Emergent Odisha:
Demography & Development

As Odisha approaches its centenary in 2036, the report "Emergent Odisha: Demography and Development" highlights key demographic shifts that will reshape its socio-economic landscape. Trends such as declining fertility rates, increasing life expectancy, and population ageing present opportunities and challenges in various sectors including health, education, employment, migration and urbanization. To leverage its demographic dividend, Odisha needs to address healthcare disparities, particularly for women, children, and the elderly, through reforms in healthcare infrastructure and social security. The report also focuses on improvements in the quality of learning and continuing education initiatives alongside equipping the youth with critical skills as the working-age population peaks. Additionally, it underscores the need for sustainable urban management and rural development to mitigate distress migration. While grounded in robust data, the report aims to highlight the key issues and possible suggestions for the policymakers and the public officials. Additionally, it serves as a framework for grassroots action by the civil society organizations to foster an inclusive society and address the needs of the vulnerable sections of population so as to ensure realisation of the Agenda 2030: No one is left behind.

ODISHA DEVELOPMENT INITIATIVE
CHALLENGES | OPPORTUNITIES | WAY FORWARD

The development challenges in Odisha are a "many hands problem" which necessitates a multi-stakeholder approach. In response, the Odisha Development Initiative (ODI) was established as a broad coalition bringing together Civil Society Organisations, Government, Academia, the Corporate Sector, Panchayati Raj Institutions, and the Media to foster collaboration. Central to this effort, five editions of the Odisha Vikash Conclaves (OVCs) have facilitated multi-stakeholder dialogues, creating a transformative development agenda for the state, aligned with the Sustainable Development Goals. The ODI also published the Odisha Development Report in 2020 addressing critical challenges and potential solutions.

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ODISHA DEMOGRAPHY REPORT 2024

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Foreword

The State of Odisha, with its rich history and vibrant culture, is on the cusp of a significant transformation as it approaches its centenary in 2036. The report "Emergent Odisha: Demography and Development" provides a timely and comprehensive analysis of the demographic shifts shaping the state's future. By focusing on key trends such as declining fertility rates, increasing life expectancy, and shifts in population age structure, the report offers crucial insights into how these changes will influence Odisha's socio-economic landscape in the coming decades.

Odisha's demographic transition presents both opportunities and challenges. As the youth population begins to decline and the elderly population grows, it is critical to assess the impact on health, education, employment, and urbanization. These transitions will play a pivotal role in determining whether Odisha can capitalize on its demographic dividend while ensuring inclusive and sustainable growth. This report, through its nuanced and data-driven analysis, provides a foundation for understanding these shifts and planning accordingly.

Odisha has made significant progress in improving health and nutrition outcomes, yet, disparities persist across various population groups, reiterating the need to focus on health, nutrition and ageing. The report analyzes the state's healthcare infrastructure, accessibility of services, and the nutritional status of women, children, and the elderly. As non-communicable diseases rise and the healthcare needs of senior citizens increase, it is crucial to implement policies that prioritize quality healthcare, social security, and community support. Additionally, there is potential for older generations to continue contributing to the economy through employment and volunteerism, fostering a society that values the contributions of all age groups. At the same time, social security measures need to be strengthened to address the needs of an ageing population.

Education and employment are equally critical as Odisha's workforce evolves in response to demographic changes. Reforms in education focused on curriculum and teacher training, will be essential to equip the youth with the skills needed for a rapidly changing economy. There is a need to promote lifelong learning and adult education to support continuous skill development across all age groups. With Odisha's working-age population nearing its peak, there is a narrow window of opportunity for economic growth if adequate employment and skill development programs are in place. Targeted strategies to foster entrepreneurship, create jobs, skilling in traditional sectors and support marginalized groups, particularly women and youth, will be key.

Migration and urbanization are closely linked to demographic trends, influencing the evolving landscape of Odisha. As more individuals migrate to urban areas in search of better opportunities, the state faces challenges in managing urbanization sustainably and inclusively. Equally important is the creation of opportunities in rural areas to reduce distress migration, ensuring that development is equitable across both urban and rural regions.

As we march towards Odisha@2036, the choices made today regarding health, education, employment, ageing, and urbanization will significantly influence the state's future trajectory. Understanding and addressing the demographic realities will empower policymakers, researchers, and civil society to collaborate effectively, building a future where every citizen thrives. As the state continues to evolve, a progressive and inclusive development agenda will be essential for navigating the complexities of a changing demographic landscape. The report "Emergent Odisha: Demography and Development" will serve as a critical resource in shaping a progressive and inclusive development agenda for the decades to come.

Jagadananda
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Co-Founder, CYSD

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Abbreviations

ABPMJAY	Ayushman Bharat Pradhan Mantri Jan Arogya Yojana
AIIMS	All India Institute of Medical Sciences
ANC	Antenatal Care
ARDSI	Alzheimer's and Related Disorders Society of India
ASAR	Age-specific Attendance Ratio
ASHA	Accredited Social Health Activist
AYUSH	Ayurveda, Yoga and Naturopathy, Unani, Siddha, and Homeopathy
BITS	Birla Institute of Technology & Science
BoCW	Odisha Building and Other Construction Workers' Welfare Board
BSSO	Block Social Security Officer
CAGR	Compound Average Growth Rate
CBR	Crude Birth Rate
CDR	Crude Death Rate
CMLS	Centre for Migration and Labour Solutions
CMR	Crude Mortality Rate
COPD	Chronic Obstructive Pulmonary Diseases
CRS	Civil Registration System
CSR	Corporate Social Responsibility
CT	Census Towns
CYSD	Centre for Youth and Social Development
DBM	Dual Burden of Malnutrition
DMF	District Mineral Foundation
DSSO	District Social Security Officer
EAG	Empowered Action Group
ECCE	Early Childhood Care and Education
EE	Employment Elasticity
ESI	Employee's State Insurance Department
EVS	Environmental Science
FGL	First General Learners
GDP	Gross Domestic Product
GER	Gross Enrolment Ratio
GoI	Government of India
GoO	Government of Odisha
GP	Gram Panchayat
GSDP	Gross State Domestic Product
GSVA	Gross State Value Added
GVA	Gross Value Added
HCES	Household Consumption Expenditure Survey
ICDS	Integrated Child Development Services
ICMR	Indian Council of Medical Research
ICMR-NIN	ICMR-National Institute of Nutrition
IGNOAPS	Indira Gandhi National Old Age Pension Scheme
IGWPS	Indira Gandhi Widows Pension Scheme
IHDS	India Human Development Survey
IHME	Institute for Health Metrics and Evaluation
IIPH	Indian Institute of Public Health
IIPS	International Institute of Population Sciences
ILO	International Labor Organization
IMR	Infant Mortality Rate
ISMWA	Inter- State Migrant Workmen Act
ITI	Industrial Training Institute
KALIA	Krushak Assistance for Livelihood and Income Augmentation
LASI	Longitudinal Aging Study of India
LEB	Life Expectancy at Birth
LF	Labor Force
LFPR	Labor Force Participation Rate
MAD	Minimal Acceptable Diet
MBPY	Madhu Babu Pension Yojana
MCH	Maternal and Child Health
MGNREGA	Mahatma Gandhi National Rural Employment Guarantee Act
MMR	Maternal Mortality Rate
MoF	Ministry of Finance
MoHFW	Ministry of Health and Family Welfare
MoSPI	Ministry of Statistics and Programme Implementation
MoU	Memorandum of Understanding
MPCE	Monthly Per Capita Consumption Expenditure
MPI	Multidimensional Poverty Index
MSME	Micro, Small, and Medium Enterprises
MWPSCA	Maintenance and Welfare of Parents and Senior Citizens Act
NAPSrC	National Action Plan for Senior Citizens
NAS	National Achievement Survey
NCD	Non-communicable Diseases
NCERT	National Council for Educational Research and Training
NCEUS	National Commission for Enterprises in the Unorganised Sector
NCOP	National Council for Older Persons
NCRB	National Crime Records Bureau
NEP 2020	National Education Policy 2020
NFHS	National Family Health Survey
NIC	National Information Centre

NPHCE National Programme for Health Care of the Elderly
NPOP National Policy on Older Persons
NSAP National Social Assistance Programme
NSO National Statistical Office
NSQF National Skills Qualification Framework
NSS National Sample Survey
NSSO National Sample Survey Organization
NSSO-EUS NSSO Employment and Unemployment Survey
OBC Other Backward Class
OMBADC Odisha Mineral Bearing Areas Development Corporation
OMPSC Odisha Maintenance of Parents and Senior Citizen Rules
ONORC One Nation One Ration Card
ORGI Office of Registrar General of India
OSDA Odisha Skill Development Authority
OSPSC Odisha State Policy for Senior Citizens
PGI Performance Grading Index
PHFI Public Health Foundation of India
PLFS Periodic Labor Force Survey
PMJJBY Pradhan Mantri Jeevan Jyoti Bima Yojana
PMKISAN Pradhan Mantri Kisan Samman Nidhi
PMSBY Pradhan Mantri Suraksha Bima Yojana
PMSVANidhi Pradhan Mantri Street Vendor's Atma Nirbhar Nidhi
PMSYM Pradhan Mantri Shram Yogi Maan-dhan Pension Scheme
RTE Act Right of Children for Free and Compulsory Education Act
SC Scheduled Caste
SDG Sustainable Development Goals
SOP Statement of Purpose
SR Sex Ratio
SRB Sex Ratio at Birth
SRS Sample Registration System
SSEPD Social Security and Empowerment of Persons with Disabilities Department
ST Scheduled Tribe
SWAYAM Study Webs of Active-Learning for Young Aspiring Minds
TB Tuberculosis
TFR Total Fertility Rate
U5MR Under-five Mortality Rate
UDISE+ Unified District Information System for Education +
UN United Nations
UN DESA United Nations Department of Economic and Social Affairs
UNDP United National Development Programme
UNESCO United National Educational, Scientific and Cultural Organization
UNFPA United Nations Population Fund
UNICEF United Nations Children's Fund
UPF Ultra Processed Foods
UPSS Usual Principal and Subsidiary Status
UR Unemployment Rate
URGD Uniform Rules for Demand Guarantees
VET Vocational Education and Training
WAA World Assembly on Ageing
WCD Women and Child Welfare Department
WFPR Work Force Participation Rate
WHO World Health Organization
WPR Work Participation Rate

Overview

India inherited a highly uneven regional structure from the colonial period, with Odisha being one of the states facing significant developmental challenges, despite its immense potential. Located in the northeastern part of the country, Odisha is endowed with rich mineral resources and strategic proximity to the heartland, benefiting from excellent rail, road, and shipping transport options, including major north-south transport corridors. However, the state's development trajectory has not fully leveraged these advantages, largely due to historical political and socioeconomic factors that have influenced its progress both during and after the colonial period. While significant interventions have been made by the Finance Commissions, Planning Commission, and other institutions to create an investment-friendly environment, Odisha has yet to attract the desired level of corporate capital. Nevertheless, there has been consistent focus on addressing these challenges, with ongoing efforts to boost economic development, improve infrastructure, and create opportunities for growth. Investments in infrastructure, particularly in Odisha's less developed regions and its tribal areas, have seen some progress, though the pace has been gradual. By continuing to address these disparities and prioritizing inclusive development, Odisha holds great promise for achieving balanced growth and unlocking its full economic potential.

The scenario, however, is changing during the past one and a half decades. Odisha has recorded an impressive rate of economic growth and is at the verge of emerging out of the quagmire of backwardness. More importantly, the state is passing through a phase of rapid demographic transition which is likely to impact not only on the size and growth of population, but its age composition, migration pattern and spatial distribution. Consequently, the sectoral priorities for employment generation, strategy for urbanisation and migration, and the nature of welfarist interventions, including that on education, skill formation, health and old age care would have to be revisited and redesigned. The sustained decline in fertility coupled with rapid economic and socio-cultural transition would be shaping up a different trajectory for the state than previously imagined.

Understanding the Early Fertility Transition in Odisha in the context of Demographic Theory and Global/National Experience

The demographic transition witnessed in Odisha in the nineties has swept the whole country in following two decades. A similar dramatic development occurred in Western Europe by the end of the nineteenth century after it witnessed an unprecedented growth in population during the Post-Malthusian era, say between 1800 to 1880. It is important to note that countries in Europe, at different levels of socio-economic development, having disparate levels of literacy and work participation rates for women, high disparity in health care and social security system, particularly for the aged, recorded significant reductions in fertility, more or less at the same time. This questioned the importance of several explanatory factors identified through demographic modelling. Understandably, a section of social researchers finds Odisha as an enigmatic case, posing a challenge to the demographic theory and running counter to the trend and pattern, observed globally.

What are the possible triggers for the demographic transition? Onset of the fertility decline is often seen as an outcome of the rise in income, generally associated with industrialisation. Reduction in child mortality is considered the other critical factor. Many, however, consider it as being fuelled by the rise in the women work participation and increase in their relative wages? Demographic theories consider also education and empowerment of women as the key elements in bringing down fertility.

These theoretical stipulations, however, have proved to be somewhat fragile as also empirically unsatisfactory. The stipulations often lead to the conclusion that the differential timings of fertility decline across countries reflect differences in their income per capita, health, education, work participation and empowerment of women. Correspondingly, one would expect the level of fertility across households within a given economy to vary inversely with their income levels.

The above propositions turn out as counterfactual on ground reality. It may be pointed out that the decline in fertility occurred across countries in Western Europe that differed significantly in their levels of economic development. In 1870, Germany and France, that were in the middle level of GDP per capita, and Finland, Sweden and Norway that were at a low level, experienced demographic transition in the same decade as in England and Netherlands, that were at very high levels of income. The history seems to have repeated itself in India during the early decades of the twenty-first century. Sharp fertility decline took place in Kerala and Goa on the eve of the century the two states being located at two opposite sides of the income scale. Furthermore, poorer states like Odisha, Bihar, Himachal, Rajasthan, Uttar Pradesh, Telangana and Andhra, and high-income states like Maharashtra, Gujarat, Tamil Nadu, Karnataka, Punjab, Haryana, and West Bengal recorded sharp fertility decline during the second decade of the century. One would, therefore, infer that income plays only a limited role for the onset of the demographic transition, whether we consider western Europe in in the Post-Malthusian era or the current situation across the Indian states.

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The hypothesis that declines in infant and child mortality precedes the reduction in fertility and population growth, too, appears to be not very robust theoretically and inconsistent with a massive body of historical evidence. While it is natural to hold that mortality rate is one of the factors affecting the level of fertility, evidence throughout human history does not lend strong credence to this proposition. United States emerges as a notable exception in the nineteenth century. Similarly, the decline in mortality in Western Europe started nearly a century prior to the decline in fertility. The sharp reversal in fertility occurred here in 1870s on the face of stable pattern of mortality decline.

Similar is the case in India. The decline in IMR and MMR started in most of the states, at least three decades prior to they witnessed demographic transition. Kerala and Goa have had good health care facilities for children since the seventies. More importantly, health care system in Bihar, Uttar Pradesh, Jharkhand and Chhattisgarh are matters of serious concern even today and yet they report low fertility rates. In Odisha, IMR and CMR have been relatively high - much higher than the national, average - in the past several decades and it continues to be so. The state, however, is one among those with the lowest fertility rates. The correlation between IMR and fertility in India, thus, does not work out as strong, similar to what was noted in Western Europe or USA, as discussed above.

High work participation of women and gender parity have been considered responsible for decline in fertility in several tribal districts in the states of India, but this does not hold in case of Odisha, like the other demographic factors, discussed above. One would possibly attribute the fertility transition in Odisha to a

complex interplay of all the above-mentioned factors along with local social and cultural practices. Notwithstanding the absence of a clear explanation of the transition, this must be utilised for ensuring sustainable, spatially balanced and inclusive development in the state, as the window of demographic opportunity has opened up, at an early stage of its socioeconomic development. The same, however, cannot be said about the fertility transition in all regions and districts within the states. The fertility rate predicted for 2036, for example varies from 1.00 in district Debagarh to 2.39 in Nabarangpur.

Global and national evidences from countries, thus, suggest that nuanced, and informed understanding of demographic shifts and timely interventions are critical in strengthening economic and social resilience and adaptation to change. This will be all the more important for a state like Odisha, where the negativities in demographic transition may manifest before it is able to reap a large part of the dividends, owing to structural backwardness and high inter district disparity.

Demographic Transition in Odisha: A Challenge and an Opportunity to address Areas of Critical Concern

Odisha inherited social and economic backwardness from the colonial regime, as noted above, manifest in very low level of per capita income, much below the national average and that of several neighboring states, high illiteracy, high child and maternal mortality. Because of all this, it records low life expectancy. Resources available from internal and central govt sources are inadequate to meet the challenge, while the flow of funds from the corporate sector has been measly. Consequently, the state has recorded slow progress, resulting in an increase in interstate inequality in income and poverty while the deficiencies in health, education and other basic services are turning out as alarmingly high.

Interestingly, the state has maintained a consistent revenue surplus for over a decade, although its own tax revenues account for less than a third of total revenue receipts. Interestingly, it did not utilise the enhanced fiscal deficit limit permitted by the Centre during the Covid period but continued fiscal consolidation by achieving a surplus position. This fiscal health enhances the capacity of the government to invest in asset generation and strengthen social welfare schemes.

It may, nonetheless, be argued that Odisha has been maintaining its revenue surplus by understaffing the public offices, including education and health and cutting infrastructure investment for employment generation. The state's unemployment rate has been higher and per capita income lower than the national average in the past six years. The multidimensional poverty rates in the state are above the all-India level in 2015-16 and 2019-21. Female literacy is much on the lower side, and infant mortality rates in the higher side, even among the less developed states.

A tragedy which makes the country hold its head in embarrassment is the way the migrants, particularly the interstate migrants, have been treated during the period of lockdown. Thousands of people with women and children, walking on roads with head-loads, railway tracks, squeezing in crowded buses and trucks, will haunt Indian memories for decades. This was preventable.

The case of Odisha will be important in this context, despite it share in total out-migrants being not very high. Its share in total interstate outmigrants in the country is less than its share in population, in sharp contrast with the situations in Uttar Pradesh and Bihar. The out-migrants per hundred in-migrants in Bihar and Uttar Pradesh as per 2011 Census are 492 and 277 respectively, the corresponding figure for Odisha being 136 only. And yet, the scenes of Odisha migrants desperately trying to reach their homes, disturbed the national consciousness. Most of these migrants are from the distressed region of the state, concentrated in and around a few districts such as Ganjam, Bargarh, Kalahandi, Nuapada, Rayagada, Koraput and Khurda.

Despite many among the returnees vouching never to return and despite the efforts made by the state agencies to find employment for them, it has not been possible to absorb them in decent jobs. Most have returned to the cities and states of their destination. A section among them has, however, chosen to stay back or have found it difficult to return, increasing, thereby, the pressure on the local economy. These migrants have been visible only in their distress but do not have any political clout or electoral strength. Many of the

developed states have passed legislation or administrative orders restricting employment possibilities for the migrants. Demographic transition in Odisha is expected to reduce this pressure, bring down unemployment, particularly in backward districts and help in paving the path to sustainable future.

The Present Report

Given the global context and the emerging national and state level scenario in recent years, CYSD in partnership with UNFPA has developed an evidence-based comprehensive report entitled **Emergent Odisha: Demography and Development** using state-of-the-art methodology to generate an informed discourse, aiming to influence current and future policy and programmatic interventions. The Report is sharply focused on areas that need immediate intervention due to the emerging sectoral and spatial scenario, impacted by demographic changes. These are very different from those projected before a decade. This would necessitate a revisit and revision of many of the developmental parameters and may lead to restructuring of the strategy of development. Given this context, the present Report analyses the emerging challenges and identifies the potential and critical areas of intervention for accelerating the overall development and well-being of people, with special focus on the backward regions and vulnerable communities.

The report consists of six chapters. The first chapter entitled *Demographic Transition in Odisha* by Laxmikant Dwivedi, which follows the present introductory note, overviews the demographic transition in Odisha at district level, giving the sex ratio, sex ratio at birth, infant mortality rate, life expectancy at birth for males and females for the latest NFHS years, along with projected figures of population on annual basis from 2020 to 2036, focusing on intra state variations. These constitute the demographic base of analysis in all other chapters of the study.

The next chapter *Shifting Demographics: Health and Nutrition* by Shridhar M. Kadam and others discusses the changing age composition of the population in the state and its implications for the disease burden, focusing on specific problems of children, adults and elderly. It makes a comparative assessment of the dietary situation in the state with that at national level while simultaneously bringing out the sharp differences between rural and urban areas and across different regions of the state. It expresses concern regarding the dietary practices in the country, Odisha in particular, as this is predominantly cereal-based with minimal inclusion of micronutrient-dense vegetables, meat, milk, and eggs. It makes a case for bringing about changes in lifestyle and food habits and underlines the need for social mobilisation for this purpose. Finally, it overviews the current programmes and identifies the deficits in the existing nutrition and health care delivery systems. Finally, it suggests how the state must respond to meet the changing requirements in the coming decades to meet the challenges of demographic transition.

The third chapter titled *Demographic Transition: Education* in Odisha by Biswajit Kar overviews the present state of educational development and prospective pathways in Odisha, in the context of the challenges thrown by demographic transition. It begins with an analysis of the access to pre-school education and goes on to explain the disparities in achievement in school and higher education, with special emphasis on girls. Aspects of decentralized provisioning of educational infrastructure in context of declining number of children in villages and urban neighbourhoods over time have been discussed in the context of recent developments. It highlights the growing need for technical education while examining issues linked with emergence of non-aided private institutions and increase in out-of-pocket expenditures by the households. Disparities across districts in several key indicators of education are noted as alarming, needing immediate targeted support. A comparative perspective emerging from the analysis of the situation in Odisha alongside that of neighbouring states and India helps in identifying the critical areas for intervention. The concluding section presents a possible future scenario of disparity in educational outcomes and a roadmap for strategic interventions.

The chapter on *Demographic Transition: Employment Pattern* by Balakrushna Padhi begins with a detailed analysis of trends in the population's age structure and select characteristics of labour force since 1993-94 in the state. This section also analyses the nature and

scale of unemployment in the state. seeks to discuss the emerging concerns in labour market in Odisha with focus on changing structure of labour force, quality of employment, mismatch between the education and employability, focusing on gender, regions, and social groups. It also projects the future employment scenario in Odisha till 2035 i.e., 100th years since the formation of the state. Discussion on select indicators of growth in employment and output, employment elasticity in Odisha in comparison with those in other states allows assessing the progress in a regional perspective. The vision built based on the state's future employment scenario facilitates identification of policy measures for sustainable utilization of resources and realization of the opportunities opened up through demographic transition. The emphasis is on inclusive development and the recommendations proposed for redesigning the policy interventions for greater efficiency and inclusivity are very timely.

The fifth chapter titled *Leveraging Demographic Dividend: Migration and Urbanisation* by Tania Debnath seeks to explain the present pattern and characteristics of migrants and their linkages with urbanisation in the state in the light of the current socio-economic and demographic trend. It analyses the possible impact of demographic transition on population growth, urbanisation and migration within and outside the state and their implications. Given the current problems of outmigration, special focus is on districts reporting high net out-migration with the vision to address their problems, utilising the opportunities opened with demographic transition.

The final chapter on *Demographic Transition: The Ageing Factor* by Bharati Chakra and Anupama Datta provides a spatially disaggregated snapshot of demographic transition and ageing of population across districts, highlighting the gender breakups. Major Challenges faced by the elderly in different spheres - economic, social, health, infrastructure, safety & security - have been analysed in the context of the fast-changing demographic scenario. Considering the higher life expectancy of women and their high share among the elderly, special focus has been on their problems in the context of their lower access in economic and social spaces, in the tradition bound society in Odisha. An attempt is made to review of current policies/ programmes, bringing out their inadequacies with reference to the challenges and opportunities opened through demographic transition. Finally, the paper provides a welfarist perspective for the elderly in different regions of the state and puts forward a few recommendations that could address the present and future problems faced by the elderly, within their household and the society.

All the papers bring out the deficits in different sectors of development and discuss their implications for the vulnerable sections of population and backward regions. They, nonetheless, share a sense of optimism in the context of the recent trends of growth and assessment of physical and structural possibilities. The report asserts that Odisha has the potential to lead socio-economic growth in the country in the decades to come.

In the event of significant decline in population growth, Odisha can expect to spend less on conventional human resource development programmes including health education, provisioning of amenities and unemployment relief. The government can now focus on quality rather than quantity. Also, with an increase in the elderly and dependency rate, the state can spend on old-age security and a health-care system for senior citizens. The strong fiscal health will allow the state government to find resources to improve the outcome quality of the current programmes and design new pogrammes to meet the challenges emerging from demographic transition.

The education system would have to be reorganized spatially since the number of children at the village level is going down. Secondary and higher education will have to be provided at nodal centres, supported by child-friendly transport systems.

In recent years, the government has introduced numerous welfare schemes aimed at empowering vulnerable populations, including women and disadvantaged communities. Notable programs include 'Subhadra,' which provides financial assistance to eligible women for their empowerment and economic upliftment. Additionally, the 'Shahid Madho Singh Haath Kharcha Scheme' offers one-time financial assistance to eligible Scheduled Tribe students enrolling in Class IX and XI, while the flagship Krushak Assistance for Livelihood and Income Augmentation supports farmers. The

'SWAYAM' scheme provides interest-free loans to the unemployed youth. It is possible for the govt to implement the programme with adequate resources to ensure better outcome particularly in the backward areas, targeting the vulnerable population.

The Report is special because it is not produced by a central or state govt department or university or a research institution. It is produced by the Centre for Youth and Social Development, a civil society organisation, striving to promote development and alleviate the deprivation of the vulnerable sections of population in the state, working both at grass root and policy level through empirical research. Academic and logistic support for this has come from UNFPA. This has helped in bringing in a global perspective in understanding and contextualising the demographic transition in the state of Odisha.

The report proposes strategic interventions based on studies, authored by researchers, activists, administrators, largely from Odisha but working in all over the country and for national and global institutions. While an attempt has been made to root the arguments on hard secondary or primary data, the key concern has been to flag the key issues for the policy makers and public officials, at different levels of governance, who often have healthy disrespect for micro level details. Also, the report is expected to provide a framework for designing activities by the civil society organisations to make Odisha a vibrant and inclusive society and addressing the needs of vulnerable sections of population. The report therefore lies in the interface where research has the smell of the earth but at the same time could transcend the particular.

Prof. Amitabh Kundu

1

Demographic Transition in Odisha

Demography is the study of human population dynamics that examines population size, composition, and characteristics, and how they intersect with social, cultural, economic, ecological, and healthcare factors. The Demographic Transition Theory outlines a nation's progression from high birth and death rates (Stage 1) to rapid population growth (Stages 2 and 3), ultimately reaching low or negative growth (Stage 4). This shift is driven by initial declines in mortality, followed by reductions in fertility rates, which gradually stabilize population growth as fertility approaches or falls below replacement levels. According to the classic theory, increases in per capita income, industrialization, urbanization, and overall socio-economic progress naturally contribute to lower birth and death rates, guiding populations toward stabilization.

1.1. Introduction

India has surpassed China in 2022 as the world's most populous country (UN DESA, policy brief No. 143) and currently, is undergoing a demographic shift having enormous socio-economic implications. A remarkable reduction in the Crude Death Rate (CDR), currently at 6, and the Crude Birth Rate (CBR), now at 19.5, reflect this change. The National Family and Health Survey-5 (NFHS-5) indicates, the Total Fertility Rate (TFR) has fallen below the replacement level of 2.1 to 2, suggesting population stabilization and an anticipated decline. It is important to realise that India's demographic transition is intricate, marked by heterogeneities that challenge conventional theories and need to be understood with regional specificity.

Unlike most regions, where declining fertility is generally accompanied by lower mortality rates and increased life expectancy, India stands apart. The country reached replacement fertility despite relatively low life expectancy and limited socio-economic development, including female literacy, per capita income, and mortality. Moreover, India's states are progressing through demographic transition at varying rates. Although the national TFR is now at 2, states like Bihar, Uttar Pradesh, Jharkhand, Meghalaya, and Manipur continue to experience high fertility. In larger states, TFR ranges from 3 in Bihar to 1.6 in West Bengal. Northern states remain in the second or third stage of transition, with high fertility and mortality, while many southern states have advanced to the fourth stage, marked by stagnation and rapid aging.

India's demographic structure, with 68% of its population aged 15-64 and a median age of 28.4 years, positions it as one of the youngest nations globally and opens a window for demographic dividend until 2055-56. However, capitalizing on this potential depends on substantial investments in education, skill development, and youth health, as a favourable age structure alone does not guarantee economic benefits. However, the demographic dividend like the demographic transition, varies significantly across states: Bihar, with a median age of 22, has only 7.7% elderly, while Kerala's median age is 35, with 16.5% elderly, the highest in the country.

The less developed state of Odisha has been a subject of interest among population experts for a considerable time due to its unique demographic situation. Odisha's remarkable success in reducing fertility has garnered international attention and admiration, especially given that it ranks among the poorest states in India in terms of per capita income and industrial output. Many demographers refer to this situation as a "demographic dilemma".

Odisha: A Unique Case

NFHS-5 (2019-21) reports a 14% decline in Odisha's TFR to 1.8 since 2015-16, consistently lower than India's national average since 1990. Odisha's fertility decline has drawn international recognition, especially given its relatively low per capita income and industrial output. The state faces challenges of high childhood mortality, and unfavorable economic conditions (Das, 2018) while exhibiting low fertility and low rates of population growth. This could impact not only the population size but also the future quality of its human resources. Additionally, Odisha's age structure is shifting, with a declining birth rate and increasing life expectancy, raising concerns for the future.

Need for the Study

The need for this study arises from the evolving demographic challenges that have yet to be fully addressed by policy frameworks, despite significant global shifts in population trends. In India, the complexity of the situation is heightened as states are at different stages of demographic transition, requiring tailored, state-specific responses rather than a uniform national approach. Since the last decadal census in 2011, there has been no comprehensive population enumeration, and large-scale sample surveys have not been fully utilized to capture detailed insights into the demographic and health profile of states. This gap hampers a clear understanding of evolving trends and needs.

This chapter provides an in-depth analysis of Odisha's demographic transition as the state nears its millennial milestone in 2036. By examining key trends, projections, and regional disparities, it assesses the potential impacts on Odisha's society, economy, and ethnic composition. This foundational overview sets the stage for detailed exploration in subsequent thematic chapters on Health, Education, Employment, Migration, Urbanization, and Population Ageing, offering insights to shape policy frameworks that address the challenges and opportunities of these demographic shifts.

1.2 Methodology

This analysis relies entirely on secondary data sources, including the 2011 Census of India, recent rounds of the Sample Registration System (SRS), and the National Family Health Survey (NFHS). Key demographic indicators examined include Infant Mortality Rate (IMR), Under Five Mortality Rate (U5MR), Total Fertility Rate (TFR), Life Expectancy at Birth (LEB), and Sex Ratio at Birth (SRB). Additionally, population projections have been conducted at the district level in 5-year age groups up to 2036. The estimation and projection methods are as follows:

Estimation of Child Mortality Rates

Both direct and Bayesian approaches have been employed to estimate the child mortality rate, the direct method uses DHS India data, defining the numerator as the number of deaths among live-born children within specific age ranges and periods. The child mortality rate is calculated as the quotient of the numerator divided by the denominator for each kind. Fatalities between 0 and 30 days old are considered when calculating NMR, including those recorded deaths at 0 months old. Similarly, the U5MR is assessed at ages 0 to 5 years, including fatalities recorded at ages 0 to 59 months, while the IMR is measured at ages 0 to 11 months. The denominator represents the number of children alive at the beginning of each age range during the defined period. The Monte Carlo Markov chain (MCMC) technique was used to get Bayesian estimates.

Estimation of Fertility Rates (Bayesian approach with Gompertz function)

To calculate fertility rates, a two-step process is being used. First, the birth history data is

converted into a birth table. Next, Poisson regression has been used to determine fertility rates from the table. Specifically, the number of births (Xi) is assumed to follow a Poisson distribution with a mean (μi), calculated as the product of the fertility rate (λi) and exposure time (ti). By taking the logarithm of μi, we get $\log(\mu i) = \log(\lambda i) + \log(ti)$. The fertility rate $\log(\lambda i)$ is modeled as a linear combination of age and other covariates.

To enhance this model, the Gompertz function can be incorporated, which models the age-specific fertility rate. The Gompertz function is expressed as

$$log(\lambda i) = \alpha + \beta * exp\ (\gamma * age)$$

where α, β, and γ are parameters to be estimated.

For a robust estimation process, the Bayesian method is used. Bayesian estimation allows to incorporate prior knowledge and update the beliefs based on the data. Using Bayesian techniques, the parameters of the Gompertz function are estimated by computing the posterior distributions. This involves specifying prior distributions for α, β, and γ, and using the observed birth data to update these priors.

For age groups, dummy variables were created, with the first age group (15-19) as the reference category. The fertility rate for a specific age group, like 20-24 years, is the exponential of the constant plus the coefficient for that age group. The Total Fertility Rate (TFR) is then calculated by multiplying the sum of these exponentials by 5. This Bayesian approach, combined with the Gompertz function, provides a flexible and robust framework for estimating fertility rates.

1.3 Demographic Transition in Odisha

1.3.1 Fertility

As per the Sample Registration System (SRS), Odisha's Crude Birth Rate (CBR) saw a sharp decline from 34.6 in 1971 to 17.7 in 2020. Over the same period, the Total Fertility Rate (TFR) dropped from 4.7 to 1.8, consistently staying below the national average. Despite socio-economic challenges, Odisha reached the replacement level TFR of 2.1 by 2013, seven years ahead of the national milestone. Urban areas now show a TFR of 1.2, similar to developed countries like Japan and South Korea, while rural TFR stands at 1.9. The projected TFR of 1.48 by 2036 could present challenges, such as an ageing population and a shrinking workforce, mirroring trends in advanced economies.

District-wise Fertility Trend

Both past trends and future projections indicate a steady decline in the Total Fertility Rate (TFR) across all districts in Odisha, marking a shift from high to low fertility levels. In 2015, the state's TFR was 2.16, with district-level rates ranging from 2.83 in Malkangiri to 1.56 in Jharsuguda. Currently, there is considerable variation among districts, with TFR values from 2.6 in Nabarangpur to 1.3 in Jharsuguda, highlighting the need for further exploration and tailored approaches. The TFR has declined across all the districts, except in undivided Koraput and Kandhamal, between NFHS-4 and NFHS-5. The highest decline is observed in Cuttack. Over time, districts tend to converge toward the state's TFR values. Projections for 2036 suggest a significant reduction in the gap between the district-level TFR, and the state average (**Annexure 1**). By 2036 twenty districts' TFRs will be less than 1.2 and only two southern districts Named Rayagada and Nabarangpur will have a TFR above replacement level.

In Jharsuguda, a prominent industrial hub, the low fertility rate may lead to challenges in meeting human resource needs, potentially resulting in a reliance on in-migrant labor, even for less

specialized jobs. Meanwhile, the southern region, home to many tribal-dominated districts with higher fertility rates, is likely to continue serving as a key source of labor for the state in the coming years.

