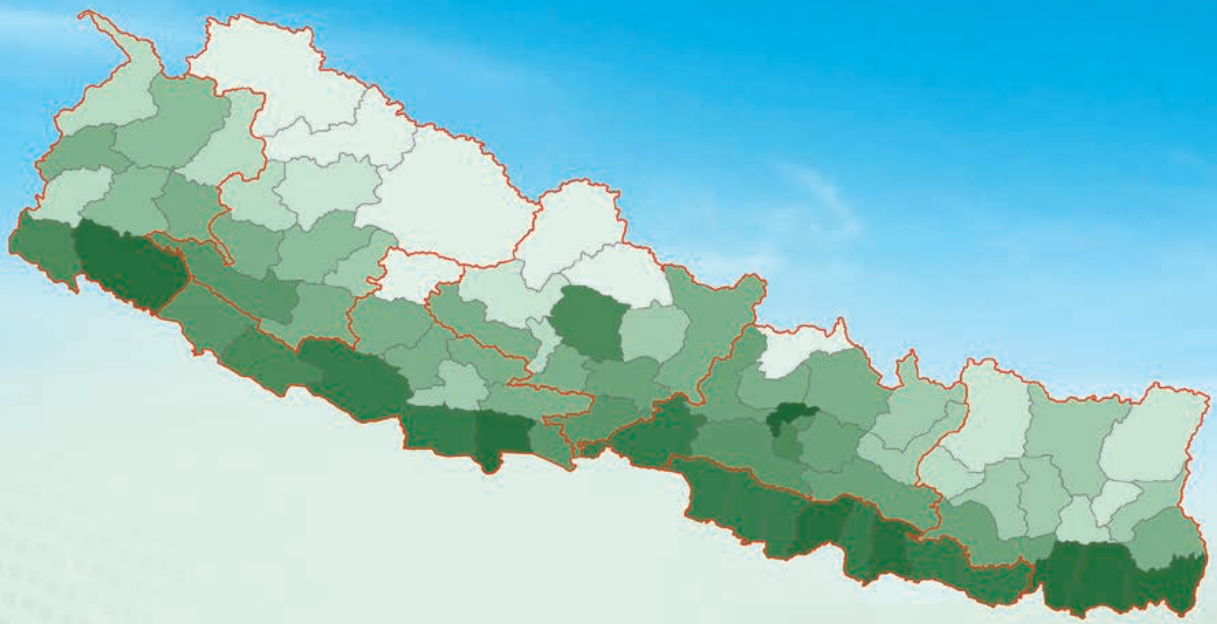
Thematic Report-IV

National Population and Housing Census 2021

Fertility in Nepal



Government of Nepal
Office of the Prime Minister and Council of Ministers
National Statistics Office
Thapathali, Kathmandu

MY CENSUS
MY PARTICIPATION
NATIONAL POPULATION CENSUS 2021

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Fertility in Nepal

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Tel: 5365323, 5341801, 5328406, 5345946 (47, 48) Fax No.: 977-1-5327720
E-mail: info@nsonepal.gov.np, Website: www.nsonepal.gov.np
E-mail: popcen@nsonepal.gov.np, Website: www.censusnepal.cbs.gov.np

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Cover Map: Population distribution by district, NPHC 2021

Kathmandu, Nepal

Chief Secretary

Foreword

Government of Nepal has placed great emphasis on evidence-based policymaking, which depends on the availability of reliable and high-quality official data. The National Statistics Office (NSO) has consistently served this need by providing crucial data to inform government initiatives. As a key agency under the Office of the Prime Minister and Council of Ministers, the NSO plays a critical role in producing socio-economic and environmental statistics. These statistics are vital not only for federal, provincial, and local governments but also for a wide range of stakeholders across various sectors. Access to accurate and timely statistics is essential for implementing policies and plans at all levels of governance.

Fertility is a key demographic factor that shapes a nation's socioeconomic landscape. Understanding its trends and implications is essential for evidence-based revisions of population policy and long-term planning. In Nepal, fertility patterns have evolved significantly over the past decade, influenced by various social, economic, and health-related factors. This report, *Fertility in Nepal*, provides a comprehensive analysis of these trends, offering valuable insights for policymakers, researchers, and development practitioners.

The findings of this report, based on robust data, highlight the evolving fertility dynamics, their challenges, and the opportunities they present. As Nepal experiences a continued decline in fertility rates, it is essential to assess the potential socioeconomic consequences and design appropriate policy responses to ensure sustainable development.

On behalf of the Government of Nepal, I extend my sincere appreciation to everyone who contributed to the preparation of this long-awaited report. Their dedication and expertise have made this valuable resource possible, helping to strengthen Nepal's policy framework for sustainable development. I also appreciate the tireless efforts of the NSO team in producing this essential and highly technical report, which provides a strong basis for informed decision-making.

I am confident that this report will serve as a valuable resource for policymakers, researchers, and development practitioners in shaping strategies that promote sustainable and equitable development in Nepal.

March 2025

Eaknarayan Aryal
Chief Secretary

Government of Nepal
Office of the Prime Minister and Council of Ministers
National Statistics Office

Phone 5345946, 5345947, 5345948, 5345848, 5341801, 5328406

Ref. No.

Fax: 977-1-5327720
Post Box No.: 11031
Thapathali, Kathmandu

Foreword

The National Population and Housing Census (NPHC) is the only source that consistently provides demographic and housing data down to the lowest administrative unit, i.e., the Ward. To meet the needs of a broad range of users, we have included brief explanations of the data in our reports. Over the years, the NSO has focused not just on statistical reports but also on valuable analytical ones that cater to a wide audience, both within and outside the country. The production and dissemination of quality statistics are not merely public goods but national resources in the data and information age.

The NSO is committed to being the central provider of high-quality official statistics to support decision-making. Traditionally, the NSO has produced population monographs after the release of all statistical results; however, this time we will publish 21 thematic reports covering key sectors of the national development plan.

I am pleased to present the long-awaited report *Fertility in Nepal*. Fertility patterns, shaped by social, economic, cultural, and health factors, play a crucial role in shaping demographic structures, including the working-age population, dependency ratios, and economic growth. Understanding fertility is vital for policymakers to develop effective population policies and ensure sustainable development.

I extend my appreciation to all contributors for their dedication in bringing this important analysis to light. I am confident that these findings will guide policymakers and planners in shaping development strategies for a more prosperous and sustainable future.

I would like to specifically commend the Population Section staff for their tireless efforts in generating data, providing support, and reviewing the report. The Head of the Social Statistics Division at NSO played a crucial role in coordinating all activities, and I greatly appreciate his contributions. Special thanks to fertility experts Mr. Nebin Lal Shrestha and Mr. Bijaya Mani Devkota for analyzing crucial data and presenting important findings, and to Mr. Uttam Narayan Malla, former Director General of the Central Bureau of Statistics, for reviewing the report from a government perspective. I also acknowledge the technical support provided by the United Nations Population Fund (UNFPA). Additionally, I extend my gratitude to the British Embassy Kathmandu and the Swiss Agency for Development and Cooperation (SDC) for their financial support at various stages of this report's development.

Lastly, I encourage constructive feedback from our users to improve future editions of this report.

March 2025

Maddhu Sudan Burlakoti
Chief Statistician

LIST OF CONTRIBUTORS

Contributors to the *'Fertility in Nepal'*, thematic report

S.N.	Name and Designation	Organization	Role
1.	Mr. Maddhu Sudan Burlakoti, *Chief Statistician*	National Statistics Office, Thapathali Kathmandu	Overall supervision
2.	Dr. Hem Raj Regmi, *Deputy Chief Statistician*	National Statistics Office, Thapathali Kathmandu	Overall guidance
3.	Mr. Dhundiraj Lamichhane, *Deputy Chief Statistician*	National Statistics Office, Thapathali Kathmandu	Quality assurance and data processing/ Reviewer
4.	Mr. Nebin Lal Shrestha, *Former Deputy Chief Statistician, NSO*	Freelance, Statistician	Analyst
5.	Dr. Bijaya Mani Devkota, *Lecturer*	Central Department of Population Studies, TU	Analyst
6.	Prof. Dr. Samir KC, *Freelance, Demographer*	-	Generation of fertility indicators
7.	Mr. Uttam Narayan Malla, *Former Director General, CBS*	Freelance, Statistician	Reviewer
8.	Mr. Rajan Silwal, *Director*	National Statistics Office, Thapathali, Kathmandu	Reviewer
9.	Mr. Binod Sharan Acharya, *Director*	National Statistics Office, Thapathali, Kathmandu	Reviewer
10.	Mr. Deenanath Lamsal, *Statistics Officer*	National Statistics Office, Thapathali, Kathmandu	Data management
11.	Mr. Dol Narayan Shreshtha, *Computer Officer*	National Statistics Office, Thapathali, Kathmandu	Data and statistical table generation
12.	Mr. Kapil Dhital, *Statistics Officer*	National Statistics Office, Thapathali, Kathmandu	Support
13.	Mr. Ashok Neupane, *Statistics Assistant*	National Statistics Office, Thapathali, Kathmandu	Support
Additional Support			
1.	Mr. Atul Joshi	Map Designer	Map generation

CONTENTS

TABLES

FIGURES

MAPS

ABBREVIATIONS

ASFR	Age-specific fertility rate
CBR	Crude birth rate
CBS	Central Bureau of Statistics
CEB	Children ever born
CWR	Child-woman ratio
DEGURBA	Degree of urbanization
GFR	General fertility rate
GRR	Gross reproduction rate
MACB	Mean age at childbearing
MICS	Multiple indicator cluster survey
MoHP	Ministry of Health and Population
NDHS	Nepal demographic and health survey
NPHC	National population and housing census
NRR	Net reproduction rate
NSO	National Statistics Office
PES	Post enumeration survey
RNI	Rate of natural increase
SMAM	Singulate mean age at marriage
SRB	Sex ratio at birth
TFR	Total fertility rate
UN	United Nations
UNDESA	United Nations Department of Economic and Social Affairs
UNFPA	United Nations Population Fund

कार्यकारी सारांश

पृष्ठभूमि (Introduction)

विगत केही दशकयता नेपाल व्यापक जनसाङ्ख्यिक परिवर्तनहरूबाट गुज्रिएको छ। यसमा प्रजननदरमा आएको कमी उल्लेखनीय रहेको छ। यस परिवर्तनमा सामाजिक-आर्थिक कारकहरू जस्तै स्वास्थ्य सेवामा विस्तार, महिला शिक्षामा प्रगति, सहरीकरण र समाजमा विकसित हुँदै गएका नवीन मान्यताहरूले योगदान पुर्‍याएका छन्। प्रभावकारी सार्वजनिक नीति निर्माण गर्न प्रजननको प्रवृत्ति र स्वरूपलाई बुझ्नु आवश्यक छ। यो प्रतिवेदनले वि.सं. २००९ देखि २०७८ सम्मका प्रजनन प्रवृत्ति र तिनसँग सम्बन्धित कारकहरूको विश्लेषण प्रस्तुत गरेको छ। वि.सं. २०३८ मा कुल प्रजननदर ६.३९ रहेको थियो जुन वि.सं. २०७८ मा घटेर १.९४ मा आएको छ। प्रदेशगत प्रजननदरमा पनि उल्लेखनीय असमानता देखिन्छ। मधेस प्रदेशलाई असमान प्रजननदरको उदाहरण मान्दा शिक्षाको कम स्तर, स्वास्थ्य सेवाको अभाव र आर्थिक अवसरहरूको कमीका कारण अन्य प्रदेशहरूभन्दा तुलनात्मक रूपमा उच्च प्रजननदर रहेको छ। सहरी क्षेत्रहरूमा र विशेष गरी बागमती प्रदेशमा प्रजननदर न्यून देखिन्छ।

खासगरी पाँचौं राष्ट्रिय जनगणना (वि.सं. २००९-११) पश्चात् नेपालमा उच्च प्रजननदर र मृत्युदर देखिएको थियो जसले तीव्र जनसङ्ख्या वृद्धिमा सहयोग पुऱ्यायो। यी दरहरू देशका विभिन्न क्षेत्र र प्रशासनिक विभाजनअनुसार फरक फरक छन् र त्यसो हुनुमा शिक्षा र स्वास्थ्य सेवामा पहुँचका साथसाथै आर्थिक अवसरहरूमा रहेको भिन्नता पनि जिम्मेवार छन्। परिणामस्वरूप कुल प्रजननदर (TFR) मा स्थिर गिरावट देखाएको छ। यस्तो उल्लेखनीय गिरावटका पछाडि शैक्षिक स्थितिमा भएको सकारात्मक सुधार, परिवार नियोजन कार्यक्रमहरूमा गरिएका विशेष प्रयास र स्वास्थ्य सेवामा अनुभूत गर्न सकिने गरी भएको सुधारलाई लिन सकिन्छ।

प्रजननदर खासगरी भूगोल, सामाजिक-आर्थिक अवस्था र जातजातिका आधारमा हेर्दा असमान देखिन्छ। शिक्षा र स्वास्थ्य सुविधाहरूमा विद्यमान सीमित पहुँचका कारणले हिमाली तथा पहाडी क्षेत्रहरूमा प्रजननदर उच्च रहने गरेको छ। शिक्षित महिलाहरूमाझ प्रजननदर न्यून छ भने विपन्न परिवारका महिलाहरूमाझ प्रजननदर उच्च रहेकोले त्यहाँ परिवारको आकार औसतभन्दा ठुलो देखिन्छ। सीमान्तकृत समुदायहरूभित्र पनि उच्च प्रजननदर देखिएको छ।

कोरा जन्मदर (Crude Birth Rate-CBR)

कोरा जन्मदर (CBR) ले प्रति १,००० जनसङ्ख्यामा वार्षिक जीवित जन्महरूको सङ्ख्या दर्शाउँछ। वि.सं. २००९ तिर देखिएको कोरा जन्मदर ४५-५० बाट घटेर २०७८ सालमा १४.२ पुगेको छ। यसले स्वास्थ्य सेवामा भएको सुधार, परिवार नियोजन कार्यक्रमको प्रभावकारिता र आर्थिक विकासमा आएको

सुधारलाई प्रतिविम्बित गरेको छ। ग्रामीण क्षेत्रको कोरा जन्मदर (१५.७) सहरी क्षेत्रको (१३.६) भन्दा बढी छ। प्रदेशगत रूपमा यस सूचकले उल्लेखनीय भिन्नता देखाएको छ। कोरा जन्मदर बागमतीमा सबैभन्दा न्यून (११.५) छ भने कर्णालीमा सबैभन्दा उच्च (१८.७) छ। नेपालको सामान्य प्रजननदर (GFR) ५०.२ रहेको छ जसले १५-४९ वर्ष उमेर समूहका प्रति १,००० महिलामा जन्मदरलाई जनाउँछ। सामान्य प्रजननदर कर्णाली (६७.९) र मधेस (६०.४) मा उच्च रहेको छ भने बागमती (३९.२) प्रदेशमा सबैभन्दा न्यून रहेको देखिन्छ। यस तथ्याङ्कले सहरीकरण र आर्थिक आयामहरूको प्रभावलाई सङ्केत गरेको छ।

उमेर–विशिष्ट प्रजननदर (ASFR)

उमेर-विशिष्ट प्रजनन प्रवृत्तिहरूले सबै उमेर समूहमा भएको परिवर्तनलाई प्रतिविम्बित गरेका छन्। वि.सं. २०५८ देखि २०७८ सम्मको प्रवृत्ति हेर्दा २५-३९ वर्षका महिलाहरूमा प्रजननदरमा विशेष गिरावट आएको छ। किशोरावस्था (१५-१९ वर्ष) को प्रजननदर वि.सं. २०५८ मा प्रति १,००० महिलामा ७१ थियो जुन २०७८ मा घटेर ४७ पुगेको छ। यस्तो गिरावटले शिक्षाको भूमिकालाई उजागर गरेको छ। प्रजनन उमेरका खासगरी २०-२४ वर्ष उमेर समूहमा रहेका महिलाहरूमा उच्चतम प्रजननदर देखिए पनि त्यो वि.सं. २०५८ को प्रतिहजार २०३ बाट घटेर २०७८ सम्ममा घटेर १४९ पुगेको छ।

कुल प्रजननदर (TFR)

नेपाल अहिले प्रतिस्थापनस्तरको प्रजननदर २.१ भन्दा पनि तल पुगेको स्थिति छ। सबैभन्दा उच्चतम कुल प्रजननदर मधेस (२.८५) र कर्णाली (२.१९) प्रदेशमा रहेको छ भने बागमती (१.३७) र गण्डकी (१.५४) न्यून प्रजननदर रहेका प्रदेश हुन्। बागमती र गण्डकी प्रदेशमा रहेको न्यून प्रजननदरका पछाडि सहरीकरणका साथसाथै विलम्बित विवाहको भूमिका रहेको छ। किशोरावस्था (१५—१९) का महिलाहरूको प्रजननदर पनि सोचनीय छ। विशेष गरी मधेस (०.०८५) र कर्णाली (०.०७५) प्रदेश जहाँ छिटो विवाहलगायत अशिक्षा वा न्यून शैक्षिक स्तरले यस्तो अवस्था सिर्जित भएको देखिन्छ। माथि उल्लेख गरिएझैं सहरीकरण र ढिलो विवाहको प्रवृत्तिले गर्दा काठमाडौं जिल्ला र बागमती प्रदेशमा पनि प्रजननदर न्यून रहेको छ।

जन्मसम्बन्धी सूचक (Birth-related Indicators)

प्राकृतिक वा स्वाभाविक वृद्धिदर (RNI) विभिन्न क्षेत्रअनुसार सार्थक रूपमा फरक हुने गर्दछ। कर्णाली (१३.७) र मधेस (१०.३) मा उच्च प्राकृतिक वृद्धिदर रहेको छ जबकि बागमती प्रदेशमा यस्तो दर सबैभन्दा न्यून (४.४) देखिन्छ। प्राकृतिक वृद्धिदरले जन्मदर र मृत्युदर बिचको अन्तरलाई प्रस्तुत

गर्दछ। नेपालमा औसत सन्तान जन्माउने उमेर (MACB) २५.६ वर्ष रहेको छ जुन बागमतीमा सबैभन्दा उच्च (२६.५) र कर्णालीमा सबैभन्दा न्यून (२४.५) छ। मधेसमा कुल पुनरूत्पादनदर (GRR) र खुद पुनरूत्पादनदर (NRR) क्रमशः १.३१ र १.२९ रहेको छ जुन सातओटा प्रदेशमध्ये सबैभन्दा धेरै हो। बागमतीमा कुल पुनरूत्पादनदर सबैभन्दा न्यून अर्थात् ०.६५ छ जसले भविष्यमा जनसङ्ख्या सङ्कुचनको सम्भावनालाई देखाउँछ। यी जनसाङ्ख्यिकीय सूचकहरूले विभिन्न प्रदेशहरूमा प्रजननदर र जनसङ्ख्या वृद्धिमा रहेको असमानतालाई उजागर गर्छन्।

विवाहको औसत उमेर (SMAM) महिला तथा पुरूष दुवैका हकमा वृद्धि भएको छ। पुरूषहरूको औसत विवाह उमेर वि.सं. २०५८ मा कायम २२.९ वर्षबाट २०७८ मा २५.५ वर्ष पुगेको छ। त्यसैगरी महिलाहरूको औसत विवाह उमेर सो अवधिमा १९.५ वर्षबाट २१.८ वर्षमा पुगेको छ। सहरी क्षेत्रहरूमा औसत विवाह उमेर उच्च देखिन्छ जसले विवाह र सन्तान प्राप्तिमा विलम्ब हुने गरेको छ। यसको कारकका रूपमा वैयक्तिक वा पारिवारिक आर्थिक स्थायित्व र वृत्ति विकासजन्य अभिप्रेरणाले भूमिका खेलेको सङ्केत गर्दछ। नेपालमा १६,८८,८८६ एकल आमाहरू (single mothers) छन्। एकल आमाहरूको प्रदेशगत वितरण हेर्दा सबैभन्दा बढी मधेस (३७०,६११) र लुम्बिनी (३५२,९७८) मा रहेको देखिन्छ। विधवाहरूको सङ्ख्या विधुरहरूको तुलनामा धेरै छ जसले महिलाको औसत आयु बढी हुनु र पुरूषहरूको पुनर्विवाह प्रवृत्तिलाई झल्काउँछ।

शिशु जन्मदाको लिङ्ग अनुपात (SRB) वि.सं. २०५८ मा कायम ९९.८ बाट २०७८ मा ११२ पुगेको छ। यसले व्यक्ति र दम्पतीको छोराको चाहनालाई इङ्गित गर्दछ। सातओटा प्रदेशमध्ये मधेस (११८) र सुदूरपश्चिम (११६) मा सबैभन्दा उच्च शिशु जन्मिदाको लैङ्गिक अनुपात देखिन्छ र यसो हुनुमा गर्भपतन सेवामा भएको बढ्दो पहुँचलाई लिन सकिन्छ। शिक्षाले प्रजननदर न्यूनीकरणमा महत्वपूर्ण भूमिका खेल्दछ। तथ्याङ्कले औपचारिक शिक्षा नभएका महिलाहरूको औसत सन्तान सङ्ख्या २.७१ देखाएको छ जबकि स्नातक वा उच्च शिक्षाप्राप्त महिलाहरूको हकमा यो मान केवल ०.१० रहेको छ। सम्पन्न परिवारमा कम सन्तान हुने प्रवृत्ति देखिन्छ, जसले आयस्तर र प्रजननदर बिचको अन्तरसम्बन्धलाई उजागर गर्दछ।

निष्कर्ष र सिफारिस

नेपालमा विद्यमान प्रजनन प्रवृत्तिमा देखिएका क्षेत्रीय र सामाजिक-आर्थिक असमानतालाई सम्बोधन गर्न लक्षित नीतिहरू आवश्यक छन्। उच्च प्रजननदर भएका विशेषगरी ग्रामीण क्षेत्रका बालिकाहरूलाई लक्षित गरी शिक्षा र चेतना अभिवृद्धिका कार्यक्रमहरू विस्तार गरेर प्रजननदर घटाउन सकिन्छ। साथै, बाल विवाहविरूद्धका कानुनहरूको कडाइका साथ कार्यान्वयन गर्न उत्तिकै आवश्यक छ। सुरक्षित मातृत्व तथा प्रजनन स्वास्थ्यसम्बन्धी सेवाहरू समतामूलक आधारमा उपलब्ध गराउनका लागि यस्तो

