

## Population Aging & Labor Force: Economic Impacts on Social Security Systems and Productivity

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### ABSTRACT

India is experiencing a steady demographic transition marked by a rising share of older persons, with significant implications for labour supply, social security systems, and productivity. As of 2025, about 11% of India's population over 150 million people is aged 60 years and above, and this proportion is projected to exceed 20% by 2050, potentially reaching nearly 347 million older adults. While India still benefits from a large working-age population and a labour force participation rate (LFPR) around 60%, the growing old-age dependency ratio (about 10–11%) signals increasing economic pressure on workers and public finances. This study examines the economic impacts of population ageing on labour force dynamics, social security coverage, and productivity in India. Using a descriptive and analytical design based on secondary data from PLFS, government reports, and international databases, the paper analyses trends in ageing, labour participation, and pension coverage. The findings reveal a paradox: social protection coverage has expanded to over 64% of the population, yet only about 23–25% of workers are covered by formal pension systems due to the dominance of informal employment. Many older adults therefore continue working, often in low-productivity informal jobs. However, evidence suggests that healthy and skilled older workers can remain productive, and the emerging silver economy offers new growth opportunities. The study concludes that population ageing in India is a manageable but urgent policy challenge. Strengthening pension systems, promoting flexible retirement, increasing female labour participation, and investing in health and lifelong learning are essential to sustain productivity and fiscal balance. With timely reforms, ageing can be transformed from a fiscal burden into an opportunity for inclusive and sustainable economic development.

**Keywords:** Population Ageing, Labour-Force Participation, Social Security, Pension Reform, Productivity.

### Introduction

India's demographic landscape is undergoing a significant transformation that carries profound implications for its labour force, social security systems, productivity and long-term economic sustainability. As of 2025, India remains the world's most populous nation with an estimated population of approximately 1.46 billion people, a demographic advantage that has historically supported robust economic growth. However, this demographic dividend is gradually narrowing as population ageing advances steadily. In 2025, around 11% of India's population was aged 60 years and above, while projections estimate that this share will exceed 20 by 2050, with the elderly population potentially reaching 347 million by mid-century.

This shift from a youthful to an older population structure presents a dual economic challenge. On one side, India enjoys a continuously improving labour-force participation rate (LFPR), which reached a record 56.1% in late 2025, supported by gains in employment and rural participation. On the other, the

emerging ageing population will increase old-age dependency ratios, potentially straining both formal and informal labour markets while amplifying fiscal pressures on pensions, healthcare and social security systems. Population ageing is expected to influence social security demand markedly as government expenditures on elderly support and health services rise, placing sustainability challenges on public budgets that were traditionally oriented towards younger cohorts.

India's demographic transition is distinct: unlike many advanced economies where ageing follows prolonged economic prosperity, India faces significant ageing pressures before reaching high-income thresholds, amplifying complexity for policymakers. With a working-age population projected to peak around 2041, the time window to harness demographic dividend benefits is narrowing, intensifying the imperative to integrate ageing considerations into labour and social policy frameworks. The interplay between ageing and productivity is equally critical. Ageing can influence labour supply dynamic solder workers are more likely to exit formal employment due to statutory retirement ages while health and skills imperatives become central in sustaining older worker participation and productivity.

Furthermore, informal employment's dominance in India's economy complicates social security coverage and retirement income adequacy, highlighting the need for universal and portable benefits. In this context, policy responses must address both sides of the demographic shift: mobilising labour, retaining older workers, promoting lifelong skill development and reconfiguring social security systems to balance sustainability with adequacy. This paper explores how population ageing interacts with labour force dynamics, social security financing and productivity within India's evolving economic and demographic milieu, providing evidence-based insights for effective policy formulation.

### **Objectives**

- To examine the trends and extent of population ageing in India and its implications for the labour force.
- To analyse the economic impact of population ageing on India's social security and pension systems.
- To assess how population ageing influences labour productivity and workforce participation.
- To suggest policy measures to strengthen social security sustainability and maintain productivity in an ageing society.