Evolving SRHR in light of declining Fertility

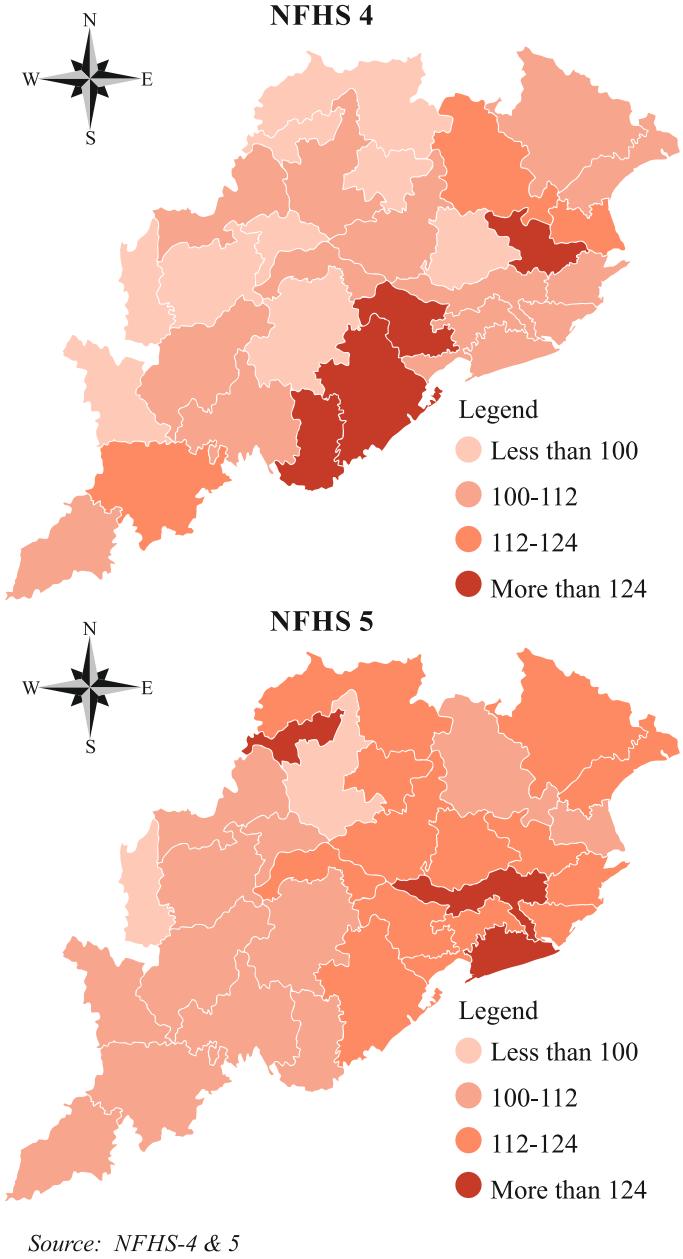
While the state has seen an increase in contraceptive use from 57.3% to 74.1% between NFHS-4 and NFHS-5, this growth is majorly supported by traditional methods. Modern contraceptive use remains below 49%, with a significant reliance on female methods, such as sterilization (28%) and pills (10.8%) only. Male sterilization, a safe and effective permanent method, is the least utilized, and male condoms, known for their convenience and minimal side effects, account for only 5.5% of modern contraceptive use. This indicates that women are largely responsible for the fertility reduction efforts. As the state reaches replacement-level TFR, it is essential to consider how this shift has influenced women's sexual and reproductive health choices.

As fertility declines and the youth population grows, the need for contraception in the state is evolving. Policies must shift from focusing solely on fertility control to empowering individuals with choices, ensuring their sexual and reproductive rights. This includes promoting the use of modern, safe contraceptive methods, giving women greater control over their health and lives.

Declining Sex Ratio at Birth (SRB)

The SRB in Odisha has decreased from 932 in NFHS-4 to 894 in NFHS-5, suggesting an interaction between lower birth rates and a cultural preference for sons. This trend is apparent across most districts (**Annexure 4**), with notable exceptions like Gajapati, Ganjam, and Koraput, where there has been an increase. The most significant declines are observed in Debagarh and Cuttack, where the drop is nearly 25%, coinciding with TFRs below the state average. Biologically, male births are slightly more likely than female births. However, in societies with a pronounced preference for male children, the sex ratio at birth can fall below natural levels, potentially leading to a gender imbalance over time. Although declining TFR itself may not directly cause a reduction in the sex ratio at birth, the two factors are interconnected, as fewer births intensify choices influenced by cultural preferences.

Fig. 1.1 Sex ratio at Birth (Number of Male births per 100 Female births)



Source: NFHS-4 & 5

Note: The text presents the SRB as females per 1000 male births, where a lower value indicates greater disadvantage to females. However, the map uses SRB as males per 100 female births, where a higher value reflects a similar disadvantage.

1.3.2 Mortality

Historically, the state's death rate has been above the national average. Over the years, the Crude Death Rate (CDR) has decreased significantly, from 15.5 in 1973 to 7.3 in 2020 (SRS), remains the second-highest in the country after Chhattisgarh. Given the fact that the Infant Mortality Rate (IMR) is a major contributor to the overall death rates in the state, the decline in IMR from 39 to 33, now below the national average of 35.2, marks a major milestone for Odisha. This progress reflects enhanced healthcare services and a critical step towards demographic transition. Research indicates that most infant deaths in Odisha occur within the first four weeks of life, commonly referred to as neonatal mortality. The primary causes are prematurity, low birth weight, respiratory infections, diarrhea, and malnutrition. As Odisha already has a sub-replacement fertility rate, it can't afford more deaths among these already shrunk populations.

District-wise Mortality trend

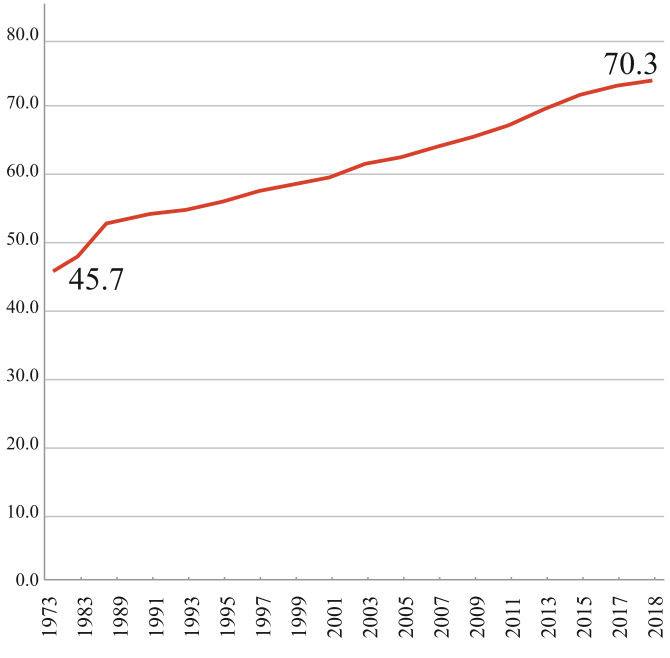
District-level mortality rate estimates reveal significant variation across the state. According to Bayesian analysis, Cuttack has the lowest Infant Mortality Rate (IMR) at 16, followed by Baleshwar (20), Bargarh (21), and both Ganjam and Puri (23 each). Conversely, Subarnapur records the highest IMR at 45, with Debagarh, Kalahandi, Kendrapara, and Kendujhar close behind at 43 each. Cuttack's demographic progress —marked by the highest reduction in Total Fertility Rate (TFR) from NFHS-4 to NFHS-5, along with the lowest IMR, Neonatal Mortality Rate (NMR), and Under-Five Mortality Rate (U5MR)—offers a compelling case study.

IMR tends to be higher among lower socioeconomic groups, especially in tribal areas with high rates of female illiteracy and high teenage pregnancy. Notably, the state's tribal regions, which have a higher-than-average TFR, are expected to contribute substantially to the future labor force. However, the high rate of infant mortality poses a serious threat to population survival and sustainable growth in these regions as well as to the state.

1.3.3 Life Expectancy

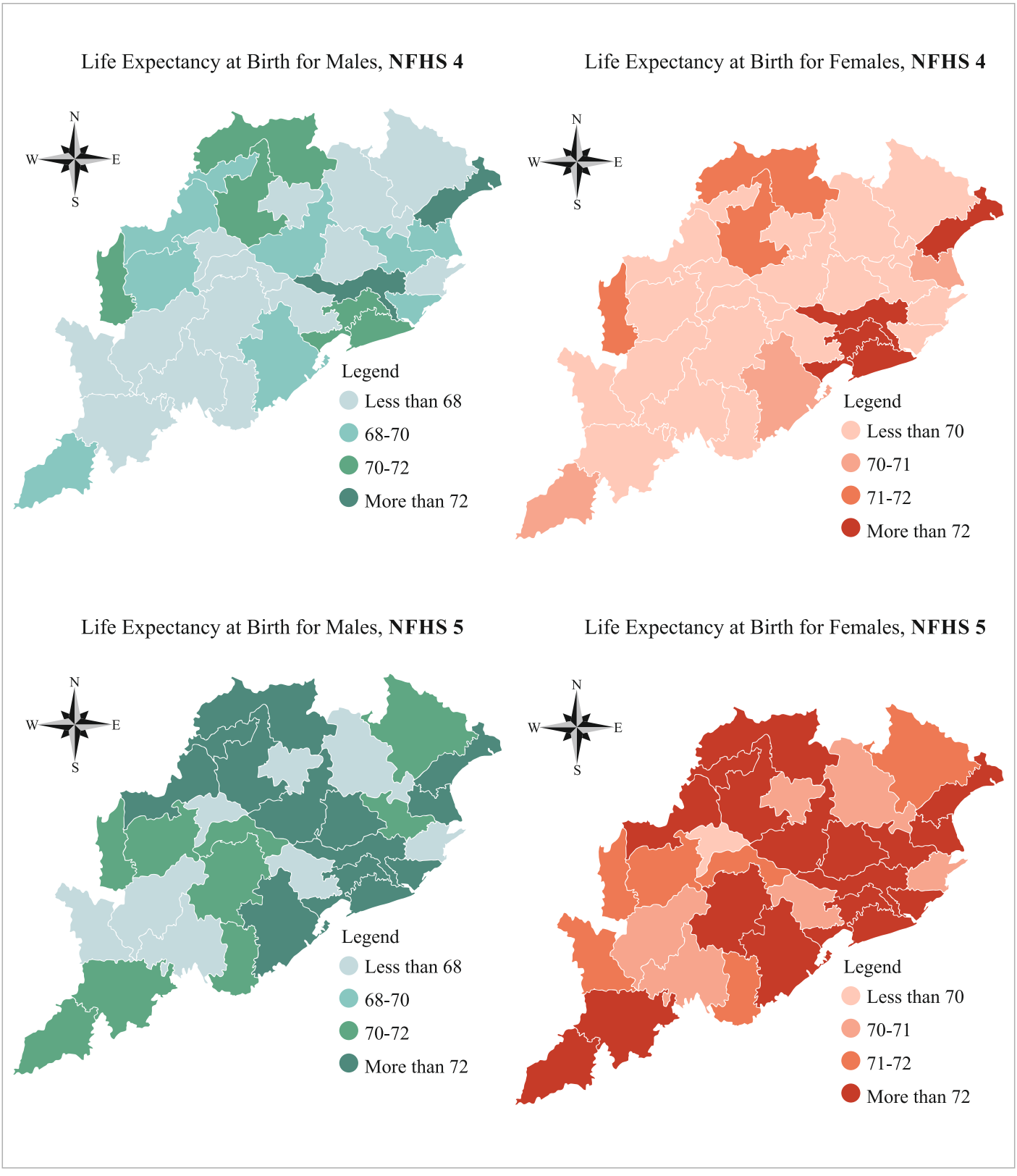
The life expectancy at Birth (LEB) in the state has significantly improved in the state from 45.7 years in 1973 to over 70 years in 2018 (SRS), an addition of 25 years to life in the last 45 years. The NFHS-5 estimates a LEB of 72 years for males and 73.3 years for females. An increase of four years in Life Expectancy at Birth (LEB) for both males and females in the last two rounds of NFHS, further underlines improvements in living conditions, healthcare access, and overall well-being. Districts like Bargarh and Kalahandi recorded small increases while massive gains were reported in Gajapati, Jajapur, and Nayagarh as a result of improvements in mortality rates in early life (**Annexure 5**). This signifies that Odisha is progressing towards advanced stages of demographic transition, characterized by increased longevity although small improvement in healthcare systems remains an area of concern. Subarnapur, the most recently formed district, bifurcated from Balangir district has the lowest life expectancy at birth among both genders due to high infant and child mortality. Specific intervention programs need to be undertaken to address these issues.

Fig 1.2 Trends in Life Expectancy at Birth in Odisha: 1973-2018



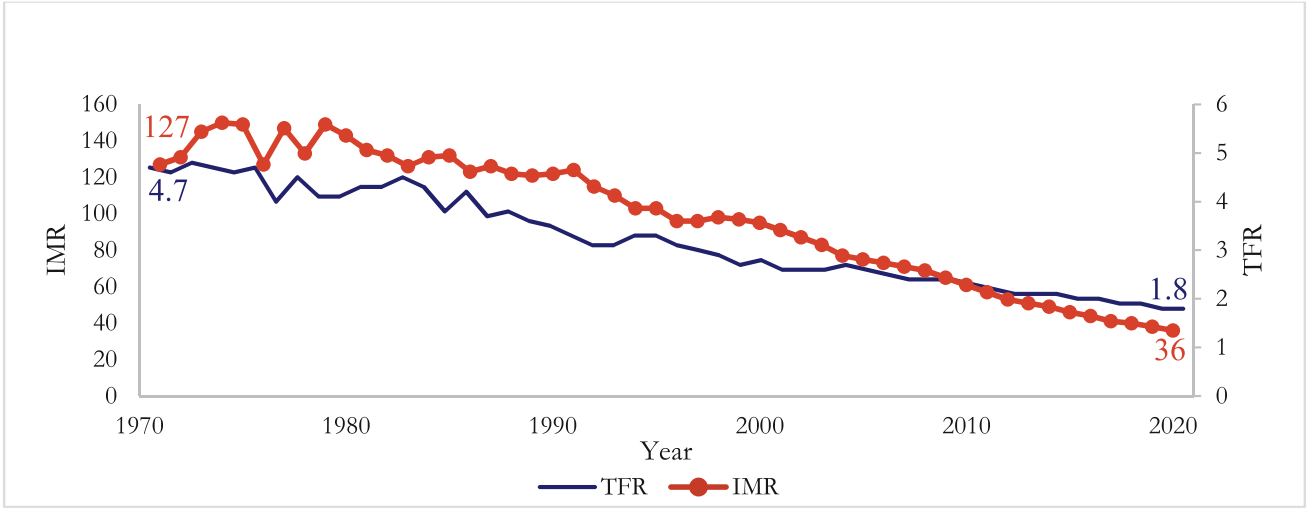
Source: Various Rounds of SRS

Fig. 1.3 Life Expectancy at Birth by Gender for the Districts of Odisha



Source: NFHS-4 & 5

Fig. 1.4: Trends of Infant Mortality Rate, and Total Fertility Rate in Odisha



Source: SRS 1971-2020

1.4 Impact of Demographic Transition

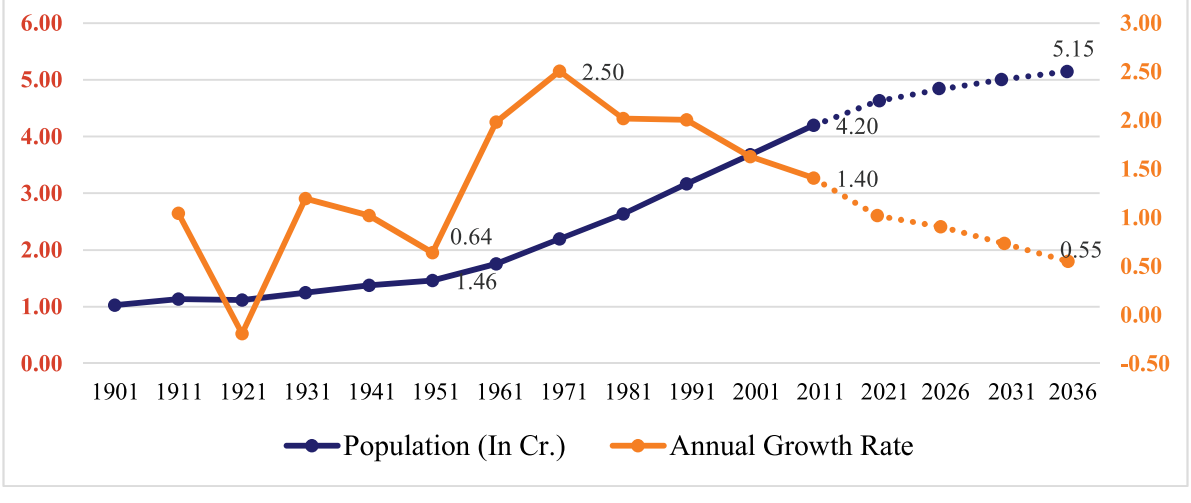
1.4.1 Population Growth

As per the last census in 2011, with a total population of about 42 million, Odisha accounts for 3.7% of India's total population. From 1951, with a population of 14.6 million, Odisha's population grew at an average annual rate close to 2% till 1991, and then, started declining, reaching 1.4% in the 2001-2011 period. This declining population growth rate reflects the ongoing demographic transition, characterized by reductions in both birth and death rates.

There has been a consistent decline in the natural growth of the population (CBR minus CDR) during the 1970s and 1980s, followed by a more rapid decline post-1990s. The CBR-CDR gap in Odisha has also decreased, reducing from 20.0 (1981) to 10.4 (2020), primarily due to the faster decline in CBR. Additionally, the Infant Mortality Rate (IMR) in Odisha decreased significantly from 127 in 1971 to 36 in 2020 (Fig. 1.4), contributing to a significant increase in life expectancy at birth (SRS based abridged life tables, 2016-20).

As projected, Odisha's population will reach 51.5 million by 2036, with an annual growth rate of below 1% from 2011 to 2036. Although the growth

Fig. 1.5: Population Growth in Odisha 1901- 2036



Source: Census 1901-2011, Population Projection for Odisha using Bayesian Method 2011-2036

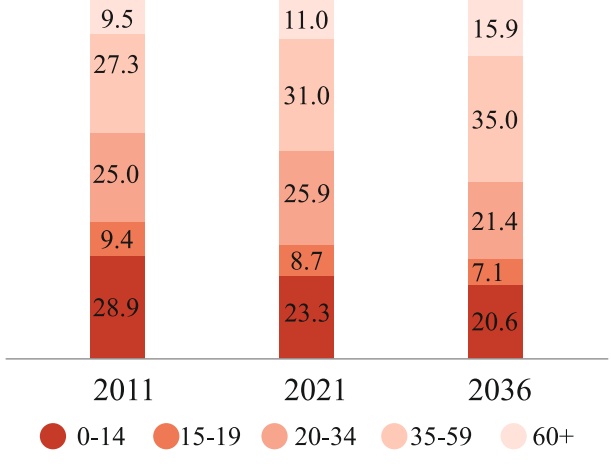
rate has steadily declined, an additional 9.7 million people will be added during this period, primarily due to increased life expectancy rather than a high birth rate as seen in the past. The population will continue to grow further due to the population momentum as a large share of young populations has yet to have children, which will sustain growth for some time before stabilizing or declining. The state growth is also reflected across district-wise population projections in 2036 (**Annexure 2**).

Due to this demographic shift, the age-sex composition of the population will be greatly impacted, which has further implications on the health and economic outcome of the state.

1.4.2 Change in population Age Structure

The state's population can be divided into four broad age groups, each with distinct needs and impacts on education, healthcare, and the economy. Children (Aged below 15 years) need strong foundations in education and healthcare. Youth (aged 15-34 years) drive economic growth and social change with research and innovation, requiring access to education, skills, and jobs. The working-age group (aged 15-59 years) sustains the economy and social systems. Finally, the elderly (aged 60+ years) create rising demands for healthcare, social security, and elder care.

Fig. 1.6 Projected Population Age Structure in Odisha



Source: Census 2011, Population projections for Odisha 2011-2036 using the Bayesian method

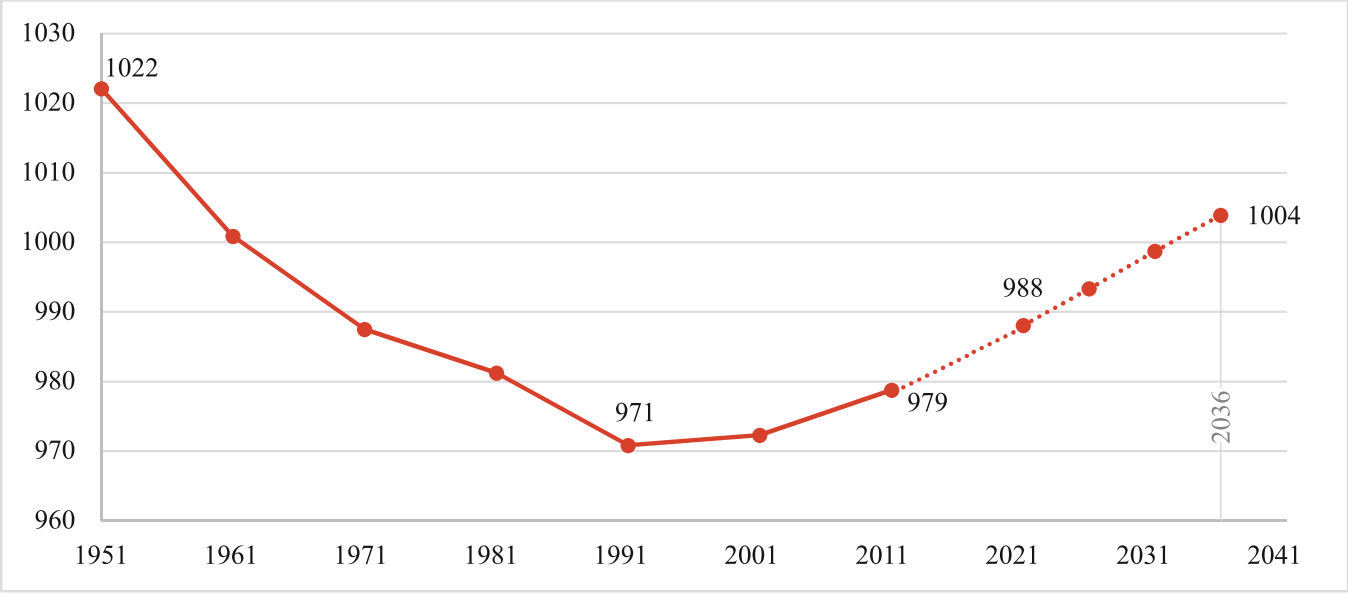
The proportion of the child population in the state is projected to decrease significantly, dropping from 28.9% in 2011 to 20.6% by 2036—a reduction of over 1.4 million children over 25 years, which stresses upon rethinking upon the existing structure and distribution of education system. Similarly, the youth population is expected to shrink from 34.4% to 28.5%, a decline of 6 percentage points during the same period. In contrast, the working-age population will see a modest increase, rising from 61.5% to 63.1%, which presents a favorable demographic dividend for the state. This demographic will peak at 64.1% in 2031, after which it is expected to decline, highlighting the urgent need to maximize the potential of this economically productive group.

Meanwhile, the elderly population is projected to grow substantially, increasing by 105% from 3.9 million in 2011 to 8.2 million by 2036, representing nearly 16% of the total population. Over these 25 years, the state will experience a net population increase of 9.7 million, with 71% of this growth in the working-age group, 43% among the elderly, and a reduction of 14% in the child population. This demographic shift seems favorable for the economic growth of the state, as it lowers the overall age dependency ratio among the working-age population from 62.3% to 57.6%. Although the dependency ratio due to ageing is increasing, the sharp decline in young-age dependency helps reduce the overall financial and social burden on working-age individuals who support dependents. This generally allows for greater economic productivity, increased savings, and more resources available for investment in development, healthcare, and social services.

1.4.3 Change in Sex Ratio

In 1951, Odisha had a sex ratio of 1022 females per 1000 males, but this declined to 971 by 1991. However, the ratio has since improved, reaching 979 by the 2011 census. By 2036, it is projected to exceed 1000, indicating a positive shift toward gender balance. District-level data shows disparities, with Nayagarh having the lowest sex ratio (915) and Gajapati the highest (1043), but all districts are moving towards greater gender balance.

Fig. 1.7: Change in Sex Ratio from 1951 to 2036



Source: Census 1951-2011, Population Projection for Odisha using Bayesian Method, 2011-2036

The sex ratio is expected to improve across all age groups. Despite a decline in the sex ratio at birth, the sex ratio among children below 4 years is becoming more balanced, largely due to lower survival rates among male children. The elderly population shows the most favourable sex ratio, expected to rise from 998 in 2011 to 1065 by 2036, driven by higher female life expectancy. However, the sex ratio in the 80+ age group is projected to be 1170, up from 943 in 2011, with most women in this group being widowed or living without a spouse, leading to heightened vulnerability due to poor health, financial, and social exclusion concerns.

The improvement in the sex ratio is driven by enhanced healthcare, maternal and child health programs, and gender-focused policies, which have reduced gender disparities. Efforts to promote female literacy, curb sex-selective practices, and improve women's life expectancy have further contributed to this trend. However, the emerging trend of a very skewed sex ratio towards elderly women needs special attention from the policy perspective to mainstream their needs.

1.5 Conclusion

The demographic transition in Odisha reflects significant changes in fertility, mortality, and age structure, positioning the state on a trajectory towards improved health and economic outcomes. The decline in TFR and IMR indicates progress in reproductive health and healthcare access, although concerns remain about the reliance on traditional contraceptive methods and a declining Sex Ratio at Birth. As the population ages, with a projected increase in the elderly, Odisha must address emerging challenges in healthcare. Conversely, the growth of the working-age population presents an opportunity for economic development, provided that appropriate investments in education, skill development, and job creation are prioritized. The anticipated reduction in the child population necessitates a re-evaluation of the education system to ensure that future generations are adequately equipped for the evolving economic landscape. Overall, while the demographic changes bring both opportunities and challenges, strategic planning and policy interventions will be essential for harnessing the potential demographic dividend and ensuring sustainable growth for Odisha.

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2

Shifting Demographics: Health & Nutrition

Health and nutrition are profoundly affected by the demographic transition, which shifts from high birth and death rates to low birth and death rates. At the early stages, high birth rates strain resources, adversely impacting maternal and child health. As improvements in public health and nutrition reduce mortality rates, people begin to live longer, leading to an increase in overall life expectancy. However, later stages present challenges, such as ageing populations and chronic diseases, necessitating adaptive policies and resources to address evolving health priorities.

2.1. Introduction

Over the past two decades, Odisha has seen a significant decrease in birth and death rates, marking its transition into third stage of demographic shifts. Simultaneously, the state is also experiencing the third stage of epidemiological transition as well, characterized by increased life expectancy, reduced total fertility rates, and a shift in the leading causes of mortality to non-communicable diseases such as cancer and cardiovascular conditions.

Odisha's demographic transition reveals regional disparities, with population growth driven by increased longevity, resulting in an older median age. The shrinking working-age population and rising age dependency ratio are expected to reduce the state's demographic dividend by 2026, creating financial and administrative challenges. Approximately 80% of Odisha's population resides in rural areas and relies on primary healthcare services. With a significant 23% Scheduled Tribe and 17% Scheduled Caste populations, Odisha is rich in demographic, cultural, linguistic, and socio-economic diversity. Despite recent improvements, the diversity coupled with existing health sector challenges, complicates efforts to provide tailored healthcare across varied different geographies and needs.

This chapter explores the health and nutrition concerns arising from the evolving demographic transition along with the pre-existing challenges in Odisha. It also examines the preparedness required for a healthy and productive Odisha by 2036.

2.2 Public Health Challenges in a Changing Demographic Landscape

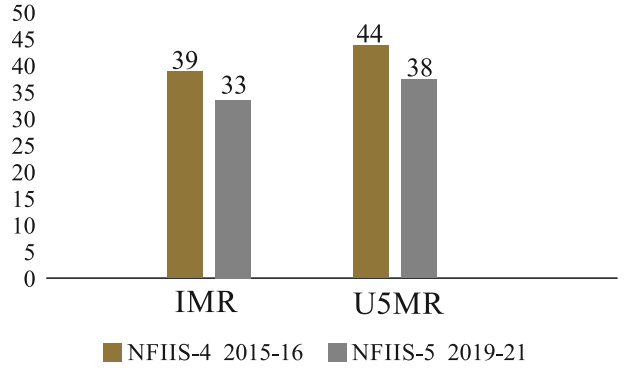
2.2.1 Child Health- Improvements and challenges

Child health is one of the most important aspects for understanding future health conditions of the population in the state. The important indicators to understand this aspect include IMR, U5MR, nutritional status, causes of death, and prevalence of chronic diseases in the children among others.

Despite achieving replacement-level fertility since 2013 (SRS- 2014), Odisha still has relatively high infant mortality rates, implying more severe conditions than under-developing regions with relatively high fertility and high mortality rates. The Fig. 2.1 highlights the trends in IMR and U5MR across different rounds of National Family Health Surveys.

The declining TFR in Odisha, coupled with persistently high U5MR and IMR, presents complex challenges for the state's demographic and health landscape. A falling TFR typically signals a demographic transition towards a lower population growth rate and can lead to a shrinking working-age population in the long run. However, when this decline is accompanied by high child mortality rates, it suggests that while families are having fewer children, the survival rates of these children are not improving at the same pace. This disparity could indicate inequities in healthcare access, quality of maternal and child health services, and inadequate nutrition, particularly in rural and tribal areas.

Fig. 2.1 Trends in IMR and U5MR in Odisha



Source: NFHS-4 & 5

The combination of these factors can also strain the socio-economic system. With fewer children being born, but a higher proportion of them dying before reaching adulthood, there is a potential reduction in the future labour force, which can affect economic growth and development. Additionally, families may experience higher emotional and financial stress due to the loss of children, leading to adverse effects on household well-being and increased healthcare costs. This situation underscores the need for comprehensive healthcare interventions focused on reducing child mortality to ensure that the benefits of a declining TFR can translate into sustainable demographic and economic advantages for the state.

2.2.2 Sexual and Reproductive Health

Sexual rights involve the freedom to make decisions about one's sexual life, including access to sexual health care, education, and the right to express sexual orientation without coercion or violence, while reproductive rights focus on decisions related to reproduction, such as access to contraception, safe abortion, and maternal health care. These rights, though often blurred in policy discourse, play a crucial role in shaping key demographic outcomes like fertility rates, population growth, and family planning. Access to reproductive health services influences decisions about the number, timing, and spacing of children, while sexual rights impact maternal health, adolescent fertility, and the incidence of sexually transmitted infections.

Understanding reproductive rights involves access to information about reproductive health, enabling informed decisions regarding contraception, pregnancy, childbirth, and maternal health. In Odisha, knowledge of reproductive rights rose from 19% in 2005-06 to 30% in 2019-21, with variations across socioeconomic groups. Approximately 95% of women report autonomy in reproductive choices, though higher-educated women and those from certain social categories exhibit lower autonomy compared to their less educated or marginalized counterparts. While agency, or the capacity to act on reproductive choices, is present in about 84% of women, the practice of reproductive rights increased from 42% in 2005-06 to 62% in 2019-21, with significant gaps remaining based on education and wealth. Women with fewer children show lower levels of practice, likely due to younger age. Overall, despite progress in Odisha, challenges persist in ensuring equitable access and empowerment across different demographic groups.

As per the population projections, Odisha is expected to witness a shrinkage in the youth population (aged 15-29) post 2021. As mentioned

previously, this is a consequence of the declining TFR in the state. A shrinking youth population impacts SRHR by shifting priorities away from youth-focused programs, potentially leaving young people underserved in critical areas like contraception, safe sex practices, and comprehensive sex education. Reduced attention to youth SRHR could lead to long-term health issues, making it essential to maintain strong, responsive services for this changing demographic.

2.2.2.1 Contraceptive Usage

Odisha's demographic transition, marked by declining fertility rates (TFR) and aging populations, is intricately linked to the usage of contraception, although the relationship is not as straightforward as one might expect. While contraceptive knowledge is nearly universal (over 99%) among both men and women, and modern contraceptive usage has seen a significant rise from 57% in NFHS-4 to over 74% in the latest NFHS-5 (2019-21), the decrease in TFR does not seem directly correlated with contraception usage alone. Additionally, while modern contraceptives like sterilization, IUDs, condoms, and pills are being more widely used by married women (aged 15-49), a considerable section of the population still remains outside the fold of contraceptive use. The interplay between declining fertility and these social and behavioural factors highlights the complex dynamics of Odisha's demographic shift, where increasing contraception use contributes but is not the sole driver of demographic changes.

It is observed from the above figures that, the usage of contraceptives among the married women aged 15-49 far exceeds that of men. More than half of the men in the state do not use any form of contraceptives rendering them to be highly susceptible to STDs. While a significant portion of the women use modern contraceptives, more than a quarter of the total women in Odisha do not use them. This is an alarming issue because despite a high level of knowledge on the benefits of contraceptives in Odisha, the actual usage is significantly small. This is especially true among men, where more than 51% do not use any contraceptive.

Fig. 2.2 Percentage Distribution of Married Women using Contraceptives in Odisha

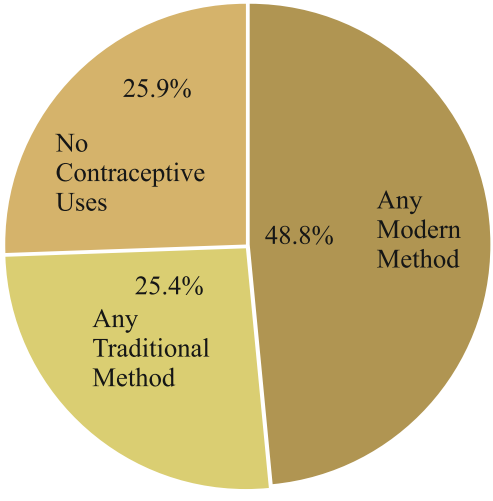
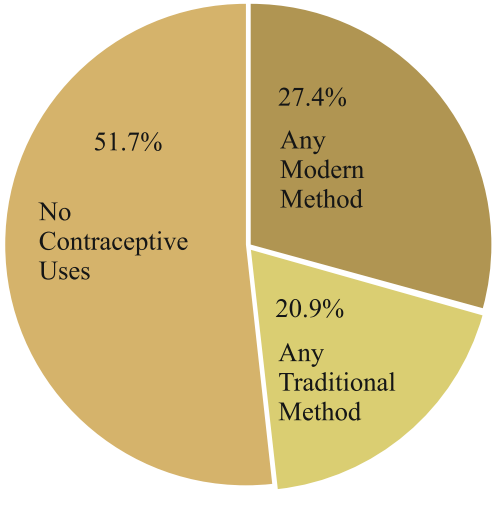


Fig 2.3 Percentage Distribution of Men using Contraceptives in Odisha



Source: NFHS-5

2.2.2.2 Maternal Health: Teenage and Adults

Despite Odisha achieving replacement-level fertility since 2013, maternal health outcomes remain a significant concern. The state's Maternal Mortality Ratio (MMR) stands at 119, higher than the national average of 97 (SRS and MMR bulletins, 2020). This high MMR highlights severe maternal health challenges, especially among socio-economically disadvantaged groups like Scheduled Tribes (STs). ST women face higher maternal morbidity, exacerbated by poor nutrition and closely spaced births. Early age at cohabitation and childbearing among tribals increases the duration of reproductive risk. Additionally, access to maternal healthcare is unequal, with one-fifth of all deliveries in the state not meeting the recommended four antenatal care (ANC) visits. In districts like Mayurbhanj, which has a high tribal population, half of the deliveries fall short of the ANC standard, and a significant proportion occur outside medical institutions. ST women are disproportionately affected, with only 69.8% receiving four or more ANC visits compared to 82% for other social categories. Furthermore, institutional deliveries are lower among STs (83%) compared to other groups (98%), contributing to ongoing maternal health disparities in the state. These issues underline the need for more targeted maternal health interventions and improved healthcare access, particularly for vulnerable tribal populations (NFHS-5).

