

## **Age Structure Transition in Nepal**

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### **Abstract**

*This research article examines the age structure transition in Nepal, a nation that has experienced significant demographic changes over the past few decades. Utilizing data from various demographic and health surveys, censuses, and scholarly articles, this paper analyzes the factors contributing to these shifts and their implications for Nepal's socio-economic development. The study highlights the trends in fertility, mortality, literacy, life expectancy, population growth and broad age structure of population. It also discusses the potential policy responses needed to address the challenges and opportunities presented by these demographic changes.*

**Keywords:** Birth, Death, Literacy, Life expectancy, Demographic dividend, Age structure transition

### **Introduction**

Nepal is a small landlocked country located in between two giant countries China and India who have highest population in the world. The population of Nepal is 29164578 according to the present census 2021. The population of Nepal is experiencing the change in age structure. This transition of age structure has created the situation of demographic dividend. Age structure transition has social and economic implications in policy making of the country. In this context the study of age structure transition has great significance. This article deals with the present factors responsible for the present age structure transition along with the situation of age structure and its implication in socio-economic sphere.

### **Historical Context of Age Structure in Nepal**

Nepal's age structure has undergone a profound transformation over the past century, yet it is rooted in a historical context shaped by socio-cultural, economic, and environmental

factors. Until the late 20th century, Nepal's demographic profile was characterized by high fertility and mortality rates, resulting in a population pyramid with a broad base and narrow top—typical of pre-transition societies. The age structure in this period was heavily influenced by agrarian lifestyles, limited access to healthcare, and deeply entrenched cultural practices regarding family size and gender roles.

Traditionally, larger families were considered both a social asset and an economic necessity in Nepal's rural communities. High child mortality rates necessitated higher birth rates, with families often having five to seven children to ensure that some survived into adulthood. Moreover, in the absence of formal pension systems, elderly care was predominantly familial. This encouraged the norm of having multiple children, particularly sons, who were expected to support aging parents. These social norms contributed to sustained high fertility rates well into the 1980s.

Healthcare access was limited, especially in the hills and mountainous regions, which led to elevated mortality levels. Diseases such as tuberculosis, pneumonia, and diarrheal illnesses were common causes of death, particularly among infants and young children. According to historical estimates from the Central Bureau of Statistics (CBS), the crude death rate (CDR) exceeded 30 per thousand in the early 1950s (CBS, 2014), with life expectancy hovering around 35 years. These mortality patterns kept population growth relatively low despite high fertility.

The 1950s and 1960s marked the beginning of slow demographic shifts, coinciding with the expansion of modern infrastructure and the introduction of development aid. The establishment of the National Health Services and the expansion of education laid the foundation for eventual changes in demographic behavior. However, it was not until the 1980s and 1990s that Nepal began to witness significant declines in mortality due to targeted interventions in maternal and child health, vaccination programs, and the expansion of rural healthcare posts.

The historical age structure, therefore, was a reflection of a society grappling with high levels of uncertainty about survival. Understanding this backdrop is essential to contextualize the current demographic transition, wherein improvements in health, education, and family planning have shifted the age structure towards a more balanced and economically favorable distribution.

## **Methodology**

This study employs a quantitative approach, utilizing quantitative data from national censuses and qualitative information from scholarly articles and policy reports. The study is based on the secondary sources of data which include the series of publications from the Central Bureau of Statistics (CBS) of Nepal. The selection of data was guided by its relevance to key demographic indicators such as fertility rates, mortality rates, and population distribution across

age cohorts, as recommended by the United Nations Population Fund (UNFPA, 2018). Data from the Nepal Demographic and Health Surveys (NDHS) were also utilized to provide insights into health-related factors influencing demographic trends (Ministry of Health, Nepal, 2016). Statistical methods including descriptive analysis and trend analysis were employed to examine the patterns and changes in age structure over the Specified period.

## **Literature Review**

The study of age structure transition in Nepal involves an examination of demographic shifts and their socio-economic implications. The existing literature provides a comprehensive analysis of trends in fertility, mortality, migration, and age distribution, alongside policy responses and projections for the future. This section reviews the key findings and discussions from relevant studies, reports, and academic papers.

### **Fertility Trends**

Several studies have documented the decline in fertility rates in Nepal. Aryal (2010) highlighted the significant reduction in fertility rates since the 1990s, attributing this to factors such as increased use of contraception, delayed marriage, and improved education and healthcare. The Nepal Demographic and Health Survey (NDHS) 2016 also reported a notable decrease in the total fertility rate (TFR) from 4.6 children per woman in 1996 to 2.3 in 2016 (Ministry of Health, Nepal, New ERA, & ICF, 2017).

