
POPULATION AGEING: IS IT REALLY A CONCERN?

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1- ABSTRACT

An ageing population is phenomena refers to demographic trend where proportion or percentage of older population (typically aged 65 and over) in a society increases relative to younger population. This shift happens due to factors such as increased life expectancy and declining birth rates. This trend has impact on different dimensions of the society viz; social, economic and political impacts, such as increased demand for healthcare, Old age pensions, and social services, and also change in labour market as workforce ages. This present paper emphasis on the study of population ageing in theoretical as well as analytical in nature. We try to find out the various aspects of population ageing at domestic level and global level as well. This cross-sectional study utilized from the 1971 to 2021 of population ageing. Although this dataset heavily relies on the World bank dataset, World population prospects (WPP), Census, and EPWRF India Time series our analyses is guided by framework of ageing phenomena in cross-sectional study that recognize the impacts and future prospects of ageing population. Linear regression model is used to determine the growth rate associated with the old age population. Findings indicate that countries categorize by the India as showing that the proportion of growth rate in year 1971 is 0.60087 whereas the proportion of 60+ population in Japan is 0.11010 which is higher than India's elderly population and so on. Although the growth rate of elderly population in India is 4.5833. On, the other hand, growth rate of elderly in Japan is 22.0095. On the contrary, study on cross-state has been also done on the elderly population of Uttar Pradesh and Kerala. Linear regression model is also used to determine growth rate associated with the old age population. The data has been taken on decadal basis from year 1971 to 2021 and proportion of elderly population. In year 1971 the proportion of elderly population is 6.8 of Uttar Pradesh and 6.2 of Kerala respectively. Findings indicates that the proportion of old age population of Uttar Pradesh is higher than Kerala is 22.5807. And, also growth rate of elderly population of Uttar Pradesh is -4.4118 and in Kerala is 22.5807 which shows there is inverse relation between growth rate of both the states. In other words, after analyzing trend population of both the states we can clearly understand that Uttar Pradesh contains very a smaller number of elderly populations. However, Kerala is having larger number of elderly populations. The main aim of this study is to help government in policy making for elderly populations.

KEYWORDS: Ageing population, Declining birth rate, Life expectancy, Cross-sectional study.

2- INTRODUCTION

An ageing population is become is a global issue in present scenario. But, the fact is that ageing population is not still noticed in India. It is the one of the biggest challenge in different countries for example- Japan, China, United Kingdom etc. An ageing of world's population is result of the continued decline in fertility rates and increased life expectancy. Due to this demographic change has resulted in increasing numbers and proportion of people over 60 years. As, per the report release by Minister Harshvardhan in 2021 on Longitudinal Ageing Study on India (LASI) individuals are live long than before. Life expectancy of elderly are increasing globally, the number of elderly (Age above 60 & above) are projected to exceed the number of children (under age 14 for the first time in 2047). And, we are expected to exceed outnumber (beat) children under the age of ten by 2030 (UN World Population Ageing, 2013 & 2017). The demographic trend represents a historic achievement of increased longevity, but at the same time offers unpredictable challenges with the profound implications of social health and economy. The number of productive population less than dependant population as per the present study, Now, with help of Demographic transition theory (DTT) we are trying to see the population trend in Indian context. Demographic transition phenomena refer to the process of change in level of population growth due to change in fertility and mortality levels that countries go through due to industrialization. An early formulation of theory of population that's later classic version of demographic transition theory was Warren Thompson in 1929 propounded theory of demographic transition and classified countries in three stages as per population growth, birth rates and death rates. Theory of demographic transition suggests that economy goes through three stages. In first stages birth rate is high and death rate is also high and population growth rate is nominal at this stage of Pre-industrialized society. At the second stage there is continues high birth rate and sharply declining death rate and the difference between the both are increasing because the population is also goes on increasing and there wide gap is known as population explosion. At the last or third stage birth rate and death rates both are low and population growth reaches at low stationery stage. Secondly, Carr Saunders what later come known as demographic transition theory, he do data analysis of Western Europe and gave demographic transition theory, but, due to lack of data restriction he is unable to do study about other countries. There is other demographer who explains about the four and five stages of demographic transition theory (DTT).