The landscape of teenage pregnancy in Odisha is intricately linked to the broader demographic transition, reflecting shifts in population dynamics, age structure, and reproductive behaviour. As the state progresses through this transition, marked by declining fertility rates and increasing educational attainment, the prevalence of teenage pregnancies remains a critical concern. Currently, 7.5% of women aged 15-19 have begun childbearing, with 4.5% having had a live birth and 3.1% pregnant with their first child. Notably, the impact of education is profound; 23.5% of girls with no schooling have begun childbearing, contrasting sharply with only 4.6% among those who have completed 12 or more years of education. This discrepancy underscores the need for targeted interventions to enhance educational opportunities, particularly for girls in rural areas, where the childbearing rate is higher at 7.8% compared to 6.1% in urban settings. Furthermore, the demographic transition highlights the importance of understanding the reproductive health challenges faced by marginalized groups, as evidenced by the 9.7% of Scheduled Tribe girls and 7.9% of Scheduled Caste girls who are mothers or pregnant. Addressing these issues is crucial not only for improving maternal and child health outcomes but also for supporting the state's transition towards a more educated, empowered population.

2.2.3 Health Status of the Adults and the Elderly

Despite the Odisha government's 2013 ban on the sale and manufacture of tobacco, the latest family health survey reveals that half of the state's men and a quarter of its women still consume it. About 51.6% of men aged 15 and older in the state use tobacco, compared to the national average of 38%. Among women, 26% in Odisha use tobacco, significantly higher than the national average of 8.9%. Rural areas show even higher consumption rates. While tobacco use among men has declined from 55.9% in 2015-2016 to 51.6% in 2019-2021, it has increased among women from 17.3% to 26% during the same period. Medical research consistently links tobacco consumption to higher morbidity and mortality rates. With a substantial portion of the population using tobacco, oral cancer has become a major health crisis in the state, claiming over 10,000 lives annually.

Excessive substance abuse in Odisha has far-reaching consequences, including domestic violence, crime, and reduced engagement in productive activities, all of which deteriorate the quality of human capital and hinder efforts to harness the state's demographic dividend. According to NFHS-5, about 31% of women aged 18-49 in Odisha are victims of domestic abuse, with nearly 32% experiencing either sexual or physical abuse and approximately 4% experiencing both. Contributing factors include the wife being the family's breadwinner, the husband's alcohol abuse, and his illiteracy. This prevalence of domestic

abuse has severe economic implications, as it discourages women from joining the workforce, leading to underutilized labour and slowing overall development. Addressing these issues is crucial for improving human capital quality and ensuring the state can fully leverage its demographic resources.

The evolving disease landscape, coupled with shifting demographics—especially the growing proportion of elderly individuals—presents substantial challenges. Non-communicable diseases (NCDs) such as hypertension and diabetes are widespread among millions of elderly citizens, who require long-term management and face an increased risk of complications. Alarmingly, these diseases are also affecting younger age groups, further increasing their burden across the population. Using age-specific prevalence data sourced from the National Family Health Survey (NFHS-5, 2019-21) for the age group 15-49 years and the Longitudinal Aging Study in India (LASI Wave-1, 2018) for individuals aged 50 and above, projections have been made to estimate the total hypertensive and diabetic populations across various years, detailed in Table 2.1.

In 2021, approximately 8.67 million people aged 15 and above were afflicted with hypertension, a number estimated to rise to 10.8 million in the year 2036. Among those aged 50 and above, females are anticipated to outnumber males in hypertension prevalence. Similarly, in 2021, 3.97 million people aged 15 to 49 had diabetes, with this number projected to increase to 4.10 million by 2036. Non-communicable diseases (NCDs), such as hypertension and diabetes, are lifelong conditions that negatively impact quality of life. As Odisha continues to struggle with child malnutrition and anaemia, the increasing prevalence of NCDs will further increase the economic burden on the state. Strengthening the health system and designing interventions, especially in primary care setting, are essential to address the increasing prevalence of NCD challenge in Odisha. Furthermore, the

Table 2.1 Estimated Population affected by Hypertension and Diabetes (NFHS and LASI)

	Hypertension				
	NFHS-5, 2019-21		**LASI Wave-1, 2018**		
	Male	**Female**	**Male**	**Female**	**Total**
	15 to 49 Years		50+ Years		
% share	**18.58**	**15.18**	**38.43**	**49.74**	
2021	23,84,817	19,35,014	19,04,673	24,49,054	86,73,558
2026	24,34,453	19,62,451	21,75,088	28,55,668	94,27,660
2031	24,69,850	19,86,538	24,12,966	32,33,984	1,01,03,337
2036	24,79,991	19,88,566	27,00,360	36,85,222	1,08,54,140
	Diabetes (15 to 49 years)				
% share	**17**	**14**	Not Measured	Not Measured	
2021	21,82,018	17,84,598	Not Measured	Not Measured	39,66,616
2026	22,27,433	18,09,902	Not Measured	Not Measured	40,37,335
2031	22,59,820	18,32,116	Not Measured	Not Measured	40,91,936
2036	22,69,099	18,33,988	Not Measured	Not Measured	41,03,086

*It has been assumed that the prevalence of Hypertension & Diabetes will remain the same over the period.
*The prevalence rate in the past surveys has been multiplied by the projected population figure for different years (2021,2026,2031 & 2036) to get the size of healthcare requirements.

gradual decline in the share of the 0 to 4-year population in the total population will free up resources and manpower previously used to combat childhood illness and deaths. This can now be redirected to support the elderly population.

The elderly population in Odisha faces a significant burden of non-communicable diseases (NCDs), similar to trends seen globally and across India. The most prevalent health issue among Odisha's elderly is hypertension, with a substantial proportion of them showing pre-hypertension (41.6%) compared to the national average (39.3%). While the prevalence of high blood pressure (30.8%) is lower than the national figure (36.1%), a sizable percentage of Odisha's elderly also suffer from cardiovascular diseases (CVDs), which rise with age. Gastrointestinal and skin disorders are also more common in Odisha's elderly population than the national average, indicating gaps in medical care and access. Chronic bone and joint disorders, such as arthritis (16.7%), rheumatism (1.8%), and osteoporosis (0.3%), also significantly impact the elderly in the state, though the overall prevalence is slightly lower than the national average.

2.3 Nutritional Status

India is currently experiencing a significant rise in various forms of malnutrition, including undernutrition (underweight adults and stunted, wasted, severely wasted, and underweight children), overweight/obesity, and micronutrient deficiencies. This phenomenon, known as the double burden of malnutrition (DBM), is a major public health concern, particularly in low- and middle-income countries like India. While Odisha has shown some improvements in nutritional metrics, it still mirrors national trends. The prevalence of underweight has decreased among both men (21%) and women (19%) aged 15-49, but anaemia has risen alarmingly, affecting 64% of women and 28.5% of men (NFHS-5). Additionally, the incidence of overweight and obesity in the same age group has increased, now affecting 23% of women and 22% of men.

2.3.1 Nutritional Status Among the Children

As per the fifth round of NFHS, there have been reductions in stunting (31%), wasting (18%), severe wasting (6%), and underweight (30%) among children under 5 compared to previous rounds (NFHS-3 and NFHS-4) in Odisha. However, the prevalence of anaemia (64%) and overweight (4%) among children has increased. While rates of wasting, severe wasting, and underweight are below national levels, the prevalence of overweight is slightly higher than the national average.

Table 2.2 Nutritional Status in India and Odisha (in %)

	India			Odisha		
	NFHS 3	NFHS 4	NFHS 5	NFHS 3	NFHS 4	NFHS 5
Anaemia	69.4	58.6	67.1	65	44.6	64.2
Stunting	48	38.4	35.5	45	34.1	31
Wasting	19.8	21	19.3	19.6	20.4	18.1
Severely wasting	6.4	7.5	7.7	5.2	6.4	6.1
Underweight	42.5	35.8	32.1	40.7	34.4	29.7
Overweight	NA	2.1	3.4	NA	2.6	3.5

Source: NFHS 3, 4 & 5

There are significant variations in the nutritional metrices among the different districts of the state. Districts like Malkangiri, Nabarangpur, and Rayagada have displayed a high level of stunting (more than 44%) among the children, while Jagatsingpur, Puri, and Khurda have shown significantly lower levels. This nutritional difference among districts is also mirrored in the share of underweight children in the above districts. More than a quarter of the children Mayurbhanj, Subarnapur, Debagarh, Kandhamal, and Balangir have been observed to be wasted, with Debagarh, Kandhamal, and Balangir having the most share of severely wasted children. As mentioned above, the share of overweight children in the state has increased between the last two rounds of NFHS. Dhenkanal had the largest increase, from 1.6% during NFHS-4 to 6.8% during NFHS-5. Highest incidence of overweight children was in Jagatsinghpur at 8.3%, which had increased from the earlier 5.5%. The prevalence of Anaemia had increased significantly in most of the districts of Odisha. The highest recorded prevalence of anaemia was in Malkangiri, Sundargarh, and Anugul (more than 70%), while the lowest prevalence was in Baleshwar, Nayagarh, and Puri. However, districts like Khurda and Cuttack had the highest growth of anaemic incidence between the last two rounds of NFHS, and districts like Bargarh and Sambalpur observed significant decline in the prevalence of anaemia.

The nutritional and health disparities in Odisha, as highlighted by the NFHS-5 data, indicate a complex future for the state's health outcomes. While progress has been made in reducing stunting, wasting, and underweight rates, the rising prevalence of anaemia and overweight children points to emerging health challenges. District-level variations in child malnutrition could widen health inequities across the state, especially with stunting remaining high in some tribal and rural districts like Malkangiri and Rayagada. The increasing incidence of anaemia and overweight children, particularly in districts such as Jagatsinghpur and Dhenkanal, suggests a shift toward a dual burden of malnutrition—undernutrition coexisting with overnutrition. This trend, if not addressed, may strain healthcare resources, increase non-communicable diseases, and hinder the long-term economic and social development of Odisha.

2.3.2 Nutritional status among the adults

The nutritional status of adults in Odisha shows a significant variation by age group, particularly in BMI levels. Among women aged 15-19, 36.0% are underweight (BMI < 18.5), while 6.4% are overweight or obese (BMI ≥ 25.0). The prevalence of underweight women decreases with age, reaching 16.7% in the 40-49 age group, while overweight and obesity rise to 28.8%. Similarly, for men, 32.9% aged 15-19 are underweight, decreasing to 10.8% in the 40-49 age group, with overweight/obesity increasing from 8.5% to 27.6% over the same age range. This shift in nutritional status mirrors Odisha's demographic transition, with a shrinking population of children and youth, which may contribute to increased focus on adult health challenges, such as managing rising obesity and addressing malnutrition in aging populations.

The increasing prevalence of anaemia, particularly the significant gap between women (64.9%) and men (28.5%) aged 15 to 49, as highlighted in the NFHS-5, adds a crucial dimension to Odisha's demographic transition. As Odisha undergoes demographic changes marked by declining fertility rates and an aging population, the health of the reproductive-age population becomes increasingly important for sustaining social and economic development. The high incidence of anaemia, especially among women, indicates persistent gender-based health disparities that could impede women's productivity and well-being. This is particularly concerning in a state where the youth population is shrinking, as a smaller working-age population with health challenges may further strain public health systems and hinder economic growth. Addressing anaemia is thus vital not only for improving individual health outcomes but also for ensuring a healthy, productive population that can support Odisha's demographic transition.

2.3.3 Nutritional status of the Elderly

While malnutrition is harmful at any age, it significantly impacts older adults, making them more vulnerable to falls, slower recovery, hospitalizations, and even death. Contributing factors include loss of appetite, difficulty in chewing and swallowing, increased use of prescription medication, depression, dementia, chronic diseases, and limited access to nutritious food. Older adults, especially those with chronic conditions like diabetes, cancer, or Alzheimer's disease, face higher risks due to altered metabolism and dietary restrictions. Additionally, frequent hospitalizations and stays in long-term care facilities further increase their risk.

Diet and lifestyle, along with maintaining a healthy body weight, are essential for good health at all age groups but are particularly crucial for healthy ageing (Leslie and Hankey, 2015). In India, more than 21% of individuals above age 45 are underweight, 21% are overweight and 7% are obese. In rural areas, about 26% are underweight whereas in the urban area, 32% are overweight, and 15% are obese in the same age group (LASI Wave-1, 2017-18). In Odisha, 30% of the elderly ages 45 and above are underweight, the second highest in the country, while 18% are either overweight or obese, which is below the national average. This situation, among several other factors, indicates that the early age groups with inadequate nutrition have transitioned into elderly age groups with similar conditions.

2.4 Existing Programmes in Odisha to Address Malnutrition

For the first time in India, a state-specific nutrition budget has been formulated to allocate funds for targeted nutrition-specific and sensitive interventions. The Odisha Nutrition Budget 2023 outlines 27 nutrition-specific and 170 nutrition-sensitive programs. Notable government initiatives (**Table 2.3**) to improve nutritional outcomes include the "Mo Chhatua" app for tracking and streamlining the supply chain of take-home rations, the establishment of Nutri gardens ("Mo Upakari Bageecha"), the introduction of the "Tiki Mausi" mascot for nutritional awareness, and the creation of community-based creches under the "Ama Kalika" program. The current nutrition crisis in Odisha is multifaceted, requiring a comprehensive approach to address the rising prevalence.

2.5 Recommendations

Odisha's demographic landscape is shifting, with a declining young population (0-15 years) and a growing elderly population (60+ years). This transition demands a revaluation of health and nutrition policies to address age-specific health risks, non-communicable diseases (NCDs), and malnutrition. Mental health services also require integration into health programs to support both physical and psychological well-being. The following recommendations aim to strengthen the state's healthcare infrastructure and ensure that health and nutrition strategies are responsive to the evolving demographic trends.

- Strengthen Geriatric Care: Expand chronic disease management and mental health services for the elderly, alongside integrated care systems for comprehensive health support.
- Enhance Child and Adolescent Health: Improve nutrition programs for children and introduce mental health services in schools for early detection and prevention of psychological issues.
- Allocate Resources to Primary Healthcare: Prioritize primary healthcare with a 70% budget allocation to prevent and manage age-related diseases and NCDs, incorporating mental health services.
- Implement Health Risk Tracking Systems: Develop robust data systems to track and manage health risks across different age groups, particularly for NCDs and mental health issues.
- Address Dual Burden of Malnutrition: Expand nutrition programs to provide nutrient-dense foods and address both undernutrition and obesity, particularly in tribal areas and vulnerable populations.

Table 2.3 Major Schemes and Programmes aimed towards improving Nutritional Outcomes in Odisha

Name of the Programme/ Scheme	Target Beneficiaries	Benefits entitled to the Beneficiary
Anaemia Mukt Bharat	6-59 months children, 5-10 years children, school going adolescent girls 10-19 years age, women of reproductive age 20-49 years, pregnant and lactating mothers	Prophylactic IFA supplementation, Periodic deworming, Testing and treatment of anaemia, IFA fortified foods, intensify awareness of non-nutritional anaemia
AMLAN (Depts.: Health and Family Welfare, School and Mass Education, Women and Child Development, Mission Shakthi, ST & SC Development)	Also include school going children	
MAMATA SAMMPURNA (Sishu Abang Matru Mrutyu Ra Purna Nirakarana Abhiyan) Jiban Sampark	Pregnant women and newborn Jiban Sampark: Particularly Vulnerable Tribal Groups (PVTGs)	MAMATA: Wage compensation, increase utilization of services, improve care and feeding practices SAMMPURNA: reducing IMR/MMR in state (focus on 15 districts) Jiban Sampark: implemented in 12 districts, involves systematic community mobilization, innovative communication methods and tools to engage communities, leading to adoption of positive behaviours on health, nutrition and hygiene issues.
Purna AAHAR		Community based management of severe acute malnutrition
Pada Pushti Yojana		Hot cooked meals in tribal /hard to teach areas
Ojan Utsav		Growth monitoring
Janani Suraksha Yojana (JSY) Janani Shishu Suraksha Saryakaram (JSSK) Pradhan Mantri Matru Vandana Yojana MAA- Mothers Absolute Affection Annaprashan Divas		Conditional cash transfer, free entitlements in health centre during pregnancy and for sick newborns Provide enabling environment to promote and sustain breastfeeding and child care
'Advika: I am Unique' scheme	Adolescent girls and boys	Empower adolescents to be the change agents and bridging gender gaps
RMNACH+ Village Sanitation, Health and Nutrition Day	Reproductive Health, maternal, newborn, child, adolescent	Continuum of care concept encompassing all interventions aimed at addressing health and Nutrition outcomes
Poshan Abhiyaan (POSHAN 2.0 / Saksham Anganwadi)	Mother and child	Convergence of Mult ministries, technological linkage to data monitoring and training, enabling community participation and panchayats towards nutrition goals
Mukshya Mantri Sampoorna Pushti Yojana	Mothers, adolescent girls and children	Supplementary nutrition/ take home ration
PM POSHAN (Mid-Day Meal)	School children	Mid-Day Meal
PDS	Economically vulnerable	Food items at subsidized cost
Mo Upakari Bagicha	Households	Support to maintaining home gardens
Self Help Groups, Mission Shakti, Community Creches	ICDS beneficiaries	Procurement and preparation of take-home ration, community based creches for child care

Source: Compiled from various Documents of Government of Odisha, Departments of Health and Family Welfare, School and Mass Education, and Others

- Integrate Mental Health into Community Services: Build community-based mental health services, with special support for the elderly and school-based initiatives to promote mental wellness in adolescents.
- Incorporate Nutrition and Mental Health into Education: Include nutrition and mental health education in school curricula and healthcare worker training to promote long-term healthy habits.
- Focus on Vulnerable Populations: Prioritize health and nutrition programs for Scheduled Tribes, rural communities, and excluded groups like out-of-school adolescent girls, with culturally relevant interventions.

2.6 Conclusion

The demographic transition in Odisha has significant implications for health and nutrition, necessitating a re-evaluation of existing policies and the implementation of targeted interventions to address evolving age-specific health risks, non-communicable diseases (NCDs), and malnutrition. As the state experiences a declining young population and a growing elderly population, there is a critical need to strengthen geriatric care by expanding chronic disease management and mental health services for the elderly, while also integrating care systems for comprehensive health support. This includes measures to enhance child and adolescent health through improved nutrition programs and the introduction of mental health services in schools for early detection and prevention of psychological issues. Prioritizing primary healthcare with a substantial budget allocation to prevent and manage age-related diseases and NCDs, along with the incorporation of mental health services, is crucial. The state must also focus on developing robust data systems to track and manage health risks across different age groups, particularly for NCDs and mental health issues, to inform targeted interventions. Addressing the dual burden of malnutrition by expanding nutrition programs to provide nutrient-dense foods and focusing on vulnerable populations, particularly Scheduled Tribes, rural communities, and excluded groups, is vital for promoting inclusive health and nutrition strategies in Odisha, ensuring equitable access to healthcare and addressing the diverse health needs of the population.

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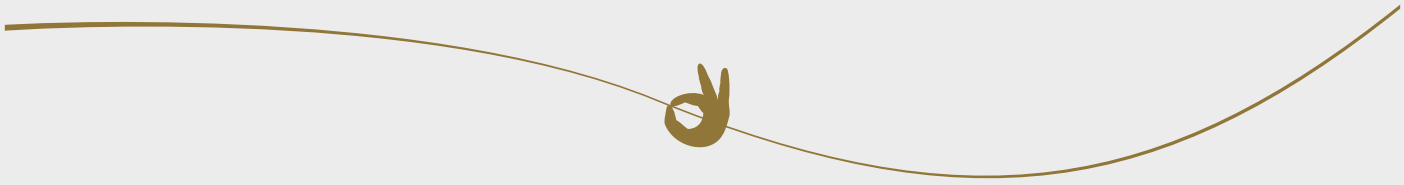


3

Demographic Transition: Education

The demographic transition significantly impacts educational outcomes by reshaping societal needs and resource allocation. As birth and death rates decline, smaller family sizes enable parents and government to invest more on each child's education, enhancing overall attainment. Lower young-age dependency ratios allow families to prioritize schooling over labour, particularly for girls, expanding access. Furthermore, as populations age, economies increasingly rely on a more educated workforce to drive productivity and sustainable growth.

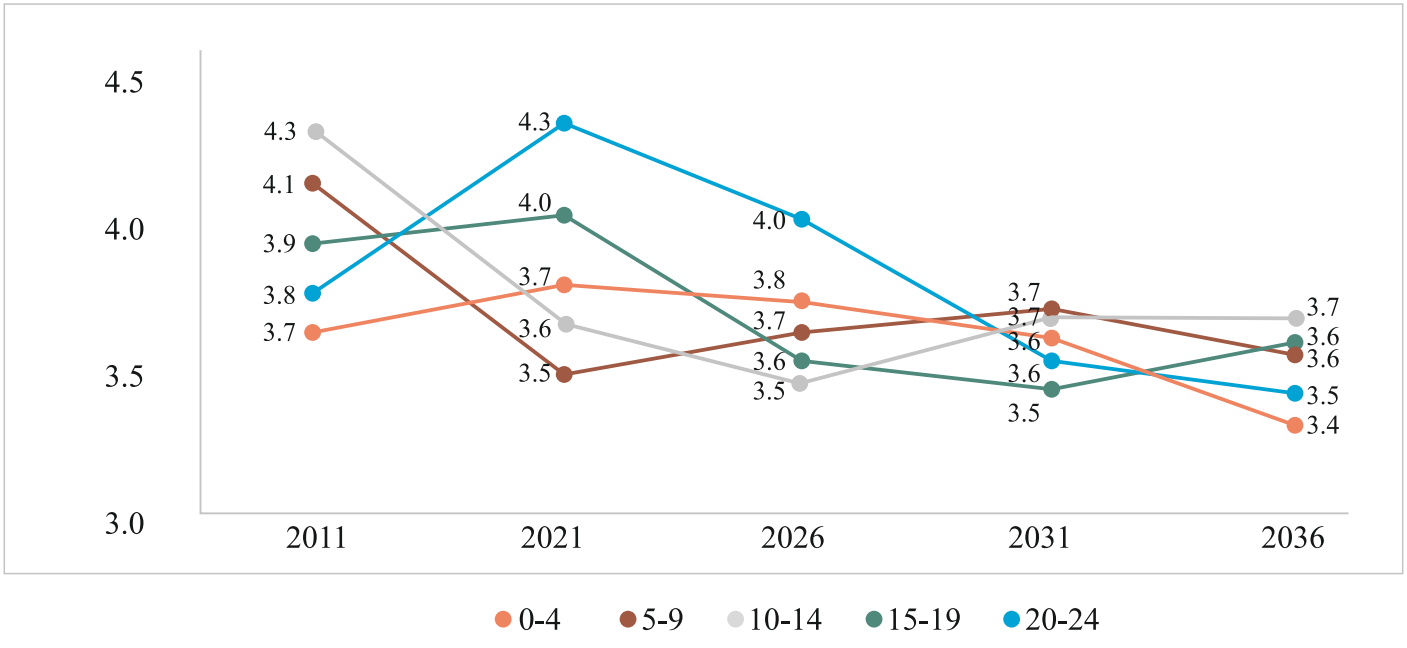
3.1. Introduction

The National Education Policy in 2020 has brought a sharp focus on the critical role of education in driving socio-economic growth, particularly in less developed states like Odisha. The state is now reassessing its current education landscape through the demographic window, which is likely to close within a decade. Therefore, there is, a sense of urgency to plan effectively for education to reap the maximum benefits of demographic transition. In the absence of proper quality education for young people at this stage, the state might end up with a high proportion of adults with low skills and no quality education to support a high tempo of growth. With the rapid change in technology, it is important to equip the workforce with modern skills and technology.

Odisha is undergoing a pronounced demographic transition, marked by a reduction in the population of children and young adults (aged 0-24 years) and a concurrent rise in the proportion of the elderly. This demographic shift is projected to have significant implications for the state's educational landscape. As depicted in Figure 3.1, the population across all age cohorts under 24 is expected to contract substantially by 2036. This contraction will directly impact the student population across all educational tiers, from primary to tertiary levels.

Addressing the ramifications of this demographic shift is imperative to mitigate potential adverse effects on the state's educational attainment. A shrinking student population presents challenges, such as the underutilization of educational infrastructure and diminished demand for educational institutions. However, it also offers the possibility of reallocating resources toward enhancing the quality of education. Odisha must develop a strategic framework to manage the demographic transition, ensuring that falling

Fig. 3.1 Population Projection by Age in Odisha: 2011-2036, (in Millions)



Source: Census 2011, Population Projection using the Bayesian Method

student numbers do not lead to declining educational standards. Instead, the focus should be on leveraging this shift to improve access to high-quality education, invest in skill development, and modernize the curriculum to align with emerging technological advancements. This approach will allow the state to navigate the demographic changes while maintaining, and potentially enhancing, its educational outcomes.

Against this backdrop, this chapter delves into the present state of educational progress and future pathways in Odisha, considering the unfolding demographic transition. The analysis begins with an overview of access to preschool education and goes on to explain the disparities in achievement in school and higher education with special emphasis on girls. Aspects of decentralized provisioning of educational infrastructure in the context of declining number of children in villages and urban neighbourhoods over time, the growing demand for technical education; the emergence of non-aided private institutions, and household out-of-pocket expenditures have been analysed in some detail. This chapter also presents a comparative analysis of the situation in Odisha with neighbouring states and the rest of India, where feasible. Additionally, the chapter looks at spatial disparities across districts in several key indicators of education using the coefficient of variation (CV). The concluding section addresses social disparities in learning outcomes, possible future scenarios and strategies for reducing social and spatial inequality in access to education.

3.2 Implications of Demographic Transition on Education

The demographic transition in Odisha, marked by a shrinking youth population, has significant implications for the state's education system. The decreasing student base poses challenges for educational infrastructure, requiring adjustments in the demand and supply of schools, teachers, and resources. Access to education across all age groups will face disparities, particularly in rural and marginalized communities. School education systems must adapt to lower enrolment, while higher education institutions will face a critical decline in their core demographic. Vocational and technical education must also evolve to meet the demands of a changing workforce.

Table 3.1 Distribution of Government Schools by Enrolment Size

	Number of Students Enrolled					
	< 20	**20-40**	**41-60**	**61-100**	**>100**	**Total**
Odisha						
No. of Schools	3,064	13,551	8,809	10,071	19,384	54,879
% of Schools	5.6	24.7	16.1	18.4	35.3	100.0
India						
No. of Schools	1,02,587	2,10,852	1,42,725	1,92,951	4,79,364	11,28,479
% of Schools	9.1	18.7	12.6	17.1	42.5	100.0

Source: UDISE+, 2021-22

3.2.1 Educational Demand and Supply

Educational demand and supply in Odisha are increasingly influenced by demographic changes, particularly the decline in the child population aged 5-14 years. The decrease in the child population has led to a significant reduction in school enrolment, resulting in a rise in the number of "small schools," defined by very low enrolment, particularly those with fewer than 20 students. The ongoing establishment of larger schools and the concentration of students in these institutions further exacerbate the problem, creating a disparity in resource allocation and leading to potential school closures.

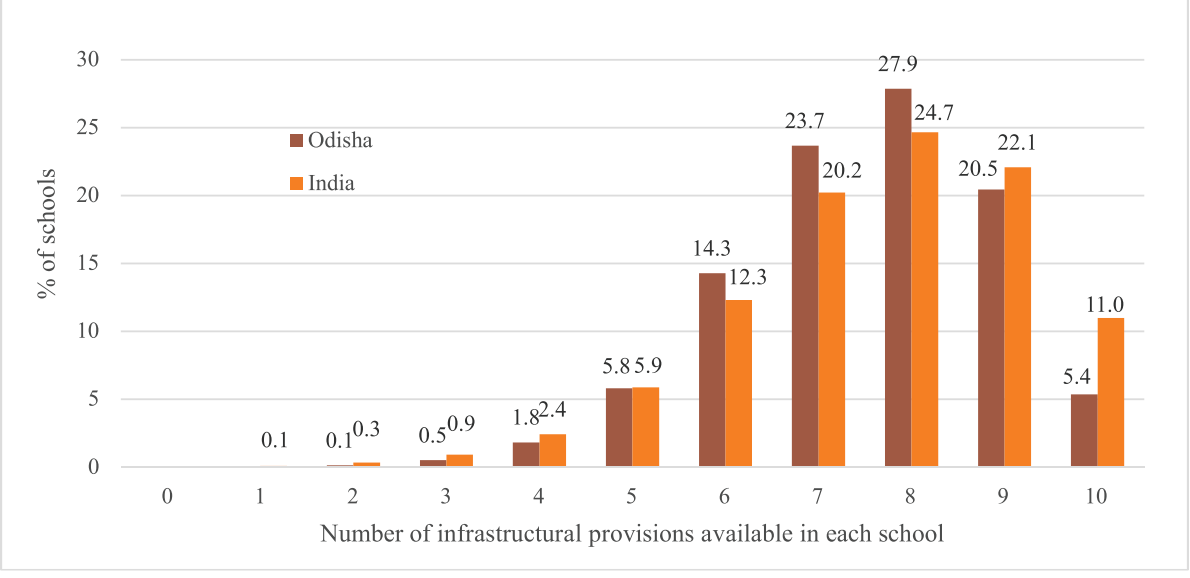
The data from UDISE+ (2021-22) in Table 3.1 shows that 6% of all government schools in Odisha have fewer than 20 students. The presence of such small government schools is particularly high in districts like Kandhamal, Koraput, Gajapati, Rayagada, Puri, and Subarnapur. Notably the tribal population exceeds 50% in all these districts, except for Puri and Subarnapur. As Odisha's population declines due to demographic changes, these schools will face challenges in enrolling enough students in the future. However, many of these schools, particularly those in remote areas, serve as the primary source of education and represent the last mile of government presence. Therefore, it is crucial to strike a balance between maintaining access to education and considering local socio-economic, demographic, and geographical conditions.

Availability of Infrastructure Facilities in Schools

The availability of quality infrastructure is crucial for creating a conducive teaching and learning environment in schools. The Right of Children for Free and Compulsory Education (RTE) Act, 2009, has recommended improving infrastructural provisions in elementary schools. These provisions include: 1) functional boys' toilet, 2) functional girls' toilet, 3) pucca boundary walls (including intact walls, pucca but broken walls, and barbed wire fencing), 4) a library, 5) a playground, 6) a ramp, 7) functional drinking water facilities, 8) a teacher-classroom ratio (number of teachers divided by number of classrooms used for instruction) of 1 or more, 9) a pupil-teacher ratio (students divided by teachers) of 30 or less, and 10) a student-classroom ratio (students divided by classrooms) of 30 or less. The schools are, thus, classified based on the availability of these essential facilities.

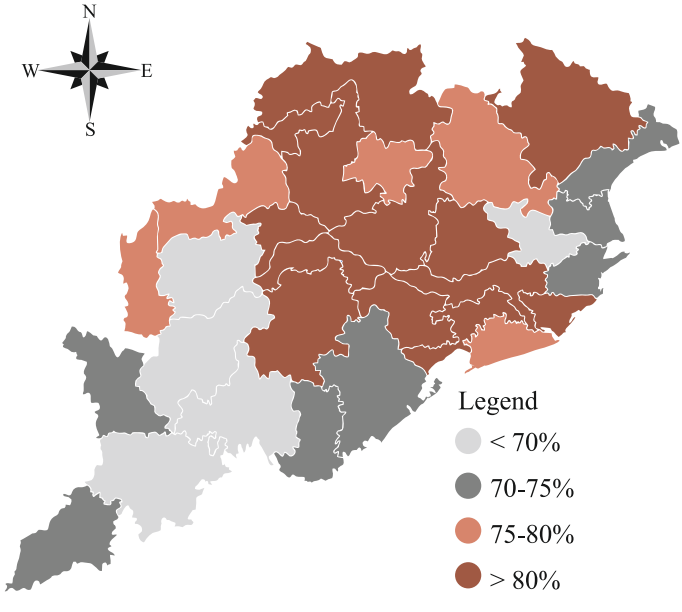
As shown in Figure 3.2, only 11% of all elementary schools in India meet the 10 provisions listed above. In Odisha, the figure is even lower, at just 5.4%, and about 50% of schools have fewer than seven of these facilities.

Fig. 3.2 Percentage of Schools at Elementary Level with Number of Infrastructure Facilities Available in 2021-22



Source: UDISE+, 2021-22

Fig. 3.3 Percentage of Schools with Compliance to Seven or More Parameters at Elementary Level of Education



Source: UDISE+, 2021-22

3.2.2 Access to Education and Challenges with focus on gender, social category and geography

This section examines access to education in Odisha, with a particular focus on disparities rooted in gender, social category, and geography. It explores how these factors shape educational opportunities across different stages, from early childhood to higher education. While Odisha has made notable progress in improving overall enrolment rates, significant challenges remain for marginalized groups, including girls, Scheduled Castes (SCs), Scheduled Tribes (STs), and children

from rural or economically disadvantaged backgrounds. By analyzing the interplay of these variables, this section highlights the persistent inequalities in access to education and the critical need for targeted interventions to bridge these gaps.

3.2.2.1 Early Childhood Care and Education (ECCE)

Early Childhood Care and Education (ECCE) in Odisha has exhibited significant improvements in enrolment, with 57% of children aged 2-4 years attending pre-primary education in Anganwadi Centres or schools, surpassing the national average of 40%. This high enrolment reflects the state's efforts to provide foundational services in nutrition and care through government-supported Anganwadi Centres, which serve as the main pre-primary education providers for rural children. However, disparities in access persist based on geographic location, with only 49% of urban children attending preschool compared to 58% in rural areas. This urban-rural divide contrasts with the national pattern, where urban enrolment typically exceeds rural rates.

The role of Anganwadi Centres is crucial in bridging the educational gap for children from economically disadvantaged households. With 87% of pre-primary children attending these centres, Odisha demonstrates a strong reliance on public institutions for early childhood education, particularly in rural areas. Conversely, wealthier families increasingly turn to fee-charged private pre-schools, especially in urban areas, where 8.7% of children attend private institutions (Table – 3.3). Affordability significantly influences this trend, with private pre-school enrolment rising sharply among wealthier households, highlighting inequities in access and quality of education across socio-economic groups.

There is significant diversity in access to pre-school education among children across districts in Odisha. Gajapati (62.9%) and Puri (62.7%) districts stand out, performing well above the national average. However, Kandhamal district lags behind at 45.1%. Special attention is needed for Boudh, Kendrapara, Kalahandi, and Bolangir districts, where fewer than 50% of children aged 2-4 years attend preschool. Despite these disparities,

Table 3.2 Percentage of Children (de facto) aged 2-4 years Attending Preschool

Categories	Classifications	Odisha (%)	India (%)
Residence	Urban	49.2	43.9
	Rural	58.1	38.7
Gender	Male	55.9	39.3
	Female	57.7	40.9
Social Groups	Scheduled Caste (SCs)	57.3	38.2
	Scheduled Tribes (STs)	58.0	43.2
	Other Backward Class (OBCs)	56.7	38.1
	General	55.5	43.5
Wealth Status*	Poor	57.5	38.0
	Non-poor	56.2	41.8
All		**56.8**	**40.1**

Source: NFHS-5, Note: Attending pre-primary education includes attendance at Anganwadi Centre or schools offering pre-primary education. NFHS only covers access to pre-school for children aged 2-4 years of age.
* The lowest two quintile classes of the wealth index (within state/nation) in NFHS-5 (2019-21) database have been classified as 'poor' and the rest as 'non-poor'.

Table 3.3 Share of children attending pre-school by types and wealth status in Odisha

Wealth Quintile	ICDS-Anganwadi Centre	Other Govt. run Pre-school	Private Pre-school	Others	Don't know	Total
Poorest	94.1	5.1	0.5	0.4	0.1	100
Poorer	94.0	3.1	2.0	0.9	0.0	100
Middle	90.2	4.3	4.9	0.6	0.0	100
Richer	86.9	2.1	10.8	0.3	0.0	100
Richest	64.9	4.2	30.5	0.3	0.1	100
All	87.0	3.8	8.7	0.5	0.0	100

Source: NFHS-5

the coefficient of variation (CV) in the share of children attending pre-school education across the districts in Odisha, is only 9%, which indicates a relatively low level of disparity in access to early childhood education.