### **Mortality Trends**

Mortality rates, particularly infant and child mortality have shown a marked decline. According to the World Bank (2021), the infant mortality rate decreased significantly from 79 per 1,000 live births in 1996 to 32 per 1,000 in 2016. Bhattarai and Jha (2018) emphasized that improvements in maternal and child health services, vaccination programs, and better nutrition have been pivotal in reducing mortality rates.

### **Ageing Population**

Nepal is experiencing a gradual shift towards an ageing population. The proportion of the population aged 60 and above increased from 6% in 1991 to 8% in 2011 (CBS, 2014). Subedi (2014) explored the implications of this demographic shift, including the increasing demand for healthcare services and the need for social security systems to support the elderly.

### **Socio-Economic Implications**

The changing age structure has significant socio-economic implications. Acharya (2018) discussed the potential economic benefits of the 'demographic dividend' phase, where a higher proportion of the working-age population can boost economic productivity. However, the author also warned of the challenges in harnessing this potential without adequate investment in education, healthcare, and job creation.

## Results

### Birth and Death Rates in Nepal

Birth and death are the main components which help for the transition in age structure of any population. The birth and death decreases due to the improvement of socio-economic aspects of population. It is found that the birth and death rates of Nepal started to decrease significantly since 1991 A.D. the decrease in the birth and death has contributed for the change in the age structure of the population of Nepal. The transition in age structure has created the condition of demographic dividend. Decrease in birth has decreased in the child dependency and the decrease in the death has improved the health status of people and increased the life expectancy. The following table shows the trends of fertility and mortality in Nepal since 1991 to 2021.

**Table 1**

*Trends in fertility and mortality in Nepal, 1991 – 2021 census*

Census Year	CBR	TFR	CDR	IMR
1991	37.4	5.1	13.3	97
2001	33.5	4.1	9.6	66
2011	22.4	2.5	7.3	40.5
2021	14.21	1.94	6.8	17

*Source: CBS, 1991-2021*

It is evident that the age structure transition in Nepal is the cause of decrease in the birth and death rates. The crude birth rate and total fertility rate were 37.4 per thousand mid-year population and 5.1 per woman in 1991. In the period three decades in 2021 they are found just 14.21 per thousand mid-year population and 1.94 per woman. Likewise the crude death rate and infant mortality rates were 13.3 per thousand mid-year population and 97 per thousand live births. In the period of three decades the crude death rate and infant mortality rates are reached to just 6.8 per thousand mid-year population and 17 per thousand live births respectively in 2021. This significant decline in death implies the improvement in socio-economic improvements in the life of Nepalese people.

### Literacy and Life Expectancy in Nepal

Literacy and life expectancy are the indicators of socio-economic development of the country. The literacy and life expectancy of Nepal are both increasing very rapidly along with the decrease with gender gap. The literacy rate and life expectancy both have contributed significantly for the reduction of the birth and death rates and ultimately contributed for the age structure transition of the country. The levels and trends of literacy rate and life expectancy are presented in the following table.

**Table 2**

*Levels and trends of literacy rate and life expectancy of Nepal by sex, 1991-2021 A.D. Nepal.*

Census year	Literacy rate (%)			Life expectancy(Years)		
	Both	Male	Female	Both	Male	Female
1991	39.6	54.5	25.0	NA	55.0	50.3
2001	54.1	65.6	42.8	61.0	60.2	61.5
2011	66.5	75.9	57.7	66.6	65.5	67.9
2021	76.25	83.55	69.37	71.30	68.20	73.80

*Source: CBS, 1991-2021*

The rate of literacy rate and life expectancy are both increasing. The literacy rate is much higher of male than of female and the life expectancy of female is higher than male except 1991. The literacy rate of Nepal was just 39.6 in 1991 and reached to 76.25 percent nearly an increase of double. The male literacy rate was 54.5 percent in 1991 and increased more than thirty percent. Likewise the female literacy rate was just 25.0 percent in 1991 and reached to 69.37 percent in 2021 nearly an increase of forty-five percent.

Before 2001 the life expectancy of both sexes is not available. In 2001 the life expectancy of Nepal was 61 years and increased by slightly more than 10 years in 2021 and reached to 71.30 years. In the year 1991 the life expectancy of male is more of male than female that was 55 years of male and 50.3 years of female. The male life expectancy increased by more than 13 years in the period of three decades that was 55 years in 1991 and reached to 68.20 years in 2021. In the same period of time the female life expectancy was increased by more than twenty-three years which was 50.3 years in 1991 and reached to 73.80 years in 2021.