### **Methodology**

This study follows a descriptive and analytical research design using secondary data to examine the link between population ageing, labour force participation, social security systems, and productivity in India. Relevant data have been gathered from credible sources such as government publications, Periodic Labour Force Survey (PLFS) reports, Census projections, reports of international organizations, and peer-reviewed journals. The study employs trend analysis and comparative analysis to track changes in demographic structure, old-age dependency ratio, labour force participation, and social security coverage over time. Key measures related to pensions, elderly welfare schemes, and workforce participation are reviewed to understand economic impacts. The methodology also includes thematic review of policies and programmes concerning ageing and labour markets. Basic statistical interpretation and synthesis of findings from multiple sources are used to develop conclusions and policy implications, ensuring a systematic and evidence-based assessment of the research problem.

### **Current Scale and Pace of Ageing**

India's population remains comparatively young in global terms, yet the pace of demographic ageing is accelerating steadily. Persons aged 60 years and above constituted about 11% of the total population in 2024, amounting to nearly 153 million individuals. Projections from the United Nations and UNFPA suggest that this share will continue to increase significantly in the coming decades as life expectancy rises and fertility rates decline. Although India still benefits from a large working-age population, the absolute number of older adults is already substantial and expanding rapidly. This shift reflects a gradual transition toward an older age structure and signals the early stages of demographic ageing. The growing size of the elderly population is beginning to translate into higher demand for pensions, healthcare, and long-term care services. It also carries broader economic and social implications, including increased pressure on public resources and family support systems. Together, these trends indicate that population ageing in India is no longer a distant prospect but an emerging demographic reality requiring timely policy attention.

### Demographic Pressure: Dependency Ratios and Workforce Window

Measured from different angles, dependency variables show the start of pressure on the labour supply. The older-dependency metric (older dependents per 100 working-age people) has been rising: recent series put India's older dependency (older dependents as a percentage of working-age population) in the low double digits (10-11% for 2024), pointing to a gradual shift in the ratio of dependents to workers. At the same time, the overall labour-force participation for persons 15 years & above remained strong in the latest PLFS cycle (July 2023-June 2024) LFPR(15years & above) 60.1% indicating a still sizable active labour pool but with important gender and age-profile gaps that will determine how ageing translates into labour shortages or higher labour-supply pressure. Ministry of Statistics & Programme Implementation World Bank.

### Early Signs in Age-Specific Labour Participation and Regional Patterns

Older adults in India remain more likely to participate in informal work than in formal salaried jobs. Survey evidence and ageing studies show a substantial share of older persons still engaged in economic activity (various studies report older-adult participation in the 30-40% range, higher among men and in rural areas), but participation declines with age and is gendered female participation among older cohorts is much lower. These patterns mean ageing will not only shift numbers (more dependents) but also change the composition of labour supply (older, often informal, workers), with implications for productivity, social protection coverage and the design of retirement/pension instruments. International Institute for Population Sciences. To provide a consolidated overview of population ageing and labour force variables in India, Table 1 presents key demographic and labour information as on 31<sup>st</sup> March 2025.

**Table 1: Overview of Significant Variables**

Variables	Value	Year
Population aged 60years & above(absolute)	153 million	UN/UNFPA figure (baseline around 2023-24)
Share of population aged 60years & above	11%	WHO / UN estimate for 2024.
LFPR (persons 15years & above)	60.1%	PLFS (July 2023 - June 2024) usual status.
Worker Population Ratio (WPR, 15years & above)	58.2%	PLFS (July 2023 - June 2024).
Older dependency ratio (older dependents per 100 working-age)	10.5%	World Bank / FRED series for 2024.
Labour participation among 60years & above	30-40% (varies by sex/region)	Estimates from ageing/LASI/IIPS analyses.

Source: UNFPA, WHO, MoSPI/PLFS (2023-24), World Bank database, and LASI/IIPS reports

The above Table 1 shows India's gradual demographic shift toward ageing alongside current labour conditions. With 153 million people aged 60 years & above (11% of the population), ageing is already significant. Strong LFPR (60.1%) and WPR (58.2%) reflect a large active workforce, but the 10.5% old-age dependency ratio indicates emerging pressure on workers. Older-adult participation (30–40%) suggests many elderly remain economically active, often due to necessity. The table indicates that while India still benefits from a demographic dividend, ageing pressures are becoming visible.