3.2.2.2 School Education

Over the years, enrolment ratios at various levels of education in India have shown a positive trend, with many states achieving a Gross Enrolment Ratio (GER) exceeding 90%. Odisha reflects this trend, with a GER of 5.4% at the elementary level of education (UDISE+, 2021-22). This marks a significant step towards the goal of universalization of elementary education in the state. However, despite this commendable achievement at the elementary level, there is a steady decline in enrolment ratio at higher levels of education. The GER at the higher secondary level stands at 43.6%, signalling a substantial drop from the elementary level. This decline calls for serious policy attention and strategic interventions to address the barriers hindering access to and participation in higher education.

Access to School Education

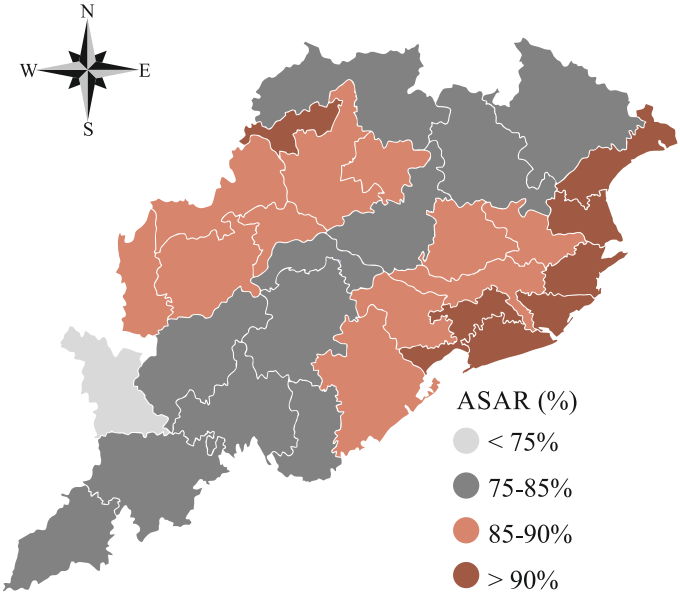
The National Family Health Survey – 5 (NFHS-5, 2019-21) shows that only 85% of children in the age group of 6-17 years attend school in Odisha (Table – 3.4). While the Age-Specific Attendance Ratio (ASAR) for the 6-13 age group is impressively high at 95%, it declines to 50.6% for the 16-17 age group. These discrepancies in attendance rates between childhood and adolescence underscore the need for targeted policy interventions to maintain higher attendance rates among adolescents (ages 14-17).

Table 3.4 Age-specific Attendance Ratio (ASAR) among children aged 6-17 Years, 2015-16 and 2019-21 (in %)

Age-Groups	India		Odisha	
	2015-16	2019-21	2015-16	2019-21
06-13 years	93.3	94.2	94.1	95.0
14-15 years	78.3	82.5	74.6	75.9
16-17 years	57.8	65.2	45.7	50.6
06-17 years	85.0	87.4	82.8	85.0

Source: NFHS- 4 & 5

Fig. 3.4 ASAR among Children aged 6-17 across Districts in Odisha



Source: NFHS-5

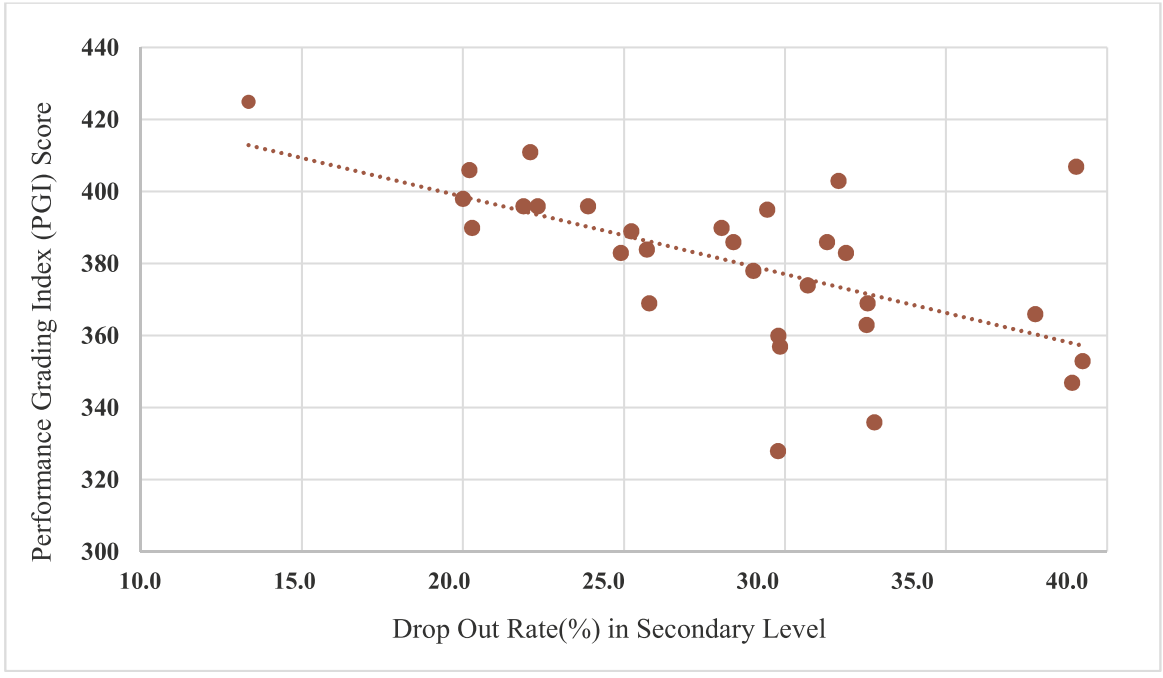
Social group disparities also play a critical role in determining access to education in Odisha. Children from Scheduled Tribes (STs) and Scheduled Castes (SCs) face significant barriers to schooling compared to children from the general category. Only 77.1% of ST children aged 6-17 years attend school, compared to 92.3% of general category children, underscoring the systemic disadvantage faced by tribal communities in particular. The districts with higher ST populations, such as Nabarangpur and Rayagada, tend to have lower school attendance rates, reflecting the compounded challenges of geographical isolation, economic disadvantage, and social marginalization.

Geographical disparities further accentuate unequal access to education. Coastal districts such as Jagatsingpur, Kendrapara, and Khordha exhibit higher school attendance, while districts in the interior and hilly regions, including Malkangiri, Kalahandi, and Kandhamal, consistently show lower ASARs. Urban-rural divides are also evident, though the gap in school attendance between urban and rural children is less pronounced compared to the national average. However, urban areas witness a higher concentration of private schools, which are more accessible to wealthier households, exacerbating educational inequalities based on location and socio-economic status. The affordability of private schooling remains a key challenge for economically disadvantaged households, especially in rural areas, where the prevalence of private institutions is low and reliance on government schools is higher.

Dropouts

The dropout rate serves as a critical indicator for assessing student retention in the education system. In Odisha, the UDISE+ database (2021-22) reports zero dropout rates both at primary and upper primary levels; however, this figure escalates to 27.3% at the secondary level, marking the highest rate among neighbouring states. Notably, boys exhibit higher dropout rates compared to girls, reflecting gender disparities in educational

Fig. 3.5 Association between Performance Grading Index in School Education and Dropout Rate in Secondary Education Across Districts in Odisha



Source: UDISE+, 2021-22

continuity. Although the reported 'zero dropout rate' at lower levels seems promising, data from NFHS-5 (2019-21) reveals that approximately 17% of children aged 6-17 do not attend school regularly. This discrepancy indicates that the dropout rate does not account for those who are entirely excluded from the education system, thereby underestimating the actual number of out-of-school children.

Spatial disparities in dropout rates across districts in Odisha are evident, with certain regions facing significantly higher rates, particularly at the upper primary and secondary levels. For instance, the coefficient of variation (CV) in dropout rates at the upper primary level is 34.1%, highlighting substantial differences among districts. At the secondary level, while the CV decreases to 22.1%, districts such as Bolangir, Boudh, Deogarh, Jharsuguda, Koraput, Nabarangpur, Nuapada, and Rayagada report alarmingly high dropout rates exceeding 30%. These figures raise concerns, especially considering that dropout rates at the primary level in these districts remain relatively low.

The underlying factors contributing to elevated dropout rates are complex and multifaceted. The Performance Grading Index (PGI), published by the Ministry of Education, provides insights into the state of school education across India, revealing a negative correlation between school performance and dropout rates. Districts with high dropout rates often correspond with low PGI scores, suggesting that inadequate educational quality significantly drives students away. This correlation emphasizes the need for systemic improvements in teaching quality, infrastructure, and governance to mitigate dropout rates effectively.

The landscape of school education in Odisha faces significant challenges, particularly with high dropout rates at the secondary level, which threaten to create skills gap in the future workforce. As the demographic transition progresses, with a declining youth population and a growing elderly demographic, the education system must adapt to equip remaining youth with the skills needed for emerging sectors. Addressing gender disparities, especially those affecting girls, is crucial to prevent cycles of poverty and promote workforce participation. Investing in educational quality and accessibility, particularly in rural areas, can help

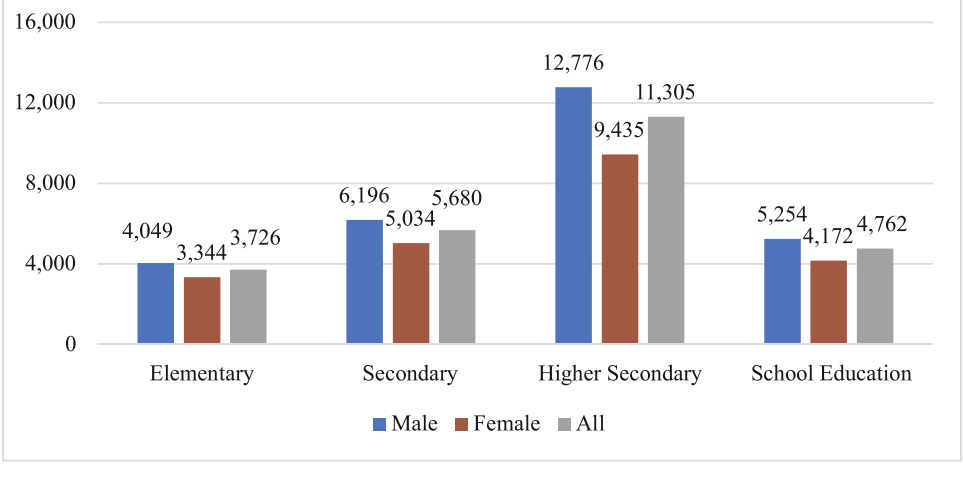
retain students and create a more equitable landscape. By leveraging the demographic transition to focus on quality education and lifelong learning opportunities, Odisha can develop a skilled workforce ready to meet the demands of a dynamic economy.

Out-of-Pocket Expenditure in School Education

According to the latest National Sample Survey (75th round, 2017-18) on social consumption in education, the average household spent Rs. 4,762 per student on school education (class I – XII) in 2017-18. This expenditure increases with higher levels of education. While the annual per-student expenditure was Rs 3,726 at the elementary level, it rose to Rs 11,305 per student in higher secondary education. Although 'free education' is guaranteed at the elementary level in government-run or sponsored schools, households still incur expenses for various education-related components, such as for private tuition and learning materials.

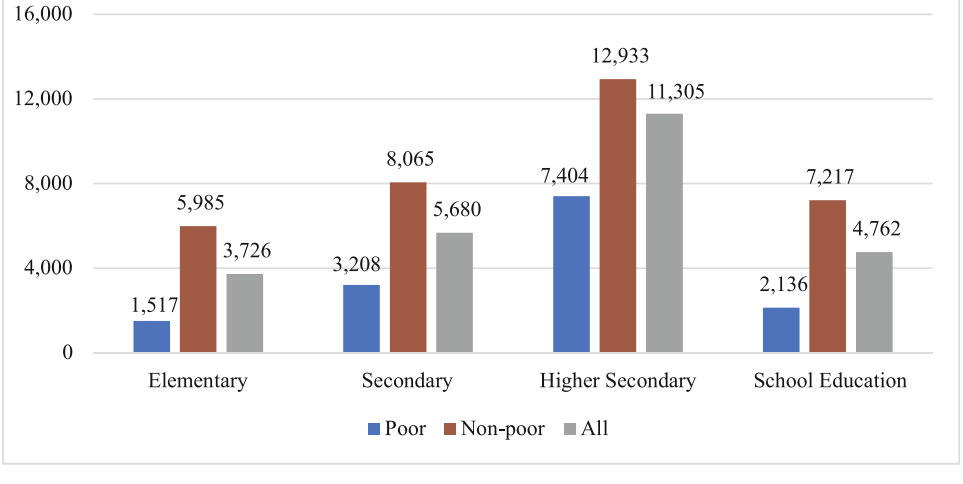
There is also gender discrimination in expenditure for education. Households spent Rs. 5,254 per boy, which was about Rs 1000 higher than the Rs 4712 spent per girl. This gender-based gap in spending widens as children progress from elementary to higher secondary education.

Fig 3.6 Average Household Expenditure (Rs.) per Student by Gender on School Education in Odisha, 2017-18



Source: National Sample Survey (75th Round) on Social Consumption in Education, 2017-18

Fig. 3.7 Average Household Expenditure (Rs.) per Student by Economic Status in School Education in Odisha, 2017-18



Source: National Sample Survey (75th Round) on Social Consumption in Education, 2017-18

The expenditure on education also varies based on a household's economic status. On an average, non-poor households spend nearly three times more per student than poor households. This gap widens as the level of education increases. The primary reason for this disparity is the fees charged by private unaided schools, which are more accessible to students from economically well-off households.

The share of private unaided schools (9.8%) in the total number of schools in Odisha is lower than the national average (22.6%) in 2021-22. However, this share has been steadily increasing, rising from 4.4% in 2012-13 to 9.8% in 2021-22. There is also wide variation across regions, with the lowest share in Malkangiri (3.2%) and the highest in Khurda (26.6 %) It is likely that this share of private unaided schools will continue to grow, and the cost will remain a major barrier for some sections of the population in affording these schools.

3.2.2.3 Higher Education

The National Education Policy (2020) has set an ambitious target of raising the increasing gross enrolment ratio (GER) in higher education to 50%. Both India as a whole and Odisha as a State are still far from reaching this target. In 2020-21, the overall GER for higher education (graduation and above) in the 18-23 age group in Odisha was just 20.7%, significantly lower than the national average of 27.3%. Among the neighbouring states, Odisha (20.7%) is ahead of Bihar (15.9%), Chhattisgarh (19.6%), and Jharkhand (17.0%), but trails behind West Bengal (21.3%). The situation is even more concerning for the Scheduled Castes (SCs) and Scheduled Tribes (STs). The GER for STs in the 18-23 age group is only 13.5% in Odisha, while the GER for SCs is 20%, matching the state's overall average.

Notably, there is no significant gender gap in the Gross Enrolment Ratio (GER) for higher education (18-23 years of age), but a gap emerges when one looks at attendance ratios. The National Sample Survey (75th round) on Social Consumption in Education provides data on attendance in higher education. In Odisha, the gender gap in age-specific attendance ratio (ASAR) for the 18-23 age group was 7.7% in 2007-08, which increased to 8.4% in 2017-18 (Table – 3.5). This trend mirrors the national pattern.

Table 3.5 Age-specific (18-23 years) Attendance Ratio in India across Selected States (in %)

State	2007-08			2014			2017-18		
	Male	Female	Gender Gap	Male	Female	Gender Gap	Male	Female	Gender Gap
Bihar	20.7	9.2	11.4	33.6	22.3	11.3	32.3	16.5	15.7
Chhattisgarh	19.3	11.5	7.8	32.4	26.7	5.7	26.7	18.7	8.0
Jharkhand	28.0	13.2	14.9	32.7	28.0	4.7	27.3	17.9	9.4
Odisha	16.0	8.3	7.7	22.6	15.9	6.7	22.1	13.7	8.4
West Bengal	20.7	12.6	8.1	30.4	27.4	3.0	27.7	22.2	5.5
India	23.7	16.7	7.0	34.8	28.4	6.4	32.6	24.6	8.0

Source: National Sample Survey on Social Consumption in Education, respective years

3.2.2.4 Vocational and Technical Education

Vocational and technical education plays a crucial role in securing jobs for youth in the labour market. In Odisha, these programmes are primarily offered through Industrial Training Institutes (ITIs), Polytechnics, Engineering Colleges, and specialized skill centers. A major initiative aims to establish 'Skilled-in-Odisha' as a household Brand. However, only 949 out of 11916 schools offer vocational courses under the National Skills Qualification Framework (NSQF) at the secondary/higher secondary level (UDISE+, 2021-22). In the 2020-21 financial year, the Odisha School Education Programme Authority, primarily responsible for implementing the Samagra Shiksha Aviyan, approved vocational education in 385 schools. Surprisingly, no private school has opted for vocational education, despite the state's efforts to skill the youth through ITIs, Polytechnics, and Training Centres in collaboration with private sectors and to integrate occupational tracks into regular undergraduate and postgraduate courses. Although technical education is part of school education, it is currently pursued by a very small number of students.

The 75th round National Sample Survey (NSS) on social consumption in education (2017-18) provides data on the highest level of technical education achieved by household members. As per the All-India Council for Technical Education Act, 1987, technical education means programmes of education, research and training in the fields of Engineering and Technology, Architecture, Town Planning, Management, Pharmacy and Applied Arts and Crafts. As shown in Table – 3.6, in India, 96.1% of students in higher education are pursuing general courses, while only 3.9% are enrolled in technical/ professional courses (NSS, 2017-18). Kerala has the highest share of students pursuing technical/ professional education at 10.4%, while Odisha lags at 2.6%. However, Odisha's figure is still higher than those of its neighbouring states.

Table 3.6 Share (%) of students by type of course pursuing (general course and technical/professional courses) for selective States, 2017-18

Categories	States	General Course	Technical/ Professional Course
Odisha and Neighbouring States	Bihar	99.2	0.8
	Chhattisgarh	98.2	1.8
	Jharkhand	98.8	1.2
	Odisha	97.4	2.6
	West Bengal	98.1	1.9
States with higher share of students in technical education	Kerala	89.6	10.4
	Tamil Nadu	91.5	8.5
	Haryana	94	6
	Karnataka	93.1	6.9
	Andhra Pradesh	92	8
India		**96.1**	**3.9**

Source: National Sample Survey (75th round): Social Consumption in Education, 2017-18

Table 3.7 Share (%) of students by type of course pursuing (general course and technical/ professional courses) in Odisha, 2017-18

Residence	Gender	General Course	Technical/Professional Course
Rural	Male	97.5	2.5
	Female	99.1	0.9
	All	98.3	1.7
Urban	Male	92.8	7.2
	Female	93.9	6.1
	All	93.3	6.7
Rural + Urban	Male	96.7	3.3
	Female	98.3	1.7
	All	97.4	2.6

Source: National Sample Survey (75th round): Social Consumption in Education, 2017-18

Table 3.7 reveals a gender disparity in participation in different types of courses in Odisha. While 3.3% of male students are enrolled in technical/ professional courses, the figure is only 1.7% for female students. The share of students in technical/vocational education is nearly three times higher among urban students compared to their rural counterparts. The gender divide in the choice of subjects becomes more pronounced when comparing rural and urban areas. In rural Odisha, only 2.5% of males pursue technical/professional courses in higher education, whereas 6.1% of females in urban areas do so. The greater availability of technical/professional institutes in urban areas likely could be a reason for higher participation of urban students in these courses.

One of the major obstacles to the expansion of technical and vocational education in Odisha is its cost. On average, the per-student expenditure for technical education in Odisha stands at Rs 35,345, significantly higher than that for general education but still below the national average of Rs 50,307. The high-cost acts as a deterrent for many households, particularly in rural areas, from enrolling their children, especially daughters, in vocational courses. Given that household investment in education is often skewed in favour of boys, this financial barrier further contributes to the gender gap in technical education. As Odisha navigates its demographic transition, addressing these financial and gender barriers is crucial to ensuring that its shrinking youth population is adequately prepared for the labour market and can contribute meaningfully to the state's economic future.

3.2.3 Educational Outcomes and Challenges

Odisha's education system faces critical challenges in improving learning outcomes, particularly in the context of the state's ongoing demographic transition. While access to schooling has expanded, there is a persistent "learning crisis" as many students advance through grades without achieving basic proficiency in key subjects. According to the National Achievement Survey (NAS, 2021), only 43% of Grade III students in Odisha reached a 'proficient and advanced' level in language skills. Although this performance surpasses that of neighbouring states like Bihar, Chhattisgarh, and Jharkhand, the percentage of students achieving proficiency drops sharply as they move to higher grades. By Grade VIII, just 35% of students demonstrate proficiency in language, and by Grade X, this figure plummets to a mere 4%. This declining trend reflects the challenges in sustaining educational quality as students advance through the system, which could hinder Odisha's ability to fully harness the potential of its younger population during the demographic transition.

Table 3.8 Share of Students by Level of Performance in Language and Mathematics in Odisha (in %)

Levels of Proficiency	Language	Mathematics
Class III		
Below Basic and Basic	57	53
Proficient and Advance	43	46
Class V		
Below Basic and Basic	61	70
Proficient and Advance	39	30
Class VIII		
Below Basic and Basic	65	68
Proficient and Advance	35	35
Class X		
Below Basic and Basic	96	75
Proficient and Advance	4	26

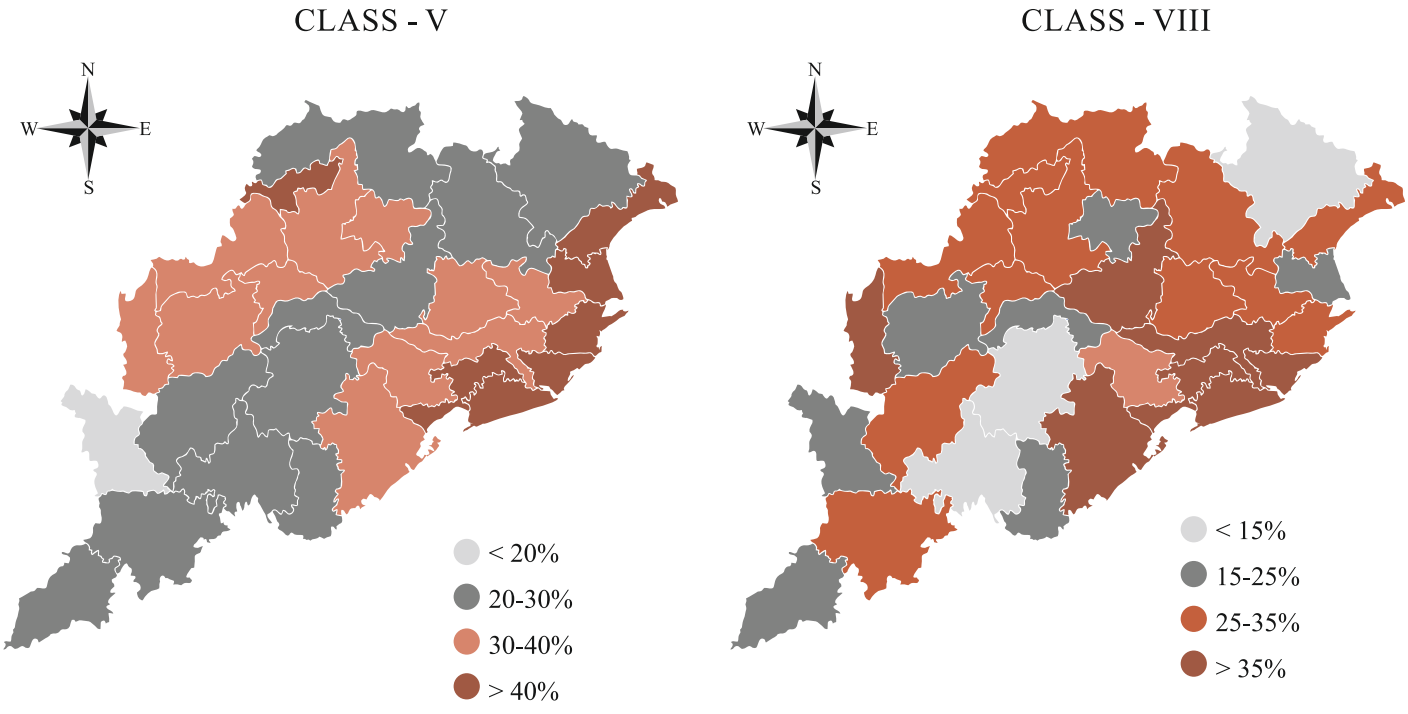
Source: National Achievement Survey (NAS), 2021

In mathematics, student outcomes are slightly better, though the overall trend remains concerning. At Grade III, 46% of Odisha's students achieve proficiency in mathematics, but this drops to 26% by Grade X. While this decline is less steep compared to language skills, the gap remains troubling as it indicates that students are not acquiring the skills necessary for higher education or employment in technical fields. The demographic shift in Odisha, with a shrinking youth population, amplifies the urgency of addressing these learning gaps. If the current cohort of students fails to acquire adequate skills, the state risks missing out on the economic benefits that typically accompany a demographic transition.

Disparities in learning outcomes across districts further compound the issue. The coefficient of variation (CV) for students reaching a 'proficient or advanced' level of understanding in Grade V is 28.5%, suggesting a wide range of student achievement across districts. This variation increases at higher grade levels, reaching 35.0% in Grade VIII and 30.9% in Grade X, highlighting the growing educational inequality as students' progress through the system. These disparities suggest that certain districts are falling behind in providing quality education, which could exacerbate regional inequalities in the labour market as the state's population ages. Bridging these gaps is crucial to ensuring that all regions of Odisha benefit equally from the demographic transition and that the workforce remains competitive.

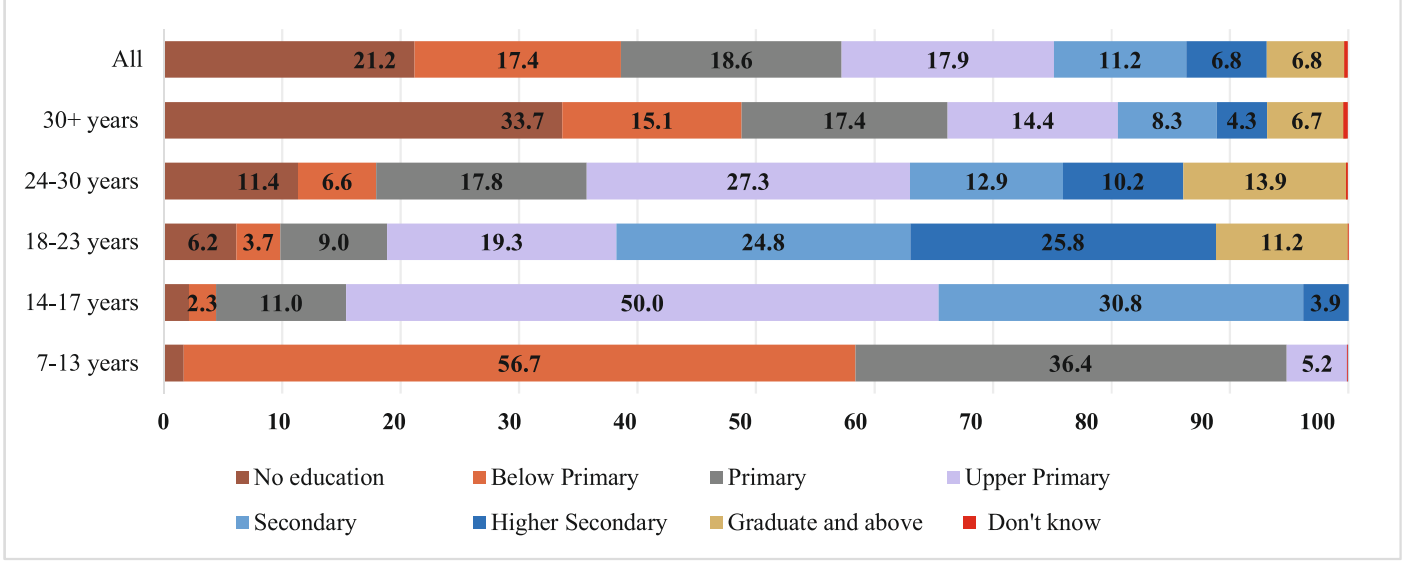
Odisha has made significant strides in improving literacy rates among children and adolescents, largely due to successful educational initiatives that have nearly universalized primary education. However, the state faces challenges with low educational attainment among individuals aged 18 and above. In the 24-30 age group, 11.4% remain illiterate, and only about one-third have completed upper primary education or higher. The situation is more concerning among those aged 30 and above, where one-third of the population is still illiterate. As Odisha undergoes its demographic transition, the proportion of older, less-educated individuals is expected to grow, underscoring the urgent need for targeted literacy programs for adults.

Fig 3.8 Percentage of children at Proficient and Advance level across districts in Odisha



Source: National Achievement Survey (NAS), 2021

Fig. 3.9 Distribution of population by completed level of education across age groups in Odisha



Source: NFHS-5

3.3 Demographic Transition and Education in Odisha: Unlocking the Demographic Dividend

Demographic transition and education are strongly linked, shaping opportunities for a demographic dividend. As age structures shift, educational needs evolve, requiring policies that address these changes. While children and adolescents currently represent a decreasing share of the population, this trend will soon affect the youth (20-29 years). Effective educational planning must adapt to these transitions.

In Odisha, educational access is marked by disparities in quantity, quality, and equity. The state exceeds the national average for pre-primary education access (56% vs. 40.1%), but significant gaps remain based on residence, economic status, and geography.

Despite progress toward universal elementary education (95% attendance for ages 6-13), learning outcomes are concerning. Only 43% of Grade III students achieve proficiency in language, and mathematics outcomes drop to 26% by Grade X.

Higher education in Odisha also faces challenges. While 97.4% of students choose general courses, only 2.6% pursue technical education. Access to higher education is shaped by gender, location, and family background. First-generation learners (19.9% in Odisha) face barriers, and educational mobility remains low among children from non-literate households. Addressing these disparities is critical for fostering equitable access to continuing education. As Odisha's child population declines, resource rationalization is needed.

3.4 Recommendations

To address the challenges facing education in Odisha, a series of targeted policy recommendations are essential. These initiatives aim to improve access, enhance quality, and ensure that all individuals, regardless of age, can benefit from a robust educational framework.

- Focus on Pre-Primary Education: Recognize pre-primary education as an integral part of the formal education system, ensuring its alignment with the curriculum for a smooth transition into elementary education. Strengthen Anganwadi centres by enhancing staff training, preparing high-quality educational materials, and ensuring adequate facilities. This initiative aims to create a robust foundational learning environment that promotes early literacy and numeracy skills among young children.
- Increase Attendance in Secondary Education: Develop targeted strategies to improve attendance rates in secondary and higher secondary education, particularly for girls. These strategies can include mentorship programs, counselling services, and community engagement initiatives that encourage families to prioritize education. By addressing the unique barriers faced by students, particularly girls, we can help retain them in the education system and reduce dropout rates.
- Improve Learning Outcomes: Shift the focus from merely increasing access to ensuring that all students achieve 'proficient or advanced' levels in literacy and numeracy. Revise the curriculum to make it more relevant and engaging, integrating innovative teaching methods that promote critical thinking and problem-solving skills. This approach will enhance the overall quality of education and help students develop the skills needed for future success.
- Address Dropout Rates: Launch comprehensive awareness campaigns to tackle the root causes of dropout rates, especially among girls. These campaigns should highlight the importance of education and address cultural practices, such as child marriage, that contribute to school discontinuation. By raising awareness and fostering community support, we can encourage students to remain in school and complete their education.
- Enhance School Infrastructure: Prioritize the improvement of school infrastructure to meet the ten mandated provisions outlined in the RTE Act of 2009, ensuring adequate classrooms, sanitation facilities, and learning resources. Implement the "5T–High School Transformation Programme" under 'Mo School Abhiyan' to mobilize corporate social responsibility (CSR) funds for infrastructure development. This initiative should aim to transform both the physical spaces and the overall educational environment within schools.
- Boost Higher Education Enrolment: Implement strategic enrolment initiatives to increase the GER in

higher education to 50% by 2035. Create awareness about higher education opportunities, improve the quality of institutions, and provide financial support for students pursuing higher education. By making higher education more accessible and appealing, we can encourage more youth to continue their studies beyond secondary school.

- Support for Continuing Education: Revitalize continuing education programs aimed at reducing the illiteracy rate, particularly among those aged 30 and above. Offer community-based learning initiatives, evening classes, and online resources tailored for adult learners. By promoting lifelong learning opportunities and skill development, we can help adults adapt to changing job markets and technological advancements, fostering a more educated and skilled population.

3.5 Conclusion

In conclusion, as Odisha undergoes a pronounced demographic transition, the implications for the state's education system are significant. The decreasing youth population poses challenges for educational infrastructure, access, and learning outcomes, necessitating strategic reforms to address these issues. The National Education Policy (NEP) 2020 plays a pivotal role in this context, providing a comprehensive framework to enhance educational quality and equity during the demographic transition. By aligning with the objectives of NEP 2020, Odisha can strategically navigate the demographic changes and ensure that the educational landscape is equipped to meet the evolving needs of the state's population. Additionally, expanding the Gross Enrolment Ratio (GER) in higher education is essential to capitalize on the state's younger population and ensure a skilled workforce for the future economy, thereby maximizing the socio-economic potential of Odisha. To enhance education in Odisha, several policy recommendations are essential. These include prioritizing pre-primary education, increasing attendance in secondary schools, improving learning outcomes, and addressing dropout rates. Additionally, efforts should focus on enhancing school infrastructure, boosting enrolment in higher education, and supporting adult education programs. These initiatives aim to establish a solid foundation for early literacy and numeracy skills, improve overall learning outcomes, and promote lifelong learning opportunities for all individuals.

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4

Demographic Transition: Employment Pattern

The demographic transition greatly affects employment patterns. At early stages, the young population boosts demand for jobs and skills development. As countries progress through the transition, the "demographic dividend" requires job creation and skill enhancement to drive economic growth. At later stages, a shrinking youth demographic and an expanding elderly population require policies that leverage the demographic and silver dividend for a resilient economic growth.

4.1. Introduction

Over the past three decades, India's development strategy has been focusing on achieving robust and inclusive economic growth while creating productive employment opportunities for its growing labour force. The years from 2014-15 to 2019-20 mark a significant period of structural and governance reforms in the country, contributing to sustained economic growth. Despite achieving an average Gross Domestic Product (GDP) growth of over 6.5% since the 1990s, India continues to face significant challenges regarding decent employment and social security provisions. While the Indian economy demonstrated resilience and quickly recovered from the COVID-19 crisis in 2022, the informal sector, self-employed workers, and poor migrant labourers experienced severe disruptions. This underscores the need for state-specific analysis of development and employment scenarios, particularly as India embarks on its "Amrit Kaal," a 25-year journey toward becoming a dynamic and independent economy.

Odisha, one of India's fastest-growing economies, has demonstrated resilience with an average Gross State Value Added (GSVA) growth of 7.9% between 2013-14 and 2021-22, outpacing the national average. Despite this economic progress, Odisha's per capita income remains lower than the national average, highlighting persistent disparities. Agriculture and self-employment dominate the state's labour market, but Odisha faces significant challenges in generating decent employment opportunities, particularly for women and marginalized groups. The state has made strides in poverty reduction, but its multidimensional poverty rate remains higher than the national level. The relationship between employment and economic growth is clear, as sustained growth in sectors like agriculture, mining, and services fuels job creation, but ensuring the quality of employment remains a key policy concern. As Odisha looks towards its centenary in 2035, addressing the gaps in employment quality, gender disparity, and social security will be crucial for achieving inclusive growth.

