in 2018-2019?
7. What is the legal marriage age for girls decided by the Indian government?
8. Which bill is proposed Two- child for a couple?
9. In which year did India introduce the first family planning programme?
10. Which oral contraceptive methods are distributed in public healthcare for free?
11. Which pill should be taken after unprotected sex to avoid pregnancy?
12. Which IUCD is a highly effective method for long-term birth spacing?
13. Which methods offer dual protection by preventing unintended pregnancies as well as HIV infection and other STIs?
14. What type of sterilisation will be performed at any time after six weeks of delivery?
15. Which method is the long-term form of contraception?
16. Which programme seeks to significantly expand access to contraception and family planning services that have 146 high-fertility districts with a total fertility rate (TFR)?
17. Which global summit focused their attention on family planning in 2012?
18. What is the total population of India as per 2011 census?
19. What is the average number of people living per square kilometre in a population?
20. What was the important characteristic of the first two decades of the 20th century, i.e. from 1901 to 1921?
21. What is the number of females per 1,000 males called?
22. What was the sex ratio in Kerala as per 2011 census?
23. What is the female literacy rate in India as per 2011 census?
24. What is the term used to denote the average life of the people of a country?
25. What is the term given to the administrative and legal programmes and other government efforts which aim at reducing birth rate and improving the quality of life?

Answers

1. 1.21 billion (121 cores)
2. 1951 between 2011
3. 17.5
4. Centre for Monitoring Indian Economy
5. Ernakulam
6. 80 million
7. 21
8. Population Regulation bill, 2019
9. 1952
10. MALA-N
11. Emergency Contraceptive pill
12. Copper- T
13. Condom
14. Intermittent
15. Sterilisation
16. Mission Parivar Vikas
17. London summit
18. 1,21,01,93,422
19. Density
20. Stagnation
21. Sex ratio
22. 1,048 females per 1,000 males
23. 91.98%
24. Life expectancy
25. Population policy

Assignments

1. Discuss the importance of population control measures.
2. Analyse various population control measures implemented in India.
3. Critically analyse the evolution of family planning programs in India.
4. Explain the major family planning methods in India.
5. Evaluate the growth trend of Indian population from 1900 - 2011.

Suggested Reading

1. Sehgal, B. P. S. (1989). *Population control and the law: Problems, policies, remedial measures*. Deep and Deep
2. Rao, M. (Ed.). (2019). *The Lineaments of population policy in India: Women and family planning*. Routledge India
3. Premi, M. K. (2011). *India's changing population profile*. National Book Trust
4. NRHM, *Health and Population Policies*. www.mohfw.nic.in

Reference

1. Srinivasan, K. (2017). *Population concerns in India: shifting trends, policies, and programs*. SAGE Publications
2. Majumdar, P. K. (2013). *India's demography: Changing demographic scenario in India*. Rawat Publications
3. Chaubey, P. K. (2001). *Population policy for India: perspectives, issues, and challenges*. Kanishka Publishers
4. National Population Policy.(2000). Ministry of health and family welfare Government of India

MODEL QUESTION PAPERS





SREENARAYANAGURU OPEN UNIVERSITY

QP CODE:

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Name:

FIFTH SEMESTER BA SOCIOLOGY HONORS
MAJOR DISCIPLINE SPECIFIC ELECTIVE
SGB24SO503ME – POPULATION STUDIES

(CBCS - UG)

2025 - Admission Onwards

SET-1

Time: 3 Hours

Max Marks: 70

Section A

Objective Type Questions

Answer any eight of the following. Each question carries 1 mark

(8x1=8)

1. The term “Demography “ was first used by whom?
2. The invalidation or voiding of a marriage by a competent authority is known as what?
3. Which aspect of a population shows the distribution of people of various ages which explains population trends like rates of births and deaths?
4. Who authored “*Essay on the Principle of Population*”?
5. Which committee was constituted by the British government of India in October 1943 to analyse the existing health conditions in British India?
6. In which year the world’s first family planning programme was launched?
7. Who defined population growth and food supply in a mathematical formula?
8. In which category of migration can we place refugees and displaced individuals?
9. Which demographic structure interacts with the demographic processes like fertility, mortality and migration?
10. In which stage of population transition theory explicits population explosion?