3- REVIEW OF LITERATURE

Literature review gives a crystal clear understanding about the area already undertaken and throws light on the potential areas which are yet uncovered. Keeping in mind, an attempt has been made to brief survey of the work undertaken on the field of Population ageing: is it really a concern? Here, some of the important studies are given below.

Doyle et al. (2009) examine the growing public health and welfare challenges associated with population ageing, emphasizing that increased longevity, while a positive demographic achievement, places significant pressure on social and healthcare systems. The authors argue that ageing societies are not inherently unsustainable; rather, the extent of the challenge depends on how effectively governments adapt policies related to health, employment, and social protection. The article highlights that healthier ageing, improved long-term care planning, and supportive

community structures are essential to managing demographic change. Doyle and colleagues also emphasize the need for integrated public health strategies that address preventable illnesses among older adults and promote active ageing. Overall, the study underscores that with proactive policy reforms and improved service delivery, the difficulties created by population ageing can be mitigated, ensuring resilience within welfare states.

Fougère, M., & Harvey, S. (2009). Population ageing, time allocation and human capital: A general equilibrium analysis for Canada. Ottawa: Human Resources and Skills Development Canada. This study examined the long-term impact of population ageing on labour supply and human capital investment in Canada using a general equilibrium framework. The study aimed to assess how declining fertility rates and increasing life expectancy—largely due to improvements in medical care—affect productivity capacity and economic performance. Their findings indicated that population ageing leads to a reduction in labour supply, which in turn contributes to lower national savings and potential constraints on economic growth.

Dulgosz, Z. (2011). Population Ageing in Europe. In this study, Dulgosz (2011) examines the phenomenon of population ageing across European countries, analyzing demographic trends and their socioeconomic implications. The research employs a quantitative methodology, using comparative formulas such as $WLs = L(+65) / L(0-14) * C$ and $Wmw = L(+65) / L(+85) / L(50-60) / C$ to assess changes in age structure over a 25-year period. The findings highlight two key solutions to address the challenges of ageing populations: promoting higher birth rates and encouraging migration as a replacement mechanism. Overall, the study contributes valuable insight into demographic transitions and policy responses within Europe.

Alhasaan, P., Shelia, I., & Ney Smith, S. (2013). Policy Implications of Population Ageing in Western Africa. In this study, Alhasaan, Shelia, and Ney Smith (2013) explore the trends and policy challenges associated with demographic ageing in West Africa. The research highlights key dimensions such as rural–urban and gender distribution, the occupational history of older persons, as well as issues related to health, housing, and income security. Using Ghana as a case example, the authors analyze policy responses within the broader West African context. Their findings reveal that older persons are predominantly concentrated in rural areas, with a higher proportion of females among the ageing population. The study also notes low levels of formal literacy and the absence of income security in old age. Despite these challenges, older individuals continue to play a vital social role, particularly in grandparenting and family support systems.

Lisenkova, K., Mérette, M., & Wright, R. (2013). Population Ageing and Labour Market: Modelling Size and Age-Specific Effect. Lisenkova, Mérette, and Wright (2013) develop an Overlapping Generations Computable General Equilibrium (OLG-CGE) model to analyze the economic implications of population ageing in Scotland. The primary objective of their research is to examine how ageing influences the labour market, particularly focusing on the effects of a declining and ageing labour force on key macroeconomic variables. Additionally, the study evaluates age-specific productivity patterns and variations in labour force participation rates. The findings contribute to a deeper understanding of how demographic changes affect labour market dynamics and broader economic performance.