4.2 Emerging Concerns of Labour Market in Odisha

This section provides an assessment of recent changes in the various aspects of the labour market in Odisha with frequently using common economic indicators such as employment rates, Unemployment Rates (UR), Labour Force Participation Rates (LFPR), and Employment Elasticity (EE). These indicators also reflect the economy's overall macroeconomic performance. can also be gleaned from these indicators. This study examines various aspects of the labour market, particularly for the age group of '15-64 years' (Working age population) as well as the youth population for the age group '15-24 years.

4.2.1 Quality of Employment (Self-Employed, Regular, and Casual)

This section analyses the quality of employment in Odisha in the last three decades i.e., from 1993-94 to 2022-23. **Annexure 3** shows that over the last three decades, the structure of LFPR (total employment) has changed slowly over this period at a slow pace. The size of the labour force in Odisha has increased from 14.41 million in 1993-94 to 21.26 million in 2022-23. In 2022-23, Odisha has 20.41 million persons in the labour-force, overall, of which with 12.9 million were self-employed, 4.65 million worked casual workers, 2.86 million in had regular jobs, and 0.85 million were unemployed and searching for work. in 2022-23. This changing structure of labour force participation is explained in the study of Chand's, 2023 study, which states that "underemployment is a more serious problem than unemployment in India."

Odisha still lags behind the national average in regular employment. The percentage of regular employment in India has risen from 13.7 percent in 1993-94 to 23.39 percent in 2022-23 (**Annexure 3**). Like the patterns of LFPRs, the Work Participation Rates (WPRs) broadly follow a similar trend pattern in both Odisha and in India. There is an increase in WFPR in Odisha increased from 42.9 percent in 1993-94 to 44.2 percent in 2022-23 after a decline of 33.5 percent in 2017-18 in Odisha. The percentage of the labour force engaged in casual labour has fallen considerably from 37.1 percent to 22.8 percent in 2022-23, although it remains higher than the national average. Between 2017-18 and 2022-23, the share of self-employed people in Odisha increased marginally, by about roughly 5.3 percentage points, while. The share of casual labour and regular employees fell by 4.1 percent and 2.3 percent points, respectively. during the same period.

4.2.2 Low Female Labour Force Participation Rate (FLFPR)

The labour force participation rate (LFPR) for women in Odisha reflects a critical gender imbalance in the productive workforce, particularly as the state experiences shifts in its population structure. The data shows a marked decline in the participation of young women (aged 15-29) over the years, from 42.5% in 1993-94 to 35.3% in 2022-23, with the most substantial drops occurring in rural areas. This decline in female participation is largely due to persistent gender norms, limited access to quality jobs, and the low absorption capacity of urban labour markets for women. Rural areas, in contrast, see higher labour force participation among women, driven by the reliance on agriculture and informal, low-skilled work, which tends to absorb more labour regardless of skill level. Despite the decline, the period from 2019-20 to 2022-23 has witnessed a notable recovery, with female LFPR in Odisha increasing by 10 percentage points, suggesting that recent policies or shifts in the economic environment may have encouraged more women to enter the labour market.

The gender gap in labour market participation remains significant, with women's participation still trailing behind men's. While 83.1% of men in the working-age group (15-64) were part of the labour force in 2022-23, only 47.4% of women were engaged, highlighting enduring gender disparities. In urban areas, these disparities are more pronounced, as urban jobs often require higher skills and formal qualifications, which women may lack due to limited access to education and vocational training. However, rural areas present a contrasting picture, with women's LFPR surpassing urban levels, driven by agricultural and informal sector jobs that offer greater flexibility. The demographic transition, characterized by a

shrinking younger population, may further challenge gender dynamics, especially as women's participation becomes increasingly vital to maintaining the labour supply. Expanding opportunities for women in higher-skilled urban jobs and addressing gendered barriers in education and employment will be essential for Odisha to fully harness its labour potential amid these demographic shifts.

4.2.3 Significant Rate of Unemployment

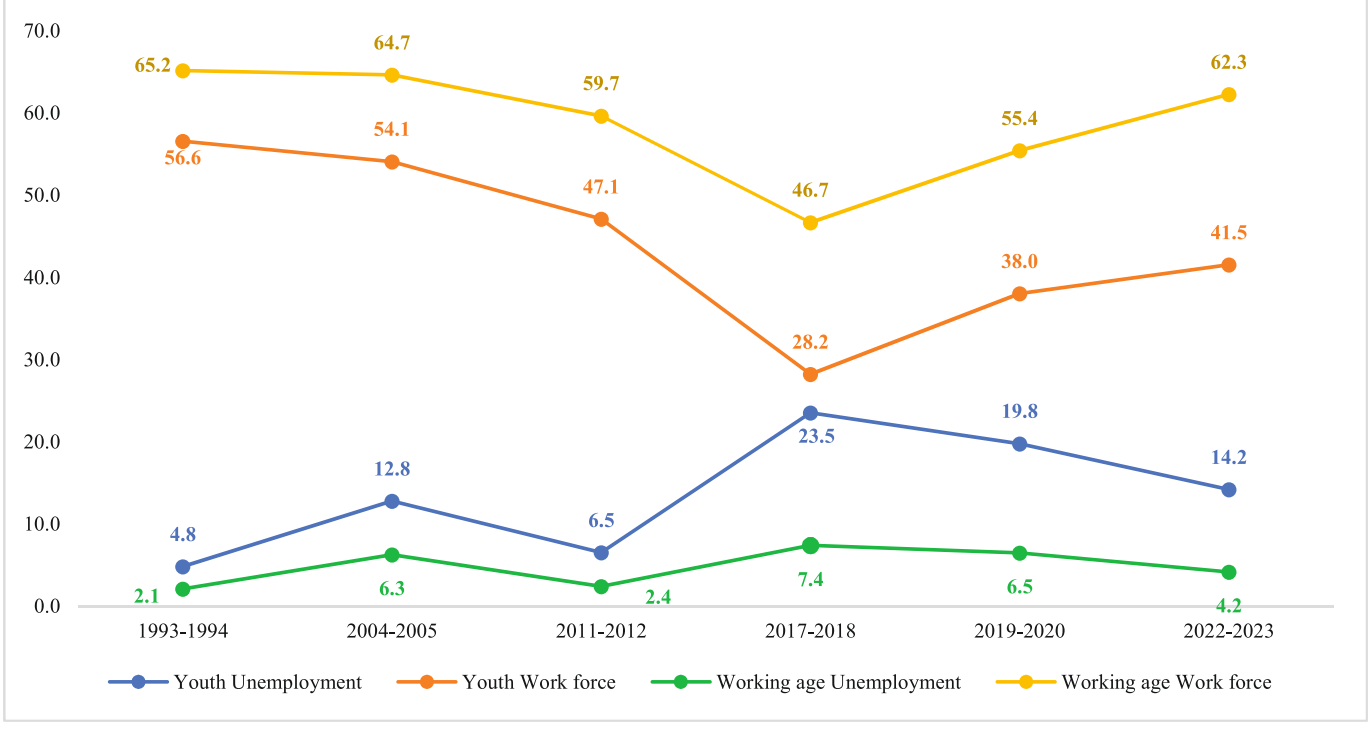
Unemployment rates (URs) in Odisha are higher as compared to the all-India average. The state's unemployment rate hit a record low of 2.03 percent in 1993–94, rose rapidly to 6.06 percent in 2004-05, reached an and even stood unprecedentedly high of 7.15 percent in during 2017-18, and then fell to 6.24 percent in 2022-23. The high unemployment rate in 2017-18 raised concerns about "jobless growth." However, these concerns were later eased by highlighting the non-comparability of this data with that from other rounds of NSSO and PLFS surveys. (**Annexure 3**).

While the WFPR decreased by 15 percent during this period (from 56.6 percent in 1993–94 to 41.5 percent in 2022–23) (Fig. 4.1), unemployment is around three times higher (14.2 percent) among youth compared to the working-age group (4.2 percent) in 2022-23. Between 1993-94 and 2022-23, the unemployment rate of the working-age group rose from 2.1 percent to 4.2 percent. The WFPR of the working-age group between 1993-94 and 2022-23 indicates that, despite an increase in the number of the working-age group, most are unable to find gainful employment.

LFPR and Unemployment Rate among the Youth (Age 15-29)

The data from 2022-23 shows a persistent issue of high unemployment rates among the youth (15-29 years), with male unemployment at 17.1% and female unemployment at 9.1%, significantly higher than the national averages. This trend is particularly evident in urban areas, where female unemployment in Odisha reached 24.5%, further highlighting the difficulties faced by young women

Fig. 4.1: Share of Youth (age-15-29) and Working Age (age-15-64) WFPR & UR in Odisha



Source: Computed from the unit-level datasets of different NSSO Employment and Unemployment Survey (1993-94, 2004-05 & 2011-12) and the Periodic Labour Force Survey (2017-18, 2019-20 & 2022-23)

in accessing formal employment. These challenges are exacerbated by a mismatch between the skills acquired by the youth and the demands of the labour market, leading to underemployment, especially in urban regions where opportunities in agriculture and informal sectors are limited compared to rural areas.

The coastal regions of Odisha, where development and income levels are higher, show particularly high unemployment rates, with youth unemployment reaching 28.8% in 2022-23, compared to 9.3% in the northern regions. This reflects a growing preference for quality employment in developed areas, while underdeveloped regions like the southern part of the state continue to rely on low-skill, agriculture-based employment. These disparities point to the need for targeted regional interventions, especially in education and skill development, to address the challenges posed by the evolving population structure. If left unaddressed, high unemployment rates, particularly among the youth, could lead to long-term underemployment and economic stagnation in the state, undermining the potential benefits of a large working-age population.

It is important to note that there is a significant incidence of skill mismatch in Odisha, particularly affecting the employability of its youth. Despite improvements in education levels, the unemployment rate among educated individuals remains high, especially among females. This suggests that the skills acquired through formal education often do not align with the demands of the labour market. The shortage of skilled manpower and technical know-how, particularly in modern industries and services, exacerbates the issue. While vocational education and training (VET) have been shown to increase labour force participation and reduce unemployment, the reach and effectiveness of these programs remain limited. Those with vocational education exhibit lower unemployment rates and higher labour force participation, but overall, the lack of adequate vocational training opportunities leaves a large proportion of youth unprepared for the job market.

Table 4.1: LFPR and Unemployment Rate among the youth (15-29 years) of Odisha (in%)

	Total		Rural		Urban	
	Male	Female	Male	Female	Male	Female
	LFPR					
1993-94	76.8	42.5	79.5	46.2	63.5	20.0
2004-05	81.1	44.4	84.6	47.4	64.7	27.8
2011-12	74.4	27.9	76.4	30.4	66.1	16.7
2017-18	62.2	16.2	64.0	16.4	55.3	15.2
2019-20	65.8	29.8	68.0	31.6	57.1	20.9
2022-23	61.7	35.3	64.0	38.5	53.5	21.9
	Unemployment Rate					
1993-94	6.0	2.7	4.3	1.8	16.8	15.9
2004-05	10.0	17.5	7.5	14.3	25.3	47.3
2011-12	6.9	5.6	6.2	5.7	10.3	4.9
2017-18	24.7	19.8	25.3	16.7	21.9	35.3
2019-20	22.9	13.1	22.7	11.1	24.3	27.4
2022-23	17.1	9.1	16.3	7.0	20.8	24.5

Source: Computed from the unit-level datasets of different NSSO Employment and Unemployment Survey (1993-94, 2004-05 & 2011-12) and the Periodic Labour Force Survey (2017-18, 2019-20 &2022-23)

Table 4.2: LFPR and Unemployment Rate among the Working age (15 to 64years), Odisha

	Total		Rural		Urban	
	Male	Female	Male	Female	Male	Female
	LFPR					
1993-1994	87.7	45.3	89.1	48.7	79.7	23.9
2004-2005	89.5	48.5	91.3	52.0	80.8	29.3
2011-2012	88.8	34.0	89.9	36.7	84.0	21.2
2017-2018	83.0	20.8	83.9	21.3	79.0	18.1
2019-2020	84.0	35.8	85.1	38.1	79.6	25.4
2022-2023	83.1	47.2	84.3	51.3	78.8	29.6
	Unemployment Rate					
1993-1994	2.6	1.2	1.9	0.8	6.9	6.3
2004-2005	4.1	10.3	3.2	8.5	9.2	27.4
2011-2012	2.6	2.0	2.3	2.0	3.9	1.9
2017-2018	7.6	6.5	7.7	5.4	7.6	13.1
2019-2020	7.5	4.3	7.4	3.7	7.7	8.1
2022-2023	5.1	2.6	4.8	2.1	6.2	6.9

Source: Computed from the unit-level datasets of different NSSO Employment and Unemployment Survey (1993-94, 2004-05 & 2011-12) and the Periodic Labour Force Survey (2017-18, 2019-20 &2022-23)

This gap between educational attainment and marketable skills reflects a critical need for the state to expand and improve VET programs, ensuring they are accessible, relevant, and aligned with current and future labour market demands.

LFPR and Unemployment Rate among the working Age (Aged 15-64)

The unemployment rates among the working-age group declined significantly in both rural and urban areas in the state. Overall, men are more likely to be unemployed than women. For instance, the male unemployment rate in Odisha in 2022-23 was 5.1 percent, but the female unemployment rate was 2.6 percent. “Research has shown, however, that unemployed men and women do not exhibit perfect interindustry and labour force mobility” (DeBoer, et.al., 1984). Furthermore, male unemployment rates increase relative to female rates during recessions and fall during recoveries (Nilsen, 1984). The estimates also show that female involvement in the labour market in urban areas remains limited.

4.2.4 Sectoral Changes in Employment

Odisha's economy has undergone significant sectoral shifts over the past three decades, reflecting broader trends in its employment structure. The state's Gross State Value Added (GSVA) has increasingly shifted away from agriculture toward the industrial and service sectors. While agriculture contributed 36.10% to the state's GVA in 1993-94, it employed a disproportionate 73.84% of the workforce, highlighting the mismatch between output and employment. Over time, this gap narrowed as agriculture's share of employment declined to 46.18% in 2022-23, though its GSVA contribution dropped to just 15.23%. This shift illustrates the state's gradual transition from an agrarian-based economy to one increasingly reliant on non-farm sectors. The growth of Agro-based industries has been modest, which limits agriculture's capacity to absorb labour, pushing workers toward other sectors like construction and mining, which have emerged as key employment generators in the non-farm sector.

The industrial sector, particularly manufacturing and mining, has played an outsized role in Odisha's GSVA, contributing 48.68% of it by 2022-23. However, the employment share of this sector, at 25.98%, reveals that while industries are driving economic growth, they are not generating jobs at a comparable rate. The manufacturing sector, despite a relatively sluggish GSVA share of 25.8%, employs only 8.19% of the workforce, indicating the capital-intensive nature of many industries, which rely more on automation and technology than on labour. This points to a broader structural transformation, where employment is shifting from agriculture toward more capital-intensive sectors like manufacturing and mining, even though these sectors are not absorbing labour as effectively. This slow-paced shift is compounded by the demographic transition, as Odisha's aging population and the decline in young workers limit the availability of a skilled, productive workforce to meet the growing demands of these industries. Without adequate policies to upskill older workers or attract younger talent, the state risks a labour shortage in its core industries.

The service sector, while modest compared to national averages, has shown remarkable potential for employment generation in recent years, growing at an impressive 8.14% between 2017-18 and 2022-23. Despite accounting for 36.09% of the GSVA in 2022-23, the sector employed a notable 27.84% of the workforce. The rise in service sector employment, particularly in finance, real estate, and public administration, highlights a shift toward more knowledge-intensive jobs, which is crucial as Odisha's demographic transition continues. With fewer young workers entering the labour market, sectors that traditionally rely on youth, such as construction, may struggle, while the aging population presents an opportunity for growth in health services and public administration. However, the state's demographic transition could create a mismatch in labour supply and demand if policies do not support the upskilling of workers, especially in the service sector, which requires higher education and specialized training. This underscores the need for targeted interventions to ensure that Odisha's labour force remains competitive amid changing demographic and economic realities.

Table 4.3: Employment and GSVA Share across major Industries in Odisha: 1993-94 to 2022-23(%)

	Odisha GVA Share					Odisha-Employment Share				
	1993-94	2011-12	2017-18	2019-20	2022-23	1993-94	2011-12	2017-18	2019-20	2022-23
Agriculture	36.10	17.87	13.41	15.16	15.23	73.84	54.84	47.11	46.88	46.18
Mining	6.44	12.03	11.62	11.25	11.48	1.17	0.55	1.13	0.17	0.41
Manufacturing	10.14	18.69	23.75	22.81	25.80	7.92	9.81	7.85	6.84	8.19
Electricity & Water	6.45	3.52	3.58	3.11	3.97	0.31	0.42	0.43	0.52	0.37
Construction	12.11	9.35	7.62	7.27	7.43	2.14	11.98	17.08	19.50	17.01
Trade, Hotels & Restaurants	5.39	9.24	10.62	11.21	8.42	6.29	10.64	10.82	11.90	13.77
Transport Storage & Communications	2.55	6.12	7.08	6.18	6.39	1.74	3.82	4.73	4.38	4.12
Finance & Real Estate	10.59	11.37	11.01	10.66	9.60	0.28	1.07	2.47	2.04	2.54
Public Admin.	4.77	3.92	4.67	5.28	4.90	2.08	1.32	1.31	1.27	1.06
Other Services	5.48	7.89	6.65	7.07	6.78	4.24	5.55	7.06	6.49	6.36
Industry	35.13	43.59	46.57	44.43	48.68	11.54	22.76	26.50	27.03	25.98
Service	28.77	38.54	40.02	40.41	36.09	14.63	22.39	26.39	26.09	27.84
Non-Agriculture	63.90	82.13	86.59	84.84	84.77	26.16	45.16	52.89	53.12	53.82
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

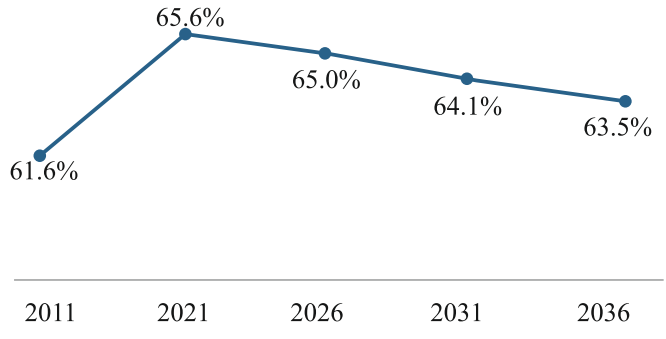
Source: Computed from the unit-level datasets of different NSSO Employment and Unemployment Survey (1993-94, 2004-05 & 2011-12) & the Periodic Labour Force Survey (2017-18, 2019-20 &2022-23)

4.3 IMPACT OF DEMOGRAPHIC TRANSITION ON THE LABOUR FORCE

4.3.1 Population Age Structure and Labour Market

Odisha is experiencing a demographic transition which is characterized by a decrease in the young population (aged 0-15) and an increase in the share of elderly. While the share of the working-age population (aged 15-59) remains the largest (more than 60%), it is expected to witness a decline over the next decades after 2026.

Fig. 4.2: Trends in Share of Working Age Population (Age 15-59) in Total Population, Odisha



Source: Census 2011, Population Projection using the Bayesian Method

The share of the working-age population (15-59 years) has increased in recent decades, presenting a "demographic dividend" that, if harnessed effectively, could contribute to sustained economic growth. The demographic dividend arises when the proportion of the working-age population (15-64 years) is larger than the dependent population (children and the elderly), providing a potential window for accelerated economic growth. However, the fertility rate is declining, and the proportion of the elderly population (60+) is steadily rising. This shift will lead to a shrinking youth cohort, which could constrain the supply of new labour market entrants, potentially slowing economic dynamism if adequate policy responses are not implemented.

As Odisha's population continues to age, the state will encounter increasing challenges in maintaining a robust labour force, especially in sectors like agriculture and construction, which require significant physical labour. Additionally, the labour force is marked by a high prevalence of informal employment and lower female participation, particularly in rural areas. With the rise in the elderly population, younger workers may face increased responsibilities in supporting both children and the elderly, potentially creating a dual burden. The growing number of elderly citizens will also heighten the need for healthcare services and social protection, potentially stretching public resources. To address these evolving needs, Odisha must prioritize investments in education, skills development, and healthcare, while encouraging growth in sectors like technology and services, which are less impacted by the aging workforce. This approach will help ensure a productive and adaptable labour market for the future.

4.3.2 Impact of a youthful demographic on job creation and economic growth.

The youthful demographic in Odisha has historically fueled economic growth by supplying labour to sectors like agriculture and small-scale industries. However, as the share of young people (15-29) declines due to the state's demographic transition, sustaining the current growth momentum becomes a challenge. Fewer young workers entering the labour force may slow growth in labour-intensive sectors. Yet, this shift also opens opportunities to enhance productivity by focusing on skill development, technological advancement, and job creation in knowledge- and capital-intensive industries. By adapting policies to this demographic change, Odisha can drive sustainable economic growth even with a shrinking youth population.

Youth employment in Odisha presents significant opportunities for growth, particularly in emerging sectors such as the digital economy, green jobs, and healthcare. With the state's demographic transition leading to a shrinking youth population, there is a growing need to align employment strategies with sectors that offer sustainable growth and meet the demands of the modern economy. The digital economy, driven by advancements in technology,

has the potential to absorb a large number of young workers in fields such as software development, data analytics, and e-commerce. Additionally, the push for environmental sustainability is creating opportunities in green jobs, including renewable energy and eco-friendly infrastructure projects. Healthcare, especially in the context of Odisha's aging population, is another sector with high growth potential, requiring more skilled workers to address the rising demand for medical and care services. These sectors could provide Odisha's youth with meaningful employment while also contributing to long-term economic stability.

Implications of an aging population on labour markets

Odisha's aging population presents significant challenges for its labour market, particularly as the share of young people (aged 15-29) declines. This demographic shift could lead to a labour shortage, which may increase wages but would also drive up the cost of doing business. As the state's workforce ages, skill mismatches are expected to become more pronounced, as older workers often require upskilling to meet the demands of a rapidly evolving economy. The state must focus on modernizing its workforce by implementing policies that encourage continuous education and training, allowing older workers to stay competitive in industries such as information technology, manufacturing, and healthcare.

At the same time, Odisha can capitalize on the "Silver Dividend" by harnessing the potential of its aging population. Older workers, with their experience and accumulated knowledge, can contribute significantly to sectors where institutional memory and specialized skills are highly valued. By promoting flexible work arrangements, encouraging phased retirement, and investing in health and wellness programs for older workers, Odisha can ensure their prolonged participation in the workforce. Additionally, the state must address productivity concerns by fostering innovation and adopting technologies that enhance the efficiency of an aging labour force. Properly managed, the demographic transition offers Odisha the opportunity to balance the challenges of an aging population with economic stability, while preparing for long-term sustainable growth.

4.4 Policy Responses and Interventions

As Odisha undergoes a demographic transition with a shrinking youth population and a growing elderly demographic, welfare schemes and programs at both national and state levels are becoming increasingly critical. These initiatives aim to raise the standard of living, improve labour force productivity, and ensure social security. National schemes such as the Pradhan Mantri Jeevan Jyoti Bima Yojana (PMJJBY) and Pradhan Mantri Suraksha Bima Yojana (PMSBY) provide life and disability coverage, which is essential as Odisha's workforce ages. The Ayushman Bharat-Pradhan Mantri Jan Arogya Yojana (ABPMJAY) offers health coverage, vital for addressing the healthcare needs of an aging population. Similarly, the Pradhan Mantri Shram Yogi Maan-dhan (PM-SYM) Pension Scheme, launched in 2019, secures old-age protection for unorganized sector workers, a critical support system as the number of elderly citizens rises. Other schemes like the Public Distribution System (PDS), Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), and Pradhan Mantri Awas Yojana (PMAY) help stabilize the livelihoods of workers as Odisha's labour market adjusts to these demographic changes. Meanwhile, the state's Krushak Assistance for Livelihood and Income Augmentation (KALIA) scheme, which provides financial support to small and marginal farmers and landless agricultural households, is instrumental in reducing poverty as the agricultural workforce ages.

In response to the demographic transition, Odisha's government has introduced several initiatives aimed at promoting employment and entrepreneurship, especially for the younger workforce that will bear the burden of supporting an aging population. These measures include subsidies on power use, transportation of goods and materials, concessional loans, and sector-specific incentives for the growth of Micro, Small, and Medium Enterprises (MSMEs), which are crucial for job creation in a labour market with fewer young workers. Additionally, the e-Shram portal is being used to gather comprehensive data on unorganized workers, ensuring that they have

access to welfare programs like One Nation One Ration Card (ONORC), Ayushman Bharat, and PM-Kisan. As Odisha's demographic shift continues, these schemes will be essential in supporting the working population, especially in adapting to sectors where the youth workforce is declining, and the dependency ratio is increasing.

- Analysis of skill development initiatives, vocational training, and other employment-enhancing programs in Odisha.
- Suggestions for policy directions to mitigate challenges and leverage opportunities.

The state requires significant policy interventions to improve its employment levels while factoring in the ongoing demographic transition. The following are some policy suggestions for the above.

- Enhance Vocational Education and Training (VET): Modernize and expand VET programs to align with future labour market demands, with a focus on sectors like digital technology, renewable energy, and healthcare.
- Promote Lifelong Learning: Encourage continuous education and upskilling for the workforce, providing incentives for older workers to participate in training programs.
- Invest in STEM Education: Strengthen Science, Technology, Engineering, and Mathematics (STEM) education to prepare the workforce for high-skilled jobs and foster innovation.
- Support Entrepreneurship and Innovation: Create a supportive ecosystem with financial assistance, mentorship, and infrastructure to promote entrepreneurship, especially among youth.
- Boost MSMEs: Implement policies that support the growth of Micro, Small, and Medium Enterprises (MSMEs) as key drivers of job creation.
- Leverage Technology: Utilize technology to improve productivity, create new business opportunities, and facilitate remote work options.
- Promote Flexible Work Arrangements: Encourage flexible work hours, job sharing, and part-time employment to accommodate an aging workforce and balance work-life demands.
- Address Gender Disparities: Promote gender equality in the workplace and provide targeted support for women's education and skill development, especially in rural areas.
- Focus on Regional Development and Urban Planning: Implement regional development strategies to reduce disparities between urban and rural areas, improve urban infrastructure, and ensure inclusive, sustainable urban development.

4.5 Conclusion

In conclusion, Odisha's ongoing demographic transition presents both challenges and opportunities for employment and economic growth. The state has experienced a shift from agriculture to non-farm sectors, particularly in mining and MSMEs, reflecting a structural transformation in its employment landscape. However, this transition has also led to persistently high unemployment rates, especially among the educated workforce, raising concerns about jobless growth and skill mismatches. To address these challenges and leverage the demographic dividend, Odisha must focus on enhancing vocational education and training, promoting entrepreneurship and innovation, and investing in sectors like mining and agriculture to create quality employment opportunities. By aligning its employment policies with the demands of an evolving workforce and economy, Odisha can navigate its demographic transition towards sustainable and inclusive growth.

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5

Leveraging Demographic Dividend: Migration & Urbanisation

People migrate seeking better opportunities, viewing them as either aspirational or life-saving. In many regions of the state, distress drives migration, leading to employment gains but often compromising health, social well-being, and dignity. Urbanization, crucial for economic growth, heavily relies on migration, yet it brings challenges like accommodating newcomers and creating sustainable infrastructure. To harness the demographic dividend effectively and address distress migration amid changing urbanization, policies and programmes must be realigned to adapt to these evolving demographic shifts.

5.1. Introduction

Historically, the state has been a labour-sending region, which has intensified since 1990s as the state has emerged as a source for inter-state migration in the country. In fact, in certain regions of the state, the rural economy is witnessing an emergence of 'agrarian livelihood' – with the households diversifying their economy by combining migration and agriculture as their survival strategy (CMLS, 2014, p. 1) and incomes of the migrating members add up to two-thirds of household income in several southern districts.

Migration in Odisha is a combination of both distress-driven and aspirational moves, although the state is infamous for its distress-driven outflows (Daniel, 2014). More importantly, there has been an increase in the seasonal circular out-flow from various parts of the state, particularly in recent decades. Importantly, many parts of the state recorded reverse migration at a mass scale during the COVID-19 mostly of seasonal nature and it is difficult to determine their exact number. However, figures provided by the Government of Odisha indicate that 358,401 migrants from different parts of the country were brought back to the state by Shramik special train by July 7, 2020 (Behera et al, 2021).

Considering the relative advantage of Odisha's demographic dividend over other states and its surplus labour in the agrarian sector, it would be important to have appropriate labour laws and design other policy measures, to restructure the migration pattern to bring maximum economic benefits to the state. Moreover, the state can focus on new employment generation in high-potential sectors, particularly through the creation of new urban centres, benefiting from spatial pattern of demographic dividend.

It is extremely important to establish the linkages between migration patterns, urbanisation and regional development in the state of Odisha. Unfortunately, there is a dearth of serious empirical research on migration, coming in the way of formulating effective migration policies in the state. The paucity of updated information on migration, particularly that of seasonal and circulatory, is a major bottleneck in evidence-based policy formulation.

Objective

This chapter aims to analyse the current migration and urbanization landscape in Odisha, focusing on districts with high net out-migration. It examines recent trends and patterns of migration, projecting figures for 2036 while exploring the implications of demographic transition on these movements. Additionally, the chapter assesses the regional patterns of urbanization and migration, offering insights for promoting balanced regional development in the future.

5.2 Conceptualisation of Migration and Databases

The Decadal Population Census and National Sample Surveys (NSS) by the National Statistical Office (NSO) are two important sources of migration data in India. Population Census captures only permanent migration and defines a migrant in terms of place of birth (born at a place other than that of enumeration where the duration of stay is over six months) and place of last residence (PoLR) (resided elsewhere and currently residing at the place of enumeration for over six months) criteria. NSS (55th and 64th round), however, cover a broader spectrum of migrants, i.e., 1) migrant households, 2) migrants, 2) out-migrants, 3) short-term circular migrants and 4) return migrants. NSS rounds on 'Employment, Unemployment and Migration' by NSO consider only PoLR criteria to define a migrant. As per this criterion, a person is considered as a migrant if the person stays in a place for more than six months which is different from the current place of enumeration. Further, the Periodic Labour Force Survey (2020-21) could be considered a third and latest source, however, providing limited information on migrants is restricted to only migrants based on PoLR criteria.

While the Census remains the key source for understanding migration trends, the latest available data is from 2011, now over a decade old. In contrast, the PLFS offers migration data for 2020-21. It's important to note that NSS estimates tend to report lower migration volumes compared to the Census, requiring caution when comparing absolute figures from these sources. Due to the lack of more recent data, this study primarily relies on PLFS 2020-21 for estimating the current stock of migrants.

The census does not collect information on short-term flow, which takes over for a period of less than six months. Therefore, the present study uses the NSS 64th round (2007-08) to estimate short-term circular migration, which provides the latest information. However, this dataset has some drawbacks. It undercounts short-term circular migrants as it considers a period of more than a month to less than six months to define a short-term migrant, while most of the seasonal shifts to non-agricultural sectors are for longer periods. Moreover, circular migration is more of a family migration rather than an individual movement, which sometimes is not captured as these migrant households could not be found at their place of enumeration during the dominant migration cycle. To fill this lacuna, the study considers various micro-studies to determine the extent and intensity of circular flow from Odisha in recent periods.

Projection of Migration for 2036

The projection is based on latest three rounds of NSS and PLFS surveys on migration i.e., NSS 55th round (1999-00), NSS 64th round (2007-08) and PLFS (2020-21). As the figures are estimated based on PLFS 2020-21, there may be some under-estimation the ground realities of migration.

The migration figures have been projected for 1st March 2036 using age and gender disaggregated migration rates calculated from various NSS rounds on migration in two ways, viz., using the current migration rate (based on PLFS 2020-21) and using the extrapolated migration rate from three rounds (NSS 55th round, NSS 64th round, and PLFS 2020-21). Census adjusted migration rates have been calculated for total in-migration, intra-state in-migration, inter-state in-migration, inter-state out-

migration separately for males and females separately for each of the 5 years age-group cohorts for NSS 55th round (1999-00), NSS 64th round (2007-08), and PLFS (2020-21).

Scenario 1: This considers that the age-sex disaggregated migration rate will be constant as current scenario as estimated per PLFS 2020-21 and estimates projected migrant population using age-sex disaggregated Projected Population figure for March 1, 2036.

Scenario 2: For estimating age-sex disaggregated migration rate for 2036, it uses average growth rates of migration rates for each 5-year age-cohorts, separately for males and females for two periods 1999-00 to 2007-08 and 2007-08 to 2020-21. Annual growth rates of migration have been calculated for each age-groups and gender using following method

$$GMR\ (1999\text{-}00\ to\ 2007\text{-}08) = \frac{MR\ (2007\text{-}08) - MR\ (1999\text{-}00)}{8}$$

$$GMR\ (2007\text{-}08\ to\ 2020\text{-}21) = \frac{MR\ (2020\text{-}21) - MR\ (2007\text{-}08)}{13}$$

Age-sex disaggregated average growth rate has been calculated using the following formula

$$AGR = \frac{GR\ (1999\text{-}00\ to\ 2007\text{-}08) + GR\ (2007\text{-}08\ to\ 2020\text{-}21)}{2}$$

Where, ***GMR*** is *Growth Rate of Migration*, ***MR*** is *Migration Rate*, ***AGR*** is *Average Growth Rate*, and ***GR*** is the *Growth Rate.*

The age-sex disaggregated average growth rates have been used to extrapolate migration rate in 2036 and the absolute figure has been derived using projected figure for Odisha, March 2036.

Table 5.1 Estimated Migration Figures from Sample Survey, 1999-000 to 2020-21

	Total Number of Migrants (Million)			Migration Rate (Percentage of Migrants to Total Population)		
	Total	**Rural**	**Urban**	**Total**	**Rural**	**Urban**
	Odisha					
1999-00	9.0	7.1	1.9	24.8	23.0	35.5
2007-08	12.2	9.3	2.9	30.2	27.6	44.0
2020-21	15.1	11.9	3.2	34.3	33.2	38.9
	India					
1999-00	265.7	174.5	91.2	26.5	24.0	33.0
2007-08	328.2	206.6	121.5	28.6	25.7	35.2
2020-21	394.6	233.8	160.8	29.0	26.2	34.4

Source: Estimated from NSS 55th round (1999-00), NSS 64th round (2007-08) and PLFS 2020-21

5.3 Trends and Pattern of Migration in Odisha

As per the Census figures, Odisha had 15.42 million migrants in 2011, recording an increase from 8.43 million in 1991. The corresponding increase was much higher in rural areas, from 6.86 million to 11.94 million. In 2011, 36.7% of Odisha's total population were migrants, lower than the national average of 37.6%. The migration rate i.e. the share of migrants to the total population was higher in urban areas i.e., 49.7% compared to the state average and even higher compared to the national average for urban areas (47.1%). Contrary to the higher increase in the absolute numbers of migrants in rural areas of the state between 1991 and 2011, urban areas of the state noted a substantial increase in the migration rate for the same period (**Annexure 6**).

As per PLFS (2020-21), the estimated figure for Odisha was 15.1 million, much lower than the Census figure of 2011. Consequently, only 34.3% population in Odisha were migrants in 2020-21, lower than the Census of 2011 figure of 36.7%.

Interestingly, migration rates obtained from NSS and PLFS were higher in Odisha compared to the national average, contrary to the Census figures (Table 5.1).

NSS and PLFS data indicate that the migration rate in urban areas of the state decreased from 44.0% to 38.9% between 2007-08 and 2020-21, while the trend is increasing for rural areas, i.e., from 27.6% to 33.2% during the same period. The increase in migration rate in rural areas in the state indicates that migration in the state in the last decade has been rural-directed. On the contrary, the decline in migration rate in urban areas during the same period indicates that urban areas may have either failed to attract migrants or become exclusionary towards poor migrants from rural areas.