Section B

Very Short Answers

Answer any six of the following. Each question carries 2 marks

(6x2=12)

11. What are the three postulates of the Malthusian theory of population?
12. Differentiate between push and pull factors?
13. Briefly discuss Cannan’s Optimum Theory of Population?
14. What do you mean by neo-natal mortality rate?
15. State why a category of ‘Literate but without Formal Education’ should be formed?



16. What do you mean by Reverse migration?
17. Which are the four major sources of vital statistics in India?
18. Describe how technology affects migration?

Section C
Short Answers

Answer any six of the following. Each question carries 5 marks

(6x5=30)

19. Briefly state the difference between population studies and demography
20. Elaborate what is sample survey, discuss its significance and limitations?
21. Discuss the role of education in population studies.
22. Discuss the criticism of demographic transition theory.
23. Differentiate between emigration and immigration.
24. Explain the role of education as a factor in fertility.
25. Discuss the two policies influencing fertility.
26. Explain the necessity of population control.

Section D
Long Answer/Essay
Answer any two of the following
Each question carries 10 marks

(2x10=20)

27. Population registers help maintain demographic data but does this assessment have socio-political implications? Discuss and justify your answer?
28. Discuss the growing crisis of human conflict in affecting mortality?
29. Evaluate the theories of population and assess which one describes the current population scenario globally?
30. Discuss the differences between Demography and Population Studies, focusing on their distinct approaches and scope?



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**FIFTH SEMESTER BA SOCIOLOGY HONORS
MAJOR DISCIPLINE SPECIFIC ELECTIVE
SGB24SO503ME – POPULATION STUDIES
(CBCS - UG)
2025 - Admission Onwards
SET-2**

Time: 3 Hours

Max Marks: 70

**Section A
Objective Type Questions**

**Answer any eight of the following. Each question carries 1 mark
(8x1=8)**

1. Who is credited with starting modern demographic studies?
2. Who authored *Natural and Political Observations upon the Bills of Mortality*?
3. What is the largest source of population data initiated by the government?
4. The *Demographic Yearbook* is published by which organisation?
5. Who authored *Wealth*?
6. Which committee was constituted to analyse the country's population problems in 1940?
7. The number of times a woman has given birth to a baby of viable gestation or fetal weight is known as what?
8. What is Dalton's formula to define the optimum level of population?
9. The size of the population below the optimum level is termed as what?
10. Which IUCD is a highly effective method for long-term birth spacing?

**Section B
Very Short Answers**

**Answer any six of the following. Each question carries 2 marks
(6x2=12)**

11. Explain briefly *De jury method*?
12. What are the features of Dual Reporting System?
13. Why is it important to maintain population registers?
14. Why is it important to compose the population on the basis of sex?
15. Briefly differentiate between still birth and live birth?



16. State any two criticisms of optimum population theory?
17. Why was the Bhore committee constituted?
18. Describe Crude Death Rate?

Section C

Short Answers

Answer any six of the following. Each question carries 5 marks

(6x5=30)

19. Explain macro demography and its four categories?
20. Discuss the implementation of dual registration system in India?
21. Examine the two measures suggested by Malthus suggested to control the over-population?
22. How does social factors correlate to biological factors in terms of fertility, Evaluate?
23. Compare and contrast fertility and fecundity?
24. Describe what is out migration and discuss the reasons for out migration?
25. Discuss Dalton's Theory of Optimum Level of Population?
26. Explain the age and sex structure of population?

Section D

Long Answer/Essay

Answer any two of the following. Each question carries 10 marks

(2x10=20)

27. Critically assess the Sociological perspective in population studies and specify its role in understanding of demographic issues.
28. 'Religion significantly influences various demographic behaviors within a population, impacting factors such as marriage, fertility, mortality, and migration'. Based on this critically assess how religious factors affect population.
29. Brain drain leads to a loss of intellectual and professional capital in the country of origin. Evaluate how is it a disadvantage for developing nations and an advantage for developed nations.
30. Do you think that India lacks of a comprehensive migration policy, Discuss and analyse the contemporary issues?

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