The above picture clearly shows that the increase in literacy and life expectancy have contributed for the decrease in birth and death and contributed for the age structure transition in Nepal.

### **Population Growth Rate in Nepal**

Population growth rate is the change in the size of population. The growth rate of population is either negative or positive. The negative growth rate of population in future helps to decrease the size of population and the positive growth rate of population helps to increase the size of population. The ideal size of population growth rate helps to create the huge gap between working and dependent population. The birth and death rate makes the ideal growth rate of population and helps to increase the size of working population much more than the dependent population. The trend of population growth rate clearly indicates the decrease in the birth and death and resulting the bulge of working population and decreasing the dependent population. This trend of population growth rate has created the situation of demographic dividend. The trend of population growth rate of Nepal is presented in the following table.

**Table 3***Levels and trends of population growth rate of Nepal, 1991-2021*

<b>Census Year</b>	<b>1991</b>	<b>2001</b>	<b>2011</b>	<b>2021</b>
Population	2.08	2.25	1.35	0.92
Growth Rate (%)				

*Source: CBS, 1991-2021*

The population growth rate of Nepal is not found only decreasing or in increasing trend. It found in fluctuating trend. The population growth rate was 2.08 percent per annum in 1991 and in 2001 it was 2.25 percent per annum. The population growth rate decrease in 2011 and reached to 1.35 percent per annum and further it reached to 0.92 in 2021 below one percent per annum in the history. This trend of population growth rate has resulted in the transition in age structure of Nepal and we are in the state of demographic dividend.

### **Age Structure Transition in Nepal**

Age structure transition is the result of change or shift in the birth and death. In the context of Nepal the age structure transition is in the positive way. In the age structure of Nepal the population of children (0-14 years) is decreasing and the population of ageing (60+ years) is slowly increasing. This trend has helped to increase the working age (15-59 years) population significantly. The age structure transition of Nepal with positive trend started since the last three decades. Where the population of dependent started to decrease and independent population started to increase. This situation of age structure transition can be marked as the time of demographic dividend. Which is believed to be started from 1995 and remains up to 2047 A.D. the age structure transition is presented in the following table.

**Table 4***Population composition by broad age group, 1991- 2021 Nepal.*

<b>Census Year</b>	<b>Total population</b>	<b>Population by broad age group</b>		
		0-14 years	15-59 years	60+ years
1991	18491097	42.40	51.8	5.8
2001	22736934	39.36	54.14	6.50
2011	26494504	34.9	56.9	8.2
2021	29164578	27.83	61.96	10.21

*Source: CBS, 1991-2021*

The age structure transition is clearly seen in the table. There is constant decrease in the population percentage of the child(0-14 years ) population whereas the population percentage is increasing constantly in the working (15-59 years) population and the same is in the ageing (60+ years) population. The population percentage of the children (0-14 years) was 42.4 percent in 1991 and decreased by nearly fifteen percent and reached to 27.83 percent in 2021. The working age (15-19 years) population percent was 51.8 percent in 1991 and increased by more than ten

percent and reached to 61.96 percent in 2021. Likewise the population of ageing (60+ years) was 5.8 percent and increased by nearly five percent and reached 10.21 percent in 2021.

The empirical evidence clarify that Nepal is in the state of age structure transition. Where the dependency ratio in the population is decreasing and the proportion of working population is increasing. This situation of age structure has created the situation of demographic dividend.

## **Discussion**

The demographic changes in fertility and mortality rates have led to a transformation in Nepal's age structure. The population pyramid, once characterized by a broad base of young people, is gradually stabilizing with a more balanced distribution across different age groups.

**Youth Bulge:** Nepal currently experiences a youth bulge, with a significant proportion of its population aged between 15 and 29 years. This demographic dividend can be a catalyst for economic growth if managed effectively. Key considerations include:

**Education and Skill Development:** Investing in education and vocational training to equip the youth with market-relevant skills.

**Employment Opportunities:** Creating job opportunities to absorb the young workforce into productive sectors.

**Social Inclusion:** Ensuring that youth from all backgrounds have equal access to opportunities.

**Aging Population:** As fertility rates decline and life expectancy increases, Nepal is witnessing a gradual rise in its elderly population. Addressing this shift involves:

**Healthcare Services:** Expanding geriatric care and preventive health services to cater to the elderly.

**Social Security:** Developing comprehensive social security systems, including pensions and health insurance, to support the aging population.