सेवा विस्तार हुनैपर्दछ। स्वास्थ्य सेवा विस्तार गर्दा अधिकतम जनसङ्ख्या भएको मधेस प्रदेश र कमजोर स्वास्थ्य पूर्वाधार रहेको कर्णाली प्रदेशलाई प्राथमिकतामा राख्नु उचित देखिन्छ।

महिलाहरूको आर्थिक र सामाजिक सशक्तीकरण महत्वपूर्ण छ। यसका लागि रोजगारीका अवसर, व्यावसायिक सीप विकास र विवाह तथा प्रजननसम्बन्धी निर्णयमा ढिलाइ गराउने उद्देश्यले पैरवीका कार्यक्रम र संयन्त्रहरू अगाडि सार्नु वाञ्छनीय छ। क्षेत्रीय असमानता सम्बोधन गर्नका लागि समग्र पूर्वाधार विकास, स्वास्थ्य सेवामा विस्तारका साथसाथै ग्रामीण क्षेत्रमै रोजगारीको अवसर सिर्जना गर्नका लागि पर्याप्त लगानी आवश्यक छ।

दीर्घकालीन विकास योजनाहरूले वृद्धताउन्मुख जनसङ्ख्याको हिस्सालाई कालान्तरमा सन्तुलनमा राख्नका लागि अपेक्षित प्रजननदर अभिवृद्धि हुने रणनीति अवलम्बन गर्नुपर्दछ। यसका लागि निवृत्तभरण र श्रमबजार समायोजनको व्यवस्था लागु गर्नुपर्दछ।

नीतिमा आधारित यी सिफारिसहरूले महिला शिक्षालाई प्रवर्द्धन गर्ने, विवाहको औसत उमेरलाई लम्ब्याउने, रोजगारीका अवसर अभिवृद्धि गर्ने वातावरण हुनुपर्दछ। त्यसैगरी प्रजनन उमेरका महिलाहरूको आर्थिक अवस्था सुदृढ गर्ने, स्वास्थ्य सेवामाथिको पहुँच विस्तार गर्ने, कामकाजी महिलाहरूलाई अभिप्रेरित गर्ने र महिलाहरूको प्रजननसम्बन्धी सवालमा विद्यमान लैङ्गिक भेदभाव हटाउने विषयहरूलाई पनि प्राथमिकताका साथ सम्बोधन गर्नुपर्दछ।

शिक्षामा प्रगति, आयस्तरमा अभिवृद्धि र बढ्दो सहरीकरणको प्रभावले गर्दा नेपालमा प्रजननदर निरन्तर घटिरहेको छ। विकासको स्तर भौगोलिक क्षेत्र, सहरीकरणको अवस्था र प्रशासनिक तहअनुसार असमान रहेको छ। तसर्थ, राज्यले अवलम्बन गर्ने नीतिहरू पनि जनसङ्ख्या र विकासको क्षेत्रीय अवस्था एवम् आवश्यकताअनुसार तय गरिनुपर्दछ जसले समतामूलक विकास र आर्थिक अवसरहरूको सिर्जनामा अहम् भूमिका खेल्ने विश्वास लिन सकिन्छ।

EXECUTIVE SUMMARY

Nepal has gone through vast demographic changes during the past few decades, mostly concerning the decrease in fertility rate. Socio-economic factors have contributed to this change, including healthcare expansion, increased female education, urbanization, and evolving societal norms. Understanding fertility patterns is essential for effective public policies. This reports examines fertility trends and associated factors from 1952 to 2021. The Total Fertility Rate (TFR) was as high as 6.39 in the 1980s and has declined to 1.94 in 2021. The disparities in fertility rate among regions show that Madhesh province has a relatively higher fertility rate compared to other provinces due to low levels of education, healthcare, and economic opportunity. In urban areas, particularly in Bagmati province, lower fertility rate are observed. The demand for early marriage is influenced by factors such as economic activity and preference for a male child.

Nepal experienced high fertility and mortality rate in the mid-20th century, leading to rapid population growth. These rate have differed across the country due to variations in access to education, healthcare, and economic prospects. The census shows a steady drop in TFR, accredited to better levels of education, tremendous efforts in family planning activities, and increasingly well-performing health services.

Fertility rate vary by geography, socio-economic status, and caste/ethnicity. Mountainous and rural regions experience higher fertility due to limited healthcare and educational opportunities. Education among women reduces fertility, whereas economically disadvantaged families tend to have larger families. Marginalized communities also exhibit higher fertility rate.

The crude birth rate (CBR), representing live births per 1,000 populations per year, has declined sharply from 45-50 in the 1950s to 14.2 in 2021, reflecting improvements in healthcare, family planning, and economic growth. Rural areas have higher CBR values (15.7) than urban areas (13.6). Significant provincial differences exist, with Bagmati having the lowest CBR (11.5) and Karnali the highest (18.7). Nepal's General Fertility Rate (GFR), the number of births per 1000 women aged 15-49 years, is 50.2, with the highest rate in Karnali (67.9) and Madhesh (60.4) and the lowest in Bagmati (39.2), illustrating the impact of urbanization and economic factors.

Age-specific fertility trends reveal changes across all age groups. Between 2001 and 2021, fertility rate declined, particularly for women aged 25-39. Adolescent fertility (ages 15-19) decreased from 71 per 1,000 women in 2001 to 47 in 2021, reflecting the role of education. The highest fertility rate occur in women aged 20-24, although rate have declined from 203 per 1,000 in 2001 to 149 in 2021. Nepal is now below the replacement fertility rate of 2.1. The highest TFR is in Madhesh (2.85) and Karnali (2.19), while Bagmati (1.37) and Gandaki (1.54) have the lowest, reflecting delayed marriage and urbanization. Adolescent fertility remains a concern, with higher rate in Madhesh (0.085) and Karnali (0.075) due to early marriages and low education levels, whereas urban areas like Kathmandu and Bagmati have lower rate.

The rate of natural increase (RNI) varies significantly across regions. Karnali (13.7) and Madhesh (10.3) have high RNI, while Bagmati has the lowest (4.4), reflecting differences in birth and death rate. The national mean age at childbearing (MACB) is 25.6 years, with Bagmati having the highest (26.5) and Karnali the lowest (24.5). Gross reproduction rate (GRR) and net reproduction rate (NRR) are highest in Madhesh (1.31 and 1.29, respectively), while Bagmati has the lowest GRR (0.65), indicating potential future population decline. These demographic indicators highlight regional disparities in fertility and population growth.

The singulate mean age at marriage (SMAM) has increased for both sexes, with males rising from 22.9 years in 2001 to 25.5 in 2021, and females from 19.5 to 21.8. Urban areas report higher SMAM, indicating economic stability and career aspirations as factors delaying marriage and childbirth. Nepal has 1,688,886 single mothers, with the highest numbers in Madhesh (370,611) and Lumbini (352,978). Widows significantly outnumber widowers, reflecting longer female life expectancy and remarriage patterns among men. A rising sex ratio at birth (SRB) from 99.8 in 2001 to 112 in 2021 suggests an increasing preference for male children, with the highest SRB in Madhesh (118) and Sudurpashchim (116), largely due to access to sex selective abortion. Education plays a crucial role in fertility reduction, with women having no formal education averaging 2.71 children, while those with a bachelor's degree or higher report just 0.10 children. Similar trends appear across wealth quintiles, with higher-income households having fewer children.

The targeted policies are needed to address the regional and socio-economic disparities present in Nepal's fertility patterns. Increased provision of educational and awareness-raising programs, particularly aimed at rural girls, can reduce fertility levels, along with strict implementation of laws against child marriage. In order to ensure an equitable approach to providing maternal and reproductive health services, health services need to be expanded in high-population regions such as Madhesh and Karnali.

Economic and social empowerment of women is important, through job prospects, vocational skills, and furthermore, mechanisms to advocate for delayed marriage and reproductive decision-making. Addressing regional disparities requires investment in all-round infrastructure, health care, and rural area employment. Long-term planning initiatives should focus on support for an aging body of population through pronatalist policies, pensions, and labor market adjustments.

Policy-based recommendations should support female education, promoting delayed marriage, increased job opportunities, economic strength, healthcare access, working women, and removing the gender bias related to fertility among women. As a result of improving education, wealth, and urbanization in the country, fertility rate in Nepal have decreased. The development differs in diverse regions; hence, policies must be customized specific to the area identified to meet individual peculiar needs for population growth that are equitable and aim at creating economic opportunity.

CHAPTER 1

INTRODUCTION

Nepal has undergone significant demographic changes over recent years, with a particularly notable decline in fertility. This shift can be attributed to various factors, including better access to healthcare, improvements in female education, urbanization, and broader societal transformations (Karki & Krishna, 2008). Fertility is a key determinant of population growth and understanding these trends is vital for developing policies that effectively address the population dynamics of Nepal.

1.1 Fertility trends in Nepal

As Nepal has modernized and urbanized over recent decades, fertility rate have steadily declined. In the mid-twentieth century, the country's demographic profile was marked by high fertility and mortality rate, contributing to rapid population growth. Fertility trends also varied across Nepal's diverse socio-cultural and geographic regions, influenced by disparities in access to education, healthcare and economic opportunities. Over all, high fertility was also a defining feature of most agrarian economies (Tuladhar, 1989), shaped by cultural norms that valued large families, a reliance on agriculture for livelihoods and the limited availability of education and healthcare services.

Census data reveal a steady decline in Nepal's total fertility rate (TFR) over time, reflecting both global trends and unique cultural and socio-economic factors in the country. According to the Central Bureau of Statistics (CBS), the TFR in the 1980s was just above four, a marked decrease from earlier estimates of over five. The demographic variations across Nepal have influenced this decline, with some areas experiencing increased fertility while others have fallen below replacement levels.

The birth rate estimates also vary according to sources and methodologies. Vaidyanathan and Gaige (1973) estimated a crude birth rate (CBR) of 45 to 50 children per 1,000 populations between 1952 and 1954, while Krotki and Thakur (1971) reported a CBR of 47 children per 1,000 populations for 1961. Central Bureau Statistics (CBS) data from 1987 suggested a lower figure of 42, closely aligning with Karki's 1984 estimate of 43 children per 1,000 populations for 1971. Goldman et al. (1980) reported a higher figure of 46.8 for 1976, underscoring the variability in estimates from different means and sources. These estimates collectively show an extended period of persistently high fertility before the eventual decline.

A TFR of 6.3 children per woman was reported by the CBS in the early 1980s. High fertility during this period was driven by a strong preference for male children and limited access to family planning. From the early 1990s onwards, the TFR began to decline significantly, dropping to 5.3 in 1991 and further decreasing to 4.1 by 2001 (CBS, 2003). This decline was driven by improved access to education and healthcare, particularly for women, and effective family planning programmes (MoHP, 2022).

By 2021, the TFR had fallen to 1.94 children per woman, according to the National Statistics Office (NSO, 2023). This reduction reflects transformative changes in reproductive health practices and greater acceptance of family planning use. The decrease in the TFR from over 6 in the early 1980s to 1.94 in 2021 underscores the impacts of socio-economic development and targeted policy interventions.

This report explores these historical trends in fertility, situating them within the broader socio-economic context of Nepal. It examines the interplay between demographic, cultural and policy factors that have shaped fertility patterns over time, providing valuable insights into the dynamics of population change.

1.2 Fertility differentials: A focus on geographic, socio-economic, and caste/ethnic factors

Fertility rate in Nepal reflect broader population trends, with significant disparities between geographic area and socio-economic status and caste/ethnicity.

Geography plays a major role in shaping fertility patterns. Mountain and Hilly regions, with their rugged terrain and limited resources, tend to have higher fertility rate compared to the Tarai plains, where fertility levels are lower (Ministry of Health and Population [MoHP], 2022). Urban areas, benefiting from better healthcare and family planning programmes, also report lower fertility rate (United Nations Population Fund [UNFPA], 2022).

Socioeconomic factors further influence fertility behaviour. Women with higher education levels often have fewer children, as education increases awareness of family planning methods and supports greater workforce participation (Bongaarts, 2020). In contrast, low-income households, particularly those dependent on agriculture, may favour larger families due to economic reasons. Wealthier families, with greater access to healthcare and education, typically focus on child quality rather than quantity (World Bank, 2021). Employment opportunities for women, especially in urban areas, also contribute to delayed marriage and lower fertility rate.

Nepal's caste-based social structures impact marriage age, fertility expectations and family size. Higher fertility rate are common among Dalit and indigenous communities, which face socio-economic marginalization and limited access to services (Acharya et al., 2019). In contrast, Brahman and Kshetri communities, where socio-economic conditions are better, generally have fewer children. Cultural practices, such as early marriage and a preference for sons, also contribute to fertility disparities observed between ethnic groups (Gubhaju, 2020). Understanding these factors is crucial for designing policies that address fertility disparities and promote equitable development across Nepal.

1.3 Literature review

Nepal's total fertility rate (TFR) has experienced a dramatic decline, decreasing from 4.6 children per woman in 1996 to 2.1 in 2022, and reaching replacement level over the past few decades (Ministry of Health, Nepal, New ERA, & ICF, 2022). The decrease in the TFR was largely driven by urbanization, higher levels of educational attainment, economic growth, and wider availability and use of contraception. When compared to rural areas, some urbanized areas exhibit very low fertility which is below replacement level (Ministry of Health, 2012). Data constraints, however, continue to pose significant challenges in reliably estimating fertility trends at the local level. As a result, indirect methods such as empirical Bayesian models or the P/F ratio are often employed (Devkota, 2022).

Alongside the decline in the TFR, the crude birth rate (CBR) has decreased from 33.3 births per 1,000 populations in 2001 to 14.2 births in 2021 (National Statistics Office [NSO, 2024]; Central Bureau of Statistics [CBS], 2003; CBS, 2014). The estimation of the crude birth rate (CBR) in Nepal, however, has varied by method, year and decade. The CBR was estimated at 45 to 50 in 1952/54, calculated by stable population analysis. In 1961, estimates varied from 42 to 47 (CBS, 1987).

Using the P/F Ratio method, a CBR of 43 was estimated in 1971, while stable population analysis provided a figure of 42 (CBS, 1987). A direct estimate in 1976 gave a CBR of 46.8. In 1981, the CBR, using Brass's method, was 45 (Karki, 1984) and 39.7 using stable analysis (CBS, 1987). By 1986, the CBR had further decreased to 39 Brass method. In 1991, Arriaga's modified P/F Ratio indicated a CBR of 39 (Karki, 2003).

1.3.1 Education

One of the most important variables in fertility is education. Women with higher levels of educational attainment tend to use contraception more, marry later and have lower levels of fertility (Acharya et al., 2010). The National Demographic Health Survey (NDHS) 2022 (Ministry of Health, Nepal, New ERA, & ICF, 2022) reported that a woman with secondary or higher-level education had a TFR of 1.9, while the respective TFR for women with no education was 3.1. This supports the theory by Bongaarts (2003) that education strengthens decision making, including about family size.

1.3.2 Economic development

Urbanization, improved infrastructure and economic growth programmes have increased economic opportunities for women in Nepal. Smaller families, therefore, have become more common among all sectors of the population, particularly in urban areas, where marriage and fertility are being delayed (K.C., 2003). In addition, causes of international migrants often delay childbirth or have a shorter childbearing window – if they have children at all – due to economic and social pressures, highlighted by the impact of remittances on fertility patterns in Nepal (Thapa, 2008).

1.3.3 Contraceptive use

A significant contributing factor to the fall in fertility rate has been family planning programmes and better access to modern methods of family planning in Nepal. In 2022, 43 percent of married women in Nepal were using a modern method of contraception and 57 per cent were practicing periodical abstinence (Ministry of Health, Nepal, New ERA, & ICF, 2022). Based on a reports by Ross and Stover (2013), increased accessibility to and availability of contraceptive methods is associated with lower rate of fertility.

1.3.4 Cultural and social norms

Fertility levels in Nepal have declined, yet the deeply embedded cultural norm of son preference continues to strongly influence reproductive behaviours, especially in rural areas (Ghimire & Samuels, 2017). Most of the time, desired fertility exceeds the actual number of children, due to son preference, birth spacing, and reduced maternal and newborn deaths.

1.3.5 Impact of policy interventions in Nepal

The institutional policy framework in Nepal has impacted fertility trends. The National Population Policy 2015 had an overarching goal of integrating family planning services into maternal and child health and education in broader development initiatives (Ministry of Health and Population [MoHP], 2016). With the introduction of the Safe Motherhood and Aama Surakshya Programmes, increased access to maternal health services has influenced a decline in fertility rate, irrespective of impacts on birth spacing and maternal deaths (Baral et al., 2012).

1.3.6 Regional disparities in fertility

Fertility rate vary across the country, with some regions still recording total fertility rate (TFRs) above different region (Ministry of Health, Nepal, New ERA & ICF, 2002). These disparities must be considered in order to achieve uniformity in TFRs across Nepal.

1.3.7 Comparison with regional trends

In the South Asia region, Nepal's substantial decline in fertility rate ranks alongside Bangladesh and India. Socioeconomic development and family planning programmes in the three countries have been drivers of declines in TFRs (United Nations, 2022). Nepal's achievement of reaching replacement level fertility in a very short time, however, is demonstrative of the effectiveness of such targeted interventions.

1.4 Key population policies related to fertility in Nepal

Over the decades, Nepal has implemented various policies to address fertility levels and try to curb population growth. These policies have evolved alongside changes in the demographic landscape, reflecting the need for more targeted interventions. Table 1.1 shows that major policies and targets from different planning periods, highlighting the government's commitment to managing fertility through strategic family planning initiatives.

Table 1. 1: Key population policies related to fertility in Nepal

Plan/time period	Key policies and targets
First Five-Year Plan (1956/57 – 1960/61)	The Family Planning Action Network (FPAN) was established to encourage smaller family sizes.
Year Without Plan: 1961/62	--
Second Three-Year Plan (1962/63 – 1964/65)	Fertility targets were set but not met.
Third Five-Year Plan (1965/66 – 1969/70)	The estimated crude birth rate (CBR) decreased from 39.1 in 1967 to 38.1 in 1971; targets were not met.
Fourth Five-Year Plan (1970/71 – 1974/75)	The plan focused on providing access to family planning (FP) services for 132,000 married couples.
Fifth Five-Year Plan (1975/76 – 1979/80)	The plan aimed to reduce the estimated CBR from 40 to 38 by the end of 1980.
Sixth Five-Year Plan (1980/81 – 1984/85)	The planning commission estimated the CBR at 42; targets were set for a reduction by the end of the plan.
Seventh Five-Year Plan (1985/86 – 1989/90)	The Fertility and FP Survey of 1986 indicated a CBR of around 39; the plan aimed for a TFR of 4.
Years Without Plan: 1990/91 and 1991/92	--
Eighth Five-Year Plan (1992/93 – 1996/97)	The plan set a TFR of 5.8, reducing to 4.5 by 1996/97; the Family Health Survey in 1996 indicated a TFR of 4.64.
Ninth Five-Year Plan (1997/98 – 2001/02)	The plan aimed to decrease fertility to a TFR of 4.2 by its end; the actual TFR was recorded at 4.1.
Tenth Five-Year Plan (2002/03 – 2006/07)	The plan aimed to reduce the TFR from an estimated 3.1 to 3.0; the NDHS showed an actual TFR of 3.10.
Eleventh Three-Year Plan (2007/08 – 2009/10)	The plan promoted sexual and reproductive health and rights and improved access to family planning services but did not set specific TFR or contraceptive prevalence rate (CPR) targets.

Plan/time period	Key policies and targets
Twelfth Three-Year Plan (2010/11 – 2012/13)	The plan aimed to reduce the TFR from 3.1 to 2.75 and to increase the CPR from 48 to 57%.
Thirteenth Three-Year Plan (2013/14 – 2015/16)	The plan aimed to achieve a TFR of 2.5 by 2017; DHS indicated an actual TFR of 2.3.
Fourteenth Three-Year Plan (2016/17 – 2018/19)	The plan aimed to reduce the TFR to replacement level by the end of its period.
Fifteenth Five-Year Plan (2019/20 – 2023/24)	The plan aimed to reduce the TFR to replacement level by the end of the plan period.

Source: (Devkota, 2022).

Under the first five-year plan (1956/57–1960/61), Nepal established the family planning association of Nepal (FPAN), its first national family planning organization. Subsequent plans prioritized awareness and access to family planning. The sixth and seventh five year Plans (1980/81–1989/90) emphasized integrating family planning into health and development initiatives. However, fertility reduction remained minimal due to limited infrastructure, access barriers, and opposition to contraception.

In the period following 1990, there was a shift from population control to rights-based reproductive health. The Eighth and Ninth Plans emphasized better service delivery to achieve family planning targets, especially in rural and marginalized areas. Modern contraceptive prevalence rate (modern CPR) indicates the use of scientifically developed interventions like birth control pills, IUDs, implants, condoms, and sterilization, aimed to prevent pregnancy. On the other hand, traditional CPR comprises methods using more traditional home remedies or behavioral practices like withdrawal and the rhythm (calendar) method which involve calculation rather than medical intervention. Modern methods are mostly enhanced and further encouraged in various FP program settings. Modern contraceptive prevalence rate (CPRs) improved over the present time. In the Twelfth Plan (2010/11–2012/13), Nepal adopted the goal of moving towards replacement-level fertility. Subsequent plans – including the Fourteenth and Fifteenth Five-Year Plans – aimed to reduce fertility rate through improved access to contraception, initiatives to tackle gender inequalities and the integration of family planning into basic health services.

Intensive efforts to increase access to and availability of modern methods of contraception, and maternal health services, have driven a decline in the TFR in Nepal from over six in the 1980s to 1.94 in 2021 (CBS, 2021). Smaller families are evidence that this decline has taken place within a demographic transition, where a larger proportion of the population has moved into the labour force, with the promise of economic growth underpinned by significant investments in education, healthcare and employment.

Declines in fertility rate have not been uniform across Nepal, however, and disparities are most marked in rural areas and among certain ethnic groups, including the Madhesi, where health inequalities are higher and there are fewer socio-economic opportunities (UN DESA, 2023). The maintaining replacement level fertility in Nepal will be challenging, particularly as traditional norms continue to influence reproductive behaviours and health infrastructure is poor in some areas. Sustaining gains made will require continued investment in girls' education and empowering women to make decisions around their fertility.