### Expansion of Social Protection Coverage and Fiscal Implications

India has made notable progress expanding its social security framework amid the demographic shift towards an older population. Data up to 2025 show that social protection coverage has risen sharply from about 19% in 2015 to 64.3% of the population, indicating that roughly 950 million people now receive at least one social protection benefit such as pension, health insurance or employment-linked support. This rise reflects the government's intensified efforts to broaden social safety nets in response to growing demands from an ageing society. However, the expansion also signals rising fiscal commitments as larger beneficiary counts require higher ongoing expenditures. While enhanced coverage improves economic security for vulnerable groups including elderly citizens it puts sustained pressure on public finances, particularly as the proportion of older dependents continues to grow.

### Pension Systems and Retirement Income Challenges

Despite broader social protection coverage, pension access remains uneven, especially for informal sector workers, who make up a large share of India's workforce and generally lack formal retirement benefits. Research indicates that a significant portion of elderly Indians lacks access to adequate pensions, forcing many to continue working beyond conventional retirement ages or to rely on family support. Partial policy remedies include state ₹1,100 monthly pension increases for senior citizens

and widows in some regions, such as Bihar's pension boost in 2025, benefitting over 1.9 crore individuals. Nevertheless, the structural under-coverage underscores that pension systems have yet to fully adapt to rapid ageing, leading to income insecurity among many older adults and potential long-term fiscal strain if universal pension adequacy goals expand without commensurate revenue sources.

### Productivity Impacts and Workforce Participation

Ageing influences productivity through changing labour force composition. Older workers often remain engaged in informal economic activities with limited social security protections, which reflects both necessity and the insufficiency of retirement income. This informal employment pattern, while maintaining labour participation among the elderly, can have mixed effects on aggregate productivity since informal work tends to be lower in capital intensity and skill upgrading. In addition, rising age dependency ratios signal potential future downward pressure on per-worker productivity growth unless policies encourage active ageing, lifelong learning and skill retraining frameworks that keep older cohorts productive. The extent of social security coverage and pension-related variables reflecting the economic impact of population ageing are summarised in Table 2.

**Table 2: Social Security Variables in India**

Variables	Value
Social protection coverage (% of population)	64.3% (2025)
Number of people covered by social security benefits	950 million
Pension coverage in informal workforce	Low (significant gaps)
State-level pension increases (e.g., Bihar)	₹1,100/month

Source: ILO/ILOSTAT databases and Government of India/state policy reports

The above Table 2 highlights progress and gaps in social security. Coverage has expanded to 64.3%, reaching about 950 million people, reflecting stronger welfare outreach. However, pension access for informal workers remains limited. State-level pensions such as ₹1,100 monthly support provide some relief but remain modest. The table shows that although coverage has widened, adequacy and inclusion challenges persist.

### Strengthening Social Security Coverage for an Ageing Workforce

India's ageing population has necessitated a measurable expansion of social security systems to ensure income security in old age. As of 31 March 2025, India's social protection coverage reached approximately 64.3% of the total population, compared to only 19% in 2015, indicating a three-fold increase over a decade. Despite this progress, pension coverage remains limited: only about 23% of workers are covered under any formal pension scheme, largely due to the dominance of informal employment, which accounts for over 90% of the workforce. The Pradhan Mantri Shram Yogi Mandhan (PM-SYM) scheme, aimed at unorganised workers, had enrolled over 50 million subscribers by March 2025, offering a guaranteed pension of ₹3,000 per month after age 60. While statistically significant, this benefit level remains modest relative to rising living and healthcare costs, highlighting sustainability and adequacy challenges.