**Community Support:** Strengthening community-based support systems to provide care and engagement for the elderly.

**Socio-Economic Implications:** The age structure transition in Nepal has profound socio-economic implications, necessitating a multifaceted approach to harness its benefits while mitigating potential risks.

**Education and Employment:** A well-educated and skilled workforce is essential for economic growth. Key strategies include:

**Improving Quality of Education:** Ensuring access to quality education at all levels, with a focus on STEM (Science, Technology, Engineering, and Mathematics) and vocational training.

**Job Creation:** Promoting sectors with high employment potential, such as agriculture, manufacturing, and services.

**Healthcare and social security:** An aging population will require robust healthcare systems. Essential measures include:

**Expanding Healthcare Infrastructure:** Building and upgrading healthcare facilities, especially in rural areas.

**Preventive Health Measures:** Focusing on preventive care to reduce the burden of non-communicable diseases.

**Pension Schemes:** Implementing comprehensive pension schemes to ensure financial security for the elderly.

**Health Insurance:** Providing affordable health insurance to cover the medical needs of the aging population.

**Government Policies and Initiatives:** The Nepalese government has implemented various policies to address the demographic transition. These include:

**Family Planning Programs:** Initiatives to promote the use of contraceptives and family planning education.

**Education Reforms:** Policies aimed at improving access to and the quality of education.

**Healthcare Improvements:** Programs to enhance healthcare services and accessibility.

**Youth Employment Schemes:** Initiatives to create job opportunities and support entrepreneurship among young people.

## **Conclusion**

Nepal's age structure transition presents both challenges and opportunities. By understanding demographic trends and their implications, policymakers can develop strategies to harness the benefits of the youth bulge and address the needs of an aging population. Investments in education, healthcare, and social security are crucial for sustainable socio-economic development.

## **Policy Recommendations**

**Investing in Education and Health:** Enhancing the quality of education and healthcare can improve human capital, supporting economic growth during the demographic transition.

**Creating Employment Opportunities:** Developing policies that create jobs, especially for young people, can harness the demographic dividend.

**Strengthening Social Security Systems:** Establishing robust social security systems to support the aging population is crucial.



## References

- Aryal, T. R. (2010). Theoretical and practical explanations of declining fertility in Nepal. *The Economic Journal of Nepal*, 33(1), 1-15.
- Bhattarai, S., & Jha, N. (2018). Maternal and child health services in Nepal: Progress, challenges and opportunities. *Journal of Nepal Health Research Council*, 16(2), 169-175.
- Caldwell, J. C. (2001). *Demographic transition theory*. Springer.
- Central Bureau of Statistics (CBS). (2014). *Population monograph of Nepal 2014 (Vol. I & II)*. CBS.
- Central Bureau of Statistics (CBS). (2021). *National Population and Housing Census 2021*. Kathmandu: CBS.
- Central Bureau of Statistics. (2014). *Population Monograph of Nepal 2014*. Kathmandu, Nepal: Author.
- Gubhaju, B. (2013). The Influence of socioeconomic development and demographic transition on population policy and programmes in Nepal. *Journal of Population and Social Studies*, 21(2), 103-116.
- Ministry of Health, Nepal, New ERA, & ICF. (2017). *Nepal demographic and health survey 2016*. Kathmandu, Nepal: Ministry of Health, Nepal.
- Sharma, S. (2004). Population change in Nepal: Trends and policy implications. *Nepal Population Journal*, 12(10), 1–15.
- Acharya, R. (2018). *Harnessing the demographic dividend in Nepal: Opportunities and challenges*. Kathmandu: Nepal Institute for Policy Studies.
- Ministry of Health, Nepal. (2016). *Nepal demographic and health survey 2016*. Kathmandu: Ministry of Health.
- United Nations Population Fund (UNFPA). (2018). *Demographic transition and development*. New York: UNFPA.
- Sijapati, B., & Limbu, A. (2017). *Governing labour migration in Nepal: An analysis of existing policies and institutional mechanisms*. Kathmandu: Himal Books.
- Subedi, B. P. (2014). Population aging in Nepal: Demographic and social dimensions. In *Population Monograph of Nepal 2014 (Vol. II, pp. 251-292)*. Kathmandu: Central Bureau of Statistics.
- Tuladhar, J. M. (1989). *The persistence of high fertility in Nepal*. East-West Center, Population Institute.
- United Nations Population Fund (UNFPA). (2007). *Nepal population report*. Kathmandu: UNFPA Nepal.
- World Bank. (2021). Life expectancy at birth, total (years) - Nepal. Retrieved from <https://data.worldbank.org/indicator/SP.DYN.LE00.IN?locations=NP>