1.5 Specific objectives of the report

1. To analyze historical trends in fertility rate in Nepal from 1952 to 2021, using data from successive population censuses.

2. To assess the impact of demographic, socio-economic and caste/ethnic variables, such as education and wealth quintiles, on fertility patterns in Nepal.

3. To analyze fertility dynamics in Nepal by key demographic indicators, providing insights into marriage patterns, single parenthood, sex ratio at birth, child-woman ratio, and children ever born, to inform effective population policies and programmes.

4. To examine variations in fertility rate across socio-cultural, economic and geographic contexts in Nepal, analyzing the influence of caste, ethnicity, religion, education, and disability status.

5. To identify key factors driving fertility changes in Nepal.

1.6 Analytical framework and methodology for fertility data

This report draws primarily from National Population and Housing Census, 2021 (NPHC) of Nepal, focusing on fertility data related to children ever born and births occurring in the 12 months preceding the census date. The analysis incorporate various socio-economic and demographic variables, including age, education, wealth quintiles, and urban/rural residence. This comprehensive approach enables key factors contributing to fertility changes over the past three decades to be identified.

The report uses the TFR as the main indicator of reproductive behaviour and examines fertility trends across various subpopulations. The TFR is particularly valuable for policy making, as it provides an aggregate measure of fertility, closely linked to population growth dynamics. This reports to employed to evaluate the relationship between fertility and socio-economic factors, offering insights into the drivers of declines in fertility in Nepal and its future trajectory.

A comprehensive comparison of different methods that can be used to calculate the TFR must always consider the completeness of data sources and reporting accuracy. The calculation of TFRs directly

from survey or vital registration data provides an insight into current fertility trends, but the analysis is too dependent on high-quality current data and is not possible or accurate in settings where records are incomplete.

Direct estimates: The TFR is a demographic measure that estimates the average number of children a woman would have over her lifetime if she were to experience a given set of age-specific fertility rate (ASFRs) throughout her reproductive years (usually defined as 15 to 49 years). To calculate direct fertility estimates at the national, provincial and district level, data from the 2021 Census is used. The calculation of the TFR begins with the derivation of ASFRs. To compute the ASFRs for 2020 to 2021, a single-year age distribution of the female population in 2021 (census data) is used, alongside the total number of births in the 12 months preceding the census. The formula for ASFR is given by:

$$ASFR(a,i) = \frac{births(a,i)}{(female\ population\ exposure\ (a,i)} \times 1000$$

This represents the number of births per 1,000 person-years by females in age group '*a*' within region '*i*', commonly expressed as births per 1,000 women.

In this context, '*i*' designates the region (national, provincial or district level), and '*a*' indicates the five-year age group ranging from 15 to 49 years. The TFR is then calculated by summing the ASFRs (births per 1,000 women) values across all age groups and dividing by 1,000 to express the rate per female, using the following formula (Siegel & Swanson, 2004):

$$TFR(i) = \sum_{a=15}^{49} \frac{ASFR(a,i)}{1000}$$

A key methodological approach used in this report is the Arriaga method, which is more applicable in contexts where traditional approaches cannot accurately reflect fertility changes over time. By comparing the average number of children ever born to women of different ages across multiple census periods, the Arriaga technique accounts for historical variability in fertility rather than more conventional analysis with single-period data and the assumption of constant fertility over time, such as the Brass P/F ratio. As a result, it provides more precise estimates of ASFRs, offering valuable insights into reproductive behaviours across different age groups, as well as more accurate estimates than those used in former demographic research (Arriaga, 1983). The Arriaga method is particularly useful in Nepal, where fertility patterns have shifted over the past decades due to urbanization, policy changes, and improvements in education and healthcare (CBS, 2021).By highlighting changes in reproductive behaviours by the analysis of ASFRs and trends, the method provides a more nuanced understanding of transitional processes in a population, enabling policymakers to fine tune interventions for family planning and health programmes (Moultrie et al., 2013).

Arriaga's method is predominantly based on census data, looking at two of the most significant fertility indicators:

- Number of children per women per specific age group. Total fertility in the census years is multiplied by the number of years that have expired between these points.
- Births in the 12 months preceding the census.

Age-specific fertility rate and the TFR are calculated by comparing the average number of children ever born to women in five-year age groups across multiple census periods. It uses this data on period fertility to estimate ASFRs and the TFR.

Arriaga's method does not only account for socio-economic and demographic factors, such as education, wealth, and urbanization that have changed or shaped fertility rate over time but also leads to an improved understanding of fertility shifts caused by transitions within economies, family planning programmes, and societal changes, as evidenced by examples from the United Nations (2017).

Indirect estimates of fertility – Arriaga method: Due to underreporting issues around fertility in censuses, an indirect approach is used to estimate fertility rate. The ASFRs and the TFR are calculated using the Arriaga method (Arriaga, 1983), which relies on more robust children ever born (CEB) data. The theoretical basis of this method posits that the single-year ASFR reflects the annual change in the average number of children born per woman within each age group.

For CEB by single age at two different time points (2011 and 2021 Censuses in Nepal), the analysis determines the rate of change. With additional information, a linear change is assumed, and the CEB for each intermediate year is interpolated. The single-year ASFRs are derived by comparing two datasets of the average CEB by single year of age, measured precisely one year apart.

In this report, average CEB data for women aged 15 to 49 was obtained from the 2011 and 2021 Censuses at national, provincial and district levels. To enhance the accuracy of the data, the single age-specific distribution of average CEB was smoothed. Arriaga's method is useful in predicting fertility in populations undergoing demographic transitions, especially for countries like Nepal, where it helps in handling inconsistencies in data that would not allow unacceptable fertility estimates due to distortions in the birth patterns brought about by urbanization, changes in policy, or improvements in health and education. In cases where fertility data is incomplete, or is generally under reported, this data has been proved to be very valuable.

A linear interpolation of average CEB was undertaken for 2011 to 2021, providing a comprehensive time series of fertility trends. The difference between these two datasets provides the single-age ASFR using the Arriaga method for November 2020 to November 2021. The steps for indirect estimates of fertility are outlined below:

Step 1: Average number of CEB for women at exact single year based on 2011 and 2021

The average number of CEB for women at exact single year of age x for two censuses can be obtained from the interpolation of the average number of CEB for five-year age groups in the same year.

First census (2011), $CEB_x^{t1} = F\ {}_5CEB_x^{t1}$

Second census (2021), $CEB_x^{t2} = F\ {}_5CEB_x^{t2}$

Where t_1 (2011) and t_2 (2021) are the points in time of the first and second census respectively, F is the interpolation function, and ${}_5CEB_x^{t1}$ and ${}_5CEB_x^{t2}$ are the average number of children for women of age groups x to x + 5 years in 2011 and 2021 respectively.

Step 2: Exact single year CEB (one year after and before) the census

This is estimated from the average number of CEB for women of the same exact single year of age in 2011 and 2021 by linear interpolation as:

First Census (2011), $CEB_x^{t1+1} = \frac{n-1}{n} CEB_x^{t1} + \frac{1}{n} CEB_x^{t2}$

Second Census (2021), $CEB_x^{t2-1} = \frac{1}{n} CEB_x^{t1} + \frac{n-1}{n} CEB_x^{t2}$

n = time of interval between the two census dates; here it is 10 years.

Step 3: Exact single year ASFR (one year after and before) the census

This is calculated as the ASFR on the basis of cohort differences and the average number of CEB according to the 2011 and 2021 Censuses.

First Census (2011), $f_x^{t1+0.5} = CEB_{x+1}^{t_1+1} - CEEB_x^{t1}$

Second Census (2021), $f_x^{t2-0.5} = CEB_{x+1}^{t_2} - CEB_x^{t2.1}$

Step 4: Conventional five-year ASFRs (one year after and before) the census

The ASFRs for conventional five-year age groups is determined by taking the average of the single year ASFR belonging to each five-year age group in the 2011 and 2021 Censuses.

First Census (2011), ${}_5f_x^{t1+0.5} = \frac{\sum_{i=x}^{x+4} f_i t^{1+0.5}}{5}$

Second Census (2021), ${}_5f_x^{t2+0.5} = \frac{\sum_{i=x}^{x+4} f_i t^{2+0.5}}{5}$

Step 5: Adjusted ASFR and TFR

If the data on CEB for women are available for more than two census dates, then the estimates of fertility rate for the intermediate period are obtained by taking the average of fertility rate for the year prior to and the year following the intermediate year. The 's' is the intermediate census data and single year ASFRs are calculated as:

$$f_x^S = \frac{f_x^{t1+0.5} + f_x^{t2-0.5}}{2} \quad \text{and}$$

$$TFR = 5 \times \sum_{i=1}^{7} f_x^S$$

The ASFRs estimated by this method are sensitive to the underreporting of the number of CEB and/or reporting of mother's age. The frequently observed tendency of women over age 35 or 40 to underreport births and to misreport their age can be adjusted by the average parity of women in each five-year age group. However, it has been recognized that the average number of children ever born to women aged up to 30 or 35 years reported in censuses and surveys can be considered as reliable information (Devkota, 2022).

Quality assurance assumptions for fertility estimates are mainly related to the accuracy of the data, including the evaluation of data completeness, detecting and eliminating any inherent reporting biases and cross-validation. The Arriaga methodology is fundamentally rooted in providing a nuanced understanding of fertility dynamics and historical variabilities within socio-economic contexts. This method, while it is just one among many techniques used, supports the premise that there has been a shift in fertility behaviour in Nepal.

1.7. Definition, concept and methods

This study has utilized a number of terms and techniques to measure fertility levels, trends and patterns. This section deals with definition, concepts and methods of the terms and techniques used in the report in the following paragraphs.

Adolescent fertility rate (AFR): The age-specific fertility rate (ASFR) for women aged 15-19 years, typically multiplied by 1,000 for more convenient presentation.

Age-specific fertility rate (ASFR): The age-specific fertility rate for a given age group and time period is the number of births to women in the age group during the time period divided by the person-years lived by women in the age group during the period. Person-

years lived may be approximated by the mid-period population multiplied by the length of the period.

Child-woman ratio (CWR): The ratio of the number of young children (under the age of 5) to the number of women of reproductive age (15 to 49 years), commonly used as an indicator of fertility levels in a population.

Children ever born (CEB): It is a demographic measure that represents the total number of children a woman (or a group of women) has given birth to during her lifetime up to a certain point in time. It is often used in fertility studies to assess reproductive behavior and trends in a population.

Crude birth rate (CBR): The **crude birth rate (CBR)** is a demographic measure that represents the number of live births per 1,000 people in a given population within a specific time period, usually a year..

General fertility rate (GFR): The number of live births occurring during a year per 1,000 women of reproductive age (usually defined as ages 15 to 49).

Gross reproduction rate (GRR): The average number of daughters a woman would have if she experienced current age-specific fertility rate throughout her reproductive life, assuming no mortality.

Mean age at childbearing (MAC): The average age of women at the time they give first birth, calculated from age-specific fertility rate and reflecting the typical timing of childbearing in a population.

Mean age at first marriage (MAFM): The average age at which individuals, particularly women, enter their first marriage, calculated for a given population.

Net reproduction rate (NRR): The average number of daughters that a group of women would have over their lifetimes, adjusted for mortality, indicating whether the population is replacing itself.

Rate of natural increase (RNI): The difference between the crude birth rate and crude death rate, usually expressed as a percentage, indicating the population growth rate excluding migration.

Sex ratio at birth (SRB): The number of male live births per 100 female live births in a population over a specific period, often used to monitor gender imbalances at birth.

Single women/mothers: Single women and single mothers play a crucial role in society, with their experiences shaped by economic, cultural, and policy-related factors. Below is a breakdown of key aspects related to single women and single mothers.

Singulate mean age at marriage (SMAM): Refers to the average age at first marriage (average number of years of single life), before a certain age (defined at 50), of the population born in the same year.

Standardized crude birth rate (SCBR): An adjusted crude birth rate that accounts for differences in the age structure of the population, making it comparable across populations with different age distributions.

Total fertility rate (TFR): A summary measure of the level of fertility in a population. It is the average number of children per woman that would be observed for the reproductive age span for a birth cohort of women who experience given age-specific fertility rate. When the reproductive age span is taken to be 15-49 years, and birth rate are given for five-year age-groups, total fertility is calculated as five times the sum of the age-specific fertility rate for ages 15-19 through to 45-49.

1.8 Data quality for fertility in Nepal

Every 10 years a census is undertaken in Nepal, led by the Central Bureau of Statistics (CBS). While data collection methods and analysis have kept pace with technological advancements and expectations of data usage changing, the quality of data is also constantly evaluated and improved. More detailed and accurate data from the census is essential to track progress towards the Sustainable Development Goals (SDGs) and other national and international development goals. Human resources, data collection tools, field work, coding, computer processing, and post- enumeration surveys (PES) are all elements that have improved the quality of data (Karki, 1995). Improved data consistency has also been achieved through rigorous data cleaning, validation checks, and adherence to standard protocols during data collection and processing.

In 2021, mass media and social media platforms were used to create awareness of the census and its importance among the population. The quality of human resources was also appreciably improved compared to previous censuses, with a better enumerator/supervisor ratio and many more qualified enumerators and supervisors. Authorities and stakeholders also ensured that the post-enumeration survey (PES) was timely and well-managed as a critical appraisal tool for enumeration purposes. For the first time, a third party employer, the Labor Studies Program of the Tribhuvan University, Nepal, conducted the PES, reporting a 2.6 percentage missing rate in the 2021 Census. This was 1 percent less than in 2011 and half the 5.3 percentage omission during the 2001 Census (NSO 2023), indicating a significant improvement.

A post-enumeration survey was conducted following the 2021 Census (NSO, 2023). This raised concerns about the quality of data, particularly the undercounting of children under five. This undercount significantly affects comparisons of the TFR (1.56 births per woman) estimated from the 412935 births recorded in the year preceding the 2021 Census with the existing TFR of 2.1 children per woman from the Demographic and Health Survey (DHS, 2023) and the TFR of 2.0 in the multiple indicator cluster surveys (MICS, 2019). To address this, the Arriaga method was applied to estimate the ASFR using more reliable data on CEB (Arriaga, 1983).

Since 1971, Nepal has been using the Whipple index method to ascertain the quality of age data in Nepal. In total, there has been a decrease of 0.98 points between 1971 and 2021, signifying a marked improvement in age data quality. In previous population censuses, there was more age heaping for females, while the 2021 census indicated no differences based on gender.

Myers index has a range of 0 to 90, where 0 is the absence of age heaping and 90 is where all ages reported end in the same digit. Positive values denote a greater tendency towards certain digits, while negative values indicate underreporting. In general, ages ending in 0 and 5 are favoured while ages ending in 1, 4, 6, 8, and 9 digits are underreported. In Nepal, there has been a significant improvement in the quality of age data as indicated by Myers index values is 24.3 in the 1971 Census declining to 9.9 in the 2021 census (NSO, 2023a). Factors driving this improvement include an improvement in age reporting for women. In the 1971, 1981 and 1991 Censuses, the index was conspicuously high for women compared to men. In recent years the difference has narrowed, with only a 0.5-point difference in 2021.

An improvement in data quality in every population census from the 1952/54 census up to the most recent (2021) census is evident.

1.9 Organization of the report

This report offers a comprehensive analysis of fertility trends in Nepal:

- **Chapter 2** presents various indicators that measure fertility rate over time, providing a foundation for understanding changes in reproductive behaviours and fertility outcomes.
- **Chapter 3** explores key indicators of fertility dynamics and provides more in-depth insights and analysis.
- **Chapter 4** explores how fertility differs across different demographic and socio-cultural groups, shaped by factors such as caste/ethnicity, religion, disability status, education level, and geographic location.
- **Chapter 5** presents conclusions and recommendations.

CHAPTER 2

TRENDS AND PATTERNS IN FERTILITY

This chapter analyzes various measures of fertility, including the crude birth rate (CBR), the general fertility rate (GFR), age-specific fertility rate (ASFRs), total fertility rate (TFR), the adolescent fertility rate, the rate of natural increase (RNI), mean age at childbearing (MACB), the gross reproduction rate (GRR), and the net reproduction rate (NRR).

2.1 Crude birth rate

The CBR is a key demographic indicator that measures the number of live births per 1,000 populations during a specific period (usually a year), providing insights into a country's reproductive behaviour and population growth (Shryock and Siegel, 1976). The calculation is straightforward, requiring minimal data and providing a good overview of fertility trends and population growth. Its wide applicability makes it suitable for comparing fertility levels within or among regions and countries.

Crude birth rate data, however, does not take into account the age and sex structure of a population. This sometimes results in poor misrepresentation of the data because of the very high proportion of women of childbearing age in a population or different area, limited to specific demographic groups. The CBR data does also not provide any insights into fertility behaviours, such as age-specific patterns, or cultural and policy influences on fertility. Therefore, while CBR data is generally useful for broad-level assessments, it has to be combined with more precise indicators, like the TFR, to provide in-depth insights into fertility patterns. Policymakers often use CBR data to guide healthcare, social services and demographic planning. Table 2.1 presents an historical overview of CBR estimates in Nepal, highlighting a gradual decline in the CBR over the past decades.

Table 2. 1: Estimated of crude birth rate from the 1952/54 to 2021 censuses

Reference year	CBR	Method	Source
1952/54	47.0	Stable population analysis	Vaidyanathan and Gaige (1973)
1961	42.0	Stable population analysis	Krotki and Thakur (1971)
1961	43.0	Stable population analysis	CBS, 1987
1971	42.0	Brass's P/F Ratio method	Karki (1984)
1971	46.8	Stable population analysis	CBS, 1987
1976	45.0	Direct estimate	Goldman, et al (1980)
1981	39.7	Brass's P/F Ratio method	Karki (1984)
1981	39.0*	Stable population analysis	CBS, 1987
1986	39.0***	Brass's P/F Ratio method	MOH (1987)

Reference year	CBR	Method	Source
1991	37.0**	Arriaga modified P/F Ratio	Karki (2003)
1993-95	33.5	Direct estimate	MOH, New Era and Macro International (1997)
1998	33.3	Direct estimate	MOH, New Era and ORC, Macro (2002)
2001	22.4	Population Projections, 2001-2021, Arriaga method	CBS, 2003
2011	14.2	Population Projections, 2011-031, Arriaga method	CBS, 2014
2021	20.0	Population Census, 2021, Arriaga Method	NSO, 2024
2022	20.0	Direct estimate	MOHP, New Era and Macro International (2022)

GRR converted to TFR using sex ratio.
Population Monograph, Central Bureau of Statistics, CBS
* ***MOH 1986 survey data corrected for under-reporting.***
** ***Based on direct estimate.***
*** ***1991 Census data corrected for under-reporting. This estimate is quite robust in that the estimated TFR matches well with Retherford and Thapa (August 1999) estimate of 5.16 for 1990/91.***

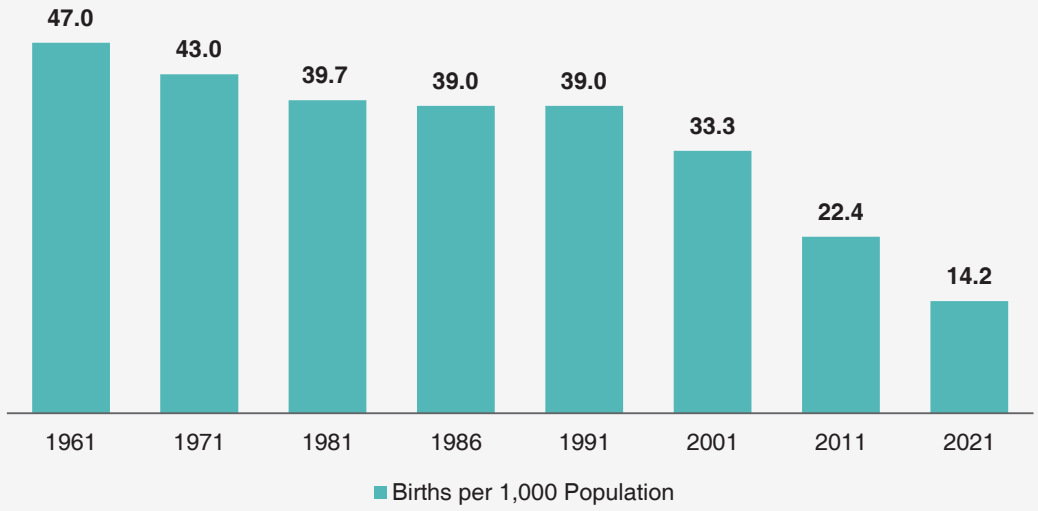
Source: NSO (2023); CBS (2001); (CBS, 2014).

The estimation of Nepal's CBR, which has evolved using various methodologies, reflects significant demographic changes and improvements in data collection. In the early 1950s, the CBR was estimated to be between 45 and 50 births per 1,000 persons using stable population analysis, based on assumptions of demographic stability. By 1961, estimates ranged from 42 to 47.

In 1971, the CBR was estimated at 43 births per 1,000 persons using the Brass P/F ratio method, which adjusts for underreporting by comparing the number of births (P) to the number of women in specific reproductive age groups (F). The CBR of 46.8 in 1976 was derived from direct estimates, collecting data on live births and deaths from censuses and surveys.

In 1991, the Arriaga modified P/F ratio estimated the CBR at 39, accounting for age-specific mortality differences. Direct estimates from national surveys in the 1990s and early 2000s revealed a further decline, with the CBR decreasing to 33.3 by 2001. By 2011, the CBR had decreased to 22.4, culminating in a significant reduction to 14.2 by 2021(Figure 2.1).

Figure 2.1: Trends in crude birth rate in Nepal (1961-2021)



Source: NSO (2023); CBS (2001); CBS, (2014).