Distance-wise disaggregation indicates that the majority of in-migration in Odisha is from within the state (intra-state) and it is dominated by female migration owing to the practice of exogamous marriage (Srivastava, 2012). As per Census figures, in 2011, 93.9% of the movement was intra-state and only 5.5% of the total in-migrants were from outside the state, much lower than the national average of 11.9%. The share of inter-state in-migrants noted a decline from 7.0% in 1991 to 5.5% in 2011. This trend is particularly noted for male migrants.

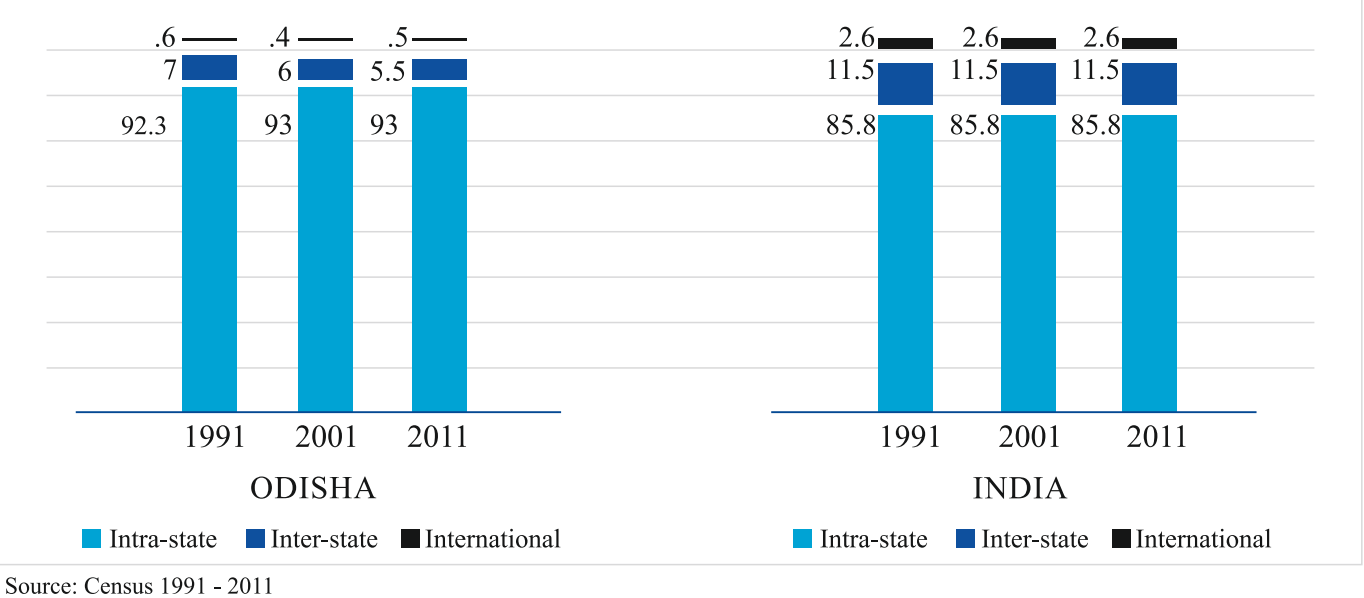
5.3.1 Intrastate Migration

The intra-state migration in Odisha, like any other state, is rural-rural dominated. However, NSS and PLFS estimates indicate the share of rural-rural stream and urban-urban stream to total in-migrants has gone down between 2007-08 and 2020-21 and the share of rural-urban migrants remained stagnant. On the other hand, the share of urban-rural stream has increased from 3.5% to 10.7% during the same period. The stagnancy of rural-urban migration within the state and declining urban-urban migration is an indication of the exclusionary nature of urbanisation in the state. Recently released NSSO 'Household Consumption Expenditure Survey' reveals urban MPCE of Odisha in 2022-23 was Rs. 5,187, which was 1.76 times the rural MPCE (Rs. 2,950) of the state (MoSPI, 2022-23). The urban-rural MPCE ratio was higher than the national average, which indicates a substantial gap prevails between rural and urban areas. The high rural-urban consumption gap along with stagnancy in rural-urban migration within the state indicates that the urban centres are exclusionary towards the intra-state migrants.

Regional Pattern

Over 90% of migration in Odisha is intra-state and mostly female dominated due to marriage

Fig 5.1 Composition of In-migrants as per Distance Category, 1991 to 2011 (in %)



Source: Census 1991 - 2011

migration. Focusing on male migration, which is employment-driven, Census 2011 reveals the highest migration rates in Khordha, Sambalpur, and Jharsuguda. Khordha alone receives 11% of intra-state male migrants, followed by Ganjam (10%), Cuttack, Sundargarh, and Mayurbhanj. Coastal districts attract migrants for urban jobs, while mineral-rich northern districts see high in-migration due to mining. PLFS 2020-21 shows the southern region receives 38.9% of male migrants, mostly rural-rural, driven by agricultural distress.

5.3.2 Inter-state In-migration

The migration pattern of inter-state in-migration to the state noted a significant change between 2007-08 and 2020-21. In 2007-08, 33% and 26.7% of inter-state in-migration were urban-urban and rural-urban streams, respectively. PLFS 2020-21 estimates reveal a sharp increase in urban-rural stream, which is mostly because of an increase in return migration to rural areas of the state during this period. In 2020-21, 57.9% of the inter-state migration to the state belonged to urban-rural stream (**Annexure 7**) and more than 80% of the stream was composed of return migrants, whose usual place of residence was Odisha at any one point of time in the past. A further disaggregation indicates that this urban-rural stream is solely male-dominated, indicating a reverse labour migration. Such reverse migration to rural areas of the state is worrisome as it may increase pressure on the state's already labour-surplus rural economy.

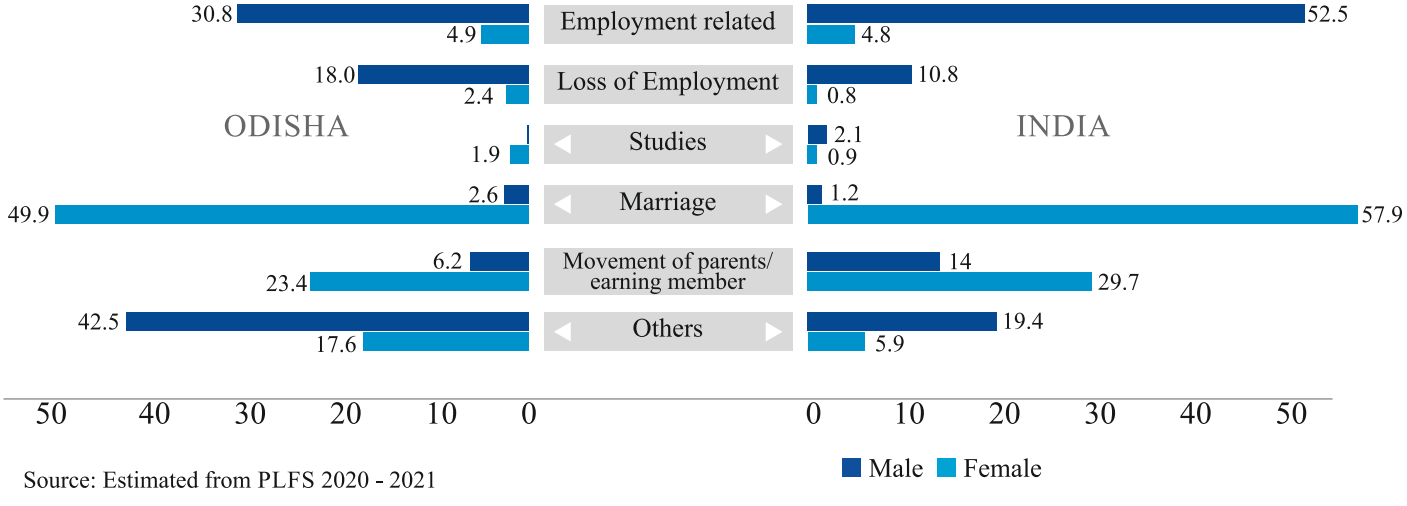
Regional Pattern

PLFS 2020-21 estimates show that migration rates, particularly among men, were higher in Odisha's Coastal and Southern regions. Notably, the Southern region, which includes out-migration-prone KBK districts (Kandhamal, Baudh, Subarnapur, Balangir, Nuapada, Kalahandi, Rayagada, Nabarangapur, Koraput, and Malkangiri), had the lowest migration rate in 2007-08. However, by 2020-21, migration in this region saw a significant rise, accounting for half of the state's inter-state migration, largely due to return migration. Overall, the majority of the inter-state migrants to Odisha originated in three southern states i.e., Kerala, Tamil Nadu and Andhra Pradesh and a considerable share of these in-migrants were return migrants. This suggests a shift toward long-term circular migration, where migrants return home after completing their work cycle as these states deny these migrants long-term opportunities.

Reasons for Migration

PLFS 2020-21 reveals that only 30.8% of male inter-state migrants in Odisha moved for employment reasons, much lower than the national average of 52.5% . Employment-related migration has declined in both rural and urban areas since 2007-08, suggesting the state's limited ability to attract labour from outside. Additionally, 18% of male migrants cited "loss of employment" as the reason for migration, significantly higher than the national figure of 10.8%. This is particularly

Fig 5.2 Distribution of Inter-state Migrants by Reason for Migration in Odisha and India, 2020-2021 (in %)



Source: Estimated from PLFS 2020 - 2021

evident among rural migrants (21.4%) and returns migrants (22%), indicating growing difficulty in securing employment in other states. 'Employment-related' reasons seem to be still important for in-migration to urban areas. However, the figure for employment-related migration among males has declined from 82.1% to 59.4% between 2007-08 and 2020-21. This is an indication that the urban areas of the state are unable to create new opportunities to attract migrants from other states.

'Marriage' and 'migration of parents/earning members' are the major two reasons for inter-state female migration in Odisha, particularly when the destination in urban.

Characteristics of Migrants

PLFS 2020-21 shows that Odisha's inter-state in-migrants are primarily young males, with 36.5% aged 15-29 and 39.6% aged 30-44, surpassing national figures (**Annexure 8**). The share of young male migrants (15-29) has increased significantly since 2007-08. Female in-migrants tend to be older, with 25% aged 45-59. Odisha mainly attracts less-educated migrants, particularly in rural areas, with 67.3% of inter-state in-migrants having education only up to middle school, much higher than the national average (**Annexure 9**). Only 11.7% of migrants to Odisha had higher education, though this share is higher in urban areas (24.4%) and among female migrants (18.1%).

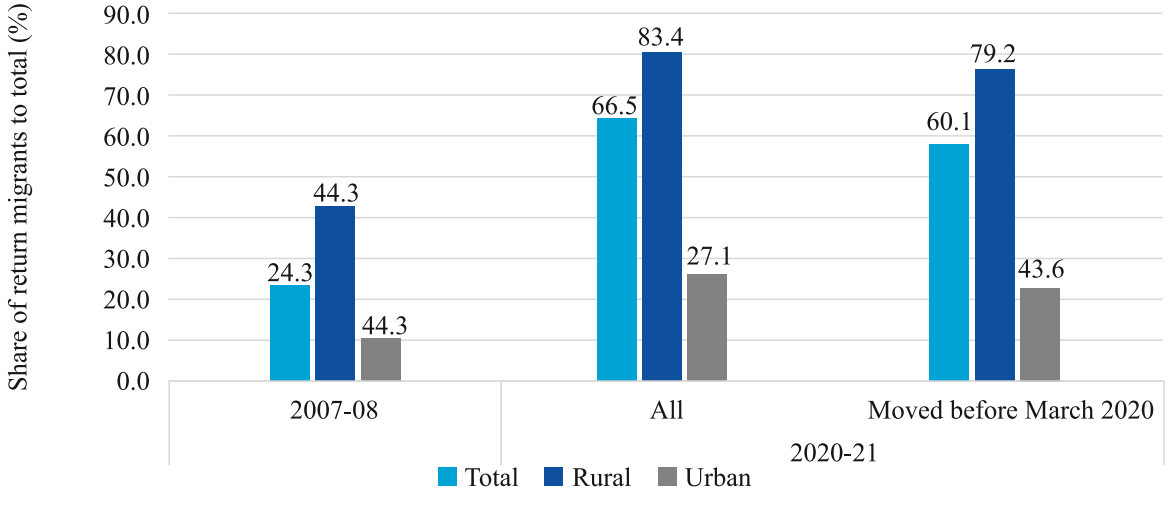
5.3.3 Return Migration

The rise in the return flow in the inter-state stream is a major reason behind the rise in inter-state in-migration in the state in 2020-21. NSS 64th round and PLFS 2020-21 did collect information regarding return migration for permanent category (those migrated for a period of more than six months). NSS and PLFS defined return migrants as those persons whose present place of enumeration has been the usual place of residence (where the person stayed for more than six months) at any point of time in past.

66.5% of the inter-state in-migrants in the state in 2020-21 were return migrants and it increased significantly from 24.3% in 2007-08. As 2020-21 was a period for COVID-19 induced mass reverse migration, a separate estimation has been done for the period before 2020, which was 60.1%, the highest in the country. Compared to other states, Odisha has a significantly higher share of return migrants in inter-state in-migration, rising sharply from 16.3% to 51.2% between 2007-08 and 2020-21. This suggests that Odisha's out-migrants face challenges in securing stable livelihoods in other states, leading many to return to their place of origin.

In 2020-21, over 80% of inter-state in-migrants to rural Odisha were return migrants. This reflects a shift towards shorter, circular migration patterns lasting more than six months. A 2014 study by

Fig 5.3 Return Migration in Odisha, 2007-08 to 2020-21



Source: Estimated from NSS 64th round (2007-08) and PLFS 2020-21

CMLS and Ajeevika Bureau, covering coastal and western Odisha, found a rise in distress-driven migration to Kerala, Surat, Tamil Nadu, and Jammu & Kashmir, with cycles lasting six months to two years. This longer-term circular migration explains the sharp increase in return migrants to the state.

Characteristics of Return migrants

Most returnees moved from urban to rural areas, and a small portion involved rural-rural migration. Over 40% were aged 15-29, suggesting difficulties in settling at their destinations. Return migrants were mostly less educated, with 70% having only up to middle school education, and many belonged to disadvantaged socio-economic groups. A significant portion worked as casual labourers, particularly in construction, relying on MGNREGS. The increase in return migration, especially to rural areas, poses challenges to the already strained rural labour market.

5.3.4 Out-migration from Odisha

Since the pre-independence era, Odisha has been a significant source of labour migration, particularly to Assam's tea plantations and Bengal's Hugly industrial belt (Daniel, 2014). Census 2011 recorded 1.27 million out-migrants from Odisha, nearly double the 0.62 million in 1991 (**Annexure 10**). However, estimates from NSS 64th round and PLFS show a decrease in inter-state out-migration, dropping from 1.18 million in 2007-08 to 0.96 million in 2020-21 (**Annexure 11**). In 2011, 3% of Odisha's population migrated to other states, but NSS and PLFS reported a decline in out-migration rates from 2.9% to 2.2% during the same period. This decline is attributed to COVID-induced reverse migration and an evolving migration pattern, with rural-origin migration decreasing while urban-origin migration becomes more selective and long-term. PLFS data shows that 0.68 million out of 0.96 million out-migrants in 2020-21 were from rural areas, but the absolute number of rural out-migrants has decreased significantly. However, rural migration is often under-reported due to its short-term and circulatory nature, which Census, NSS, and PLFS struggle to capture. Micro-studies suggest that 2.5 million people left Odisha annually between 2011 and 2016, with 0.9 million workers residing in Surat alone.

On the contrary to in-migration, close to half of the out-migration from the state is rural-urban movement, mostly owing to employment-related reasons. Although the rural-urban stream is still dominant, its share declined from 55.4% to 45.6% between 2007-08 and 2020-21. Contrarily, the share of the urban-urban stream has increased from 16.6% to 24.1% between 2007-08 (Table 5.2). It also indicates that inter-state out-migration from the state is becoming more selective and dominated by men from higher socio-economic strata.

Regional Pattern

PLFS 2020-21 figures indicate that the majority of the inter-state migrants move to Chhattisgarh (23.4%), West Bengal (15.4%), Karnataka (9.3%), Andhra Pradesh (8.4%), Gujarat (7.6%), Jharkhand (8.7%), Maharashtra (6.6%), Telangana (3.6%), Uttar Pradesh (4.3%), Delhi (3.6%) and Kerala (2.4%).

Table 5.2: Percentage distribution of out-migrants from Odisha to other states by different streams, 2007-08 and 2020-21

Streams	2007-08			2020-21		
	Male	Female	Persons	Male	Female	Persons
Rural-rural	22.1	35.4	29.0	8.4	39.2	25.0
Urban-rural	2.4	4.2	3.3	4.5	5.9	5.2
Rural-urban	60.9	41.9	51.0	55.4	37.3	45.6
Urban-urban	14.6	18.5	16.6	31.7	17.7	24.1
Total	100.0	100.0	100.0	100.0	100.0	100.0

Source: Estimated from NSS 64th round (2007-08) and PLFS 2020-21

Due to the paucity of disaggregated data at regional-level out-migration patterns, this section relies on literature to find out out-migration-prone regions of the state. Koraput, Balangir and Kalahandi (KBK districts) are the major sending region of inter-state migrants (CMIL, 2014; National Law University Odisha, 2020). The out-migrants from the KBK region move to Chhattisgarh, Gujarat, Maharashtra and Uttar Pradesh. Also, these districts are a major source of seasonal migrants to the brick kilns of Andhra Pradesh, Telangana and Tamil Nadu (CMIL, 2014). These regions are experiencing major changes in migration patterns, which needs to be addressed for a balanced regional development. On the other hand, migration from coastal districts has also increased in recent decades. A study by Ajeevika Bureau (CMIL, 2014) further indicated that out-migrants from coastal districts mainly move to Gujarat, Kerala and Jammu & Kashmir.

Reasons for Migration

The inter-state male out-migration from Odisha is predominantly 'employment related' as more than 70% stated the same. In 2020-21, only 6.7% of the male out-migrants stated 'loss of employment' as their reason for their migration. Moreover, 'movement of parents/earning member' is the second important reason among male out-migrants, however, its share has declined between 2007-08 and 2020-21.

Characteristics of Migrants

Micro-studies have shown that outmigration from parts of the state has increased over the period (CMIL, 2014; Rana, Johnson & Manjary, 2022). Therefore, this section attempts to understand the characteristics of the out-migration to the other states and does it separately for 1) out-migrants, those who have migrated for a period of six months or more and 2) short-term seasonal movement, i.e., for a period of one to six months (as per NSS definition).

Characteristics of Out-migrants-moved for six months or more

The age composition of inter-state male out-migrants has shifted over time. In 2007-08, most male out-migrants were aged 15-29 (37.3%) and 30-44 (39%) (**Annexure 12**). However, by 2020-21, the share of 15-29-year-olds declined to 33.4%, while the 40-59 age group increased from 12.5% to 18.3%.

The out-migration from Odisha is still largely dominated by less-educated migrants, particularly from rural areas, where 77.6% had education only up to middle school in 2020-21 (**Annexure 13**). However, the share of highly educated migrants rose from 9.4% to 15% between 2007-08 and 2020-21. Urban migration has become more selective, with the proportion of graduates increasing from 25.9% to 40.3%. There is also a gender disparity, as more male out-migrants have higher education

Table 5.3: Reasons for out-migration from Odisha to other states, 2007-08 to 2020-21

Reasons	2007-08		2020-21	
	Male	Female	Male	Female
Employment related	77.9	7.4	73.0	5.3
Loss of Employment	-	-	6.7	0.4
Studies	3.3	0.9	1.2	0.9
Marriage	0.3	70.6	1.2	61.7
Movement of parents/ earning member	13.2	19.1	10.9	30.0
Others	5.4	2.1	7.0	1.7
Total	100.0	100.0	100.0	100.0

Source: Estimated from NSS 64th round (2007-08) and PLFS 2020-21

Table 5.4 Work Participation and Types of Employment for Inter-state Out Migration from Odisha, 2007-08 to 2020-21

		Work Participation Rate (%)	Share of total workers (%)		
			Self-employed	Regular Salaried Work	Casual Wage Labourer
		2007-08			
Odisha total	Male	93.2	13.5	56.4	30.0
	Female	38.5	29.9	24.1	46.0
Odisha Rural-origin	Male	96.6	13.6	56.5	29.9
	Female	45.9	29.4	23.1	47.6
Odisha Urban-origin	Male	76.0	13.1	56.1	30.8
	Female	10.9	38.7	40.4	20.9
		2020-21			
Odisha total	Male	89.3	21.4	70.9	7.8
	Female	45.3	71.3	13.6	15.1
Odisha Rural-origin	Male	92.5	23.8	66.9	9.3
	Female	50.3	68.7	13.7	17.6
Odisha Urban-origin	Male	83.7	16.8	78.3	4.9
	Female	28.6	86.7	13.3	0.0

Source: Estimated from NSS 64th round (2007-08) and PLFS 2020-21

compared to females. Urban out-migration is dominated by wealthier individuals, with 54.6% of urban out-migrants in 2020-21 from the highest MPCE quintile.

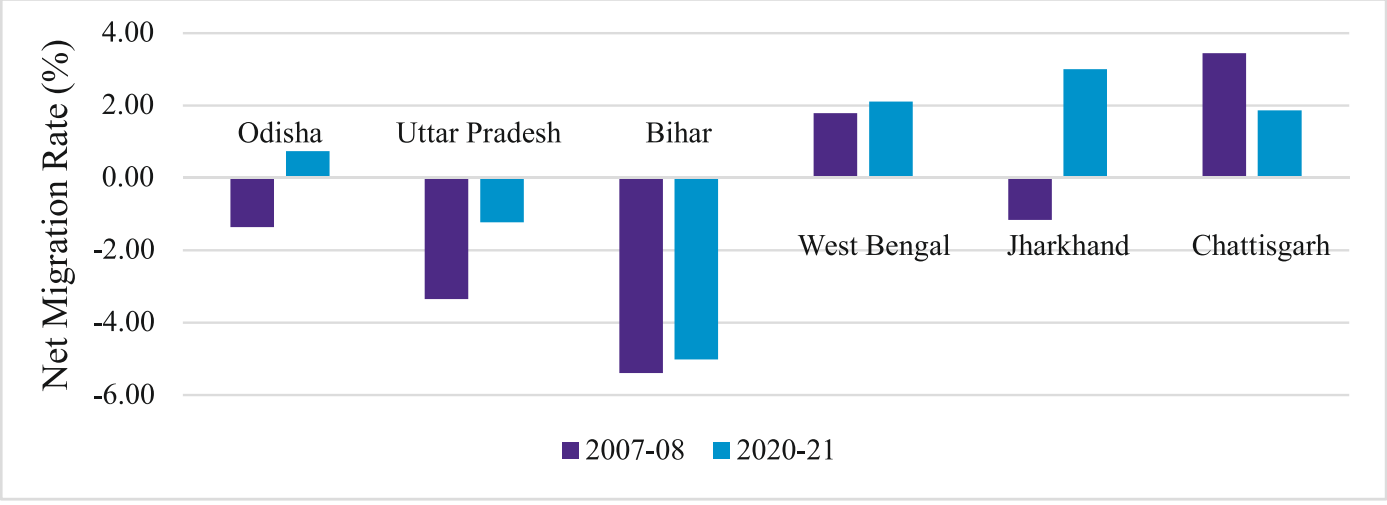
Inter-state out-migration from rural Odisha is largely driven by employment, with a high work participation rate (WPR) among both male and female migrants. In 2020-21, 70.9% of male out-migrants were engaged in regular salaried work, up from 56.4% in 2007-08, with nearly 40% employed in manufacturing and a quarter in the service sector (Table 5.4). For female migrants, 71.3% were concentrated in self-employment, a significant rise from 29.9% in 2007-08, with over 80% working in agriculture in 2020-21.

Characteristics of Out-migrants- with Short-term (Less than 6 Months) circular Motion

In addition to permanent migration, Odisha experiences cyclical out-migration for both shorter (less than six months) and longer durations. Short-term migration typically occurs seasonally without changing the usual place of residence, while long-term circular migrants maintain close ties with their families at home. The NSS 64th round and India Human Development Survey (IHDS) provide data on these migrants. For consistency, this study uses the NSS 64th round to estimate the volume and nature of these migrations.

As per census-adjusted estimations based on NSS 2007-08, the figure for short-term circular migrants from Odisha was only 4,81,555, comprising 1.2% of the state's total population, much lower than that of Bihar (27,07,910), Uttar Pradesh (21,80,736) and West Bengal (16,29,184). Further, NSS-region wise disaggregated analysis indicated that Southern region had the highest number of short-term circular out-migrants. However, studies have argued much higher estimations of seasonal flow from the state. CMLS and Ajeevika Bureau

Fig 5.4: Net-migration rate in Odisha and select states, 2007-08 to 2020-21



Source: Estimated from NSS 64th round (2007-08) and PLFS 2020-21

conducted a study on 99,523 rural households in coastal and western districts, which revealed that 30.8% of households had at least one seasonal migrant. According to their extrapolation based on Panchayat Census 2014, these two regions comprise 1.53 million seasonal migrants (CMLS, 2014). Rajshekhar (2015) argued that the number is as high as 2,00,000 only in Balangir district of the state. He also argued that the seasonal outflow has increased in recent decades.

Short-term out-migration from Odisha is primarily rural and dominated by lower socio-economic strata. In 2007-08, 94.3% of short-term migrants came from rural areas, with 41.3% migrating to rural locations and only 58.7% to urban areas, significantly lower than the national average of 67.9%. A notable movement to brick kilns in rural areas and Andhra Pradesh has been reported. Employment-wise, 34.5% of migrants worked in manufacturing and 33.6% in construction.

These short-term migrants are among the most socio-economically disadvantaged, with over half belonging to the lowest two MPCE quintiles, surpassing the national average. Furthermore, 38.8% and 23.3% of these migrants belong to Scheduled Tribes (ST) and Scheduled Castes (SC), respectively, compared to the national dominance of Other Backward Classes (OBC) (**Annexure 14**). Most short-term migrants are young, with over half aged 15-29, making them particularly vulnerable at their destinations.

5.3.5 Net Migration

The Census figures for 2001 and 2011 reveal that outmigration from Odisha is more than in-migration to the state, which makes the state an out-migrating state. Census 2011 reveals that there were 492 and 277 outmigrants per 100 in-migrants in Bihar and Uttar Pradesh, respectively, compared to merely 136 for Odisha. However, the estimates using PLFS 2020-21 provide an otherwise trend. In 2020-21, Odisha had a positive net in-migration rate (0.74%) and noted a significant increase from -1.6% in 2007-08. Overall, the state has become an in-migrating state from an out-migrating state. For a labour-surplus state like Odisha, such a shift may lead to additional pressure on the labour market and resources.

Therefore, it is seen that the inter-state migration to and from Odisha is characterised by an increased rate of inter-state in-migration to rural areas on one hand and selective long-term and permanent out-migration from urban areas on the other. While a majority of the inter-state in-migrants to the state, particularly in rural areas, belonged to disadvantaged educational and socio-economic backgrounds, urban areas continue to receive selective migrants. On the contrary, out-migration

from the state is characterised by two distinct streams. While the long-term permanent migration from the state is becoming more selective and from urban origin, the poorest of the poor from rural areas migrate on a seasonal basis.

5.4 Projected Migration for 2036

Scenario-1 projected that there will be 17.8 million in migrants in Odisha by 1st March 2036, among whom, 1.5 million will be inter-state migrants, total inter-state out-migrants from the state will be 1.1 million.

Scenario-2 reveals that total in-migrants in the state will be 20.1 million, which is higher than scenario 1. Among the total in-migrants, only 1.8 million will be inter-state in-migrants. total inter-state out-migrants from the state will be 1.6 million.

If the existing pattern of return migration to rural areas continues, by 2036, the rural economy will have to absorb additional return migrants.

Table 5.5: Projected Figure of Migrations in Odisha (As on 1st March, 2036)

	Figures in Million					
	Scenario 1			Scenario 2		
	Male	Female	Total	Male	Female	Total
Total In-migrant	2.8	15.0	17.8	2.3	17.8	20.1
Intra-state in-migrant	1.6	14.6	16.2	1.1	17.6	18.7
Inter-state in-migrant	1.1	0.4	1.5	1.4	0.4	1.8
Inter-state out-migrant	0.5	0.6	1.1	0.7	0.8	1.6

Source: Estimated using NSS 55th (1999-00), NSS 64th round (2007-08) and PLFS (2020-21).

Note: Scenario 1 has been calculated from age-sex disaggregated migration rate using PLFS 2020-21 on projected population for March 1, 2036; Scenario 2 has been extrapolated from average growth rate of age-sex disaggregated migration rate using NSS 55th (1999-00), NSS 64th round (2007-08) and PLFS (2020-21) on projected population for March 1, 2036.

5.5 Changing Demography and Migration

India is currently going through a demographic transition and has entered a favourable phase known as 'demographic window of opportunity' with a high share of working-age population. Unlike China, India's demographic transition is flat patterned, which may lead to the favourable demographic last for a prolonged period of 40-50 years (Kulkarni, 2017). However, there is a wide inter-state variation and many states entered favourable phase with a high share of the working-age population soon after 2001. States like Kerala, Tamil Nadu, Karnataka and Delhi entered the dividend phase early in 2001 and will lose its dividend in the mid-2040s. On the other hand, other laggard states like Odisha, Haryana, Assam, Chhattisgarh and Uttarakhand entered the dividend phase in 2011 and will continue to have a dividend phase till 2050s. Kulkarni (2017, 2021) also mentioned how states with higher dividends i.e., surplus labour force can benefit from sending migrant labour to low dividend states that can bring remittances to the sending states.

Odisha is ahead in terms of its demographic transition considering its level of economic development. As per NFHS- 5 (2019-21), the state's TFR is 1.8, lower than the national average of 2.0, indicating that the dividend phase will not be as prolonged as states like Bihar and Uttar Pradesh. It is already noted that Odisha has always been a net out-migrating state, although the ratio of in-migration and out-migration is much lower than in

states like Uttar Pradesh and Bihar. PLFS 2020-21 estimates indicated a change in the pattern of migration in the state. For the first time, the state has become an in-migrating state, which means that the state is attracting more inter-state in-migrants. However, a majority of these migrants are return migrants to rural areas and belong to the less educated and disadvantaged socio-economic strata. Also, a majority of these return migrants belonged to a younger age group. These migrants tend to change the demographic composition of the workforce and they are mostly engaged already labour surplus agriculture and the construction sector of rural areas. If new employment opportunities are not generated, a rise in return migration will create extra pressure on the state economy.

In terms of out-migration, predominantly 25-29 and 30-44 years of age groups are involved and the pattern has remained the same since 1999-00. Moreover, the out-migrants have become more selective over the period, with an increase in the share of urban-origin out-migrants. However, the state is going through a rapid increase in the distress-driven short-term circulatory flow. Primary studies on circular migration revealed a dominance of young age group of 18-25 years and less-skilled people in the circular flow (CMLS, 2014). Moreover, the majority of the seasonal out-migrants belong to the disadvantaged socio-economic background, and therefore, falls in the trap of neo-bondage (Mishra, 2020).

More economic opportunities need to be created particularly in rural areas to stabilise distress-driven migration in one hand and accommodate increased return migration. As the state is going through rapid change in demography, young age-group need to be trained in a way to get the benefit from economically beneficial out-migration to developed and high-income states before the state loses its dividend.

5.6 Migration and Urbanisation in Odisha

Migration and urbanisation are two important processes for a balanced regional development. Migration is an important contributor to the process of urbanisation in a region as a major share of internal migration takes place from rural areas to urban areas. Also, rural-urban migration helps to reduce pressure on already stressed rural labour market. On the contrary, a balanced network of urban system regulates distress-driven migration in check.

Historically, Odisha has been one of the least urbanised states in the country, after the neighbouring state of Bihar. The level of urbanisation in the state increased from merely 4.1% to 16.7% between 1951 and 2011. The 2011 figure for the state is almost half the national figure of 31.1%. Further, the Ministry of Health and Family Welfare (MoHFW) 2019 projected population indicates that Odisha will be 21.5% urban by 2036, still much lower than the national average of 39.6%. Besides its low level of urbanisation, the pace of urbanisation in the state, measured in terms of URGD, has been the same since 2001 and is projected to be the same till 2036. It is also observed that, it will be lower than the national average between 2021 and 2036, which indicates a slower pace of urbanisation in the state in the coming decades (**Annexure 15**).

Components of urban growth in Odisha

Natural growth and rural-urban migration have been two major factors of urban growth. For Odisha, still natural growth plays a major role followed by rural-urban transformation. However, 85 new Census Towns (CTs) have been added to Odisha in 2011 as per Census 2011, constituting 37.9% of decadal urban growth during 2001-11. It is seen that majority of the cities/Urban Agglomerations have grown at a very slow pace, indicating their exclusive nature. Moreover, the limited number of statutory towns and lack of notification of any new statutory towns has been a major contributing factor in Odisha's low pace of urbanisation.

Census data from 1991, 2001, and 2011 show a declining role of rural-urban migration in Odisha's urbanization. From 1991-2001, it contributed 35.4% to urban growth, but dropped to 31% in 2001-11. This decline reflects urban areas' inability to absorb surplus rural labour, with low intra-state migration and Urban-Rural Growth Differential

(URGD) below 0.5 in many districts. Additionally, increased in-migration to rural areas and stagnant rural-urban migration further slow urbanization, hindered by a limited number of urban centers, especially small and medium towns, to absorb the rural workforce.

Regional Pattern of Urbanisation, Migration and Uneven Development

Despite progress in reducing regional disparities, southern and western Odisha continue to lag in development. Census 2011 shows higher urbanization in districts like Khordha (48.2%), Jharsuguda (39.9%), Sundargarh (35.3%), Sambalpur (29.6%), and Cuttack (28.0%). However, districts like Baudh (4.6%), Nuapada (5.6%), and Nabarangapur (7.2%) remain significantly under-urbanized. Baudh and Nuapada, with negative urban growth rates, are particularly prone to migration, driven by rainfed agriculture. To address this, new small and medium-sized towns should be developed to stimulate the non-farm sector and reduce distress migration.

As discussed earlier, districts like Khordha, Ganjam, Cuttack, and Sundargarh received the largest share of male intra-state migrants, with high urbanization and low poverty levels. However, PFLS 2020-21 indicates rising inter-state in-migration to the poorer southern districts, where most migrants are returnees. This shift highlights the need for targeted development in these high-poverty areas to better integrate returning migrants.

5.7 Recommendations

Considering the existing challenges related to the migration and Urbanisation trends and patterns in the state, there are following recommendations:

- Gathering state representative empirical evidence for policy formulation: There is an urgent need for state-representative survey on migration, including both permanent and short-term for evidence-based policy formulation.
- Strengthening skill-development of adolescents and youth in rural areas: It is seen that majority of migration in the form of return migration or in terms of short-term seasonal flow is dominated by young men with less-education and skill-sets. Therefore, most of them migrate to find employment in the unskilled jobs in manufacturing and construction sector. Therefore, the state needs to provide skilling through Skill India or other schemes.
- Strengthening of rural economy: The state needs to strengthen its rural economy, particularly non-farm sector through schemes like MGNREGS to accommodate the return migrants and also to reduce distress-driven out-migration.
- Notification of new small and medium towns in distress-driven areas: The state needs to notify new statutory towns in distress-driven areas and establish small and medium scale industries to curb distress driven out-migration from the region. The state urban development policy should push the economy and infrastructure growth in the small urban centres to accommodate the migrants from rural hinterlands.
- Making the big cities inclusive towards migrants: Big cities like Bhubaneswar and Cuttack receive a large number of intra-state migrants from rural areas who work in the city as manual labourers. These cities need to be more inclusive in terms of policy environment.