Bloom, D. E., Chatterjee, S., & Smith, J. P. (2015). Macroeconomic implications of population ageing and selected policy responses. Geneva: World Health Organization, Bloom, Chatterjee, and Smith (2010) explored the macroeconomic consequences of population ageing and outlined

possible policy responses. The paper primarily focused on trends in low fertility, constant age-specific savings and labour participation rates, and stable age-specific health and functional status. The authors highlighted several key macroeconomic concerns arising from population ageing: older adults tend to participate less in the labour force compared to younger and middle-aged individuals; their consumption constitutes a higher share of income; and the increasing proportion of elderly people places growing pressure on pension systems. Moreover, age-related diseases and disabilities were found to significantly reduce national productivity, while the elderly population imposes a substantial burden on health and long-term care systems.

Chang, A. Y., & Skirbekk, V. (2017). Measuring Population Ageing: An Analysis of the Global Burden of Diseases Study. Chang and Skirbekk (2017) analyze population ageing through the lens of the Global Burden of Diseases (GBD) framework, focusing on the relationship between age-related disease burden and demographic change. The study utilizes the measure of Disability-Adjusted Life Years (DALYs), expressed as $DALY = a_{ld} * \text{population size} / \text{population age} * \text{prevalence}_{ady} / \text{population age} * DALY_{ady} / \text{prevalence}_{adx}$. The authors highlight that while global life expectancy continues to increase, it is often accompanied by a progressive decline in physical, mental, and cognitive functioning. This research emphasizes the importance of assessing healthy ageing alongside longevity to better understand the overall impact of ageing on global health.

Borne, A., Gomer, B., et al. (2017). The impact of population ageing on the future provision of end-of-life care: Population-based projections of place of death. The study projects where people will die from 2015 to 2040 across England and Wales to assess the impact of population ageing on end-of-life care. Using population-based trend analysis with linear modelling and explicit assumptions, the researchers found a shift from hospital deaths to more deaths occurring in care homes and private residences. The findings highlight the growing need for community-based palliative care and policy planning to meet the future demands of an ageing population.

The research paper by Khan, HTA., (2018), titled “Population Ageing in a Globalized World: Risks and Dilemmas,” examines the global phenomenon of population ageing and evaluates the associated risks and challenges within the context of health and well-being. The study employs interdisciplinary methods, drawing from social gerontology, demography, and public health to analyze the implications of demographic ageing. The findings highlight several critical issues linked to an ageing population, including the growing burden of diseases associated with the epidemiological transition, concerns over financial security during retirement, and the increasing pressure on family resources to provide care for older adults. Furthermore, the research underscores the challenges posed by the limited availability of a skilled workforce to support elderly care needs. Khan (2018) emphasizes the necessity for comprehensive policy interventions to address these dilemmas and ensure the sustainable well-being of ageing populations in a rapidly globalizing world.

Mukherjee and Thakur (2023) explore the socioeconomic impacts of population ageing across five countries—Japan, Germany, South Korea, Brazil, and South Africa. Using a comparative, multi-method approach, they analyze data from 2000–2023 obtained from the World Bank, OECD, and national statistics. The study focuses on the old-age dependency ratio, healthcare spending, labor force participation of those aged 55+, and intergenerational wealth transfers. Their findings reveal cross-national differences in how ageing affects labor markets, healthcare systems, and

intergenerational relations, as well as the varying effectiveness of policy responses to demographic change.

4- OBJECTIVES OF THE STUDY

The objectives of the present study on the topic “Population ageing: is it really a concern” are as follows:

- ❖ To understand the concept of ageing population phenomena.
- ❖ To understand socio-economic impact of ageing.
- ❖ To know the impacts of ageing population society.
- ❖ To know about the future aspects of ageing impacting Indian economy.
- ❖ Study of population ageing in Indian context.

5- RESEARCH METHODOLOGY

This study adopts a quantitative and comparative research design to analyze population ageing trends in India and Japan over five decades (1971–2021). The analysis focuses on the proportion of elderly population and their growth rates across selected census years. The data used in this study are derived from secondary sources, primarily national census reports and demographic databases such as: World bank database, World Population prospects, Census, EPWRF India Time series. The dataset summarizes the proportion of aged population (aged 65 years and above) and their decadal growth rates for India and Japan.