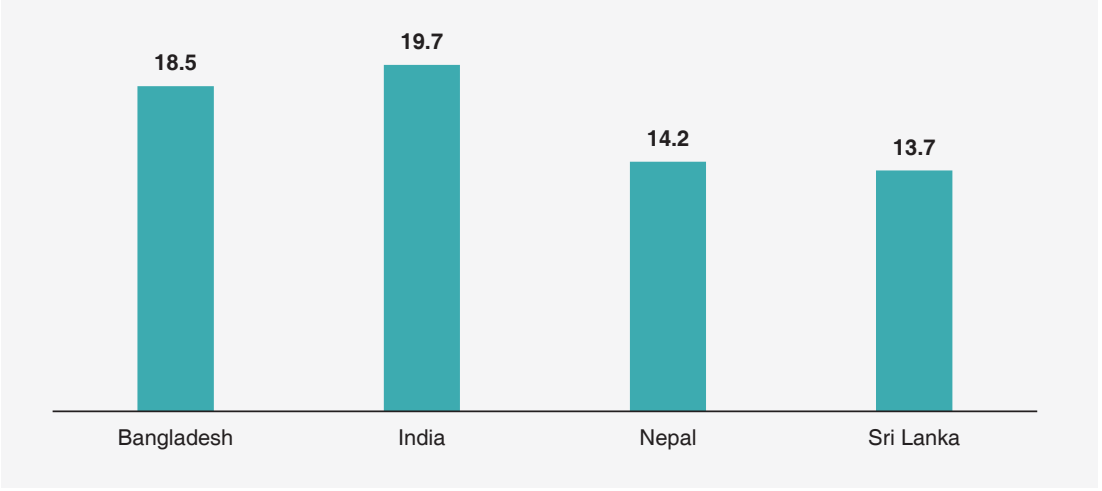
This dramatic decline can be attributed to several factors, including improved healthcare access, increased family planning awareness and use, government initiatives focused on reproductive health and changes in the age pattern of the population from 1961, when the CBR was as high as 47 live births per 1,000 populations, to 2021 when the CBR was 14.2.

Demographic transition over time, with noticeable decreases by several percentage points in the reproductive age group (15-49 years) in Nepal over the last few decades, marked a reduction in the number of young adults, an end to increasing fertility rate and an increase in the younger population. A lower percentage of women of childbearing age meant fewer births and, ultimately, a lower CBR.

Changes in the age structure, attributed to declining mortality rate, have also led to an increased median age of the population in Nepal from 20.4 years in 1991 to 25.2 years in 2021 (CBS, 2021). This process means the latter stages of the demographic transition have been defined by a decreasing dependency ratio, a smaller proportion of the population in youth and a decrease in the CBR. These transformative changes, driven by social, demographic and policy changes dating back to 1961, initiated a period of well-documented and steady decline in Nepal's CBR (Figure 2.1). It is important to understand the impacts of age distribution against the framing of policies in Nepal that have sought to address the challenges, and harness the opportunities of, the demographic transition.

Nepal's 2021 CBR of 14.2 aligns with global trends in declining birth rate, particularly in South Asia, where countries including India (19.7), Bangladesh (18.5) and Sri Lanka (13.7) report varying levels of CBRs (UNICEF, 2022) (Figure 2.2). This observation of a decline in the average number of births per woman within the region does not mean similar things for neighbouring countries; rather, they point to the unique direction in which demography has played out in Nepal.

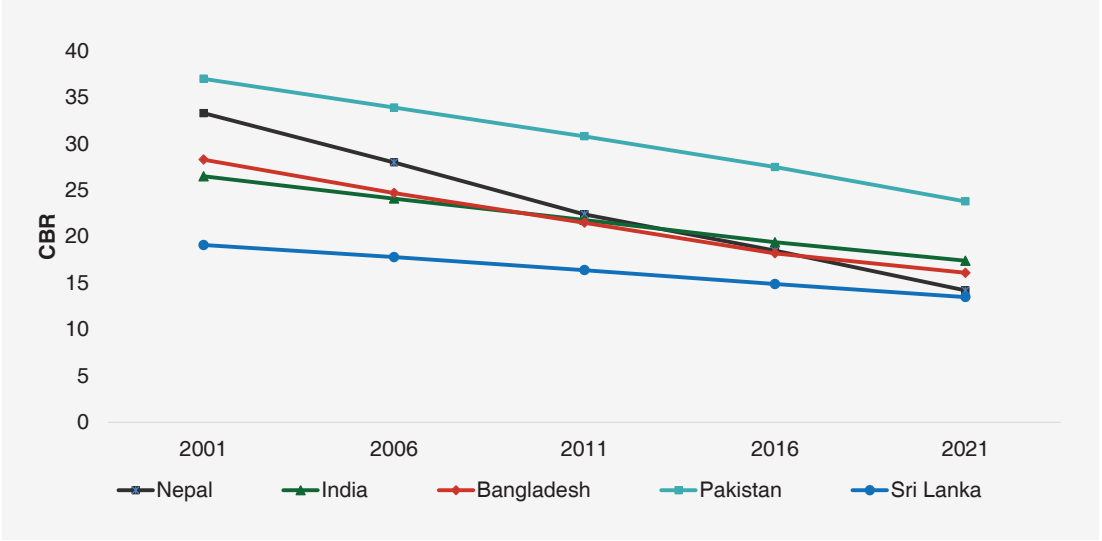
Figure 2.2: Comparison of crude birth rate in some South Asian countries



Sources: UNICEF, 2022

Figure 2.3 shows trends in the CBR of five South Asian countries as Nepal, India, Bangladesh, Pakistan, and Sri Lanka, over a five-year interval from 2001 to 2021. Nepal has seen a major decline in the CBR from 33.3 in 2001 to 14.2 in 2021, with a corresponding significant drop in birth rate. India has observed a steady decrease from 26.5 in 2001 to 17.4 in 2021, with Bangladesh only marginally behind at 28.3 in 2001 and 16.1 in 2021. Pakistan is further behind in comparison to the other countries with the CBR declining from 37 in 2001 to 23.8 in 2021. Sri Lanka, which began with the lowest CBR of the countries at 19.1 in 2001, showed a further decrease to 13.5 by 2021. In short, all countries show a consistent downward trend in the CBR over 20 years, driven by changing socio-economic conditions.

Figure 2.3: Trends in CBR comparing Nepal's with South Asian countries



Sources: (DHS, 2001, 2006, 2011, 2016 and 2021).

Wealth quintiles refer to dividing a population into five equal groups, with each quintile representing one of the five segments. The first segment, for example, refers to the 20 percent lowest households, while the last specifies the 20 percent highest households. Quintiles are often derived through composite indices from asset measures, housing conditions or even access to services, thereby making it possible to understand and analyse all socio-economic disparities. It is, however, essential to explain birth rate by wealth quintiles to see how this impacts fertility patterns as well as reproductive health behaviours within the context of the CBR.

The highest CBRs in Nepal are found in Karnali (18.7) and Sudurpashchim (17.3) provinces, while more developed regions like Bagmati (11.5) and Gandaki (11.4) report significantly lower rate. Rural areas exhibit a higher CBR (15.7) than urban areas (13.6) in Table 2.2.

Table 2.2: Estimated of crude birth rate by province, ecological zone, urban-rural municipality, and wealth quintile, NPHC 2021

Backgrounds variables	CBR
Nepal	14.2
Province	
Koshi	13.0
Madhesh	15.9
Bagmati	11.5

Backgrounds variables	CBR
Gandaki	11.4
Lumbini	14.9
Karnali	18.7
Sudurpashchim	17.3
Ecological zone	
Mountain	15.8
Hill	13.3
Tarai	14.7
Municipality	
Urban municipality	13.6
Rural municipality	15.7
Wealth quintile	
Lowest	16.2
Lower	16.0
Middle	14.8
Higher	13.5
Highest	11.1

To compute the birth rate for each of the wealth quintiles, the total live births among households within each quintile are divided by the total population in the same quintile and then multiplied by 1,000. Such an approach makes it possible to look at fertility rate per population group according to socio-economic levels. According to the 2021 NPHC, the lowest quintile has the highest CBR (16.2) and significantly higher fertility reflecting their lack of access to education, healthcare, and family planning services. In contrast, the highest quintile has the lowest CBR (11.1), as they likely have better access to services.

There is also a higher birth rate in rural municipality slightly high municipalities (15.7) compared to urban rate (13.6). In actuality, this difference may not seem large, but the bigger picture reveals huge disparities in access to healthcare and education. For example, women in rural areas experience higher rate of unmet need for contraception while also scoring lower on female literacy rate, which ultimately leads to relatively higher fertility rate (UNICEF, 2022). Women in lower wealth quintiles also often lack access to reproductive health services, leading to higher birth rate, while those in higher quintiles benefit from better education and informed family planning choices. To address these disparities,

targeted policies and programmes are essential for improving access to education and healthcare for lower-income households.

2.2 General fertility rate

The GFR is a demographic measure that provides insights into fertility levels by focusing on the number of live births per 1,000 women of reproductive age (15 to 49 years) in a given period (usually a year). The present report bases its indirect estimates for the GFR on 2021 Census data. The GFR helps track age-specific fertility trends and highlights disparities across different provinces, ecological zones and wealth quintiles in Nepal.

The national GFR, calculated using the Arriaga method, is 50.2 (Table 2.3), but substantial variations are observed between provinces. Karnali's GFR (67.9) is 17.7 births higher than the national average, representing a 35.3 percent relative increase, while Bagmati's GFR (39.2) is 11 births lower than the national figure, reflecting a 21.9 percent relative decrease. These demographics together have significant impacts on GFR variations. A high likelihood of being attributed to differences in health care, education, and family planning service access. The Nepal Demographic and Health Survey (MoHP, 2022) indicated that contraceptive prevalence rate (CPRs) varied across provinces, underscoring regional differences in fertility, likely driven by disparities in access to healthcare, education and family planning services (MoHP, 2022).

Table 2.3: General fertility rate by province, ecological zone, urban-rural municipality and wealth quintile, NPHC 2021

Background variables	GFR
Nepal	**50.2**
Province	
Koshi	46.1
Madhesh	60.4
Bagmati	39.2
Gandaki	39.3
Lumbini	50.9
Karnali	67.9
Sudurpashchim	60.1
Ecological zone	
Mountain	60.8

Background variables	GFR
Hill	46.5
Tarai	51.8
Municipality	
Urban municipality	46.6
Rural municipality	58.2
Wealth quintile	
Lowest	64.1
Lower	58.1
Middle	52.2
Higher	43.9
Highest	36.3

Similar disparities are observed across ecological zones when compared to national mean fertility patterns and provincial levels of fertility. The GFR in the Mountain zone (60.8) is 21.2 percent higher than the national average, while the Hill zone (46.5) shows a modest 7.4 percent lower rate.

Geographic differences point to the impacts of socio-economic, environmental and infrastructural factors on fertility choices, with more remote areas like the Mountain zone experiencing higher fertility rate. People in the Mountain zone face considerable challenges in accessing healthcare, family planning and education due to poor infrastructure. The Nepal Demographic and Health Survey (MoHP, 2022) reported that, as compared to 68 percent in the Hill zone, only 42 percent of households in the Mountain zone are within 30 minutes of a healthcare facility. Limited infrastructure in regions also results in lower contraceptive prevalence rate (Mountain at 34% vs Hill at 56%) and higher unmet needs for family planning. These differentials, relative to access to healthcare and education and family planning services, reflect the unique demographic structure of each zone in Nepal (CBS, 2021).

Wealth status also plays a critical role in shaping fertility patterns. The lowest quintile exhibits a GFR of 64.1, which is 27.7 percent higher than the national average, while the highest quintile has a GFR of 36.3, marking the same 27.7 percent relative decrease from the national figure. The absolute difference between the lowest and highest quintiles is 27.8 births per 1,000 women, highlighting the profound effect of wealth on fertility behaviour. Middle-income households, with a GFR of 52.2, lie closer to the national average but still exhibit a fertility rate that is 44 percent higher than that of the highest quintile.

Urban-rural differences further emphasize the role of socio-environmental factors. Rural municipalities have a GFR of 58.2, which is 11.6 percent higher than the national average, while urban municipalities report a GFR of 46.6, representing a 7.2 percent lower rate compared to the national figure. The absolute difference between urban and rural areas stands at 11.6 births per 1,000 women (15-49 years), indicating the potential influence of urbanization on reducing fertility rate.

These differences in GFR by province, ecological zone and wealth quintile illustrate the need for targeted interventions. Addressing high fertility in regions like Karnali and among the lowest quintile households requires increasing access to reproductive health services, education and economic opportunities.

2.3 Age-specific fertility rate

The ASFRs offer valuable insights into fertility age patterns, highlighting critical trends including adolescent pregnancy, fertility at older ages and delayed childbearing, and supporting policymakers to design targeted interventions to address fertility issues at specific ages.

Population censuses conducted in Nepal in 2001, 2011 and 2021, along with five inter-censual surveys, reflect significant changes in childbearing age patterns over time. These data reveal periods of both baby booms and fertility declines, and although these rate have fluctuated, the long-term trend indicates a decline in fertility across all age groups.

Globally, fertility trends have shifted towards delayed childbearing, particularly in developed countries. In South Asia, adolescent fertility rate remain relatively high compared to global averages, although Nepal has seen a steady decline. For instance, while the global ASFR averaged around 43 births per 1,000 women aged 15 to 19 years in early 2000, in South Asia the corresponding figure was approximately 70 per 1,000. Nepal has continued to see a downward trend over the course of the last two decades, but levels were higher than the global averages at the end of last century and well into the current one.

Table 2.4: Age-specific fertility rate (ASFR) per 1000 women (2001–2021)

Age group	Census year		
	2001	2011	2021
15-19	71	54	47
20-24	203	172	149
25-29	160	137	111
30-34	104	75	62

Age group	Census year		
	2001	2011	2021
35-39	66	41	17
40-44	33	19	0
45-49	11	6	0

Source: NSO (2023); CBS (2001); (CBS, 2014).

Table 2.4 shows that a consistent decrease in fertility rate across all age groups in Nepal between 2001 and 2021. A more pronounced fall is observed in age groups 25-29, 30-34 and 35-39, compared to younger women (15-24) during the period 2011 to 2021.

From 2011 to 2021, data has established that most age cohorts are seeing reductions in fertility rate, with the most significant reductions among women aged 25-39. Between 2011 to 2021, ASFRs of women aged 25-29 dropped from 137 to 111 per 1,000 women, an 18.9 percent decrease. In the same period, the ASFR for women aged 30 -34 decreased from 75 to 62 per 1,000 women, a 17 percent decrease. This data indicates a preference for delaying childbearing and smaller family sizes within the reproductive cohorts aged 25- 39.

Fertility in the 15-19 age group has decreased by approximately 33.8 percent in the last two decades, reflecting a decline in adolescent fertility, which can be attributed to increased educational opportunities, access to family planning services and changing social norms. The fertility in Nepal declined by about 34 percent from 2001 to 2021; 24 percent from 2001 to 2011 (CBS, 2014) and 12.9 percent from 2011 to 2021.

Consistent decreases in fertility rate across all age groups in Nepal between 2011 and 2021 can be attributed to improved access to education and, above all, the expansion of family planning services. The contraceptive prevalent rate (CPR) of currently married women of reproductive age in Nepal has increased from 35 percent in 2001 to 53 percent in 2021. Improvements in education have also been significant female literacy has climbed from 42 percent in 2001 to 68 percent in 2021 (MoHP, 2022).

Age-specific fertility patterns reveal distinct regional characteristics in Nepal. Fertility rate peak in the 20-24 age group across all regions, followed by a steady decline. Furthermore, despite progress in education and an increase in the legal age of marriage, significant fertility levels persist within the 15-19 age group, highlighting ongoing concerns about early marriage and suggesting that further measures may be needed to address this issue comprehensively. For the age group 35-39, the fertility level decreased by 58.53 percent between 2011 and 2021 This may be the significant influence of female labour participation in shaping the fertility of Nepal.

Figure 2.4: Trends in age specific fertility rate in Nepal (2001- 2021)

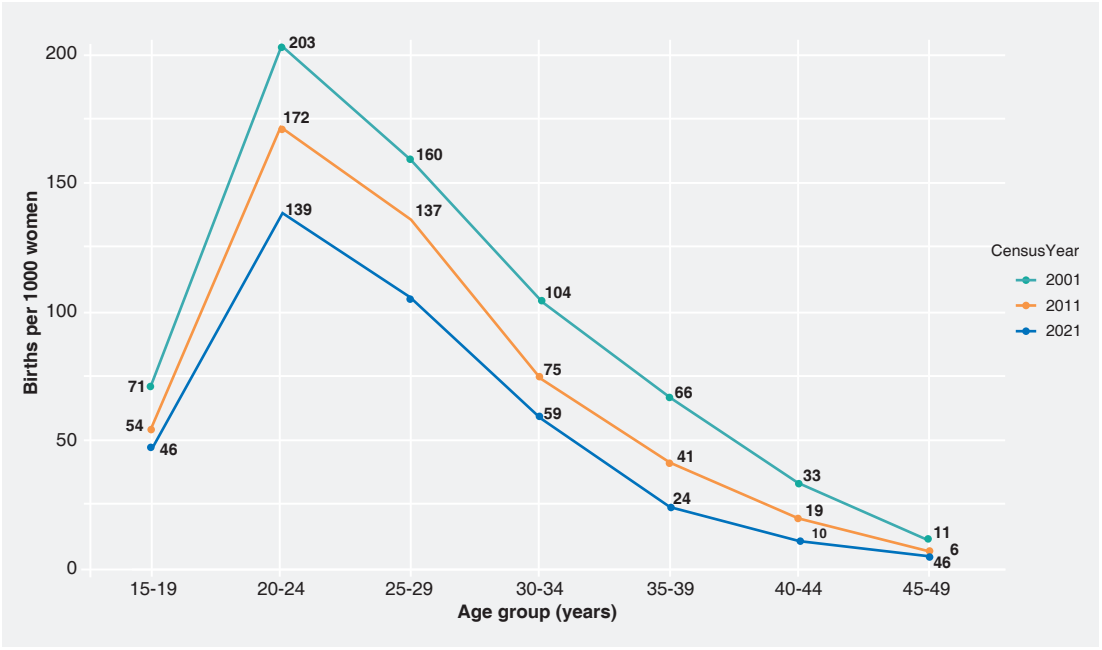


Figure 2.4 provides a comprehensive breakdown of ASFRs by age group in Nepal, offering key insights into fertility trends and disparities in 2021.

Fertility patterns differ significantly by province. Madhesh exhibits the highest fertility rate across almost all age groups, particularly in the 20 - 24 age group 0.225 birth per woman and 25 -29 age group 0.138 birth per woman. This indicates a higher prevalence of early childbearing and larger family size in this region.

Bagmati stands out for its lower ASFRs, especially among adolescents (0.024 per woman for 15-19 year-olds) and peak childbearing ages. The lower fertility here, particularly in the 20-24-year age group 0.087 birth per womn, reflects greater access to education, family planning and health services, along with possibly more urbanized and economically developed conditions (NPHC, 2021). Karnali and Sudurpashchim show relatively high fertility rate in the younger age groups (15-19 and 20-24 years), pointing to the need for targeted interventions focusing on adolescent reproductive health and education. Among the provinces, Madhesh has the highest fertility rate, particularly in the 20-29-year age group. In contrast, Bagmati and Gandaki exhibit the lowest fertility rate, highlighting a shift towards lower fertility. Karnali shows elevated fertility rate in younger age groups, signaling the persistence of traditional reproductive behaviours in this region.

Among the ecological zones, Mountains and Tarai zone exhibits the highest ASFR across nearly all age groups, particularly among women aged 20-24 (0.172 birth per woman), significantly higher than Hill zones.

The Mountain zone has higher fertility rate compared to the national average in almost all age groups, with the highest fertility in the 20-24 age group (0.172 birth per woman). Fertility patterns in the Tarai are similar to the Mountain zone, with higher fertility in the 20-24 (0.172 birth per woman) and 25-29 (0.13 birth per woman) age groups.

There is a clear inverse relationship between wealth and fertility. The lowest quintile has the highest ASFR for adolescents (0.072 birth per woman) and women in their early 20s (0.206 birth per woman), while the highest quintile shows significantly lower fertility rate across all age groups. The ASFR for the highest quintile in the 15-19 age group is only 0.006 birth per woman, compared to 0.072 birth per woman for the lowest. Women from wealthier backgrounds tend to delay childbearing, and fertility rate decrease consistently with increasing wealth.

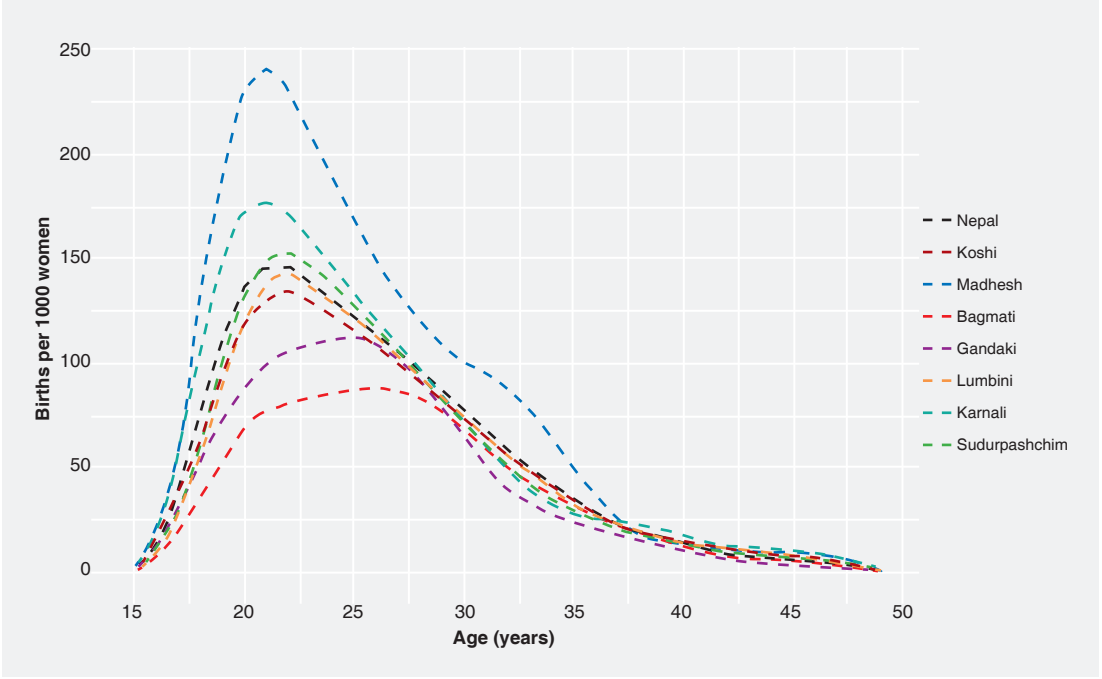
Table 2.5: Age-specific fertility rate (birth per woman) by province, ecological zone and wealth quintile, NPHC 2021

Background variables	Five-year age group						
	15-19	20-24	25-29	30-34	35-39	40-44	45-49
Nepal	**0.047**	**0.149**	**0.111**	**0.062**	**0.017**	**0.000**	**0**
Province							
Koshi	0.041	0.138	0.106	0.059	0.017	0.000	0.000
Madhesh	0.085	0.225	0.138	0.089	0.032	0.000	0.000
Bagmati	0.024	0.087	0.092	0.055	0.014	0.000	0.000
Gandaki	0.036	0.111	0.107	0.046	0.007	0.000	0.000
Lumbini	0.035	0.148	0.110	0.060	0.014	0.000	0.000
Karnali	0.075	0.180	0.119	0.055	0.008	0.000	0.000
Sudurpashchim	0.038	0.159	0.113	0.056	0.010	0.000	0.000
Ecological zone							
Mountain	0.051	0.172	0.130	0.076	0.020	0.000	0.000
Hill	0.036	0.123	0.097	0.056	0.016	0.000	0.000
Tarai	0.045	0.172	0.130	0.072	0.021	0.000	0.000
Wealth quintile							
Lowest	0.072	0.206	0.152	0.083	0.027	0.000	0.000
Lower	0.058	0.175	0.122	0.061	0.017	0.000	0.000
Middle	0.047	0.165	0.117	0.053	0.006	0.000	0.000
Higher	0.026	0.138	0.106	0.052	0.009	0.000	0.000
Highest	0.006	0.094	0.103	0.075	0.030	0.002	0.000

Table 2.5 shows that the indirect estimates of single-age ASFRs for 2020 to 2021 at the national level and by province. Bagmati province has the lowest level of fertility, with a peak at 25-29 years of age, followed by Gandaki province. The reduced fertility rate here, notably among those aged 20-24, reflects increased access to education, family planning and health care, as well as presumably more urbanized and economically developed contexts. The highest levels of fertility are in Madhesh

province, followed by Karnali, with a peak at ages 20-24 and significantly higher rate at ages 15-19. Other provinces have levels around the nation. In the older age groups (35-39 up to 44- 49 years), fertility rate across all provinces and at the national level drop drastically, nearing zero. Figure 2.5 shows that comparative ASFR analysis.