5.8 Conclusion

Odisha is at a critical juncture, transitioning from a state primarily known for sending migrants to one receiving a significant number of returnees, many of whom are rural, less-educated, and from disadvantaged communities. A large portion of these return migrants come from the southern KBK districts, long associated with distress-driven seasonal migration. This evolving migration landscape demands a more nuanced theoretical understanding and better empirical data to track circular and short-term migration, which current data sources fail to capture adequately.

The state's slow urbanization and uneven development, especially in its underdeveloped regions, add to the complexities of managing migration effectively. As Odisha looks ahead to 2036, projections indicate a migrant population of

17.8–20.1 million, with significant numbers of both inter-state in-migrants and out-migrants. Key trends include increasing inter-state migration of young, less-skilled men for rural construction work and the continued outflow of both less-skilled rural and skilled urban migrants.

To address these challenges, Odisha must focus on skilling its rural youth, fostering non-farm employment, and accelerating the development of small and medium towns, particularly in underdeveloped areas like the KBK region. The rising rates of return migration and stagnant rural-urban migration highlight the need for more inclusive urbanization efforts that can absorb surplus rural labour and mitigate distress-driven out-migration. A visionary, regionally balanced approach will be essential to ensure sustainable development and a more prosperous future for the state.

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6

Demographic Transition: The Ageing Factor

As regions undergo demographic transition, declining fertility rates and rising longevity contribute to an increasing elderly population, known as population ageing. This shift leads to a higher dependency ratio, where the elderly rely more on the working-age population, posing challenges such as escalating healthcare demands and the need for secure social support. Understanding the relationship between demographic change and population aging is essential for effective policy formulation and resource allocation, guiding initiatives that address the specific needs of an ageing population while promoting overall societal well-being.

6.1. Introduction

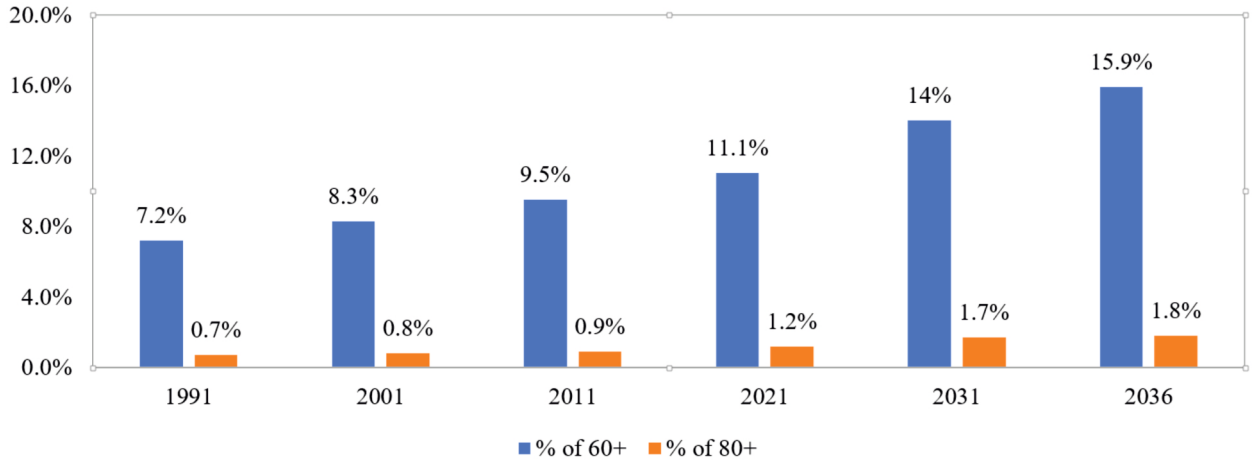
The world has witnessed a significant shift in population age structures, moving from a youthful majority in the twentieth century to a rapid rise in the share of the elderly population in the twenty-first century. Currently, 727 million people worldwide are aged 65 and above (World Population Ageing, 2020, Highlights). This growing number and proportion of elderly population is commonly referred to as "Population Ageing". It is now a widespread phenomenon in both developed and developing countries. Like the global trend, India is witnessing significant growth in both the number and proportion of its elderly population, a pattern observed across all states to varying degrees. In India, ageing has progressed more slowly, with the elderly population projected to increase from 10.5% in 2022 to 20.8% by 2050.

Odisha, like other regions, is also experiencing a rapid increase in its ageing population. In eastern India, Odisha's ageing pattern is similar to those southern states like Kerala and Telangana. Its fertility rate of 1.8, below the replacement level of 2.1, has accelerated the ageing process by shrinking the young population. This demographic shift will have a substantial impact on various sectors, including the economy, healthcare, infrastructure, social protection, and governance. It will affect GDP growth, housing, transportation, healthcare services, social security, the labour market, family structure, and inter-generational relationships. This chapter will examine the causes and effects of ageing in Odisha, exploring the demographic, health, and socio-economic conditions of the elderly. It will also provide policy recommendations to address the challenges posed by ageing population while leveraging their potential for development in the state.

6.2 Demographic Transition and Population Ageing

The fertility rate and the population growth rate in the state have been declining since 1971 and are expected to decrease further by 2036. It is estimated that the Total Fertility Rate (TFR), which was 1.82 according to NFHS-5, will drop to approximately 1.46 by 2036. Similarly, the population growth rate is anticipated to fall from a Compound Annual Growth Rate (CAGR) of 1.40% in 2011-21 to 0.55% in 2031-36 (population projected for Odisha and Districts, 2021-2036, using Bayesian Approach, Annexure 4). Additionally, the share of the elderly in the state is projected to rise from 11.0% in 2021 to 15.9% in 2036.

Fig. 6.1: Trends in the Share of Elderly Population in Odisha 1991-2036



Source: Census 1991-2011, Population Projection using Bayesian Method

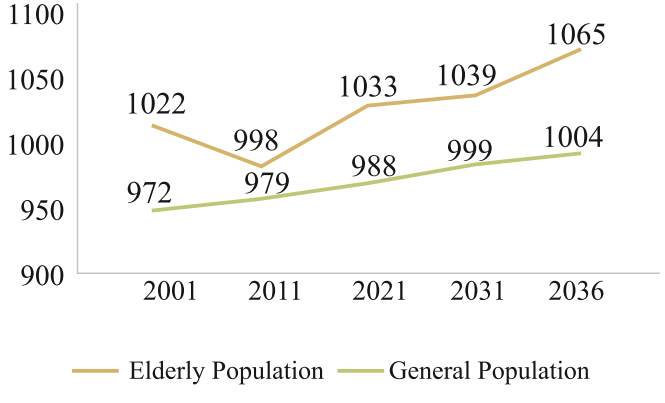
The population trend in Odisha varies significantly across districts, with a higher concentration of elderly persons projected in districts like Baleshwar, Khordha, Cuttack and Ganjam. In each of these districts, the elderly population is expected to exceed 4.5 lakh. Projections indicate an increase in the elderly population size of 109% in Baleshwar, 128% in Khordha, 94.33% in Cuttack, and 99% in Ganjam between 2011 and 2036.

Concurrently, the sex ratio for the overall population is expected to increase marginally from 988 females in 2021 to 1004 females in 2036, driven by higher life expectancy (Fig.6.2). Similarly, the sex ratio among the older age group, already at 1033 females per 1000 males in 2021, is projected to rise to 1065 by 2036. This trend of 'feminization' in the ageing population is also linked to a growing elderly dependency ratio, which is expected to climb from around 17 in 2021 to approximately 25 by 2036 in Odisha (population projection for Odisha and Districts, 2021-2036, using Bayesian Approach).

According to the 2011 census, 16.68% of the state's population lived in urban areas, compared to 31.16% nationwide, meaning that 83% lived in rural areas. It means, over 83% of the elderly population also live in rural areas, as they are often left behind during rural-to-urban migration. This phenomenon is referred to as the 'ruralisation of ageing'.

Odisha has been regularly prone to natural calamities such as cyclones, floods, landslides, droughts, and lightning. These disasters have a lasting impact on the elderly population due to their poor housing conditions and limited ability to adapt. The loss of property, livelihood, livestock, and even family members lead to both physical and mental trauma for the survivors, requiring timely intervention.

Fig. 6.2 Sex Ratio of the General and Elderly Population



Source: Census 1991-2011, Population Projection using Bayesian Method

6.3 Major Issues and Challenges Faced by the Elderly in Odisha

Old-age disabilities are a natural occurrence for most humans in the world. However, as age advances, the elderly face numerous additional challenges. The major issues of the elderly, as brought out in various studies can be put together as follows:

6.3.1 Economic Challenges

With increasing age, those engaged in the organised sector must leave the labour force due to mandatory retirement policies. In the unorganised sector, this often results in a loss of income and social security. For the 60+ population, opportunities for a second livelihood, reskilling, and new scopes of work remain a distant dream. This increases their dependency on others for survival, leading to lower self-esteem and a decline in both physical and mental well-being. Lack of financial resources further makes their lives more vulnerable to abuse and neglect.

According to the Longitudinal Ageing Study of India (LASI) Wave I report, 37.3% of the elderly in Odisha are currently working, which is slightly above the national average of 35.7%. However, only 5.5% of older persons in the state are covered by any work-related social insurance scheme, one of the lowest rates in the country.

Additionally, 46% of the elderly in Odisha have had no schooling, and while only 23.7% have completed secondary schooling or above. Among elderly women, 82% are economically dependent, either fully or partially, on others, compared to 54% of men. Moreover, 72% of the elderly work in agriculture and allied activities in the informal sector, which provides no old age security (LASI, Wave 1, 2017-18).

The labour participation rate among the elderly in the state is relatively high, with many continuing to work out of financial necessity. However, most of their work occurs in informal sectors and low-paying jobs, making it difficult for them to meet

Fig. 6.3 Level of education of elderly population LASI 2017-18

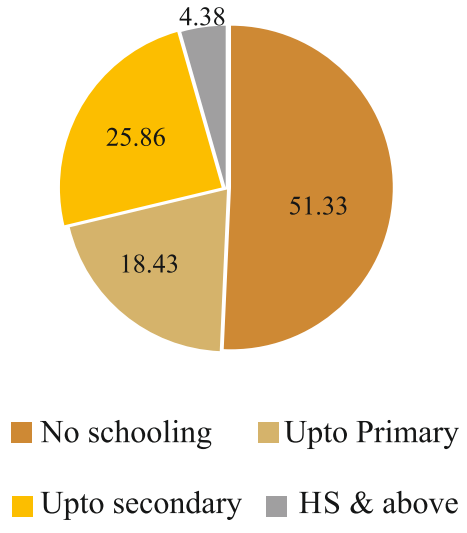
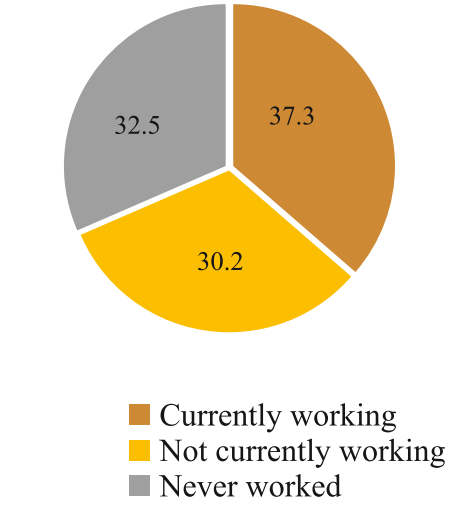


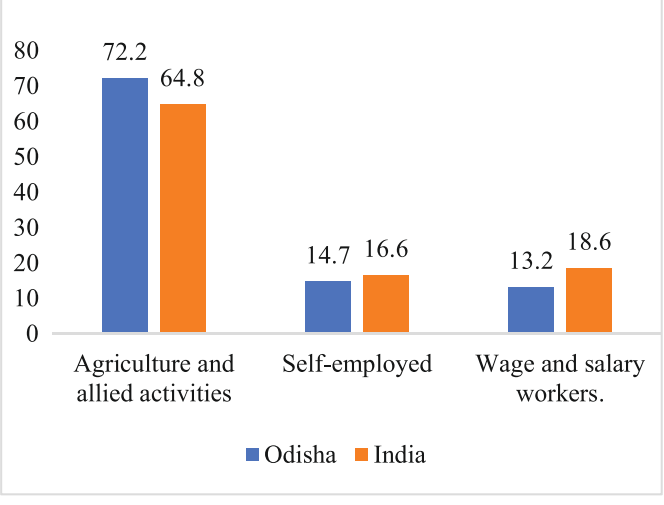
Fig. 6.4: Work status among elderly LASI 2017-18



basic needs. This economic scenario, characterized by low wages and insecure employment, significantly contributes to the perpetuation of poverty levels among the elderly in Odisha. The link between low wages, unstable job security, and poverty translates into heightened economic and social burdens.

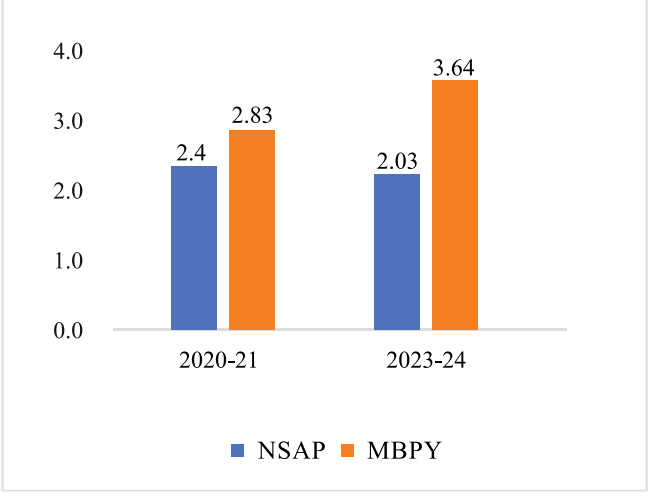
The majority of the elderly in the state come from the informal sector, yet only 35.7% of them have access to the IGNOAP (Indira Gandhi National Old Age Pension) social security scheme of the government, and 38.4% have access to widow pension, as per the LASI report. According to the Department of Social Security and Empowerment of Persons with Disabilities Department (SSEPD) of Government of Odisha, there were a total of 3.6 million elderly pensioners covered under the MBPY (Madhu Babu Pension Yojana). Additionally, the same revealed that 2.03 million elderly beneficiaries were enrolled in the NSAP (National Social Assistance Programme) scheme.

Fig. 6.5:Type of main job of currently working elderly



Source: LASI 2017-18

Fig 6.6 Pensioners under NSAP and MBPY (in Millions)



Source: SSEPD, Social Security Pension 2022-23

The monthly earnings for the elderly employed in different sectors in Odisha are also lower than the national average. Compared to Odisha-alike states like Jharkhand and Kerala, this number remains low.

Table 6.1 Mean Monthly Earnings of the Elderly in Odisha, Jharkhand, Telangana, and India (in Rs.)

	Agriculture and Allied Sectors	Self-employed	Salaried Workers
Odisha	3,838	7,015	7,148
Jharkhand	4,024	5,972	7,419
Kerala	9,544	10,953	10,510
India	4,856	8,142	7,012

Source: LASI Wave-1: 2017-18

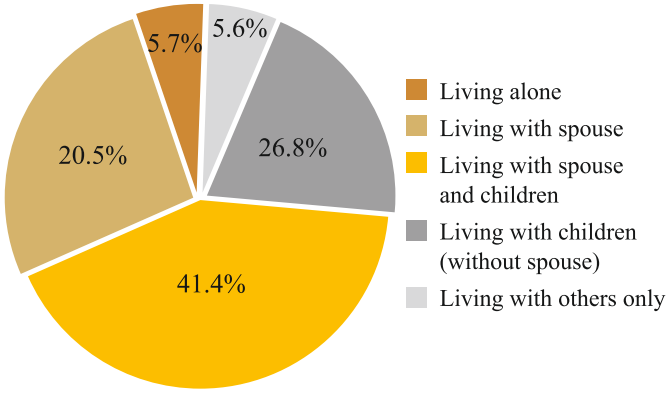
As per the Bridge the Gap report 2022 by Help Age India, 46% of respondents in India expressed a willingness to continue working beyond the age of 60. Additionally, nearly half the elderly respondents and their caregivers favoured opportunities for older workers to work from home. Approximately 30% supported the introduction of new courses to help individuals over 60 maintain employment. Furthermore, 38% were already engaged in voluntary work, and 19% expressed a desire to participate in such activities. These findings indicate a strong interest among the elderly in pursuing economically gainful activities that also contribute to their mental, physical and social well-being.

6.3.2 Social Challenges

With increasing longevity, decreasing family size, and changes in family values due to globalisation and urbanism, the living arrangements of the elderly are gradually shifting from joint families to living alone. Regarding marital status, among elderly females, 31% are currently married while 61% are widows. In contrast, among elderly males, 92% are married and only 7% are widowers (LASI, 2017-18). This highlights the serious vulnerability of widowed women, who are often largely dependent on other family members.

About 6% of the elderly in Odisha live alone, while over 20% live only with their spouses (LASI-2017-18). This implies that nearly one-third of the elderly population lacks any family care and support. This situation has significant implications for their physical and mental health, financial status, access to services, and overall safety and security.

Fig. 6.7 Living arrangements of elderly, LASI 2017-18



According to the report titled Elder Abuse in India-Changing Cultural Ethos and Impact of Technology 2018, 87% of the elderly in Bhubaneswar, the capital city of Odisha, acknowledged that abuse of the elderly is prevalent in society, and about 23% confirmed that they had experienced such abuse. The study also investigates into the causes of elder abuse, as presented in Table 6.2. Loneliness and the lack of socially and economically productive engagement among senior citizens are major factors leading to deterioration in both their physical and mental well-being. Additionally, the study noted that 70% of the elderly reported feeling lonely and abused at home because their children and grandchildren were often preoccupied with their electronic devices.

Table 6.2: Causes of Elderly Abuse in Odisha

Issue of Property	31%
Fixed Deposit linked in my name	0%
The pension amount is entitled to my name	0%
My family want to live independently	14%
Lack of resources to meet my financial needs	31%
Think me as a burden due to my old-age-related issues	24%
My family do not like my way of living	18%

The lack of social support in urban communities is a major concern. Unfortunately, rural areas are also facing a similar issue due to the large-scale out-migration of young people for education and employment. The elderly who are left behind are the worst victims in this process. A more focused study and a mitigation strategy is urgently needed to develop effective solutions for these challenges.

Table 6.3: Comparison of the status of the elderly

Economic Dependence of senior citizens	India*	Bhubaneswar (Odisha)
Dependent on family for income source	47%	28%
Dependent on pension or other cash transfers.	34.4%	36%
Do not feel financially secure	40 %	32%
Pension not being enough	45%	40%
Not employed/ working	71%	61%
Willing to work	36%	32%
Health and Wellbeing of senior citizens		
No health insurance	67%	50%
Covered under the government insurance scheme	13%	6%
Safety and Security of senior citizens		
Feel that elder abuse is prevalent in the society	59%	74%
Physical abuse (beating and clapping) happens	30%	38%
Admitted being a victim of elder abuse	10%	16%
Not aware of any abuse redressal mechanism	46%	35%
Feel that family don't spend enough time with them	79%	72%
Feel that family don't want to spend time with them	20%	10%
Do not have access to smartphones	71%	94.5%

*National average of India as per the report with the sample of 4400 older persons and 2200 care givers from 22 cities from 3 UTs and 19 states. Report available on www.helpageindia.org/aboutus/research
Bridge the Gap: Understanding Elder Needs' – A HelpAge India study report, 2022

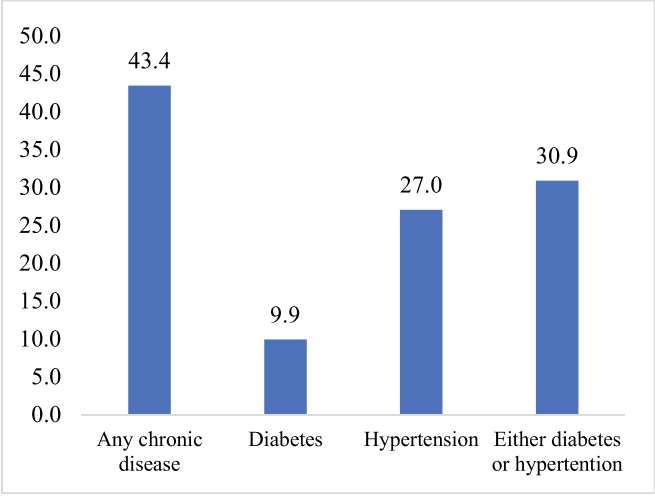
6.3.3. Health and Wellbeing Challenges

As individuals age, their susceptibility to various diseases increases significantly, along with noticeable anatomical and physiological changes. The elderly population in Odisha faces a wide range of health challenges, affecting physical, functional, behavioural, attitudinal, and psychological aspects. The decline in physical strength and stamina becomes more pronounced with age, requiring systematic management.

According to the LASI report, older individuals in Odisha self-reported a prevalence of several non-communicable diseases, including cardiovascular diseases (28.2%), hypertension (27%), and diabetes mellitus (9.9%). Notably, over 17% of older persons in the state report having multiple co-existing health conditions. Although these figures are below the national average, there is a concerning gap in treatment rates compared to the rest of the country. For instance, while the national treatment rate for diabetes mellitus stands at 83.2%, Odisha lags at 78%.

There is limited data on the prevalence of geriatric mental health issues in Odisha, including conditions like Alzheimer's and dementia. However, according to the Dementia India Strategy Report 2018, published by Alzheimer's and Related Disorders Society of India (ARDSI), Odisha is expected to have over 2 lakh confirmed cases of Alzheimer's by 2026, reflecting a 125% increase in two decades from 2006. Additionally, the 2011

Fig. 6.8 Percentage of elderly with chronic conditions and diseases



Status of Elderly in Odisha report by the United Nations Population Fund estimated a prevalence of 15 dementia cases per 1,000 population, indicating that over half a million individuals in the state are living with dementia.

The elderly in Odisha face various organ and sensory system impairments. The prevalence of urogenital disorders is notably higher in the state (9.8%) compared to the national average (7.7%), largely due to high rates of incontinence. Sensory impairments are also a pressing issue, with over 33.4% of the elderly experiencing visual impairment—primarily from cataracts and refractive errors. Hearing loss affects 6.5% of the elderly in Odisha, which is lower than the national average of 9.6%. Oral health problems are prevalent among the elderly as well, contributing to a range of dental issues. The combination of sensory and musculoskeletal impairments increases the risk of falls, with 35.9% of the elderly in Odisha reporting such incidents, significantly higher than the national average of 24.5%. Furthermore, about 20.7% of the elderly reported suffering from endemic diseases, including water-borne and vector-borne illnesses, highlighting ongoing public health challenges despite the predominance of non-communicable diseases.

Fig.6.9: % population spent more than 40% in health of their capacity to pay

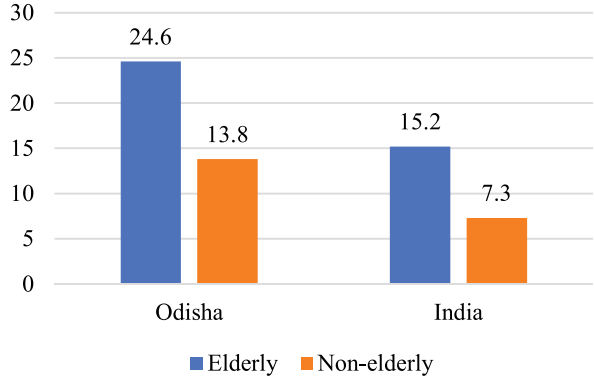
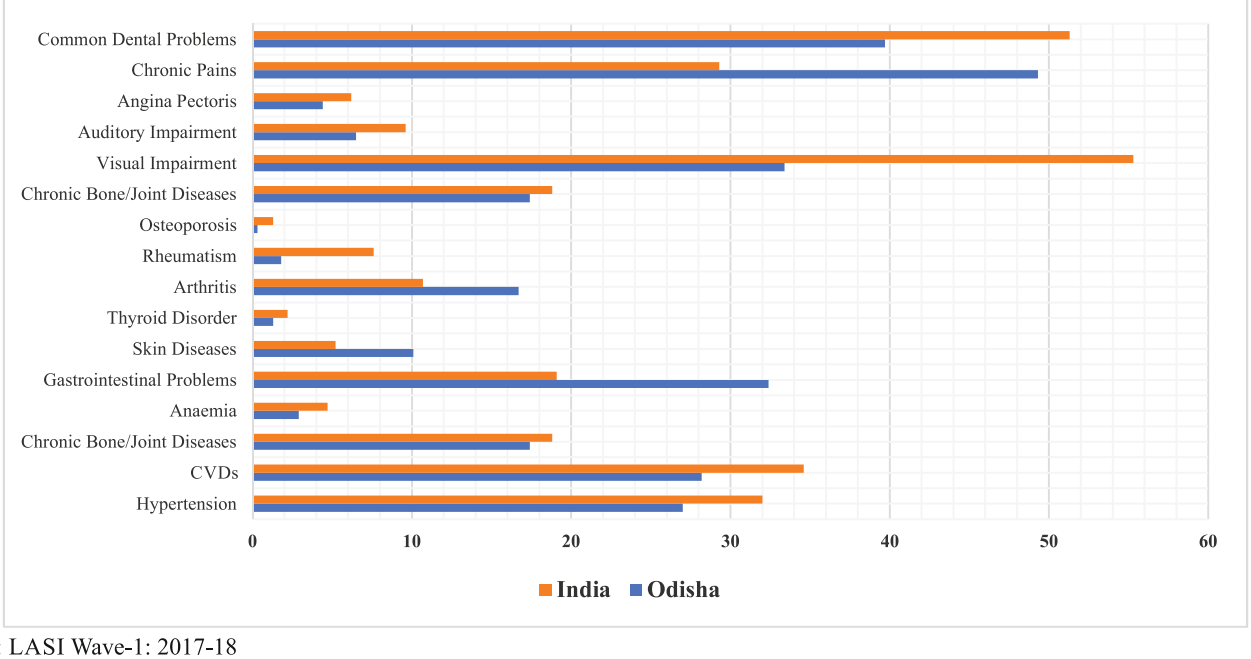
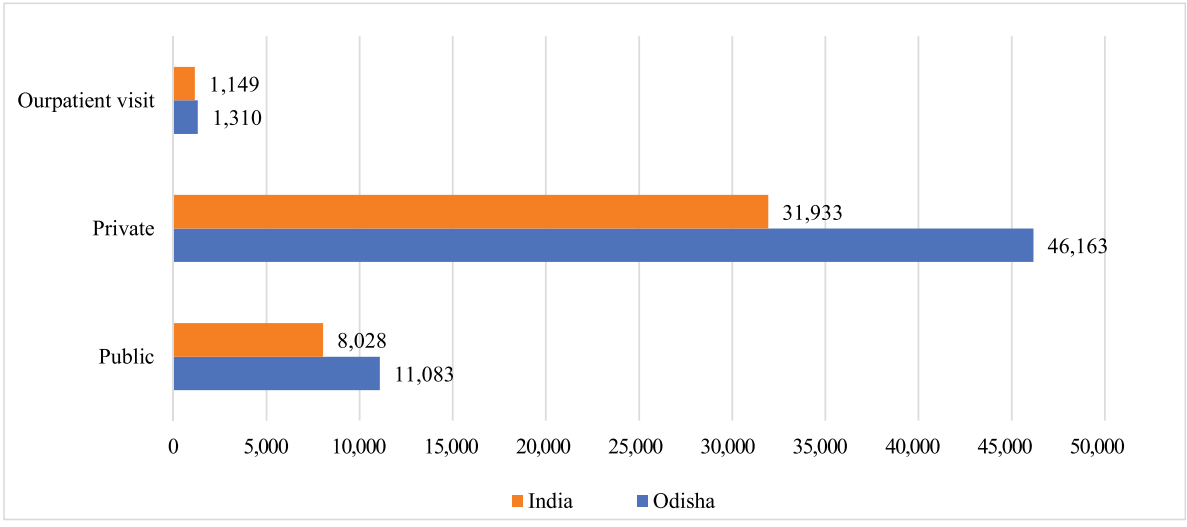


Fig. 6.10 A Comprehensive List of Health Issues in the elderly in Odisha



Source: LASI Wave-1: 2017-18

Fig. 6.11: Mean out-of-pocket cost (in INR) of inpatient and outpatient visit



Source: LASI Wave-1: 2017-18

Moreover, a striking 37% of the elderly in Odisha are underweight, indicating significant nutritional deficiencies and inadequacies in protein intake (LASI 2017-18). Additionally, 13% reported food insufficiency, reflected in reduced meal sizes or instances of going hungry despite feeling hungry. The WHO defines underweight as BMI under 18.5, overweight as BMI between 24.5 and 29.9, and obese as BMI above 29.9. In Odisha, the mean height, weight, and BMI are below the national average. A LASI survey found 37.1% of the elderly are underweight, 11.6% are overweight, and 3.4% are obese.

Healthcare utilization among the elderly in Odisha presents its own set of challenges. According to the LASI, only 24.5% of older individuals accessed outpatient care in the month prior to the survey. Of these, 41% relied on public institutions, while 40% sought care from private facilities.

Moreover, a striking 37% of the elderly in Odisha are underweight, indicating significant nutritional deficiencies and inadequacies in protein intake (LASI 2017-18). Additionally, 13% reported food insufficiency, reflected in reduced meal sizes or instances of going hungry despite feeling hungry.

These statistics highlight the significant healthcare challenges faced by the elderly in Odisha. Despite lower reported prevalence rates for certain diseases compared to the national average, disparities in treatment rates and access to healthcare need urgent attention. The widespread nutritional deficiencies, limited healthcare utilization, and varying reliance on public and private facilities reveal a complex web of challenges. This calls for targeted interventions and comprehensive healthcare strategies tailored specifically to the needs of Odisha's ageing population.

Additionally, limited financial resources hinder access to quality healthcare services, forcing many older individuals to prioritize basic needs over medical expenses. According to LASI, the average out-of-pocket expenditure for outpatient care in Odisha is INR 1,310. As a result, the elderly population faces a growing burden of health issues due to inadequate healthcare access and affordability, further straining both individual health and the broader healthcare system in Odisha.

A significant number of elderly individuals in their advanced age are physically dependent on others and need caregiver support. Providing geriatric care necessitates trained human resources and must be made affordable for the elderly. Additionally, family caregivers often struggle to manage certain conditions without proper training and sensitization, which increases the care burden. This highlights the urgent need for caregiving services for elderly individuals, particularly those living without family support. Moreover, the issue of accessibility underscores the importance of elderly-friendly infrastructure.

Problems with physical mobility are among the most common health concerns for the elderly. These issues include difficulty and pain while climbing stairs, a tendency to fall, failing eyesight, declining hearing capacity, reduced muscle stamina and energy, and forgetfulness, among others. To address the accessibility and integration challenges faced by the elderly, it is imperative that housing, public places, public transport systems, recreation facilities, public parks and all such infrastructure be based on principles of universal design. This approach will help mitigate the isolation experienced by older individuals due to their frailties and the current inadequacies in infrastructure.

Health and well-being go beyond just disease prevention; they encompass the quality of life, which is intricately linked to one's social connectedness, financial autonomy, physical mobility, independence, social integration, and the ability to fulfil social roles.

6.4. Safety and Security

The elderly are more vulnerable to crime, whether it occurs inside the home, in public places, or in cyberspace. They often live in a constant state of fear and anxiety. The safety and security of these senior citizens' life and property are increasingly at risk, with reports of crimes against aged persons rising day by day.

According to the Crime in India Report, 2020, by the National Crime Records Bureau, the number of registered crimes against senior citizens was 24,349 in 2018, 27,804 in 2019, and 24,794 in 2020. Notably, despite the COVID-19 pandemic and consequent lockdowns in 2020, crimes against the elderly persisted. Recorded offenses include murder, robbery, theft, abduction, and even rape. It is important to recognize that these figures represent only officially registered cases; numerous vulnerable senior citizens may lack the ability or resolve to report the abuse or crimes they experience.

6.5 Elderly Women

The literacy rate among the elderly persons in Odisha has increased from 27% in 1991 to 44% in 2011. However, over 50% remain illiterate, which affects their ability to access services effectively. The literacy rate among elderly women (24%) is less than half that of elderly men (63%), as females face social, economic and educational disadvantages from an early age, which profoundly impacts their later years. Despite well-intentioned efforts, elderly women often remain secondary in many aspects of life, with limited autonomy in making choices about their futures. Their economic condition is concerning, with only 10% of elderly women in rural areas and 11% in urban areas being economically independent. In contrast, elderly men fare significantly better, with 48% in rural areas and 57% in urban areas achieving economic independence.

According to the SRS 2016-2020, the life expectancy at birth in Odisha was 71.4 years for females compared to 69.1 years for males. At age 60, the average remaining life expectancy was found to be about 23.2 years (22.6 for males and 23.7 for females), while at 70, it was 16.1 years (15.6 for males and 16.6 for females). With the rise in life expectancy at birth, women are expected to live longer than their male counterparts, both nationally and in Odisha This is reflected in the higher number of widows as compared to widowers in old age. Additionally, the proportion of elderly women residing in the homes of others is more than twice that of elderly men. The percentage of elderly women living alone, excluding those in institutional care facilities, is also significantly higher than that of elderly men.

With higher life expectancy, women also face greater healthcare challenges, particularly related to menopause, which brings significant hormonal changes and associated health issues. Other health concerns for older women include cancer, heart disease, osteoarthritis, diabetes, hypertension, and mental health issues among others. Notably, the incidence of dementia is higher among elderly women than men. These issues require special focus and attention in policy planning and implementation.

In 2023, HelpAge India conducted a pan-India survey on the life conditions of older women. The comparative findings from India and Odisha are presented in (Table 6.4). The survey covered two districts in Odisha: Rayagada and Boudh.

Table 6.4: Status of Older Women

Status of Older Women
- 81% (India) and 86% (Odisha) - older women live with their families
- 54% (India) older women in India were illiterate (59% Urban, 66% - Rural) and 79 % (Odisha) - older women in were illiterate
- 54% (India) and 50% (Odisha) - older women were married
- 43% (India) and 47% (Odisha) - older women were widowed

Awareness and Impact
- 56% (India) and 85% (Odisha) -older women lack awareness on redressal mechanisms available for abuse
- 78% (India) and 60% (Odisha) -older women are not aware of government welfare schemes
- 15% (India) and 15% (Odisha) -are aware of the Maintenance and Welfare of Parents and Senior Citizens Act

Vulnerabilities
- 18% (India) and 7 % (Odisha) -of elderly women have faced discrimination due to gender
- 64% (India) and 67 % (Odisha) -of elderly women have faced social discrimination due to their marital status i.e. Widowed
- 72% (India) and 87% (Odisha) -older women can't take decisions for themselves

Healthcare
- 48% (India) and 62% (Odisha) -older women have at least one chronic condition
- 64% (India) and 60% (Odisha) -older women have reported not having health insurance

Economic and Financial Security
- 66% (India) and 90% (Odisha) -older women don't own any assets (such as vehicle, immovable/immovable property)
- 51% (India) and 35% (Odisha) -of the older women have reported being 'never' employed
- 74% (India) and 61% (Odisha) -are Not Working
- 32% (India) and 37 % (Odisha) -older women want to work till as long as possible
- 47% (India) and 77% (Odisha) -of the older women who are working, said that they do not find their environment at home friendly towards work.
- Nearly 70% (India) and 37% (Odisha) -of older women have reported a lack of adequate and accessible employment opportunities.
- 53% (India) and 52% (Odisha) -of the older women do not feel financially secure. Of the 47% (India) and 48% (Odisha) -who do feel secure, 79% are dependent on their children for finances.
- 75% (India) and 62% (Odisha) -older women do not have any savings.