The results revealed notable differences in the impacts of aging across these countries studied. To summarize ageing trends by calculating regression analysis, growth rate, proportional changes across decades. The patterns of ageing in India and Japan were compared to highlight the pace and magnitude of demographic ageing. The growth of elderly population proportion over time was plotted to identify trajectories of population ageing in both nations. Percentage growth rate formula: Population Growth Rate = $\frac{P1 - P0}{\text{original } P0} \times 100$ where P1 denotes the proportion of elderly population at the current and P0 denotes previous census years respectively.

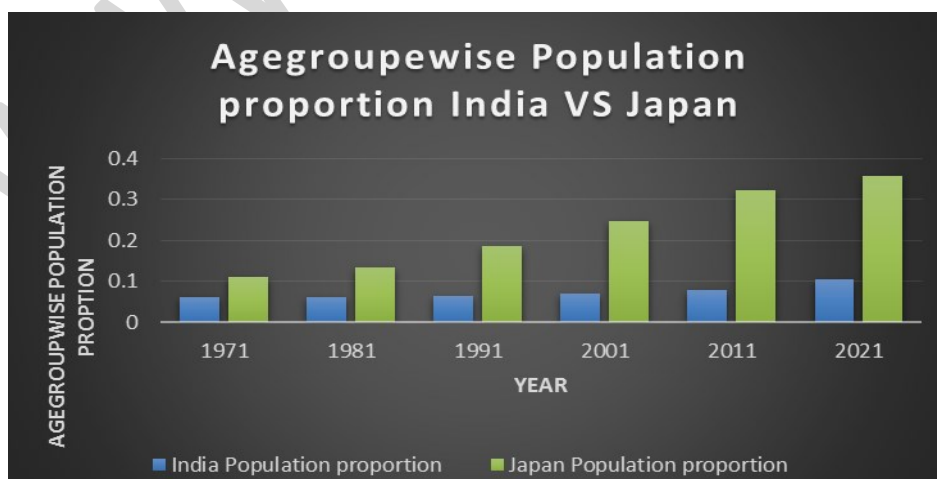


Figure 1: significant variation traced in Population (65 & above) of India and Japan

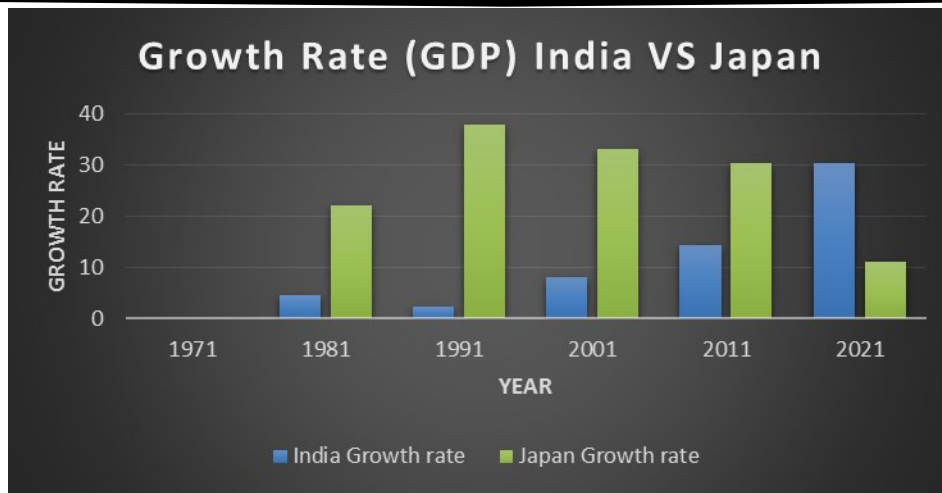


Figure 2: Significant variation traced in Growth rate (GDP) of India & Japan

The table below summarizes the proportion of aged population (aged 65 & above) and their decadal growth rates for each nation.