Figure 2. 5: Comparison of age-specific fertility rate in Nepal and provinces, NPHC 2021



2.4 Total fertility rate

The TFR in a specific year is defined as the average number of children that a woman would have if she were to live to the end of her childbearing years and bear children in accordance with ASFRs currently observed. It provides the fertility patterns of a population for a given year or period. It is calculated as:

$$TFR = \sum ASFR(x) \times 5$$

Where:

- $ASFR(x)$ = Age-specific fertility rate for women in five-year age group x.
- The sum is taken over the seven five-year age groups (15–19, 20–24, 25–29, 30–34, 35–39, 40–44, 45–49).
- Each ASFR is multiplied by five because the ASFR is calculated for five-year age intervals.

Total fertility rate trends over the past six decades indicate that Nepal's fertility patterns have undergone significant changes. The downward trend in fertility rate is attributed to broader socio-economic transformation and effective family planning programmes.

Table 2.6: Levels and trends of total fertility rate, Nepal, 1961-2021

Reference year	TFR	Method	Sources
1961	5.74	Stable population analysis	Krotki and Thakur (1971)
1971	5.83	Brass's P/F Ratio method	Karki (1984)
1976	6.33	Direct estimate	Goldman et al (1980)
1981	6.39	Brass's P/F Ratio method	Karki (1984)
1986	5.75*	Brass's P/F Ratio method	MOH (1987)
1991	5.6	Brass P/F method	CBS (1991)
1991	5.16***	Arriaga modified P/F Ratio method	Karki (2003)
1991	5.12	Arriaga modified P/F Ratio method	MOH (1993)
1993-95	4.64**	Direct estimate	MOH, New Era and Macro (1997)
1996	4.6	Direct estimate	NFHS 1996, MOH
2001	4.1	Direct estimate	MOH, New Era and ORC,Macro (2002)
2001	3.8	Arriaga modified P/F Ratio method	Karki (2003)
2001	3.25	Arriaga modified P/F Ratio method	Present study (Dangol, BDS)
2006	3.1	Direct estimate	MOH, New Era and ORC, Macro (2006)
2011	2.52	Arriaga modified P/F Ratio method	Present study (Dangol, BDS)
2011	2.6	Direct estimate	MOH, New Era and ORC, Macro (2006)
2021	1.94	Arriaga method	NSO(2024)
2022	2.1	Direct estimate	MOH, New Era and ORC, Macro (2022)

GRR converted to TFR using sex ratio.
1991 Survey data corrected for under-reporting

* ***MOH 1986 survey data corrected for under-reporting.***

** ***Based on direct estimate.***

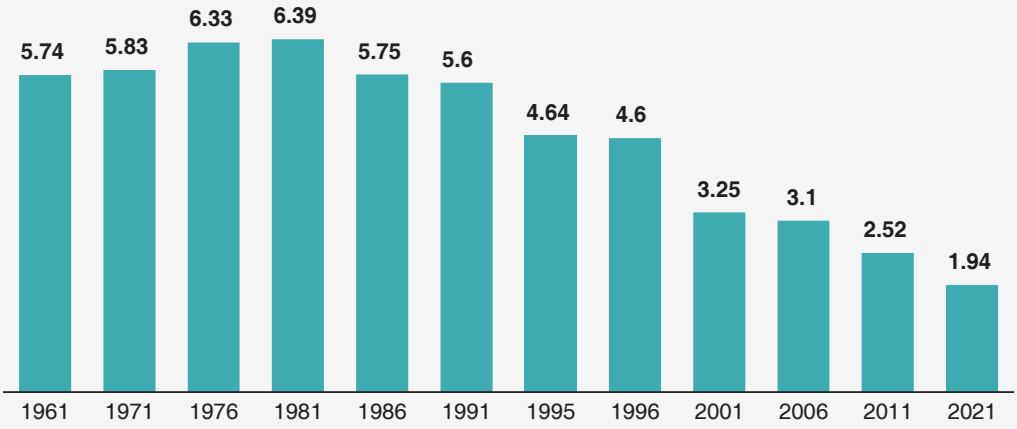
*** ***1991 Census data corrected for under-reporting. This estimate is quite robust in that the estimated TFR matches well with Retherford and Thapa (August 1999) estimate of 5.16 for 1990/91.***

In 1961, Nepal's TFR was estimated at 5.74 children per woman. By 1976, this figure had increased to 6.33 and then to 6.39 in 1981. A decrease was then observed, from 5.75 in 1986 to 4.6 in 1993-95, and now 1.94 in 2021. This decrease can be attributed to increasing government initiatives to promote family planning and improve access to maternal health services.

The TFR of Nepal, as per the 2021 Census, is 1.94 children per woman. This figure indicates that, on average, 100 women in Nepal are expected to have 194 children over their lifetime. This TFR is below the replacement level of 2.1. This figure reflects a general trend towards smaller family sizes and slower

population growth. However, there are notable regional variations in the TFR across the different provinces of Nepal, each reflecting unique socio-economic and cultural dynamics.

Figure 2. 6: Trends in total fertility rate, Nepal 1961-2021, NPHC 2021



The turning point in fertility patterns occurred in the late 1980s and early 1990s when significant declines were observed (Figure 2.6). By 1993 to 1995, direct estimates placed the TFR at 4.6, showing a considerable reduction from earlier decades. This decline can be attributed to increased government efforts to promote family planning and broader access to maternal health services. The trend continued, with the TFR dropping to 3.1 in 2006 and 2.5 by 2011, using the Arriaga modified P/F Ratio method.

By 2021, the TFR had dropped to 1.94 using the Arriaga method. This figure is particularly significant as it falls below replacement level fertility of 2.1, indicating that Nepal has reached a point where the population may not replace itself without immigration. This rapid decline in TFRs is a striking contrast to global and regional trends, where countries like India and Bangladesh have seen slower reductions in fertility.

Table 2.7: Total fertility rate by province, ecological zone, and wealth quintile, NPHC 2021

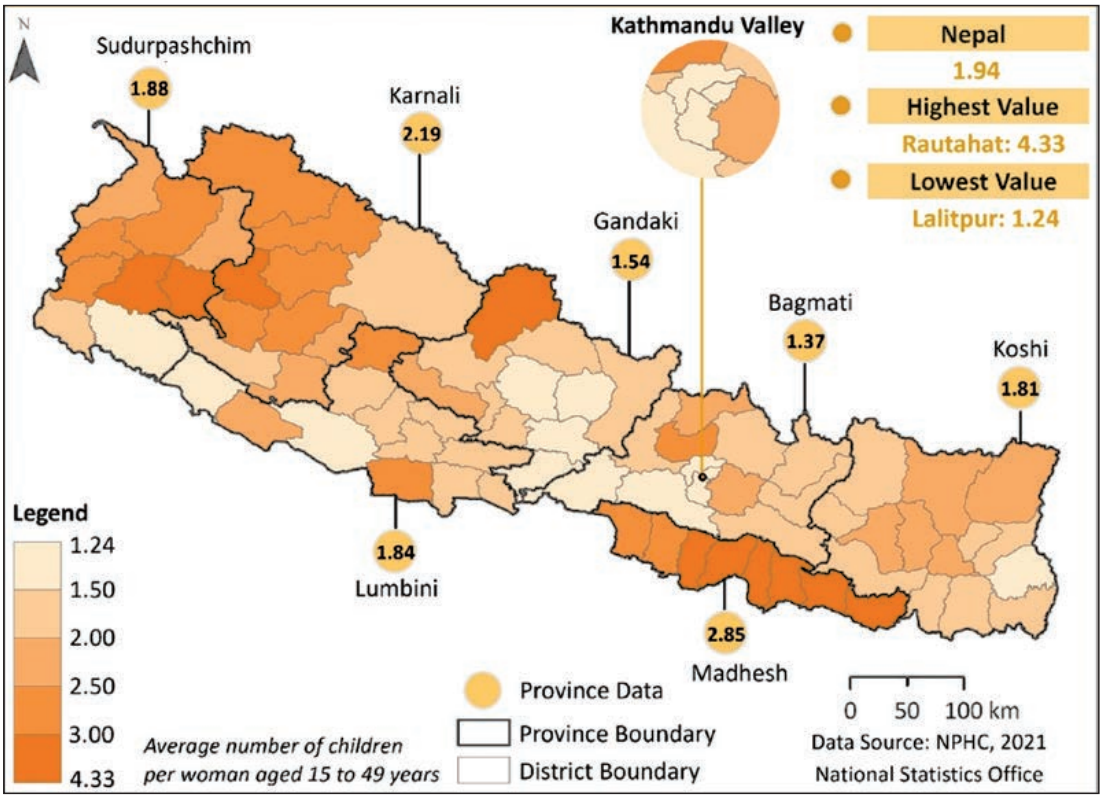
Background variables	TFR
Province	
Koshi	1.81
Madhesh	2.85
Bagmati	1.37
Gandaki	1.54
Lumbini	1.84
Karnali	2.19
Sudurpashchim	1.88
Ecological zone	
Mountain	2.24
Hill	1.64
Tarai	2.20
Wealth quintile	
Lowest	2.70
Lower	2.16
Middle	1.93
Higher	1.66
Highest	1.55

The TFR varies significantly across different provinces, ecological zones, place of residence, and wealth status as shown in Table 2.7. Although at the national level, the TFR stands at 1.94, there are notable variations between provinces. Bagmati Province has the lowest TFR at 1.37, significantly below the national average. Potential reasons for such low fertility could include delayed marriage, urbanization, improved education, and the prioritization of careers/participation in the workforce. In contrast, Madhesh Province records the highest TFR at 2.85, well above replacement level. This elevated fertility rate in Madhesh likely reflects cultural preferences for larger families and lower socio-economic development.

The wealth quintile analysis for the TFR reveals that the lowest households exhibit the highest fertility rate, with a TFR of 2.70, while the highest households have a TFR of 1.55, indicating an inverse relationship between income and fertility.

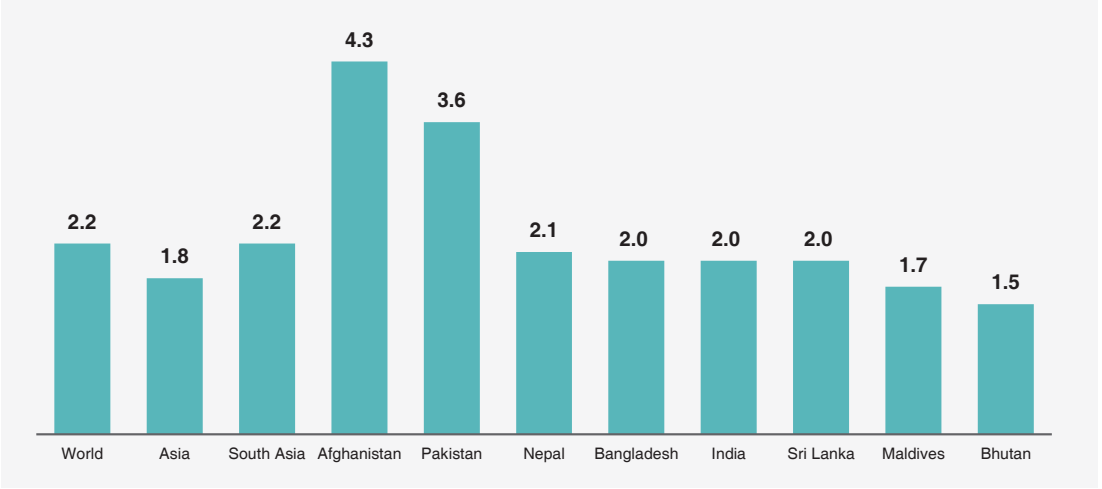
Map 2.1 shows that the TFR by province and district in Nepal in 2021. The national average TFR is 1.94, with variations observed in districts including a high of 4.33 in Rautahat and a low of 1.24 in Lalitpur. The province of Madhesh has the highest TFR at 2.85; Karnali the second highest at 2.19, while the population in the Kathmandu Valley has lower fertility rate. These variations in rate may indicate the level and rate of development across provinces in Nepal which are impacting fertility. This underscores the need for geographically targeted fertility and reproductive health policies. In regions like Madhesh and rural areas where fertility rate remain high, efforts should focus on expanding access to contraception, improving maternal health services and promoting girls' education to delay marriage and childbearing. Special attention should also be given to rural and mountainous zones where cultural and infrastructural barriers hinder access to reproductive health services.

Map 2.1: Total fertility rate by province and district, NPHC 2021



Additionally, in areas like Bagmati and among wealthier populations, where fertility rate are declining below replacement levels, policies should focus on encouraging childbearing through family-friendly policies such as maternity leave, childcare support and financial incentives for families.

Figure 2.7: Comparison of total fertility rate globally and by region



Source: Population Reference Bureau 2024.

The total fertility rate (TFR) in different regions shows that Nepal's is comparable to South Asia and slightly below the global average. Asia's TFR values are generally lower, leaning away from 1.8. This TFR exhibits the variations in fertility levels between Asia and South Asia, where Nepal's TFR is regarded as higher compared to Asia (World Bank, 2024).

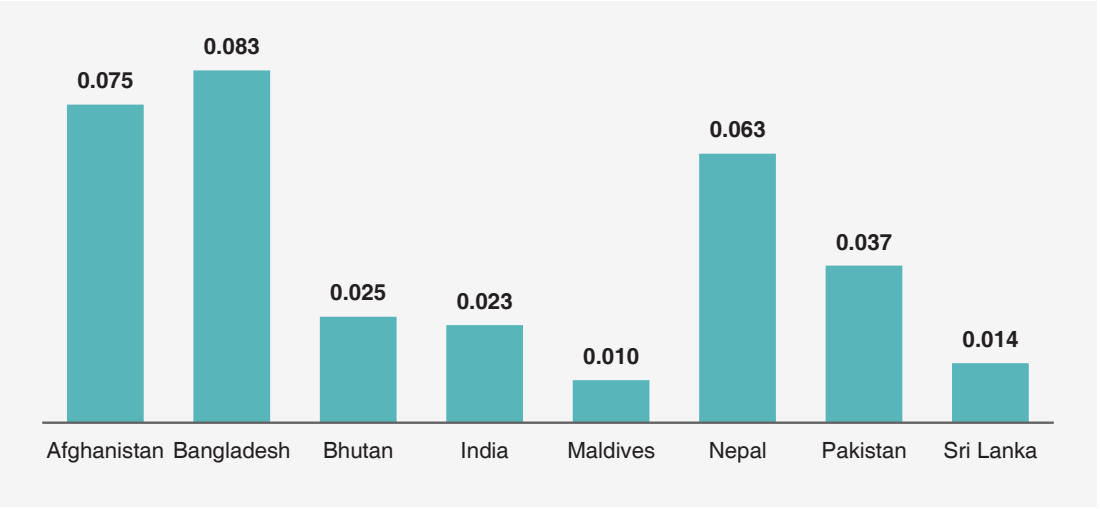
2.5 Adolescent fertility

Globally, fertility trends have shifted towards delayed childbearing, particularly in more developed countries. In South Asia, adolescent fertility rate remain relatively high compared to global averages, although Nepal has seen a steady decline in fertility and delayed childbearing, particularly in more developed areas.

Figure 2.8, South Asian countries have varying rate of adolescent fertility, with Bangladesh reporting the highest (0.083 birth per woman), followed by Afghanistan (0.075 birth per woman) and Nepal (0.063 birth per woman). Pakistan, Bhutan, and India have moderately lower rate (0.037, 0.025 and 0.023 birth per woman, respectively). The lowest rate for adolescent fertility are in Sri Lanka and the Maldives, 0.014 and 0.010 birth per woman respectively.

In respect to global averages, adolescent fertility rate remain high in South Asia. While the global ASFR averaged around 43 births per 1,000 adolescents (aged 15 to 19 years) in early 2000, in South Asia the corresponding figure was 70 per 1,000 adolescents. Nepal appears to have an unbroken downward trend over the last two decades.

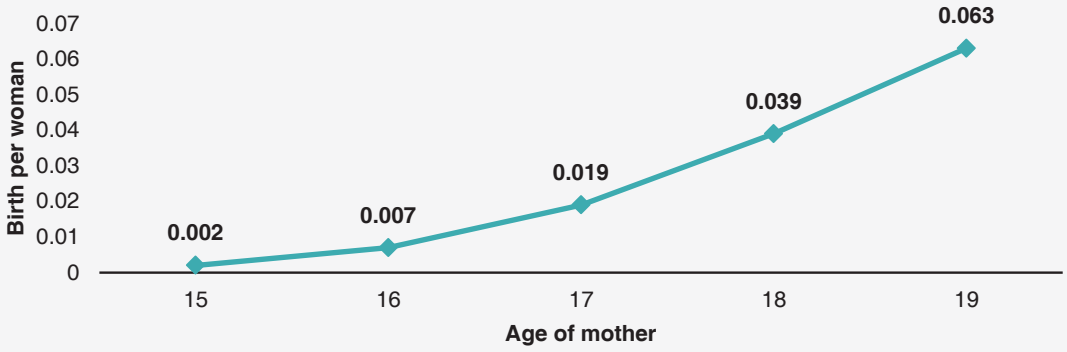
Figure 2.8: Comparison of adolescent fertility rate (births per woman) in South Asia



Sources: UNICEF, 2022

In Nepal, ASFRs for adolescents, aged 15 -19 years, are primarily derived from 2021 Census data, with births applied nationally for married women only. This has methodological limitations, which are most apparent in rural areas, where there is likely to be underreporting for total fertility for adolescents (especially from visitors, as this is when child marriage tends to occur more often than in urban settings [CBS, 2021]). These limitations have not been considered here in trends which show reducing adolescent fertility. In the early 2000s, globally, the ASFR for women aged 15-19 years was around 43 per 1,000 women, while in South Asia, it was higher at around 70 per 1,000 women. Nepal, however, has followed a downward trajectory in adolescent fertility over the last two decades as indicated in Figure 2.9.

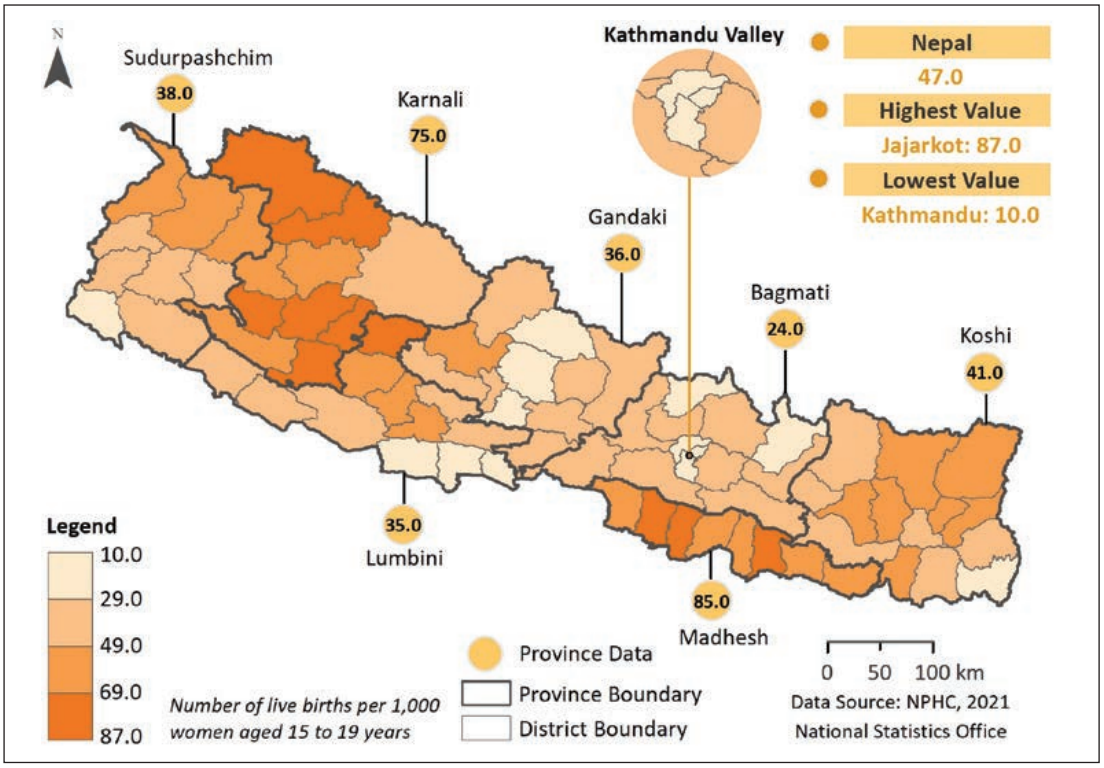
Figure 2. 9: Adolescent fertility rate (per woman) by single year of age of mother, NPHC 2021



Fertility rate show a steady increase with age: for 15-year-olds, the rate is 0.002 births per woman, rising to 0.007 for 16-year-olds, 0.019 for 17-year-olds, and peaking at 0.063 for 19 year-olds. These figures highlight that older adolescents contribute significantly to the overall fertility rate for the 15-19 age group, emphasizing the need for targeted interventions in later adolescence

The adolescent fertility rate (15-19) at Figure 2.9 above appears lower compared to figures in specialized surveys including Demographic and Health Surveys (DHS) and the Multiple Indicator Cluster Surveys (MICS). The adolescent fertility rate reported in the 2019 MICS was 63 per 1,000 women (CBS, 2019), significantly higher than the reported 47 for 2021 from census data. Such a pattern similarly characterizes DHS estimates for adolescent fertility for much of the same periods; again, they consistently exceed census estimates (MoHP, 2022).