Caregiving
- 67% (India) and 71% (Odisha) -older women are in caregiving roles.
- 36% (India) and 37% (Odisha) -older women are not able to manage the burden of their caretaking role.

Safety and Security
- 43% (India) and 60% (Odisha) -Elderly women worry about getting physically harmed.
- 76% (India) and 85% (Odisha) -said it's due to 'fear of falling' and 46% stating due to weak eyesight.

Digital/Social Inclusion
- 24% (India) and 26% (Odisha) -older women consider time spent by their children as not enough.
- 60% (India) and 77% (Odisha) -older women have never used digital devices.
- 59% (India) and 95% (Odisha) -older women do not own smartphones.
- 59% (India) and 86% (Odisha) -older women are not familiar with social media platforms.
- 13% (India) and 11% (Odisha) - elderly women would like to enrol for some skill development program online.

Source: Women and Ageing: Invisible or Empowered, HelpAge India Report, 2023
Data collected from 7911 older women living in 44 districts in 20 states and 2 UTs and 5 Metro cities.
Report available on www.helpageindia.org/aboutus/research ."

These findings assume importance in the context of the feminization of ageing in Odisha, as mentioned earlier in this chapter.

6.6 Current Policies/Programmes

6.6.1 National Interventions

- The National Policy on Older Persons, 1999 recommended several intervention areas on financial security, health and nutrition, safety and security, housing, education, research, and welfare, aimed at ensuring an active, healthy and fulfilling old age.
- The National Council for Older Persons (NCOP), established in 1999, advises central and state governments on a wide range of issues related to the welfare of senior citizens and the enhancement of their quality of life.
- The Maintenance and Welfare of Parents and Senior Citizens Act enacted in December 2007, aims to ensure need-based maintenance and welfare for parents and senior citizens.
- The National Programme for Health Care of the Elderly (NPHCE) launched during 2010-11 focuses on providing dedicated healthcare services to senior citizens (aged 60 and above) across various levels of primary, secondary, and tertiary healthcare.

6.6.2 State Interventions

Odisha State Policy for Senior Citizens 2016

In 2016, Odisha launched the Odisha State Policy for Senior Citizens (OSPSC) to enhance the quality of life for its elderly population. This policy aims to provide essential support and health services tailored specifically for senior citizens, focusing on increasing the capacity of service providers in rural areas to deliver accessible and high-quality services. It emphasizes the inclusion and full participation of seniors in society, fostering enabling environments that promote respect for the elderly. Additionally, the OSPSC addresses gender disparities by mainstreaming the specific needs of the growing elderly female population and encourages family values to offer psychological support and informal care.

The implementation of the OSPSC falls under the jurisdiction of the Department of Social Security and Empowerment of Persons with Disabilities (SSEPD), which collabourates with other departments, including Health and Home, to ensure comprehensive care for senior citizens. The policy establishes a robust administrative framework, including District Social Security Officers (DSSOs) and Block Social Security Officers (BSSOs), who oversee senior citizen matters at the local level. Furthermore, the Maintenance and Welfare of Parents and Senior Citizens Act (MWPSCA) 2007 mandates the formation of District Committees for Senior Citizens to address their concerns and facilitate government outreach. Despite these efforts, recent reports highlight a troubling prevalence of elder abuse in Odisha, indicating a critical need for enhanced awareness and implementation of protective measures to support the state's elderly population effectively.

Current programmes and schemes for the older population in Odisha

The SSEPD Department in Odisha implements various schemes aimed at supporting the overall development and welfare of senior citizens, persons with disabilities, and transgender individuals. Key schemes include:

- Indira Gandhi National Old Age Pension Scheme (IGNOAPS): Provides a monthly pension of ₹500 for individuals aged 60-79 and ₹700 for those 80 and older, targeting those below the poverty line. In 2023-24, it benefited over 2 million seniors with a budget allocation of ₹2,493.03 crores.
- Annapurna Scheme: Aims to provide food security to senior citizens not covered under IGNOPS, offering 10 kg of free food grains monthly. The scheme has a beneficiary ceiling of 64,800 statewide.
- Madhu Babu Pension Yojana: Offers pensions to individuals aged 60 and above, widows, leprosy patients, and those with disabilities, with a family income cap of ₹24,000 per annum. It allocated ₹4,487 crores for 2024-25, benefiting around 3.64 million people.
- ABADANA Scheme: Focuses on improving the quality of life for older persons by providing amenities such as shelter, food, and healthcare.

It promotes active ageing through various components, including old age homes, day service centres, health services, and caregiver training.

These schemes collectively aim to ensure financial security, food access, and improved living conditions for vulnerable populations in Odisha, addressing their unique needs and promoting active ageing.

6.7 Recommendations

As the population ages, many challenges and opportunities arise. However, challenges become more prominent due to a lack of focus on policy framework, institutional setups, and insufficient resource allocation. The demographic shift risks reducing labour force participation and saving rates, increasing health expenditures, and placing pressure on pension and health schemes. This scenario calls for greater emphasis on a strong policy and legal framework, along with ensuring their proper implementation through adequate budgetary allocation and a stringent implementation strategy. This will help secure a better today for our elders and prepare for the future. Government policies, schemes, and programmes, along with efforts by other institutions working to create an age-friendly Odisha, must focus on the following:

Appropriate and adequate Budget allocation

- Ensure effective implementation of the Maintenance and Welfare of Parents and Senior Citizens Act, 2007, and State Rules, 2009, including the proper functioning of statutory bodies such as District Senior Citizen Committees, the State Senior Citizen Council, and the Senior Citizen Cell at the Sub-collector's office in every sub-division.
- Make provision for an age-friendly response system with time-bound decision-making as a non-negotiable requirement, so that the elderly receive timely relief in cases of abuse or non-maintenance by their children.
- Adopt and implement the Odisha State Policy for Senior Citizens, 2016, with budgetary provisions in all key areas. Similar to gender and child budgeting, there should be Geriatric Budgeting.
- Include special provisions for women and the oldest old in all schemes for older persons.

Provision of affordable and accessible healthcare: prioritizing improved healthcare facilities, insurance, and free consultations and medicines for NCDs.

- Implement all provisions under NPHCE, ensuring the inclusion of services like long-term care, palliative care.
- Implement MHU in each district with telemedicine facilities.
- Promote geriatric medicine and geriatric care giving specialisation courses/training.
- State supported health insurance schemes to be universal for all elderly in the state.
- Design infrastructure in such a way that it enhances the health and wellbeing of the ageing population.
- Enhance academic research and deliberations to spread awareness and sensitization.

Focus on economic independence of the elderly in the state

- Ensure age-appropriate skilling and employment for the skilled elderly to promote financial security, active ageing, and reduced dependence on family.
- Implement policy changes to encourage employers (corporate and MSMEs) to reskill and reemploy elderly individuals while adopting an elder-friendly work culture.
- Take measures towards ensuring digital inclusion of the elderly.

Provision for social security for the elderly and creation of a social safety net.

- Non-contributory old age pension for all the elderly people, excluding the taxpayers.
- Revise the social security pension every two years based on inflation to ensure a better quality of life for the disadvantaged elderly people.

- Establish and regulate elderly caregiving services: provide training for caregivers and regulate paid services, along with community volunteers/
- Develop and incentivize community care and support mechanisms to assist elderly individuals living alone or in need of care.
- Promote family bonding and community care systems. Create policies that encourage filial piety, urge corporates to adopt care-friendly policies for staff with caregiving responsibilities, and improve the enforcement system to allow older persons to report abuse and crime easily.
- Create Age-friendly environments by entrusting local self-governance units, such as Gram Panchayats, and Nagar Palikas, with greater responsibility, budgetary provisions, and care mechanisms.

Timely review and effective implementation of policies and services:

- Age and sex-disaggregated data should be made available at the district level for better planning and implementation of schemes. Guidelines should be established for periodic review of policies and schemes in response to demographic transitions.

Academic Engagements:

- Knowledge institutions have a significant role in conducting research and studies while engaging the young generation to bridge the gap between both generations. The effective execution of the research component of the ABADANA Scheme

6.8 Conclusion

The demographic transition in Odisha is leading to a rapid increase in the elderly population, presenting significant challenges in healthcare accessibility, economic stability, and social well-being. The prevalence of chronic diseases, limited healthcare infrastructure, and high out-of-pocket expenses underscore the urgent need for policy reforms to ensure affordable and comprehensive healthcare services for the elderly. Additionally, economic dependency, low work participation among older women, and crimes against the elderly highlight the necessity for targeted interventions to enhance financial security and social support. It is imperative to prioritize budget allocation for the elderly, promote age-friendly infrastructure, and encourage academic engagement to address the multifaceted impact of demographic transition on the elderly population in Odisha.

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Annexure

Annexure 1 Total Fertility Rate (TFR) by Districts in Odisha (2015-2036)

District	Estimated from NFHS		Projected TFR															
	2015	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
Anugul	1.98	1.67	1.62	1.57	1.52	1.47	1.43	1.39	1.35	1.31	1.28	1.25	1.21	1.18	1.16	1.13	1.11	1.09
Balangir	2.34	1.90	1.82	1.75	1.68	1.61	1.55	1.49	1.43	1.38	1.33	1.28	1.24	1.20	1.16	1.13	1.10	1.08
Baleshwar	1.81	1.71	1.69	1.67	1.65	1.64	1.62	1.60	1.58	1.56	1.55	1.53	1.51	1.50	1.48	1.46	1.45	1.43
Bargarh	1.80	1.59	1.55	1.52	1.48	1.45	1.42	1.39	1.36	1.33	1.31	1.28	1.26	1.23	1.21	1.18	1.16	1.14
Baudh	2.23	1.90	1.84	1.78	1.73	1.67	1.62	1.57	1.52	1.48	1.43	1.39	1.35	1.31	1.27	1.23	1.20	1.17
Bhadrak	1.83	1.77	1.76	1.75	1.74	1.72	1.71	1.70	1.69	1.68	1.67	1.66	1.65	1.63	1.62	1.61	1.60	1.59
Cuttack	1.73	1.44	1.40	1.36	1.32	1.28	1.25	1.22	1.19	1.17	1.15	1.12	1.10	1.08	1.07	1.05	1.03	1.03
Debagarh	2.36	1.68	1.58	1.48	1.40	1.33	1.27	1.22	1.17	1.13	1.10	1.08	1.06	1.04	1.03	1.01	1.00	1.00
Dhenkanal	1.83	1.67	1.64	1.61	1.58	1.56	1.53	1.50	1.48	1.45	1.43	1.41	1.38	1.36	1.34	1.31	1.29	1.27
Gajapati	2.35	1.97	1.90	1.83	1.77	1.71	1.65	1.59	1.53	1.48	1.43	1.38	1.34	1.30	1.25	1.22	1.18	1.15
Ganjam	1.92	1.83	1.81	1.80	1.78	1.76	1.74	1.73	1.71	1.70	1.68	1.66	1.65	1.63	1.62	1.60	1.58	1.57
Jagatsinghapur	1.57	1.36	1.33	1.30	1.27	1.25	1.22	1.20	1.18	1.16	1.14	1.12	1.11	1.09	1.07	1.06	1.04	1.04
Jajapur	2.00	1.75	1.71	1.66	1.62	1.58	1.54	1.50	1.47	1.43	1.40	1.36	1.33	1.30	1.27	1.24	1.21	1.19
Jharsuguda	1.56	1.32	1.29	1.26	1.23	1.21	1.18	1.16	1.14	1.12	1.11	1.09	1.08	1.06	1.05	1.03	1.02	1.01
Kalahandi	2.49	1.98	1.89	1.80	1.72	1.64	1.57	1.50	1.43	1.37	1.32	1.27	1.22	1.18	1.14	1.11	1.07	1.05
Kandhamal	2.44	2.34	2.32	2.30	2.28	2.26	2.24	2.22	2.20	2.18	2.16	2.14	2.13	2.11	2.09	2.07	2.05	2.03
Kendrapara	2.00	1.68	1.63	1.57	1.52	1.48	1.43	1.39	1.35	1.31	1.28	1.24	1.21	1.18	1.15	1.13	1.10	1.08
Kendujhar	2.35	1.98	1.91	1.85	1.78	1.72	1.66	1.61	1.55	1.50	1.45	1.40	1.36	1.31	1.27	1.23	1.20	1.17
Khordha	1.72	1.53	1.50	1.47	1.44	1.41	1.38	1.35	1.33	1.30	1.28	1.25	1.23	1.21	1.19	1.17	1.15	1.13
Koraput	2.56	2.16	2.09	2.01	1.94	1.87	1.80	1.74	1.68	1.61	1.56	1.50	1.44	1.39	1.34	1.29	1.25	1.21
Malkangiri	2.83	2.46	2.39	2.32	2.25	2.18	2.11	2.04	1.97	1.91	1.84	1.78	1.71	1.65	1.59	1.53	1.48	1.43
Mayurbhanj	2.27	1.87	1.80	1.73	1.67	1.60	1.55	1.49	1.44	1.39	1.34	1.30	1.26	1.22	1.18	1.15	1.12	1.09
Nabarangapur	2.68	2.61	2.60	2.58	2.57	2.55	2.54	2.53	2.51	2.50	2.48	2.47	2.46	2.44	2.43	2.41	2.40	2.39
Nayagarh	1.89	1.73	1.70	1.67	1.64	1.62	1.59	1.56	1.54	1.51	1.48	1.46	1.44	1.41	1.39	1.36	1.34	1.32
Nuapada	2.58	2.00	1.90	1.80	1.71	1.62	1.54	1.47	1.40	1.33	1.28	1.22	1.18	1.14	1.10	1.07	1.04	1.03
Puri	1.81	1.46	1.41	1.36	1.32	1.28	1.24	1.21	1.18	1.15	1.13	1.11	1.09	1.07	1.05	1.03	1.02	1.01
Rayagada	2.38	2.32	2.31	2.30	2.28	2.27	2.26	2.25	2.24	2.23	2.21	2.20	2.19	2.18	2.17	2.15	2.14	2.13
Sambalpur	1.85	1.54	1.49	1.44	1.40	1.36	1.32	1.29	1.25	1.22	1.19	1.17	1.14	1.12	1.09	1.07	1.05	1.04
Subarnapur	1.71	1.63	1.61	1.60	1.59	1.57	1.56	1.54	1.53	1.51	1.50	1.49	1.47	1.46	1.45	1.43	1.42	1.41
Sundargarh	1.86	1.58	1.53	1.49	1.45	1.41	1.37	1.33	1.30	1.27	1.24	1.21	1.18	1.16	1.13	1.11	1.09	1.07
Odisha	2.16	1.80	1.74	1.68	1.62	1.60	1.60	1.59	1.59	1.57	1.53	1.53	1.53	1.53	1.52	1.51	1.49	1.48

Source: TFR Projection for Odisha (2021-2036) using Bayesian Approach, based on data from NFHS-4 & 5

Annexure 2 Projected Population by Districts of Odisha (2021-2036)

	Projected Population											
	2021			2026			2031			2036		
	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female
Anugul	14,11,373	7,18,947	6,92,426	14,75,763	7,48,295	7,27,468	15,26,327	7,70,661	7,55,666	15,65,103	7,87,037	7,78,067
Balangir	17,99,792	9,01,776	8,98,016	18,77,107	9,38,392	9,38,715	19,43,915	9,69,639	9,74,277	19,97,192	9,93,963	10,03,229
Baleshwar	25,60,974	12,98,634	12,62,340	26,79,558	13,53,764	13,25,794	27,80,506	13,99,720	13,80,786	28,59,019	14,34,119	14,24,900
Bargarh	16,32,080	8,20,392	8,11,687	16,95,417	8,49,803	8,45,614	17,41,173	8,70,264	8,70,909	17,76,045	8,85,122	8,90,923
Baudh	4,85,993	2,42,672	2,43,320	5,11,209	2,54,584	2,56,625	5,33,815	2,65,191	2,68,624	5,51,773	2,73,488	2,78,284
Bhadarak	16,68,045	8,36,530	8,31,515	17,47,710	8,73,904	8,73,806	18,12,997	9,03,888	9,09,109	18,64,033	9,26,652	9,37,381
Cuttack	28,68,723	14,63,457	14,05,267	29,69,924	15,08,177	14,61,747	30,42,336	15,38,109	15,04,227	30,96,752	15,58,734	15,38,019
Debagarh	3,46,310	1,74,045	1,72,266	3,62,819	1,81,749	1,81,070	3,76,351	1,87,954	1,88,397	3,86,847	1,92,641	1,94,206
Dhenkanal	13,08,748	6,64,993	6,43,756	13,60,248	6,88,120	6,72,128	14,00,248	7,05,565	6,94,683	14,30,850	7,18,370	7,12,480
Gajapati	6,42,535	3,15,118	3,27,417	6,80,596	3,34,025	3,46,571	7,16,241	3,51,675	3,64,566	7,44,402	3,65,465	3,78,937
Ganjam	38,97,409	19,53,356	19,44,053	40,86,446	20,43,020	20,43,426	42,37,975	21,13,930	21,24,045	43,51,159	21,65,523	21,85,636
Jagatsinghpur	12,33,130	6,21,374	6,11,756	12,71,377	6,38,309	6,33,067	12,97,405	6,49,077	6,48,327	13,16,530	6,56,429	6,60,101
Jajapur	20,16,093	10,14,074	10,02,019	21,01,765	10,53,822	10,47,943	21,70,140	10,84,877	10,85,263	22,24,586	11,09,021	11,15,565
Jharsuguda	6,44,725	3,27,549	3,17,176	6,72,451	3,40,365	3,32,086	6,93,259	3,49,612	3,43,647	7,09,424	3,56,413	3,53,010
Kalahandi	17,21,994	8,57,388	8,64,605	18,05,353	8,97,672	9,07,682	18,81,818	9,34,260	9,47,558	19,41,523	9,62,253	9,79,271
Kandhamal	8,14,963	4,00,062	4,14,901	8,61,837	4,22,975	4,38,862	9,05,749	4,44,376	4,61,373	9,40,602	4,61,203	4,79,398
Kendarapara	15,74,274	7,79,928	7,94,346	16,36,909	8,09,110	8,27,799	16,85,395	8,31,304	8,54,092	17,23,070	8,48,269	8,74,802
Kendujhar	19,97,318	9,99,865	9,97,453	20,97,785	10,47,409	10,50,376	21,90,214	10,90,662	10,99,552	22,65,437	11,25,094	11,40,343
Khorda	24,83,046	12,72,597	12,10,448	25,76,286	13,13,604	12,62,682	26,44,896	13,41,943	13,02,953	26,96,579	13,61,651	13,34,928
Koraput	15,26,622	7,51,375	7,75,247	16,11,977	7,93,415	8,18,562	16,97,648	8,35,448	8,62,200	17,67,902	8,69,323	8,98,579
Malkangiri	6,81,553	3,37,681	3,43,872	7,23,419	3,58,425	3,64,994	7,67,509	3,80,132	3,87,377	8,04,775	3,98,115	4,06,660
Mayurbhanj	27,83,389	13,83,494	13,99,895	29,29,049	14,53,551	14,75,497	30,60,235	15,16,114	15,44,121	31,61,207	15,63,437	15,97,770
Nabarangpur	13,51,292	6,69,109	6,82,183	14,33,142	7,09,267	7,23,875	15,16,813	7,50,051	7,66,762	15,85,920	7,83,198	8,02,722
Nayagarh	10,38,172	5,34,947	5,03,225	10,73,400	5,50,123	5,23,278	11,00,179	5,61,170	5,39,009	11,19,526	5,68,599	5,50,927
Nuapada	6,72,451	3,65,361	3,07,090	6,95,620	3,82,147	3,13,473	7,22,413	3,97,812	3,24,601	7,42,331	4,12,561	3,29,770
Puri	18,56,594	9,38,147	9,18,447	19,23,339	9,68,332	9,55,007	19,71,564	9,89,077	9,82,488	20,07,390	10,03,540	10,03,850
Rayagarha	10,76,875	5,26,978	5,49,897	11,39,455	5,58,471	5,80,984	11,99,716	5,88,627	6,11,089	12,47,696	6,12,246	6,35,450
Sambalpur	11,53,854	5,79,900	5,73,953	12,01,888	6,02,071	5,99,818	12,37,956	6,18,165	6,19,790	12,65,625	6,30,032	6,35,593
Subarnapur	6,72,623	3,40,454	3,32,169	7,02,686	3,54,458	3,48,228	7,26,634	3,65,429	3,61,205	7,45,722	3,73,972	3,71,751
Sundargarh	23,33,327	11,75,405	11,57,921	24,48,388	12,29,570	12,18,818	25,44,058	12,73,670	12,70,388	26,18,141	13,06,517	13,11,624
ODISHA	**4,62,54,277**	**2,32,65,608**	**2,29,88,666**	**4,83,52,923**	**2,42,56,929**	**2,40,95,995**	**5,01,25,485**	**2,50,78,402**	**2,50,47,084**	**5,15,07,161**	**2,57,02,987**	**2,58,04,176**

Source: Population Projection for Odisha (2021-2036) using Bayesian Approach, based on data from Census 2011 and NFHS-4 & 5

Annexure 3 Changing Contours of Labor Market Structure in Odisha and India, 1993-94 to 2022-23

	Self Employed	Regular	Casual	Unemployed	Total Employment	Total Labour force	Self Employed	Regular Employment	Casual Employment	LFPR	WFPR	Unemployed
	In Millions						% to Total Employment			In Percentage		
	Odisha											
(July'93-June'94)	7.6	1.2	5.2	0.3	14.1	14.4	54.1	8.8	37.1	43.8	42.9	2.0
61st (July'04-June'05)	9.6	1.6	5.8	1.1	16.9	18.0	56.7	9.2	34.1	46.4	43.6	6.1
68th (July'11-June'12)	10.5	1.9	4.9	0.4	17.4	17.8	60.6	11.1	28.4	42.2	41.2	2.4
(July'17-June'18)	8.3	2.4	3.9	1.1	14.6	15.7	56.8	16.4	26.8	36.1	33.5	7.2
(July'19-June'20)	10.4	2.8	4.6	1.2	17.8	19.0	58.6	15.8	25.6	42.0	39.3	6.4
(July'22-June'23)	12.9	2.9	4.6	0.8	20.4	21.3	63.2	14.0	22.8	46.0	44.1	4.0
	India											
(July'93-June'94)	203.0	50.8	117.1	7.5	371.0	378.5	54.7	13.7	31.6	42.5	41.7	2.0
61st (July'04-June'05)	257.7	69.8	128.1	11.1	455.7	466.8	56.6	15.3	28.1	42.7	41.7	2.4
68th (July'11-June'12)	245.6	86.7	137.6	10.7	469.9	480.7	52.3	18.5	29.3	39.3	38.4	2.2
(July'17-June'18)	235.0	109.7	110.3	30.0	455.0	485.0	51.7	24.1	24.2	36.8	34.6	6.2
(July'19-June'20)	271.2	122.7	117.2	26.4	511.0	537.4	53.1	24.0	22.9	39.9	38.0	4.9
(July'22-June'23)	321.8	133.6	116.0	20.1	571.4	591.5	56.3	23.4	20.3	42.7	41.2	3.4

Source: Computed from the unit-level datasets of different NSSO Employment and Unemployment Survey (1993-94, 2004-05 & 2011-12) & the Periodic Labour Force Survey (2017-18, 2019-20 & 2022-23)
* The Labour Force Participation Rate (LFPR), and Unemployment Rate (UR) may not exactly match with the reported estimates, because of the use of census-adjusted multiplier in the final calculations.
Notes: The concepts of employment, unemployment, unemployment rate, and labor force are typically assessed and measured by estimates provided in multiple rounds of the NSSO.

Annexure 4 Sex Ratio at Birth for the Districts of Odisha

Districts	Sex Ratio at Birth	
	NFHS 4	NFHS 5
Anugul	879	868
Balangir	1058	919
Baleshwar	969	866
Bargarh	929	950
Baudh	966	844
Bhadrak	879	980
Cuttack	987	745
Debagarh	1136	822
Dhenkanal	1044	895
Gajapati	800	999
Ganjam	801	855
Jagatsinghapur	929	843
Jajapur	725	898
Jharsuguda	1007	793
Kalahandi	898	903
Kandhamal	1057	985
Kendrapara	1007	860
Kendujhar	843	984
Khordha	965	810
Koraput	872	1014
Malkangiri	925	981
Mayurbhanj	974	837
Nabarangapur	1077	1045
Nayagarh	727	845
Nuapada	999	1025
Puri	922	782
Rayagada	967	951
Sambalpur	973	1061
Subarnapur	1034	924
Sundargarh	1036	809
Odisha	932	894

Source: Computed from NFHS-4 & 5 district level data

Annexure 5 Life Expectancy at Birth by Gender & IMR for Districts of Odisha

Districts	IMR		LEB_MALE		LEB_FEMALE	
	NFHS 4	NFHS 5	NFHS 4	NFHS 5	NFHS 4	NFHS 5
Anugul	42.0	31.1	68.17	72.59	69.13	73.89
Balangir	40.4	38.5	68.54	70.63	69.51	71.87
Baleshwar	22.6	19.6	72.79	75.76	73.89	77.19
Bargarh	38.3	21.5	69.02	75.23	70.00	76.63
Baudh	49.7	39.5	66.41	70.39	67.33	71.61
Bhadrak	34.6	25.3	69.90	74.18	70.91	75.54
Cuttack	23.2	16.0	72.64	76.77	73.74	78.23
Debagarh	47.0	43.1	67.01	69.44	67.94	70.63
Dhenkanal	43.6	28.1	67.80	73.41	68.75	74.75
Gajapati	43.1	40.3	67.91	70.16	68.87	71.38
Ganjam	36.9	22.8	69.34	74.85	70.34	76.24
Jagatsinghapur	42.0	27.3	68.16	73.61	69.13	74.96
Jajapur	40.0	36.7	68.64	71.10	69.61	72.35
Jharsuguda	41.9	28.4	68.19	73.33	69.15	74.67
Kalahandi	50.5	43.1	66.24	69.44	67.15	70.63
Kandhamal	45.7	34.1	67.33	71.81	68.26	73.08
Kendrapara	47.2	43.2	66.97	69.41	67.90	70.60
Kendujhar	46.3	43.3	67.18	69.38	68.11	70.57
Khordha	28.8	24.8	71.27	74.32	72.32	75.69
Koraput	42.9	34.6	67.96	71.66	68.92	72.93
Malkangiri	35.9	35.1	69.59	71.54	70.59	72.80
Mayurbhanj	42.9	38.8	67.96	70.56	68.92	71.79
Nabarangapur	44.8	41.7	67.52	69.82	68.46	71.02
Nayagarh	45.7	42.2	67.33	69.68	68.27	70.88
Nuapada	33.9	38.4	70.06	70.66	71.07	71.90
Puri	26.5	22.7	71.84	74.88	72.91	76.27
Rayagada	47.3	42.0	66.95	69.73	67.87	70.93
Sambalpur	33.0	26.0	70.26	73.97	71.28	75.32
Subarnapur	46.2	44.8	67.21	69.00	68.14	70.17
Sundargarh	31.4	29.3	70.64	73.07	71.68	74.40
Odisha	39	33	68.80	72.00	69.80	73.30

Source: Computed from NFHS-4 & 5 district level data

Annexure 6 Trends of Lifetime In-Migration in Odisha and India, 1991-2011

	Total Number of Migrants (in Million)			Migration Rate (Share of Migrants in Total Population in %)		
	Total	Rural	Urban	Total	Rural	Urban
Odisha						
1991	8.43	6.86	1.57	26.6	25.0	37.0
2001	11.05	8.71	2.34	30.0	27.9	42.4
2011	15.42	11.94	3.48	36.7	34.1	49.7
India						
1991*	232.1	162.5	69.6	27.4	25.8	32.0
2001	314.5	210.4	104.2	30.6	28.3	36.4
2011	455.8	278.2	177.6	37.6	33.4	47.1

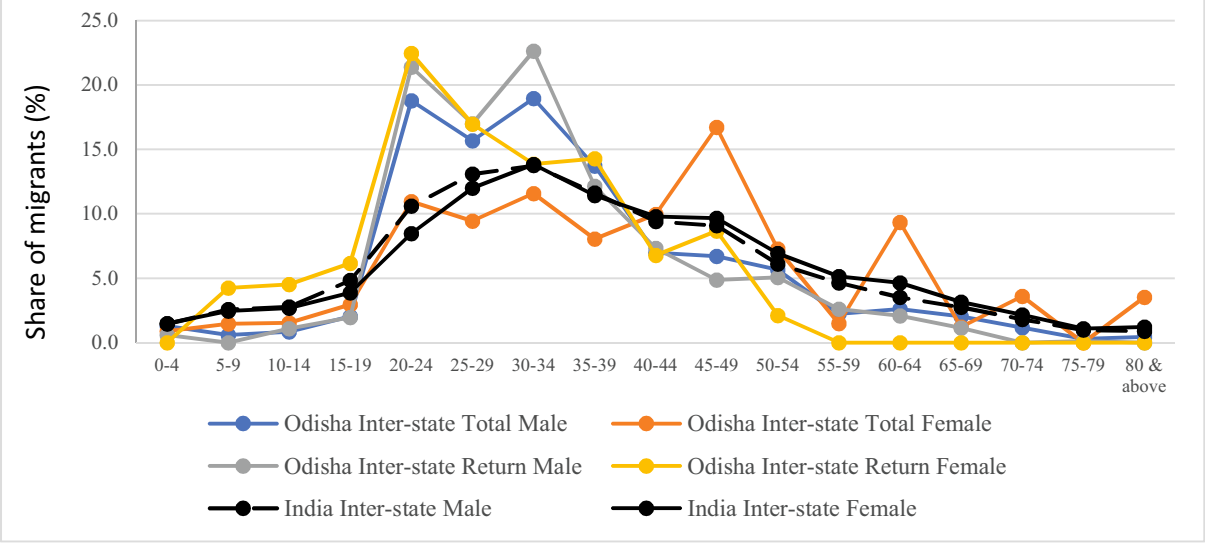
Note: *1991 India figures exclude Jammu & Kashmir
Source: Census of India, 1991, 2001 and 2011

Annexure 7 Percentage Distribution of In-migrants in Odisha by Different Streams, 2007- 08 and 2020-21

Streams	2007-08			2020-21		
	All migrants	Intra-state	Inter-state	All Migrants	Intra-state	Inter-state
Rural-rural	73	75.8	21.6	68.3	73.3	12
Urban-rural	3.5	2.7	18.7	10.7	6.5	57.9
Rural-urban	14.4	13.7	26.7	14.4	14.6	12.7
Urban-urban	9.1	7.8	33	6.5	5.6	17.4

Source: Estimated from NSS 64th round (2007-08) and PLFS 2020-21

Annexure 8 Age-profile of Inter-State Migrants in Odisha, 2020-21



Source: Estimated from PLFS 2020-21

Annexure 9 Distribution of Migrants by Educational Qualificati on in Odisha, 2020-21 (in %)

		Not Literate	Below Primary to Middle	Secondary & Higher Secondary	Graduation & above
All India		**22.4**	**38.2**	**23.9**	**15.6**
Inter-state Odisha	Total	22.0	45.3	21.0	11.7
	Rural	24.5	51.5	17.8	6.2
	Urban	16.2	31.0	28.5	24.4
	Male	16.9	51.1	22.7	9.3
	Female	35.6	29.9	16.4	18.1
	Return	19.6	50.7	18.4	11.3
	Non-return	26.9	34.6	26.1	12.5
Odisha	Non-migrant	26.1	49.4	18.8	5.7

Source: Estimated from PLFS 2020-21

Annexure 10 Inter-state Out-migrants from Odisha, 1991-2011

	Number of Inter-state Out-migrants (Million)			Outmigration Rate (Share of Out-migrants in Total Population)		
	Total	Rural-origin	Urban-origin	Total	Rural-origin	Urban-origin
1991	0.62	0.47	0.14	2.0	1.7	3.4
2001	0.94	0.69	0.20	2.5	2.2	3.5
2011	1.27	0.87	0.33	3.0	2.5	4.7

Source: Census of India, 1991, 2001 and 2011

Annexure 11 Inter-state Out-migrants from Odisha, 2007-08 to 2020-21

	Number of Inter-state Out-migrants (Million)		Out-migration Rate (Share of Out-migrants in Total Population in %)	
	2007-08	2020-21	2007-08	2020-21
Total	1.18	0.96	2.9	2.2
Rural	0.94	0.68	2.8	1.9
Urban	0.24	0.28	3.6	3.5

Source: Estimated from NSS 64th round (2007-08) and PLFS 2020-21

Annexure 12 Percentage Distribution of Out-migrants from Odisha to other States by Different Streams, 2007-08 and 2020-21

Streams	2007-08			2020-21		
	Male	Female	Persons	Male	Female	Persons
Rural-rural	22.1	35.4	29.0	8.4	39.2	25.0
Urban-rural	2.4	4.2	3.3	4.5	5.9	5.2
Rural-urban	60.9	41.9	51.0	55.4	37.3	45.6
Urban-urban	14.6	18.5	16.6	31.7	17.7	24.1

Source: Estimated from NSS 64th round (2007-08) and PLFS 2020-21

Annexure 13 Distribution of Out-migrants from Odisha by Educational Qualification, 2007-08 and 2020-21

	Not literate	Below Primary to Middle	Secondary & Higher Secondary	Graduation & above	Total
2007-08					
Odisha	**40.9**	**33.0**	**16.7**	**9.4**	**100.0**
Male	26.4	40.2	21.2	12.3	100.0
Female	54.5	26.2	12.6	6.7	100.0
Rural-origin	46.9	33.9	14.0	5.3	100.0
Urban-origin	17.0	29.4	27.8	25.9	100.0
2020-21					
Odisha	**26.0**	**39.9**	**19.1**	**15.0**	**100.0**
Male	11.5	40.7	23.5	24.4	100.0
Female	38.3	39.3	15.3	7.1	100.0
Rural-origin	35.7	41.9	17.9	4.5	100.0
Urban-origin	2.7	35.1	21.9	40.3	100.0

Source: Estimated from NSS 64th round (2007-08) and PLFS 2020-21

Annexure 14 Characteristics of Short-term Migration in Odisha, 2007-08 to 2020-21

Social Group		
	Odisha	**India**
Scheduled Tribe	38.8	8.6
Scheduled Caste	23.3	19.2
Other Backward Class	23.1	42.2
Others	14.8	30.1
MPCE Quintiles		
	Odisha	**India**
1	28.3	22.4
2	34.2	21.8
3	16.2	20.3
4	14.8	18.8
5	6.5	16.7

Source: Estimated from NSS 64th round (2007-08)

Annexure 15 Trends and Patterns of Urbanisation in Odisha and India, 1951-2011

Year	Level of urbanisation (%)		Growth of urban population (%) CAGR		Growth of rural population (%) CAGR		Urban Rural Growth Difference (%)	
	India	**Odisha**	**India**	**Odisha**	**India**	**Odisha**	**India**	**Odisha**
1951	17.3	4.1						
1961	18.0	6.3	2.3	6.3	1.9	1.6	0.5	4.7
1971	19.9	8.4	3.2	5.1	2.0	2.0	1.3	3.1
1981	23.3	11.8	3.8	5.2	1.8	1.5	2.0	3.8
1991	25.7	13.4	3.1	3.1	1.8	1.7	1.3	1.4
2001	27.8	15.0	2.7	2.6	1.7	1.3	1.1	1.3
2011	31.1	16.7	2.8	2.4	1.2	1.1	1.6	1.3
2021	34.5	18.5	2.2	1.5	0.7	0.3	1.5	1.3
2031	37.9	20.5	1.7	1.2	0.3	-0.02	1.5	1.3
2036	39.6	21.5	1.5	1.0	0.02	-0.3	1.4	1.3

Note AEGR denotes Annual Exponential Growth Rate
Source: Census data, various years
*2021, 2031 and 2036 based on projected figures by MoHFW (2019)