Year	India Population proportion	Japan Population Proportion	India Growth Rate	Japan Growth Rate
1971	0.060087	0.110107	0	0
1981	0.062841	0.134341	4.5833541	22.0095
1991	0.064325	0.18506	2.3615156	37.753925
2001	0.069552	0.246359	8.125923	33.123852
2011	0.079538	0.321094	14.357603	30.335811
2021	0.10361	0.356456	30.264779	11.012974

Table-1: Trend analysis of Ageing Population proportion & Decadal Growth rate of India and Japan This table compares India and Japan from 1971–2021 in terms of the proportion and growth rate of the ageing population.

The present study employs a comparative and quantitative research design to examine the trends of population ageing in Uttar Pradesh and Kerala over the period 1971–2021. The analysis focuses on understanding the variations in the proportion and growth rate of the elderly population between these two Indian states. This study is based on secondary data obtained from credible sources such as: World bank database, World Population prospects, Census, EPWRF India Time series. The data represent the proportion of the population aged 60 years and above in both Uttar Pradesh and Kerala for each census year. Descriptive Statistics Used to summarize the elderly population trends in each state. Comparative Analysis examines inter-state differences between Uttar Pradesh and Kerala across decades. Percentage growth rate formula: $\text{Population Growth Rate} = \frac{P1 - P0}{\text{original } P0} \times 100$ where P1 denotes the proportion of elderly population at the current and P0 denotes previous census years respectively.

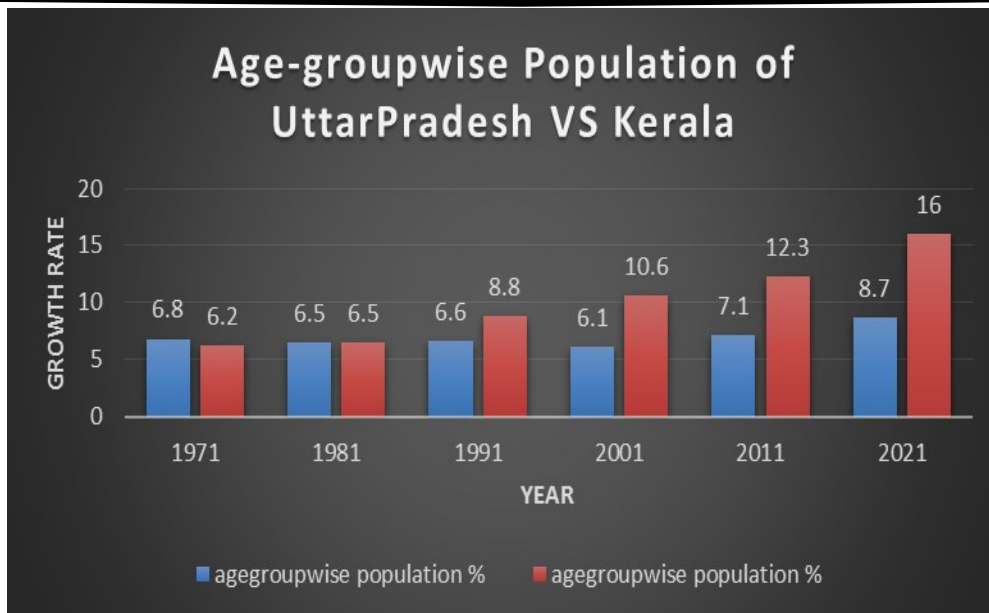


Figure 3: Significant variation in Aged Population traced (65& above) in Kerala in comparison of Uttar Pradesh.