Map 2.2: Adolescent fertility rates (per 1000 women ages 15-19 years) by province and district, Nepal, NPHC 2021



Map 2.2 shows the fertility rate of adolescents by province and district in Nepal in 2021; measured as the number of births per 1,000 adolescents aged 15 to 19. The national average for the adolescent fertility rate is 47 per thousand women, Jajarkot records the highest adolescent fertility at 87 and Kathmandu the lowest at 10 per thousand women. Provinces and districts are portrayed by a variation in colour to indicate low (10) to high adolescent fertility rates (87). Higher rates are concentrated in regions such as Karnali and Madhesh (75 and 85 per thousand women, respectively), highlighting regional disparities in adolescent fertility across Nepal.

2.6 Other fertility measures

Key indicators in this analysis include the rate of natural increase (RNI), which is defined as the difference between the crude birth rate and crude death rate expressed per 1,000 populations over a specific period, reflecting natural population growth rate, but not taking migration into account. The mean age at childbearing (MACB) reflects the average age at which women given years. The gross reproduction rate is the average number of daughters that would be born alive to a hypothetical cohort of women if they lived to the end of their reproductive years and if they experienced the same age -specific fertility throughout their lives that women in each age group experience in a given year or period of years.

The net reproduction rate is the average number of daughters that would be born alive to a hypothetical cohort of women if they experienced the same age-specific fertility throughout their lives that women in each age group experienced in a given year, or period of years, and if they were also subject to the mortality rate of the same year or period of years. It is calculated using the TFR from the Arriaga method. Each of these indicators provide critical insights into the dynamics of fertility and population growth, as well as socio-economic factors influencing reproductive behaviour.

Table 2.8: Estimation of other fertility parameters by province, ecological zone, urban-rural municipality, and wealth quintile, NPHC 2021

Background variables	CBR ('000)	CDR ('000)	RNI	MACB (years)	GRR ('000)	NRR ('000)
Nepal	**14.2**	**6.8**	**7.4**	**25.6**	**0.92**	**0.90**
Province						
Koshi	13.0	7	5.2	25.7	0.88	0.86
Madhesh	15.9	6.5	10.3	25.4	1.31	1.29
Bagmati	11.5	6.4	4.4	26.5	0.65	0.65
Gandaki	11.4	6.4	3.1	25.5	0.73	0.72
Lumbini	14.9	7.5	7.9	25.7	0.88	0.87
Karnali	18.7	6.3	13.7	24.5	1.05	1.03
Sudurpashchim	17.3	6.8	11.0	25.4	0.87	0.86
Ecological zone						
Mountain	15.8	6.8	9.3	25.7	0.91	0.89
Hill	13.3	6.5	6.2	25.8	0.69	0.68
Tarai	14.7	7.2	8.1	27.3	0.74	0.73
Municipality						
Urban municipality	13.6	NA	6.6	27.6	0.67	0.66
Rural municipality	15.7	NA	9.0	26.3	0.86	0.84

Background variables	CBR ('000)	CDR ('000)	RNI	MACB (years)	GRR ('000)	NRR ('000)
Wealth quintile						
Lowest	16.2	6.5	9.4	25.5	0.99	0.96
Lower	16.0	6.7	9.2	25.2	0.84	0.82
Middle	14.8	6.7	7.9	25.0	0.74	0.73
Higher	13.5	7.2	7.0	25.7	0.60	0.59
Highest	11.1	6.5	3.6	28.1	0.54	0.53

Table 2.8 shows that variations in fertility behaviours reflect Nepal's diverse cultural and socio-economic landscape. Among provinces, Karnali has the highest RNI at 13.7 per 1,000, driven by early childbearing (MACB 24.5) and underpinned by high CBRs at 18.7 per 1,000 and a relatively low CDR at 6.3 per 1,000 (CBS, 2021). Variations in fertility illustrate how culturally and socio-economically diverse Nepal is.

Between provinces, Karnali has the highest RNI at 13.7 per 1,000, underpinned by high CBRs of 18.7 per 1,000 and a relatively low CDR of 6.3 per 1,000 (CBS, 2021). In contrast, Bagmati exhibits the lowest RNI (4.4), where women tend to delay childbearing (MACB 26.5) and have smaller family sizes, reflecting the province's higher levels of urbanization and better access to health services (NPHC 2021). Additionally, Madhesh province reports the highest GRR (1.31) and NRR (1.29), indicating that women in this region are more likely to have sufficient daughters to sustain population growth. On the other hand, Bagmati, with a GRR and NRR of 0.65, faces challenges in population replacement, which will have long-term demographic consequences.

An analysis of ecological zones further underscores the influence of the natural and socio-economic environment on fertility patterns. The Mountain zone has a relatively high RNI of 9.3, reflecting higher fertility among remote populations. In contrast, the Hill zone has the lowest RNI (6.2), where modern family planning practices are more prevalent.

The urban-rural division also plays a crucial role in shaping fertility patterns. In urban areas, the RNI is lower at 6.6, reflecting delayed childbearing (MACB 27.6) and smaller families, largely due to better access to education, employment and healthcare. Conversely, rural areas have a higher RNI of 9.0 with an earlier MACB (26.3), indicating more traditional fertility behaviours and less access to reproductive health services (MoHP, 2022).

Socio-economic status further influences fertility results as seen in the disparities between wealth quintiles. The lowest quintile records the highest RNI (9.4), reflecting higher fertility rate, with women in this group tending to start families earlier (MACB 25.5). In contrast, the highest quintile reports the lowest RNI (3.6), with delayed childbearing (MACB 28.1) and smaller family sizes, reflecting greater educational attainments.

CHAPTER 3

INDICATORS OF FERTILITY DYNAMICS

Fertility dynamics refer to the variations in fertility behaviour over time, across different groups, and within diverse demographic contexts. These changes are shaped by a complex interplay of social, economic, and cultural factors, and play a critical role in understanding population growth and demographic shifts in Nepal.

In this chapter, key indicators reflecting fertility dynamics in Nepal are explored by analyzing metrics such as the singulate mean age at marriage (SMAM), the proportion of single women, the sex ratio at birth (SRB), the child-woman ratio (CWB), and children ever born (CEB) to gain a deeper understanding of fertility trends. These indicators not only highlight individual and societal reproductive choices but also serve as benchmarks for assessing the impact of policies and programmes. This analysis can be used to inform reproductive health strategies and support sustainable population growth.

3.1 Singulate mean age at marriage

The SMAM is a demographic measure representing the average age at which individuals marry for the first time before the age of 50 (Ritchie & Roser,2024). It is an indirect estimation method and does not require direct information on the age at marriage for all individuals. It captures the average length of single life for a cohort and provides insights into marriage patterns within a population. The SMAM is calculated using census data on the proportion of never-married individuals by age and sex, making it a valuable tool for demographic analysis (Hajnal, 1953).

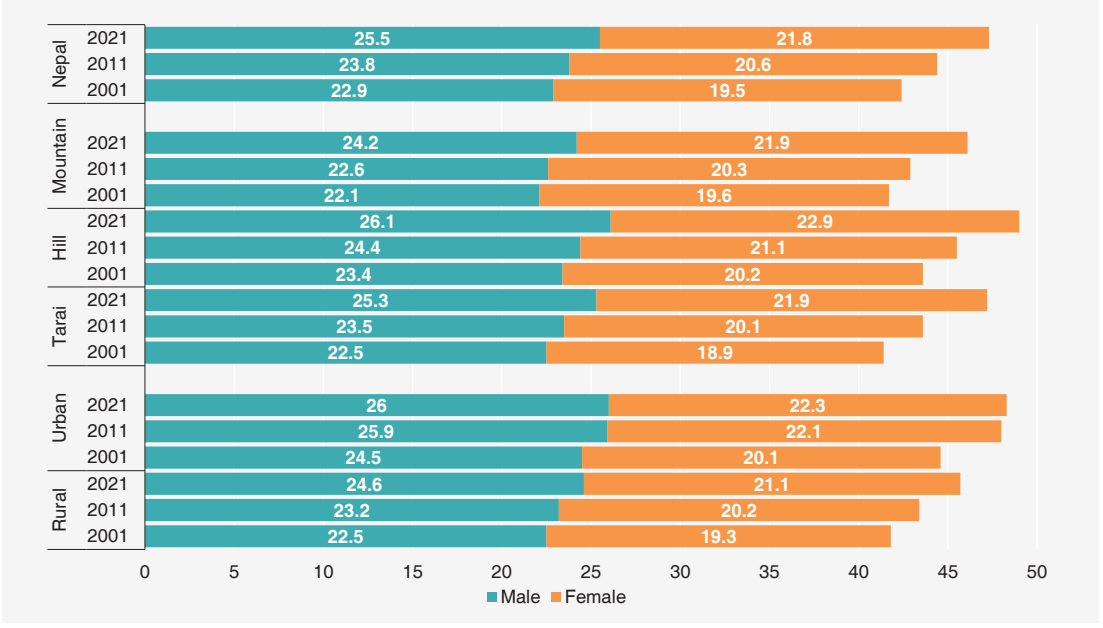
Unlike direct measures of mean age at marriage, which fluctuate with varying marriage rate across age groups, the SMAM offers a stable and comprehensive analysis. This means there are no major shifts in social behaviour around the age of marriage over time. Singulate mean age at marriage provides a stable measure of mean age at marriage but assumes constant age patterns of first marriage, which can be impacted by social, cultural and policy shifts, leading to potential inaccuracies. National Demographic and Health Survey data showed a direct mean age at marriage of 20.5 years for women in a recent survey, while SMAM was 22.3 years, accounting for those who delay or avoid marriage entirely (MoHP, 2022). Singulate mean age at marriage allows for cohort analysis over time, minimizing biases from mortality rate or current age distributions. Overall, SMAM is essential for understanding marriage dynamics while addressing the limitations of direct measures. Table 3.1 summarizes SMAM for both males and females across different years by ecological zone and urban-rural municipality levels.

Table 3.1: Singulate mean age at marriage by ecological zone and urban-rural municipality, 2001-2021, Censuses

Background variables	2001		2011		2021	
	Male	Female	Male	Female	Male	Female
Nepal	**22.9**	**19.5**	**23.8**	**20.6**	**25.5**	**21.8**
Ecological zone						
Mountain	22.1	19.6	22.6	20.3	24.2	21.9
Hill	23.4	20.2	24.4	21.1	26.1	22.9
Tarai	22.5	18.9	23.5	20.1	25.3	21.9
Municipality						
Urban municipality	24.5	20.1	25.9	22.1	26.0	22.3
Rural municipality	22.5	19.3	23.2	20.2	24.6	21.1

Source: NSO (2023); CBS (2001); (CBS, 2014).

Figure 3.1: Singulate mean age at marriage by ecological zone and urban-rural municipality, 2001-2021, Censuses



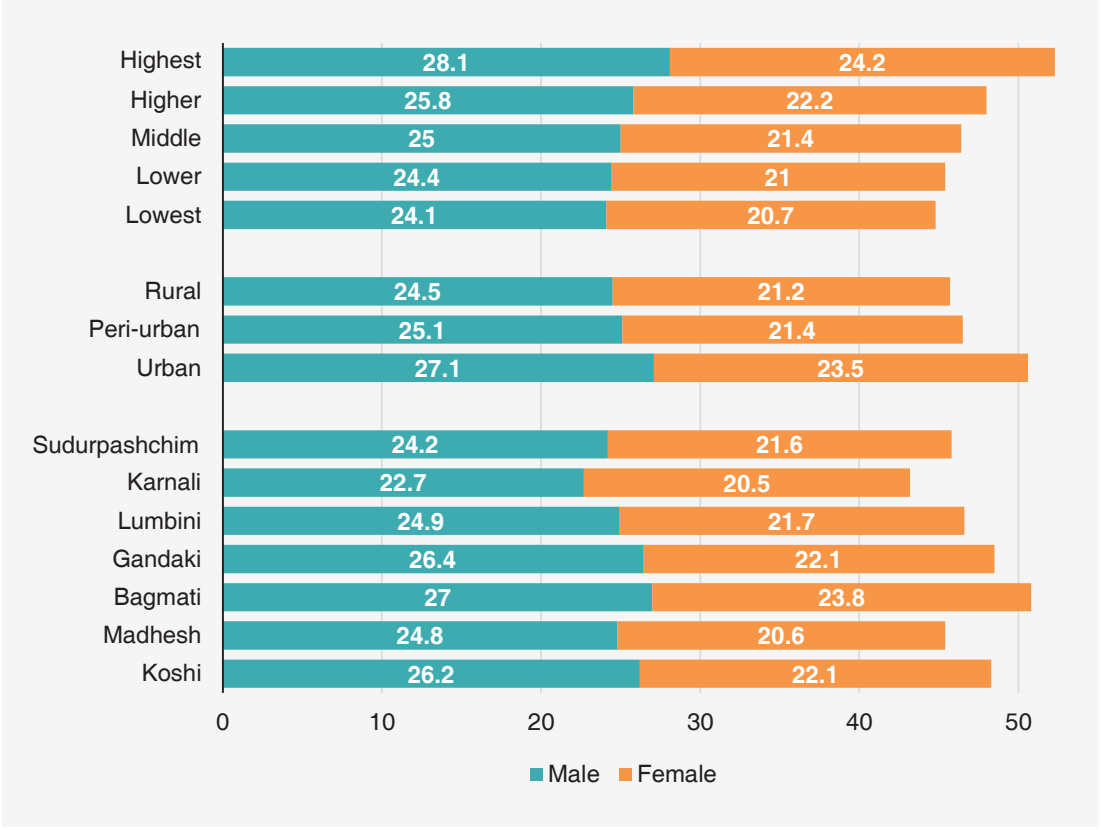
Source: NSO (2023); CBS (2001); (CBS, 2014).

There has been a noticeable increase in SMAM for both males and females between 2001 and 2021 across all ecological zones and rural-urban municipalities in Nepal. The overall SMAM for males increased from 22.9 years in 2001 to 25.5 years in 2021, while for females, it rose from 19.5 years to 21.8 years over the same period (Table 3.1).

Notably, urban areas consistently show higher SMAM figures compared to rural areas, indicating a trend towards later marriages in urban settings.

Figure 3.2 shows that a comprehensive overview of SMAM for men and women aged 15 -49 in Nepal, by province, degree of urbanization (DEGURBA) and wealth quintile. These data are crucial for understanding the dynamics of marriage trends across different demographics and geographical contexts (NPHC, 2021).

Figure 3.2: Singulate mean age at marriage (SMAM) for male and women by province, degree of urbanization, and wealth quintile, NPHC 2021



Among provinces, Bagmati has the highest SMAM for males at 27 years and for females at 23.8 years. In contrast, Karnali Province has the lowest SMAM values, with males at 22.7 and females at 20.5 years respectively.

The degree of urbanization classifications further illustrate how urbanization impacts marriage age. Urban areas have the highest SMAM (27.1 years for males and 23.5 years for females), indicating that

individuals living in cities tend to marry later. Conversely, rural areas report lower averages (24.5 years for males and 21.2 years for females), reinforcing that rural settings may still adhere to traditional marriage practices.

Examining wealth quintiles reveals how economic status influences marriage timing. The highest quintile has the highest SMAM (28.1 years for males and 24.2 years for females), suggesting that greater economic resources allow individuals to prioritize education and careers before marriage. The lowest quintile has lower averages (24.1 years for males and 20.7 years for females), indicating a tendency towards earlier marriage among economically disadvantaged groups.

The increase in SMAM over time reflects broader societal changes, including shifts in cultural norms around marriage timing, increased educational opportunities, particularly for women, and varying economic conditions across regions.

3.2 Children cared primarily by Single mothers

Single mothers in Nepali context are those women who carry the primary care and financial responsibility of their under 18 year children without the accompaniment or constant assistance of a partner. It may be due to several reasons, including divorce, separation, widowhood, migration of the partner, or being unmarried. The socio-cultural dynamics of Nepal, children from households of single mothers can have different living arrangements, such as living with other family household members or being part of multigenerational households where other caregivers can also nurture the children.

Table 3.2: Number of children cared primarily by single mothers by province, ecological zone, and urban-rural municipality in Nepal, NPHC 2021

Background variables	Under 1 year	1 - 4 years	5 - 9 years	10-14 years	15 -17 years	Total number of children
Nepal	**0.03**	**0.21**	**0.30**	**0.30**	**0.16**	**1688,886**
Province						
Koshi	0.02	0.21	0.32	0.29	0.16	261,438
Madhesh	0.03	0.23	0.32	0.29	0.13	370,611
Bagmati	0.03	0.19	0.29	0.31	0.18	207,446
Gandaki	0.03	0.20	0.30	0.30	0.17	182,653
Lumbini	0.03	0.21	0.30	0.30	0.16	352,978
Karnali	0.04	0.21	0.29	0.31	0.15	89,587
Sudurpashchim	0.05	0.21	0.28	0.31	0.15	224,173
Ecological zone						
Mountain	0.03	0.20	0.29	0.31	0.16	71,589
Hill	0.03	0.21	0.30	0.30	0.16	668,539

Background variables	Under 1 year	1 - 4 years	5 - 9 years	10-14 years	15 -17 years	Total number of children
Tarai	0.03	0.21	0.31	0.30	0.15	948,758
Municipality						
Urban municipality	0.03	0.20	0.31	0.30	0.16	1,114,105
Rural municipality	0.04	0.22	0.30	0.30	0.15	574,781

Table 3.2 shows the number of children taken cared primarily by single mothers by province, ecological zone and rural-urban municipality as per the age of their child/children. Nationally, the largest incidence of such children (0.21) is observed in the child age group aged 1 to 4 years followed by 0.30 in the child age group 5 to 9 years. This pattern is similar for provinces: there is a slight elevation observed in Madhesh and Koshi in the 1 to 4-year age group (0.23 and 0.21, respectively). The Tarai zone has the highest rate of those children in the age group 5 to 9 (0.31), while the Mountain zone records the lowest rate across all age groups. In urban areas, the prevalence of such children is higher among the child age group 1 to 4 years at 0.20, while the corresponding figure is 0.22 in rural areas, highlighting the disparities in family set-ups by geographical and socio-economic factors.

Table 3.3: Proportion of children cared primarily by single mothers by wealth quintile and caste/ethnic in Nepal, NPHC 2021

Wealth quintile/ Caste/ethnic group	Number of children	Proportion (%)
Wealth quintile		
Lowest	347,742	20.6
Lower	378,705	22.4
Middle	377,279	22.3
Higher	361,605	21.4
Highest	223,134	13.2
Caste/ethnic group		
Hill castes	534,449	31.7
Madhesh/Tarai Caste	209,080	12.4
Mountain/Hill Janajatis	393,077	23.3
Tarai Janajatis	110,538	6.5
Hill Dalits	229,075	13.6
Madhesh/Tarai Dalit	86,946	5.1
Religious/linguistic groups	123,844	7.3
Others, foreigners & not stated	1,456	0.1
Total	**1,688,465**	**100.0**

Table 3.3 highlights that single motherhood is not uniform across wealth quintiles and caste/ethnic groups in Nepal. For wealth quintiles, more single mothers are concentrated in the lower groups, with this being the case for 20.6 percent of single mothers in "Lowest" and "Lower" as compared to only 13.2 percent in "Highest". By caste/ethnic group, 31.7 percent of single mothers are Hill castes; 23.3 percent are Mountain/Hill Janajatis, while 13.6 percent are Hill Dalits. Madhesh/Tarai Dalits and Tarai Janajatis report very low proportions of single mothers at 5.1 percent and 6.5 percent, respectively. Socioeconomic and socio-cultural factors evidently impact the number of single mothers.

3.3 Single women

Single women in Nepal typically refer to women who are unmarried, divorced, separated, or widowed, often bearing social and economic responsibilities independently. They may take on primary caregiving roles, manage household responsibilities, and participate in economic activities to sustain their livelihoods.

3.3.1 Age distribution

According to 2021 Census data, out of the total number of women aged 10 years and above, almost two-thirds (64.3%) of women are married; about 28 percent of women below the age of 35 are never married. Nearly 1 percent (0.7%) of women aged 35 and above are also never married. Widowed women make up the highest proportion of single women (6.6%) compared to divorced and separated and never married single women aged 35 and above. Census data highlights that 14.9 percent of women were married before the legal age at marriage and 0.1 percent were widowed before the age of 20. This indicates that child widows are still an issue in Nepal.

Table 3.4 shows that for the total population aged 10 years and above, about 43 percent are widowed, which is a significant proportion. For married women in the 35-to-39-year age group, 2.1 percent were widowed. In addition, around 1.2 percent of women in the age group 65 and above have never been married.