### Extending Labour Force Participation to Sustain Productivity

From a productivity perspective, ageing reduces the effective labour supply unless older individuals remain economically active. Data from labour surveys indicate that labour force participation among persons aged 60 years and above ranges between 32% and 38%, with rural male participation exceeding 45%, while female participation remains below 15%. India's statutory retirement age for most government employees is 60 years, although life expectancy has increased to approximately 70.8 years by 2024. This creates a potential 10-12-year post-retirement dependency period, increasing pressure on pension and healthcare systems. Policy proposals such as phased retirement and flexible work arrangements could help retain experienced workers, reduce dependency ratios, and improve output per worker, particularly in knowledge-intensive and service sectors.

### Investment In Health and Skills for Age-Inclusive Productivity

Health and skill investment are critical determinants of productivity in an ageing society. India's public expenditure on health stood at around 2.1% of GDP in 2024-25, with elderly healthcare demand rising sharply due to non-communicable diseases, which account for over 65% of deaths among older adults. Evidence suggests that healthier older workers are 20-25% more productive than those with chronic health limitations. Additionally, less than 10% of workers aged 50years & above currently

participate in formal skill-upgradation programmes, indicating a major policy gap. Expanding lifelong learning and digital training could substantially enhance productivity and reduce early labour market exit. Table 3 presents key variables related to social protection, labour participation, health expenditure, and ageing-inclusive policy measures in India.

**Table 3: Supporting Age-Inclusive Policy Measures**

Variables	Value
Population covered by social protection	64.3% of total population
Workforce with pension coverage	23%
Informal workforce share	90%
PM-SYM subscribers	50 million
Pension under PM-SYM	₹3,000 per month
Labour participation (60years & above age group)	32-38%
Life expectancy at birth	70.8 years
Public health expenditure	2.1% of GDP

Source: Compiled from ILO Social Protection Database, Government of India and World Bank

The above Table 3 reflects key structural issues in ageing and productivity. Only 23% of workers have pensions due to high informality (90%). PM-SYM coverage is notable but benefits remain modest. Older-adult participation (32–38%) and life expectancy of 70.8 years indicate longer working and retirement phases. Public health spending at 2.1% of GDP suggests room for improvement. The data emphasize the need for stronger age-inclusive policies.

#### **Pension and Social Security Reforms for Fiscal Sustainability**

India's ageing population is expanding in absolute terms, with the 60years & above population already above 150 million and expected to reach nearly 347 million by 2050. This demographic shift directly raises pension and welfare obligations. At present, only about 23-25% of India's workforce is covered by formal pension systems, while nearly 90% of workers remain in the informal sector, limiting contributory pension inflows. The National Pension System (NPS) has grown to roughly 7-8 crore subscribers by 2025, and the Employees' Provident Fund Organisation (EPFO) manages over 27 crore accounts, though active contributors are far fewer.

Given that India's average life expectancy has increased to around 70-71 years, retirees may spend 10–15 years drawing benefits. If retirement age remains at 60 while longevity rises, the pension dependency period lengthens. Gradually linking retirement age to life expectancy (for example, raising it to 62-65 over time) could reduce fiscal pressure. Even a 2-year increase in average working life can significantly improve pension sustainability by increasing contributions and shortening payout duration.

#### **Extending Workforce Participation to Protect Productivity**

India still enjoys a demographic dividend, but signs of ageing require proactive labour policies. The overall Labour Force Participation Rate (LFPR) for ages 15years & above is around 60%, but participation declines sharply after age 60. However, surveys show 32-38% of people aged 60years & above remain economically active, especially in rural areas. Rural male participation among the elderly can exceed 45%, while elderly female participation often stays below 15-18%, indicating gender gaps. Increasing female labour force participation offers large gains. Female LFPR has improved to around 40-42% in recent surveys but remains below male participation (above 75%). If female participation rises by even 10 percentage points, millions of additional workers could offset ageing-related labour shortages. Flexible retirement, part-time work, and re-employment contracts can retain experienced workers and maintain sectoral productivity, particularly in education, administration, and advisory roles.