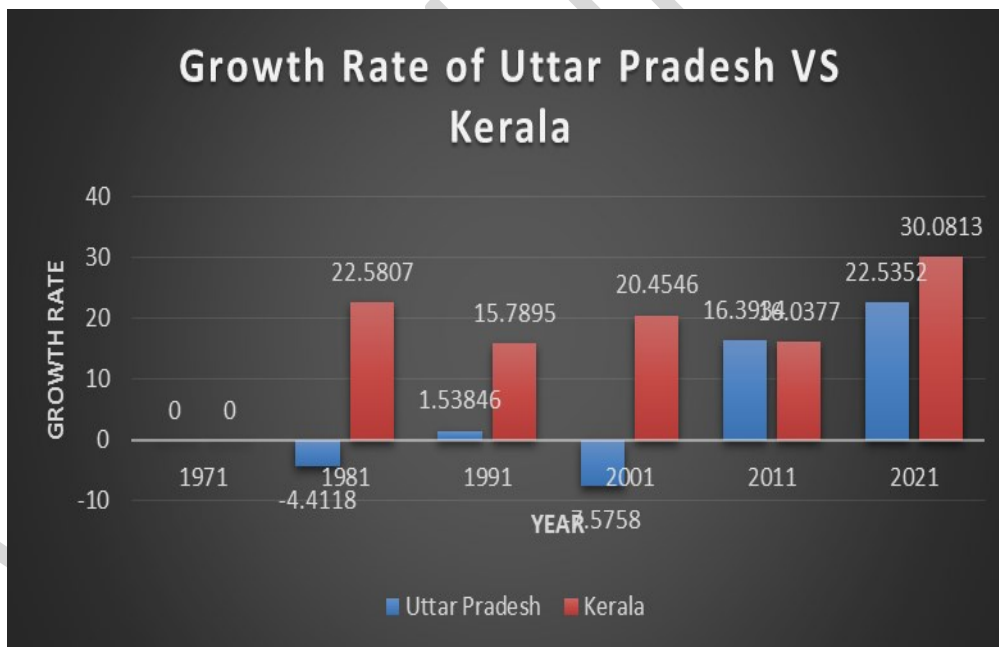


Figure 4: Significant variation in growth rate traced of Kerala in comparison of Uttar Pradesh

The table below summarizes the proportion of aged population (aged 65 & above) and their decadal growth rates for each state.

Year	Uttar Pradesh Population %	Kerala Population %	Growth Rate of Uttar Pradesh	Growth Rate of Kerala
1971	6.8	6.2	0	0
1981	6.5	7.6	-4.4118	22.5807
1991	6.6	8.8	1.53846	15.7895
2001	6.1	10.6	-7.5758	15.7895
2011	7.1	12.3	16.3934	16.0377
2021	8.7	16	22.5352	30.0813

Table-2: Trend analysis of Ageing Population proportion & Decadal Growth rate of Uttar Pradesh and Kerala

This table compares Uttar Pradesh (UP) and Kerala from 1971–2021 in terms of the proportion and growth rate of the ageing population.

The analysis of quantitative data was supplemented with ethnographic case studies from existing literature. The mixed-methods approach offers cultural context and sense-making alongside statistical rigor. As this study uses publicly available secondary data, no ethical approval or participant consent is required. As depicted, country-wise and inter-state trend analysis of India & Japan, Uttar Pradesh & Kerala respectively has been done with the help of elderly population proportion (65& above) and decadal growth rate has taken to know the trend.

6- CONCLUSION

The study covers a 50 years period (1971-2021), enabling the examination of longitudinal demographics ageing patterns. It focuses exclusively on the elderly population proportion and growth rate on decadal basis. In this research paper examines the National- level and inter-state difference between India, Japan and Uttar Pradesh, Kerala respectively. However, ageing population taken place in across various countries. As per Longitudinal Ageing Study (LASI) the elderly population (60 & above) will be going to triples in 2050. Lastly, as per researcher opinion ageing population is a natural process which will definitely takes place with a passage of time But, it may come various challenges to the economy. So, government should be prepared to overcome all future challenges which will proved favorable for our elderly population as well as entire economy as a whole.

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