Table 3.4: Distribution of women aged 10 years and above by age and marital status, NPHC 2021

Age group	Marital status						Total women 10 years and above
	Married	Widow	Divorced	Separated	Never married 35+ years	Never married below 35 years	
Nepal	**64.3**	**6.6**	**0.2**	**0.5**	**0.7**	**27.7**	**12,439,247**
10-14	0.5	0.0	0.0	0.0	NA	99.5	1,413,911
15-19	14.4	0.1	0.0	0.0	NA	85.5	1,471,881
20-24	61.6	0.3	0.1	0.2	NA	37.9	1,482,042
25-29	86.4	0.5	0.2	0.4	NA	12.5	1,337,107

Age group	Marital status						Total women 10 years and above
	Married	Widow	Divorced	Separated	Never married 35+ years	Never married below 35 years	
30-34	94.0	1.1	0.3	0.5	NA	4.2	1,168,736
35-39	94.8	2.1	0.3	0.6	2.2	NA	1,104,561
40-44	93.4	3.8	0.3	0.8	1.8	NA	919,339
45-49	91.4	5.9	0.3	0.9	1.6	NA	748,515
50-54	87.8	9.4	0.2	1.0	1.6	NA	721,358
55-59	83.5	13.9	0.2	1.0	1.4	NA	538,386
60-64	76.1	21.4	0.2	1.0	1.4	NA	489,642
65+	54.7	43.3	0.1	0.7	1.2	NA	1,043,769

NA: Not applicable

Census data shows a significant association between age and marital status for women aged 10 years and above between 2001 and 2021. The trend of marrying at a later age is consistently observed across these three censuses. Marital status distribution among Nepali women aged 10 and above throws light on important demographic patterns. About 64.3 percent are married, while 6.6 percent of the women are widowed; very few are divorced (0.2%) or separated (0.5%); finally, the never-married population consists of 35 and above (0.7%) and below 35 years (27.7%). Age-wise trend shows that the marriage rate sharply increases from 14.4 percent in the 15-19 age group to 86.4 percent in the 25-29 age group and peaks at 30-34 years (94.0%). Widowhood is conversely more evident in the older age groups, starting from a low 2.1 percent at ages 35-39 to 43.3 percent at ages 65+. The proportion of the never married is high among the younger women, dropping from 99.5 percent in the 10-14 age group to 85.5 percent in the 15-19 age group and so on. Altogether, this data evidence that marriage has been the dominant marital status in Nepal, with widowhood rising and very little room for divorce or separation.

These census findings indicate an increasing divorce rate among women, shifting from younger to older age groups over the last three census periods

3.3.2 Single marital status population

Table 3.5 shows the total single population in Nepal recorded from the 2021 Census by sex. According to the 2021 Census, the total enumerated population aged 10 years and above was 23,958,868. Among the total female population aged 10 years and above, 8.2 percent were single (widowed, divorced, separated, and never married women aged 35 years and above). The 2021 Census found that the number of widows is much higher than widowers.

Table 3.5: Distribution of population aged 10 years and above by marital status and sex, NPHC 2021

Sex	Never married below age 35		Never married age 35+ years		Married		Widow/ Widower		Divorced		Separated		Total population 10 years and above
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	
Male	4,303,752	37.4	99,210	0.9	6,810,042	59.1	255,008	2.2	15,852	0.1	35,757	0.3	11,519,621
Female	3,442,333	27.7	90,703	0.7	7,999,252	64.3	826,147	6.6	21,287	0.2	59,525	0.5	12,439,247
Total	**7,746,085**	**32.3**	**189,913**	**0.8**	**1,480,9294**	**61.8**	**1,081,155**	**4.5**	**37,139**	**0.2**	**95,282**	**0.4**	**23,958,868**

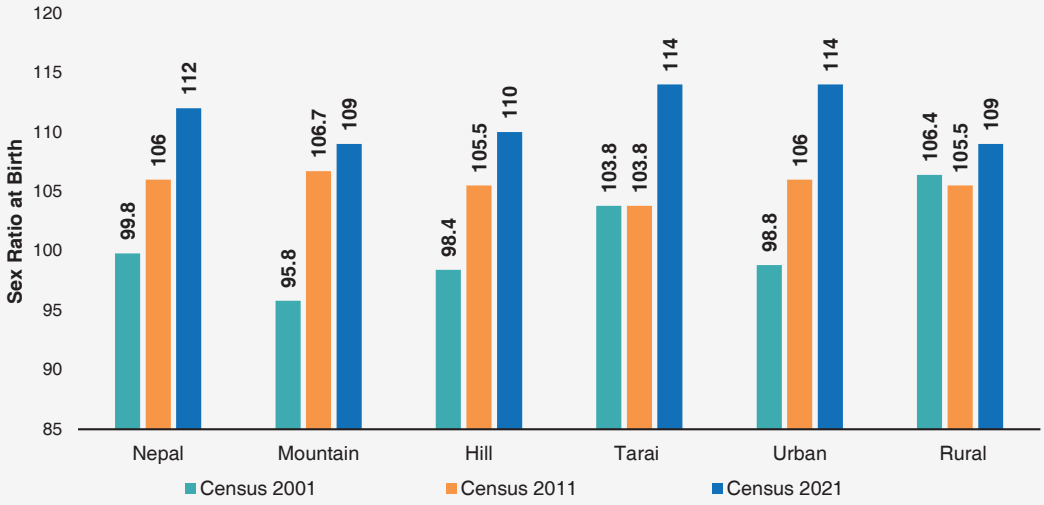
3.4 Sex ratio at birth

Sex ratio at birth refers to the number of male live births per 1,00 female live births in a given population, typically indicating natural or influenced demographic trends. The sex ratio at birth (SRB) is a crucial demographic indicator, typically defined as the number of males born for every 100 females. The natural sex ratio is approximately 105 males for every 100 females, with a normal range of 103 to 107 (Ritchie & Roser, 2024). However, this ratio can fluctuate due to various factors, including social customs that favour males in certain regions and the availability of technology, which can result in sex-selective practices.

Figure 3.3: show the sex ratio at birth in Nepal across three census years: 2001, 2011 and 2021. The increasing SRB in Nepal over the past two decades reflects a notable shift towards a male-biased population. In 2001, the national SRB was nearly balanced at 99.8, but by 2021, it had risen to 112, indicating a growing preference for male children. This trend is particularly pronounced in the Tarai region, where the SRB rose sharply from 103.8 in 2001 and 2011 to 114 in 2021, suggesting stronger cultural or economic pressures favouring male births. Similar increases in the Mountain (from 95.8 to 109) and Hill (from 98.4 to 110) zones indicate that these regions, though geographically distinct, are also experiencing a shift towards male-biased birth rate.

Urban and rural areas present contrasting trends, underscoring the role of urbanization in shaping demographic behaviours. Urban municipalities, historically closer to a balanced SRB at 98.8 in 2001, saw a sharp increase to 114 by 2021 (Figure 3.3).

Figure 3.3: Sex ratio at birth by ecological zone and urban-rural municipality 2001-2021 censuses



This shift suggests that even in urbanized areas, where access to education and healthcare is generally better, cultural preferences for sons may be driving SRB imbalances. Rural areas, on the other hand, experienced a more moderate change, with the SRB fluctuating slightly before rising to 109 in 2021. Urban-rural SRB disparities reflect differences in access to prenatal sex determination and abortion technologies. Urban areas show greater imbalances due to accessibility, while rural areas experienced moderate changes, driven by persistent gender preferences and limited technological access. These patterns point to deep-rooted gender preferences, which may have implications for long-term population structure and gender equity in Nepal. Policymakers consider addressing the socio-economic factors contributing to the rising SRB and work towards balancing population dynamics for sustainable development. Further disaggregation by province and wealth quintile is shown (Table 3.6).

Table 3.6: Sex ratio at birth by province, degree of urbanization and wealth quintile, NPHC 2021

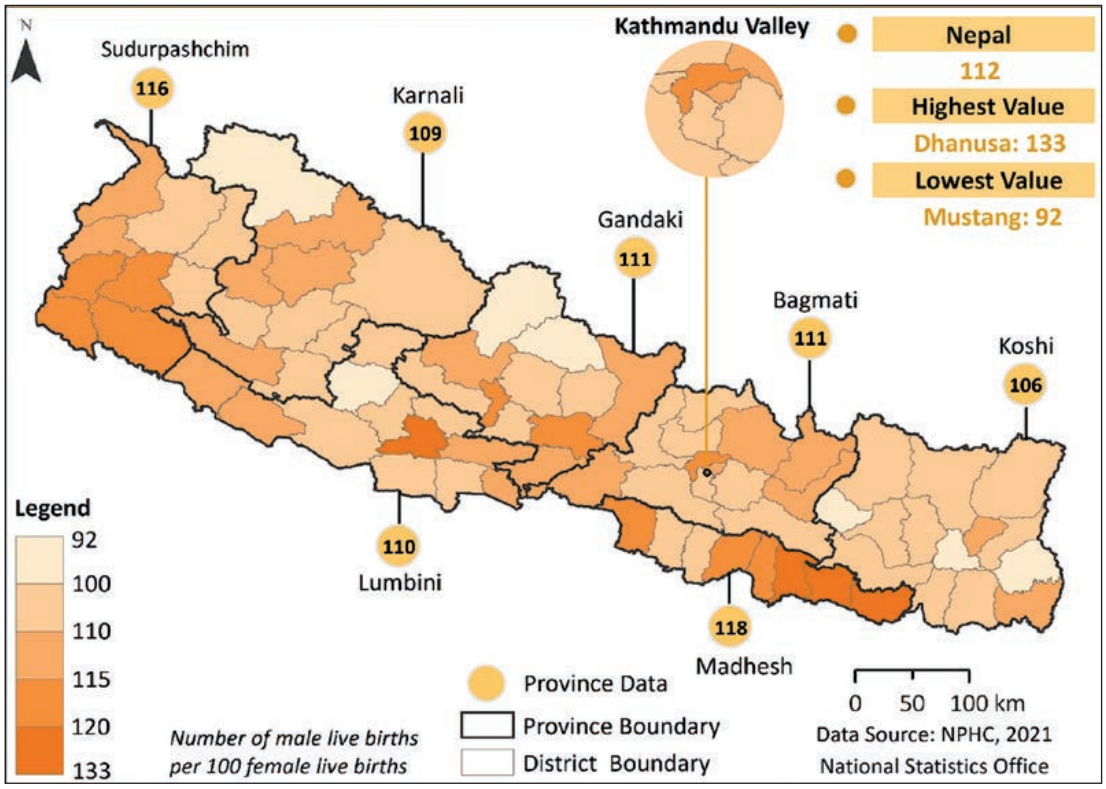
Background variables	Census years	
	2011	2021
Provinces		
Koshi	105	106
Madhesh	105	118
Bagmati	108	111
Gandaki	107	111
Lumbini	109	110
Karnali	103	109
Sudurpashchim	106	116

Background variables	Census years	
	2011	2021
Degree of urbanization		
Urban	NA	115
Peri-urban	NA	114
Rural	NA	108
Wealth quintile		
Lowest	NA	106
Lower	NA	110
Middle	NA	114
Higher	NA	117
Highest	NA	116
Educational status		
Never gone to school	NA	110
Basic (0-5)	NA	112
Secondary (6-intermediate)	NA	115
Higher (Bachelor+)	NA	110
Disability status		
Disabled	NA	110
Non-disabled	NA	112

The SRB by province, degree of urbanization classification and wealth quintile, as reflected in 2021 Census data, indicates a significant shift towards a male-biased birth trend, with notable regional and wealth-based disparities. Among the provinces, Madhesh stands out with a substantial rise in the SRB from 105 in 2011 to 118 in 2021, suggesting stronger male preferences, possibly driven by socio-cultural factors. Sudurpashchim similarly saw a notable increase, rising from 106 to 116, indicating a trend towards sex-selective practices. In contrast, provinces such as Bagmati and Gandaki, while also reporting increases in the SRB (reaching 111 by 2021), exhibit a more modest shift. Karnali's SRB rose moderately from 103 to 109, suggesting that the preference for sons, though present, may be less pronounced in this relatively underdeveloped region.

For the total population, the SRB among those who had no schooling and those who had pursued higher studies (bachelor's and above) was 110 respectively in 2021 similar results despite the differences in educational qualifications. The SRB among those with a basic education (0 -5 years) slightly increased to 112; while for those with secondary education (6 to intermediate) the value at 115 was at its most extreme. People with disabilities had a lower SRB at 110 compared to people without disabilities at 112.

Map 3.1: Sex ratio at birth by province and district, NPHC 2021



When looking at urbanization patterns, degree of urbanization classifications reveals that urban areas had the highest SRB at 115, followed closely by peri-urban areas at 114. Rural areas, while still exhibiting a male-biased SRB, reported a lower ratio of 108. This urban-peri-urban skew indicates that increased access to healthcare technology, combined with persistent cultural preferences for sons, may be amplifying SRB imbalances in more developed areas.

The correlation between wealth and SRB is striking, with the highest quintile reporting an SRB of 116, while the higher group reported 117, signaling that higher economic status is linked to a higher prevalence of male preference. In contrast, the lowest quintile reported a lower SRB of 106, which may reflect fewer opportunities or access to sex-selective technologies, or a less pronounced cultural pressure for male children. The middle and lower quintiles reported intermediate SRBs of 114 and 110, respectively, underscoring the complex relationship between socio-economic status and gender bias.

These findings highlight a growing trend of male preference, particularly pronounced in wealthier and more urbanized areas, as well as in provinces such as Madhesh and Sudurpashchim. The findings suggest SRB imbalances may result from improved access to technologies enabling sex-selective abortions rather than increased male preference, emphasizing the need for stricter regulation and gender equity awareness programmes. This rising SRB poses significant demographic challenges for

Nepal, as it risks long-term gender imbalances that could have profound socialization. Policymakers address the cultural and economic drivers behind this gender bias, ensuring equitable access to healthcare and education, and promoting gender equality.

A study conducted by Channon et al. (2023) focused on attitudes and practices toward sex-selective abortion in urban Nepal. Such studies reveal that strong desires for male children mean people are still seeing seek sex-selective abortions despite clear prohibition by law. Similarly, Marphatia et al. (2022) studied the relationship between women's education and son preference and discovered that even if women possess higher education levels, son preference continues to play a significant role in reproductive choices.

Analyzing SRB by cross-tabulating it with the number of children ever born by gender could provide deeper insights into sex-selective abortion patterns, highlighting its prevalence among higher-parity births and families with daughters.

3.5 Child woman ratio

The child-woman ratio (CWR) is an important demographic measure used to estimate fertility in contexts where detailed data may be unavailable. It is calculated as the number of children under five years of age per 1,000 women of reproductive age (15 to 49 years). While the CWR can provide useful insights into fertility trends, it must be interpreted cautiously, especially in regions with high infant and child mortality rate, as mortality variations can distort the true fertility patterns.

Table 3.7: Child-woman ratio (per woman) by ecological zone and urban-rural municipality, 2001-2021 Censuses

Background variables	Census years		
	2001	2011	2021
Nepal	**0.492**	**0.361**	**0.296**
Ecological zones			
Mountain	0.528	0.463	0.337
Hill	0.464	0.332	0.261
Tarai	0.514	0.374	0.319
Municipality			
Urban municipality	0.353	0.248	0.277
Rural municipality	0.517	0.380	0.338

Source: NSO (2023; CBS (2001); (CBS, 2014).

Table 3.7 shows that a notable decline in the CWR in Nepal between 2001 and 2021, which is consistent across ecological zones. The national CWR fell from 0.492 in 2001 to 0.296 in 2021, signaling a significant decrease in fertility levels over time.

In ecological zones, the Mountain zone started off with the highest CWR at 0.528 in 2001, decreasing to 0.337 in 2021, although it remains slightly above the national average. The Hill zone saw the largest drop from 0.464 in 2001 to 0.261 in 2021, suggesting significant fertility reductions. In the Tarai region, the CWR fell from 0.514 to 0.319, indicating gradual but steady fertility decline influenced by increased urbanization and healthcare access.

Rural and urban municipalities demonstrate distinct patterns, with rural areas experiencing a steady decline in CWR from 0.517 in 2001 to 0.338 in 2021. Conversely, urban municipalities show a slight rise in CWR between 2011 and 2021 (from 0.248 to 0.277), which might reflect urban migration patterns, where younger families are more likely to reside in urban areas, or delays in fertility declines in newly urbanized populations.

Table 3.8: Child-woman ratio (per woman) by province, degree of urbanization and wealth quintile, NPHC 2021

Background variables	Child-woman ratio
Province	
Koshi	0.275
Madhesh	0.401
Bagmati	0.222
Gandaki	0.238
Lumbini	0.293
Karnali	0.366
Sudurpashchim	0.310
Degree of urbanization	
Urban	0.234
Peri-urban	0.329
Rural	0.313
Wealth quintile	
Lowest	0.376
Lower	0.336
Middle	0.312
Higher	0.267
Highest	0.208
Disability status	
Disabled	0.247
Non-Disabled	0.297

Table 3.8 shows significant variations in the CWR by province, degree of urbanization classification and wealth quintile. Among the provinces, Madhesh has the highest CWR (0.401), indicating relatively high fertility rate. This is followed by Karnali (0.366) and Sudurpashchim (0.310), which also reflect elevated fertility levels. In contrast, Bagmati records the lowest CWR (0.222).

In terms of urbanization, fully urban areas exhibit the lowest CWR (0.234), while peri-urban and rural areas show higher ratios at 0.329 and 0.313, respectively. This underscores the impact of urbanization on fertility reduction.

Among wealth quintiles, an inverse relationship between economic status and CWR is evident. The lowest households have the highest CWR at 0.376, while the highest quintile report the lowest at 0.208.

People with disabilities have a child-woman ratio of 0.247 as opposed to 0.297 for those without disabilities. This suggests that women with disabilities bear fewer children on average than women without disabilities, indicating probable disparities in fertility or access to reproductive health services.

3.6 Children ever born

The demographic landscape of Nepal has undergone significant changes over the past two decades, as illustrated by data on children ever born (CEB) across ecological zones and municipalities. Children ever born is defined as the total number of children born alive to a woman during her lifetime, including those who have died since birth, but excluding stillbirths and adopted children. This measure provides insights into lifetime fertility experiences and is crucial for understanding population dynamics.

Table 3.9: Children ever born (per woman) by ecological zone and urban-rural municipality, 2001-2021 censuses

Background variables	Children ever born		
	2001	2011	2021
Nepal	**0.492**	**0.361**	**0.102**
Ecological zone			
Mountain	0.528	0.463	0.122
Hill	0.464	0.332	0.097
Tarai	0.514	0.374	0.104
Municipality			
Urban municipality	0.353	0.248	0.097
Rural municipality	0.517	0.380	0.114

Source: NSO (2023); CBS (2001); (CBS, 2014).

Table 3.9 summarizes CEB figures for Nepal from 2001 to 2021. The data reveals a notable increase in CEB per woman from 2011 to 2021, despite a backdrop of declining TFRs. In Nepal, the TFR has

decreased significantly from 3.80 in 2001 to 2.52 in 2011, and further to 1.94 in 2021. This divergence between TFR and CEB can be explained by several interrelated factors:

1. Demographic transition: As Nepal progresses through its demographic transition, older cohorts of women, who experienced higher fertility rate, continue to impact overall CEB statistics, even as younger cohorts are having fewer children.
2. Delayed childbearing: Women are increasingly delaying childbirth due to higher education levels and career aspirations, which allows for more children to be born later in life, contributing to higher CEB figures.
3. Cohort effects: The age structure of the population plays a crucial role; a larger proportion of women in older age groups may lead to increased CEB while younger generations exhibit lower TFRs.
4. Outmigration of youth: A significant factor influencing these trends is the outmigration of young males for employment opportunities abroad.

This contrasting trend of declining TFRs alongside increasing CEB in Nepal highlights the complexity of fertility dynamics within the country. While the overall fertility rate is decreasing, various social, economic and cultural factors, especially the outmigration of youth, are contributing to an increase in the number of CEB per woman, reflecting historical patterns and demographic shifts that warrant further investigation for effective reproductive health policy development. Understanding these trends is essential for addressing the challenges and opportunities presented by Nepal's evolving demographic landscape. The number of CEB by variable provides further insights into reproductive behaviours and population dynamics (Table 3.10).

Table 3.10: Distribution of total number of children ever born per woman (parity) by province, ecological zone, urban-rural municipality, degree of urbanization, and wealth quintile, NPHC 2021

Background variables	Child ever born	15-49 women	CEB per women
Nepal	**12,799,969**	**8,232,181**	**1.55**
Provinces			
Koshi	1,993,420	1,393,488	1.43
Madhesh	3,058,526	1,599,321	1.91
Bagmati	2,262,373	1,797,206	1.26
Gandaki	995,815	710,933	1.40
Lumbini	2,332,993	1,499,220	1.56
Karnali	852,322	461,474	1.85
Sudurpashchim	1,304,520	770,539	1.69

Background variables	Child ever born	15-49 women	CEB per women
Ecological zones			
Mountain	798,663	458,397	1.74
Hill	4,802,679	3,361,881	1.43
Tarai	7,198,627	4,411,903	1.63
Municipality			
Urban municipality	8,238,182	5,588,917	1.47
Rural municipality	4,561,787	2,643,264	1.73
Degree of urbanization			
Urban	3,085,420	2,393,222	1.29
Peri-urban	5,351,068	3,226,993	1.66
Rural	4,363,481	2,611,966	1.67
Wealth quintile			
Lowest	5,168,889	1,474,707	3.51
Lower	2,059,724	1,619,048	1.27
Middle	4,653,514	1,685,068	2.76
Higher	442,415	1,675,192	0.26
Highest	475,427	1,778,166	0.27
Educational status			
Never going to school	5,644,316	2,082,641	2.71
Basic (0-5)	2,059,724	1,887,608	1.09
Secondary (6-Intermediate)	4,653,514	986,761	4.72
Higher (Bachelor+)	442,415	4,618,127	0.10
Disability status			
Disable	133,203	106,496	1.25
Non-Disable	12,666,766	8,125,685	1.56
Caste/Ethnic group			
Hill castes	3,657,828	2,520,044	1.45
Madhesh/ Tarai castes	2,254,814	1,212,197	1.86
Hill Dalits	2,982,309	2,215,218	1.35
Madhesh/ Tarai Dalits	1,109,206	791,864	1.40
Mountain/ Hill Janajatis	1,232,749	719,773	1.71
Tarai Janajatis	712,443	359,441	1.98
Religious& linguistic groups	850,620	413,644	2.06

Background variables	Child ever born	15-49 women	CEB per women
Religion			
Hindu	1,0435,848	6,701,064	1.56
Buddhist	935,643	681,989	1.37
Islam	794,689	383,816	2.07
Kirat	334,902	259,148	1.29
Christian	230,716	158,020	1.46
Bahai	43,459	28,487	1.53
Bon	23,203	18,493	1.25
Jain	743	620	1.20
Prakriti	224	186	1.20
Sikh	542	358	1.51

Table 3.10 shows that the number of CEB per woman aged 15- 49 years in Nepal stands at 1.55 but these variations by region, geography, socio-economic status, and demography. Fertility varies markedly in the country's seven provinces, with the highest rate of 1.91 in Madhesh Province and the lowest at 1.26 in Bagmati Province. These variations indicate a huge disparity in socio-economic development levels, cultural norms and access to healthcare and family planning programmes. Bagmati benefits from better educational and healthcare facilities which is evident by its lower fertility. On the other hand, higher fertility in Madhesh, and provinces like Karnali (1.85) and Sudurpashchim (1.69), highlights underdeveloped infrastructure and the lack of healthcare services in rural areas.