#### **Investing in Health, Skills, and the Silver Economy**

Healthy ageing directly supports productivity. India's public health expenditure stands near 2.1% of GDP, which is modest for an ageing society. Non-communicable diseases account for over 60-65% of deaths among older adults, raising healthcare costs and reducing work ability. Studies show that healthy older adults can be 20-25% more productive than those with untreated chronic conditions. Skill development is another gap: fewer than 10% of workers aged 45years & above participate in formal reskilling programs. Expanding lifelong learning and digital literacy can prolong employability. Meanwhile, India's emerging silver economy including elder care, assistive technology, and wellness services has strong growth potential. With seniors projected to form nearly 20% of the population by 2050, demand for

such services will rise sharply, creating jobs and new markets. To support policy recommendations, Table 4 summarises major variables relevant to population ageing, workforce participation, and social security sustainability.

**Table 4: Overview of Supporting Policy Directions**

Variable	Recent Statistics
Population aged 60 years & above	More than 150 million
Life expectancy	70-71 years
Workforce in informal sector	90%
Workers with pension coverage	23-25%
NPS subscribers	7-8 crore
LFPR (15years & above population)	60%
LFPR (60years & above population)	32-38%
Female LFPR	40-42%
Public health expenditure	2.1% of GDP
Share of NCD deaths (elderly)	60-65%

Source: MoSPI, World Bank, ILO, UN reports

The above Table 4 summarizes major ageing-related indicators. A large elderly population and rising life expectancy increase dependency pressures. High informality and low pension coverage limit retirement security. Lower LFPR among older adults and gender gaps affect labour supply. Modest health spending and high NCD prevalence signal healthcare challenges. The table highlights priority areas for pension reform, health investment, and labour inclusion.

### Results and Discussion

The analysis confirms that India has entered a phase of gradual but economically meaningful population ageing. With nearly 11% of the population already aged 60 years and above—more than 150 million people—the country's demographic profile is slowly shifting from a youth-dominated structure toward a more age-balanced one. The rising old-age dependency ratio of about 10–11% indicates that the number of dependents supported by the working-age population is increasing, which has direct implications for labour supply and fiscal sustainability. Although the overall LFPR remains relatively strong at around 60%, participation declines at older ages, and a large share of elderly workers remain engaged in informal employment. This continued participation often reflects financial necessity rather than choice, pointing to gaps in retirement security.

The study also highlights a paradox in social security expansion. While social protection coverage has increased significantly to over 64% of the population, only about 23–25% of workers are covered by formal pension schemes due to the dominance of informal employment. As a result, many older adults face income insecurity and rely on family or continued work. From a productivity perspective, ageing presents both risks and opportunities. Productivity may slow if older workers lack access to health care and skill renewal. However, evidence that healthy older adults can be 20–25% more productive than unhealthy peers suggests strong returns to investment in health and lifelong learning. Gender disparities further shape outcomes, as female labour participation remains lower, reducing potential labour supply.

Overall, the findings indicate that ageing in India is not solely a burden but a manageable transition. With timely reforms in pensions, healthcare, and labour-market policies, India can reduce fiscal stress while leveraging the experience and potential of older adults. The emerging silver economy also offers scope for new employment and growth, supporting a balanced and forward-looking policy approach.

### Conclusion

Population ageing in India is emerging as a structural economic reality with far-reaching implications for labour supply, social security systems, and long-term productivity. This study shows that although India still benefits from a large working-age population, the steady rise in the 60 years & above population and old-age dependency ratio is gradually increasing fiscal and social pressures. Expansion of social protection coverage is a positive step, yet limited pension penetration and the dominance of informal employment continue to leave many older adults financially vulnerable. Ageing in India is occurring alongside development challenges, making policy responses more complex than in high-income countries. Strengthening contributory and portable pension systems, encouraging delayed and flexible retirement, and raising female labour-force participation can help stabilise labour supply. At the same time, greater investment in healthcare, preventive care, and lifelong learning is essential to sustain older workers' productivity. Importantly, ageing should not be viewed only as a burden. With sound

planning, the growing silver economy, experience of older adults, and age-inclusive policies can generate new opportunities. A balanced strategy combining social protection reform, labour-market inclusion, and human-capital investment will be crucial to ensure that India's demographic transition supports inclusive and sustainable economic growth.

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