The CEB was highest in the Mountain zone (1.74), followed by Tarai (1.63) and the Hill zone (1.43). Socioeconomic conditions and the lack of infrastructure continue to be reflected in high fertility rate in the Mountain zone.

Differences between fertility in urban and rural areas are evident. Women in rural areas have a relatively higher fertility rate (1.73) compared to urban women (1.47). Of the degree of urbanization classifications, urban areas have the lowest fertility (1.29), followed by peri-urban (1.66), and rural areas (1.67). Education, employment, and reproductive health services are more accessible in urban areas, reflected in lower fertility rate, while traditional norms and limited resources have sustained higher fertility rate in rural settings.

Fertility also correlates with wealth. The fertility rate of women in the lowest quintile is the highest (3.51), while it is lowest (0.27) in the highest quintile. Evidently economic deprivation restricts access to education and family planning as reflected in higher fertility rate.

Education also correlates with fertility. Women without an education have the highest fertility at 2.71, followed by women with basic education (1.09), and those with some form of higher education at 0.10, suggesting that education may empower women to delay both marriage and childbirth. Conversely, women with a secondary education have much higher (4.72) fertility rate, indicating that influence reproductive behaviours.

Women with disabilities have a lower fertility rate (1.25) than women without disabilities (1.56); which may be indicative of limited marriage opportunities and the lack of access to reproductive health services. Fertility also varies by caste and ethnic groups. Tarai Janajatis have the highest fertility rate (1.98) followed by Madhesh/Tarai (1.86). Hill Dalits have much lower fertility rate of 1.35 and 1.45, respectively.

Fertility rate among religious groups vary. Islamic communities have the highest fertility rate at 2.07, while Prakriti and Sikh denominations have lower rate. The Hindu population has a fertility rate of 1.56; Kirat people have the lower (1.29). These disparities reflect the influence of community identification and belief systems on fertility behaviours.

The date of 2021 census indicate that several factors, often interrelated, impact fertility patterns in Nepal, including regional disparities, urbanization, wealth, education, caste, and religion. To address high fertility among certain groups and in certain regions, interventions must focus on expanding access to education and healthcare, and investments in infrastructure, to ensure equitable development across Nepal and sustainable changes in the population.

CHAPTER 4

FERTILITY RATE VARIATION BY SOCIO-CULTURAL AND GEOGRAPHIC AREA

Fertility varies significantly across different demographic and socio-economic groups in Nepal, influenced by factors such as caste/ethnicity, religion, disability status, and education level. This chapter aims to provide an in-depth analysis of these variations of fertility rate by socio- cultural and geographic factors.

4.1 Total fertility rate in different caste/ethnic groups, 2021

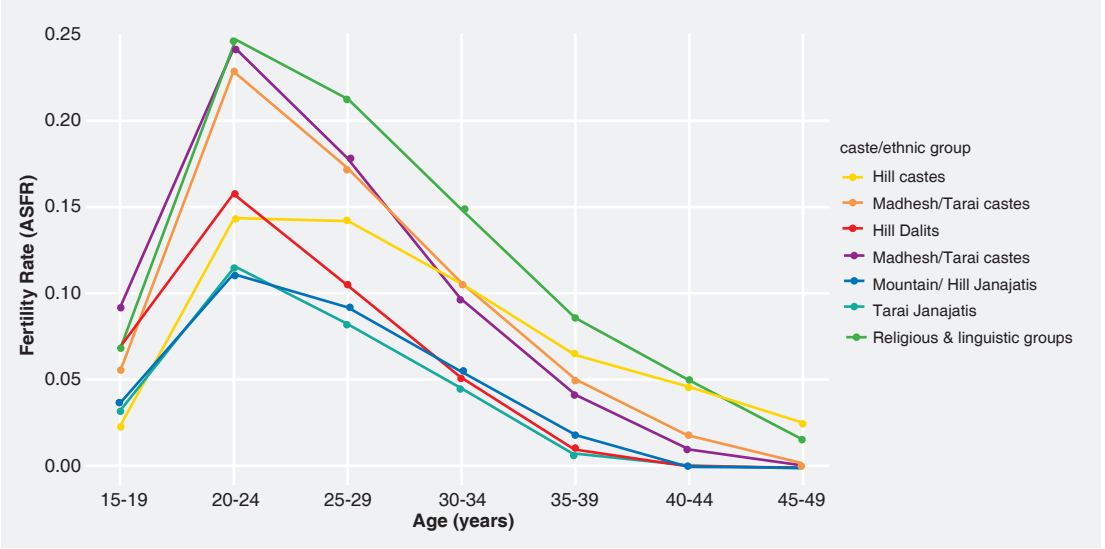
Table 4.1 reveals noteworthy fertility differences across various social and ethnic groups in Nepal. Each group shows distinct fertility outcomes influenced by cultural, social, and economic contexts, with certain groups demonstrating significantly higher or lower fertility. The caste/ethnic makeup of Nepal is very diverse since it is a multi-ethnic and multi-caste country that has a very complex socio-cultural as well as geographical landscape. The 2021 Census Population Composition Report groups the populations according to caste, ethnicity, geographical area, and socio-cultural identity.

Table 4.1: Age-specific fertility rate (ASFR) and total fertility rate (TFR) in Nepal by caste/ethnic groups, NPHC 2021

Caste/ethnic group	Age-specific fertility rate (ASFR)							Total fertility rate(TFR)
	15-19	20-24	25-29	30-34	35-39	40-44	45-49	
Caste								
Hill caste	0.023	0.144	0.142	0.104	0.065	0.047	0.025	2.75
Madhesh/ Tarai caste	0.056	0.227	0.173	0.105	0.050	0.017	0.001	3.15
Dalits								
Hill Dalits	0.066	0.157	0.105	0.052	0.010	0.000	0.000	1.94
Madhesh/ Tarai Dalits	0.091	0.243	0.179	0.097	0.041	0.009	0.000	3.30
Janajatis								
Mountain/ Hill Janajatis	0.035	0.111	0.091	0.055	0.017	0.000	0.000	1.55
Tarai Janajatis	0.032	0.115	0.083	0.045	0.008	0.000	0.000	1.41
Religious & linguistic groups	0.066	0.245	0.211	0.148	0.086	0.050	0.014	4.10

The religious and linguistic groups exhibit the highest fertility, with a TFR of 4.10. Their ASFR peaks at 0.245 for women aged 20 to 24 and remains high even in older age groups, such as 30 to 34 (0.148) and 35 to 39 (0.086). This high fertility can be linked to cultural and religious values that prioritize larger family size and early marriage. Social norms that support high fertility, along with socio-economic barriers, such as lower education levels and reduced healthcare access, may also explain the elevated TFRs.

Figure 4.1: Age-specific fertility rate by caste/ethnic group, NPHC 2021



Among ethnic groups in Nepal, Tarai Janajatis exhibit the lowest TFR at 1.41, with their ASFR peaking at 0.115 for women aged 20-24 (Figure 4.1). Fertility declines sharply in older age groups, indicating a significant trend towards smaller family sizes. In comparison, Mountain/Hill Janajatis have a slightly higher TFR of 1.55, still reflecting lower fertility patterns relative to other groups. Urbanization and increased awareness of family planning may also influence these lower fertility rate.

Among the Dalit population, a significant contrast is observed between Hill Dalits and Madhesh/Tarai Dalits. The Madhesh/Tarai Dalits have a high TFR of 3.30, with the highest ASFR in the 20 to 24 age group (0.243), indicating early and concentrated fertility. In contrast, Hill Dalits have a TFR of 1.94, which is in line with the national average.

The Madhesh/Tarai castes also demonstrate elevated fertility, with a TFR of 3.15. Fertility is particularly high among women aged 20-24 (ASFR of 0.227). The Hill castes, with a TFR of 2.75, exhibit relatively high fertility, though slightly lower than the Madheshi castes.

4.2 Total fertility rate in different religious groups, 2021

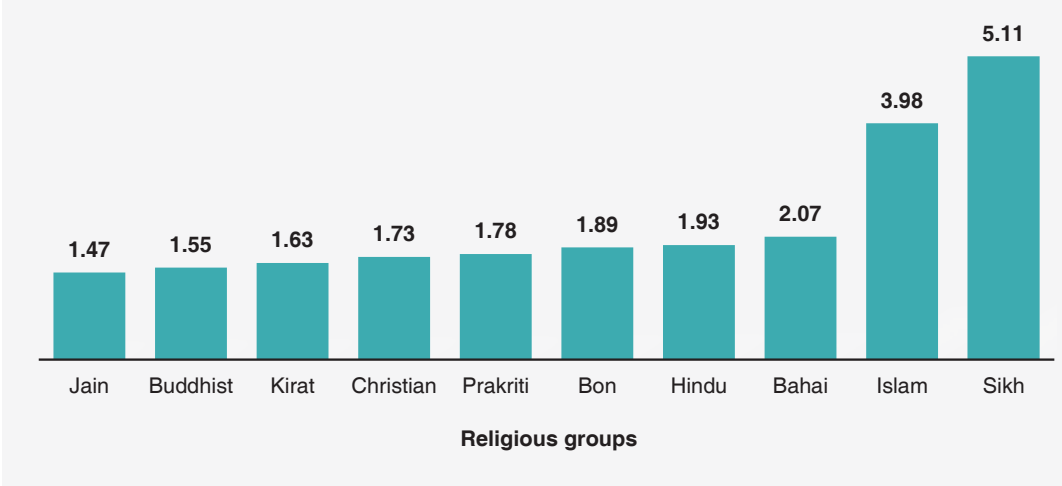
Table 4.2 highlights the diversity in fertility behaviour across different religious communities in Nepal.

Table 4.2: Age-specific fertility rate (ASFR) and total fertility rate (TFR) by religion, NPHC 2021

Religion	Age-specific fertility rate ASFR							Total fertility rate (TFR)
	15-19	20-24	25-29	30-34	35-39	40-44	45-49	
Hindu	0.008	0.128	0.134	0.082	0.033	0.001	0.000	1.93
Buddhist	0.009	0.095	0.102	0.071	0.030	0.002	0.000	1.55
Islam	0.011	0.202	0.237	0.181	0.108	0.047	0.010	3.98
Kirat	0.011	0.089	0.103	0.075	0.040	0.008	0.000	1.63
Christian	0.011	0.101	0.111	0.077	0.039	0.006	0.000	1.73
Bahai	0.000	0.058	0.081	0.097	0.116	0.060	0.000	2.07
Bon	0.007	0.077	0.117	0.088	0.049	0.034	0.005	1.89
Jain	0.000	0.065	0.050	0.060	0.036	0.074	0.009	1.47
Prakriti	0.014	0.114	0.114	0.081	0.031	0.000	0.000	1.78
Sikh	0.020	0.127	0.113	0.204	0.210	0.095	0.254	5.11

The Sikh community demonstrates the highest fertility rate among religious groups analyzed, with a TFR of 5.11, which is more than two and a half times the national average of 1.94. Notably, the ASFR for the Sikh community shows pronounced fertility among women in the age groups of 30 to 34 and 35 to 39, with rate of 0.204 and 0.210.

Figure 4.2: Total fertility rate(TFR) by religious group, Nepal 2021



It is particularly striking that the ASFR for Sikhs for the 45- 49 age group is reported as 0.254(Figure 4.2). This observation is unusual, as fertility rate typically peak in younger age groups (especially between 20-34 years) and decline significantly with age. The occurrence of a high ASFR in the 45- 49 age group may warrant further scrutiny to ensure data accuracy, as it contradicts common fertility patterns.

The Jain community displays the lowest fertility, with a TFR of 1.47. Fertility in the Jain community peaks at 0.065 in the 20-24 age group, with relatively low fertility across all age groups.

The Islamic population has a notably high TFR of 3.98, with particularly elevated fertility in the 25-29 age group (ASFR of 0.237) and substantial fertility even at ages 35- 39 (ASFR of 0.108). Early and high fertility among Islamic women is evident in the ASFR of 0.202 for ages 20-24. These patterns suggest the influence of cultural or religious norms that encourage early marriage and larger families (MoHP, 2022).

The Hindu population has a TFR of 1.93, closely mirroring the national average. Hindu women experience the highest fertility in the 25-29 age group, with an ASFR of 0.134, followed by a gradual decline in fertility with age.

The Buddhist community has a lower-than-average TFR of 1.55. Fertility peaks among Buddhist women at 0.102 in the 25-29 age group, but declines quickly thereafter, with minimal fertility beyond the age of 35.

The Kirat and Christian populations also show relatively low fertility, with TFRs of 1.63 and 1.73, respectively. Both communities exhibit similar ASFR trends, with fertility peaking in the 25 to 29 age group (Kirat: 0.103, Christian: 0.111), followed by a gradual decline.

Interestingly, the Bahai community shows a unique fertility pattern, with a TFR of 2.07 and relatively high fertility among older women. The ASFR in the 40-44-year age group is 0.060, which is unusually high compared to other religious groups. This could reflect specific religious or cultural practices that lead to childbearing at later ages.

The Bon community has a TFR of 1.89, which is slightly below the national average. Fertility peaks at 0.117 for women aged 25- 29, with continued fertility in older age groups, such as 40-44 (0.034) and 45- 49 (0.005. Lastly, the Prakriti community has a moderate TFR of 1.78. Fertility peaks at 0.114 in the 25-29 age group, with a gradual decline in fertility with age.

4.3 Total fertility rate (TFR) by disability status of women

Disability is generally defined as a physical, mental, intellectual, or sensory impairment that substantially limits one or more major life activities. It is calculated based on self-reported difficulties in performing specific functions (e.g., seeing, hearing, walking, or cognition) or medically certified conditions, often assessed through surveys or censuses (Washington Group on Disability Statistics, 2020).

Table 4.3 provides an insightful comparison of fertility behaviours between women with and without disabilities in Nepal. The data highlights noticeable differences in fertility patterns between these two groups, reflecting the intersection of disability with reproductive health and social opportunities

Table 4.3: Distribution of age-specific fertility rate and total fertility rate by disability status of woman, NPHC 2021

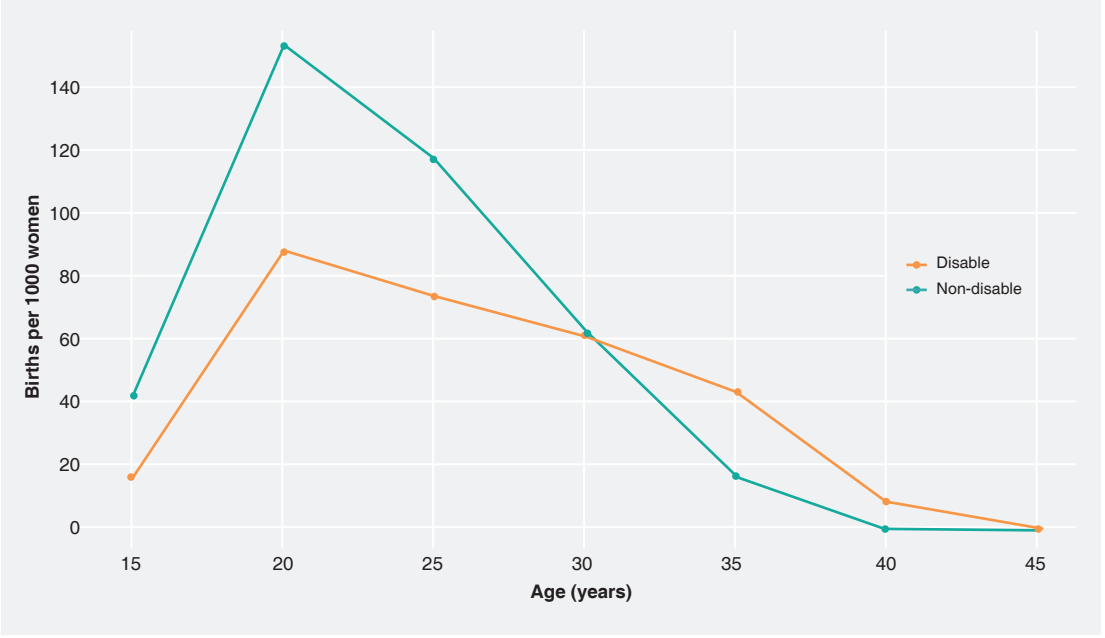
Disability Status	Age-specific fertility rate (ASFR)							Total fertility rate (TFR)
	15-19	20-24	25-29	30-34	35-39	40-44	45-49	
Disabled	0.017	0.088	0.074	0.062	0.044	0.008	0.000	1.47
Non-Disabled	0.043	0.153	0.116	0.064	0.016	0.000	0.000	1.96

The TFR for women with disabilities is 1.47, lower than the TFR of 1.96 for women without disabilities. This lower fertility rate among women with disabilities could be influenced by several factors, including societal barriers, limited access to healthcare services, and perhaps delayed or reduced marriage opportunities due to disability-related stigma. Additionally, women with disabilities may face greater economic constraints and challenges in accessing reproductive health services.

When analyzing the ASFR, women with disabilities exhibit consistently lower fertility across all age groups compared to women without disabilities. For example, the ASFR for women with disabilities peaks at 0.088 in the 20-24 age group, compared to 0.153 for women without disabilities, suggesting that women with disabilities are less likely to have children during their peak reproductive years. This could be attributed to delayed childbearing due to health issues, lack of social support, or economic constraints.

As women age, the fertility gap between women with and without disabilities becomes even more pronounced. In the 25-29 year age group, women with disabilities have an ASFR of 0.074, while women without disabilities have a higher rate of 0.116. The disparity continues in the 30-34 age group, with ASFRs of 0.062 for women with disabilities and 0.064 for women without, indicating that both groups experience a decline in fertility.

Figure 4.3: Distribution of age-specific fertility rate (ASFR) by disability status of women, NPHC 2021



Interestingly, the ASFR for women with disabilities in the older age group of 35-39 is 0.044, significantly higher than the 0.016 (per woman) for women without disabilities (Figure 4.3). This suggests that some women with disabilities may delay childbearing until later in life. This delay could be due to multiple factors, including difficulties in accessing reproductive healthcare during younger years or the impacts of disabilities.

In the older age groups (40-44 and 45-49), fertility rate for both women with and without disabilities are very low. The ASFR for women with disabilities is 0.008 per woman in the 40-44-year age group, while women without disabilities have virtually no fertility at these ages.

The overall lower fertility among women with a disability underscores the need for targeted reproductive health services and support. Women with disabilities may face unique challenges, including societal discrimination, healthcare access limitations, and economic barriers, all of which contribute to their lower fertility status. While inclusive reproductive health policies are essential, it is important to acknowledge that some disabilities inherently limit opportunities for partnership and conception, contributing to lower fertility rate among persons with disabilities. Addressing these challenges requires inclusive reproductive health policies that ensure women with disabilities receive the necessary support for family planning, maternal care, and social inclusion.

4.4 Total fertility rate (TFR) by educational attainment of women, 2021

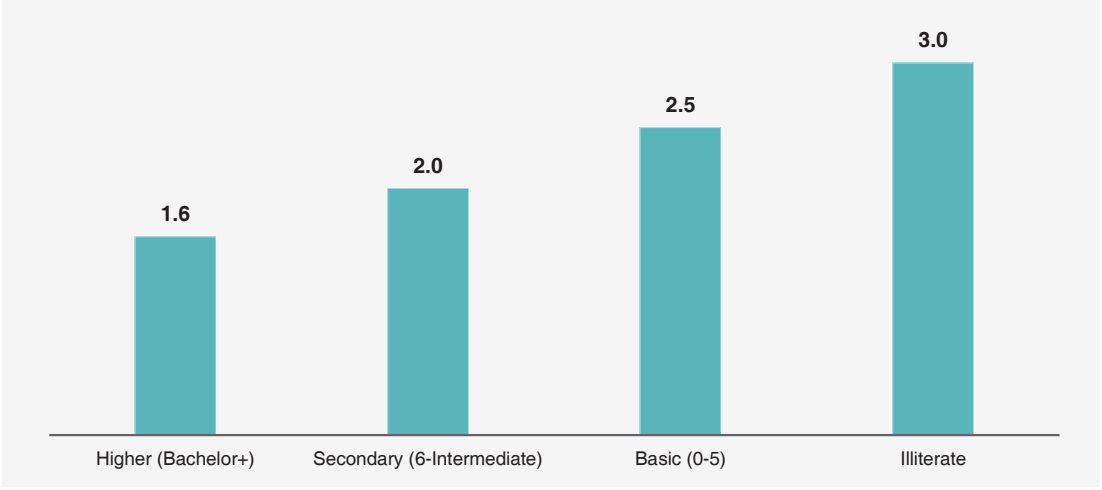
Table 4.4 offers valuable insights into how education impacts fertility in Nepal. It highlights a clear pattern where increased education levels correlate with decreased fertility rate across all age groups, reflecting the strong link between educational attainment.

Table 4.4: Age-specific fertility rate(ASFR) by educational status of women, NPHC 2021

Educational status	Age-specific fertility rate (ASFR)							Total fertility rate (TFR)
	15-19	20-24	25-29	30-34	35-39	40-44	45-49	
Never gone to school	0.126	0.232	0.159	0.070	0.013	0.000	0.000	3.00
Basic (0-5)	0.107	0.194	0.124	0.056	0.016	0.000	0.000	2.48
Secondary (6-intermediate)	0.034	0.160	0.120	0.061	0.022	0.001	0.000	1.99
Higher (Bachelor+)	0.000	0.055	0.106	0.102	0.046	0.011	0.001	1.60

The TFR declines significantly as the education level of women increases. For women without literacy the TFR stands at a high of 3.00. In contrast, women with higher education (bachelor's and above) exhibit a much lower TFR of 1.60.

Figure 4.4: Total fertility rate by educational status of women, Nepal, NPHC 2021

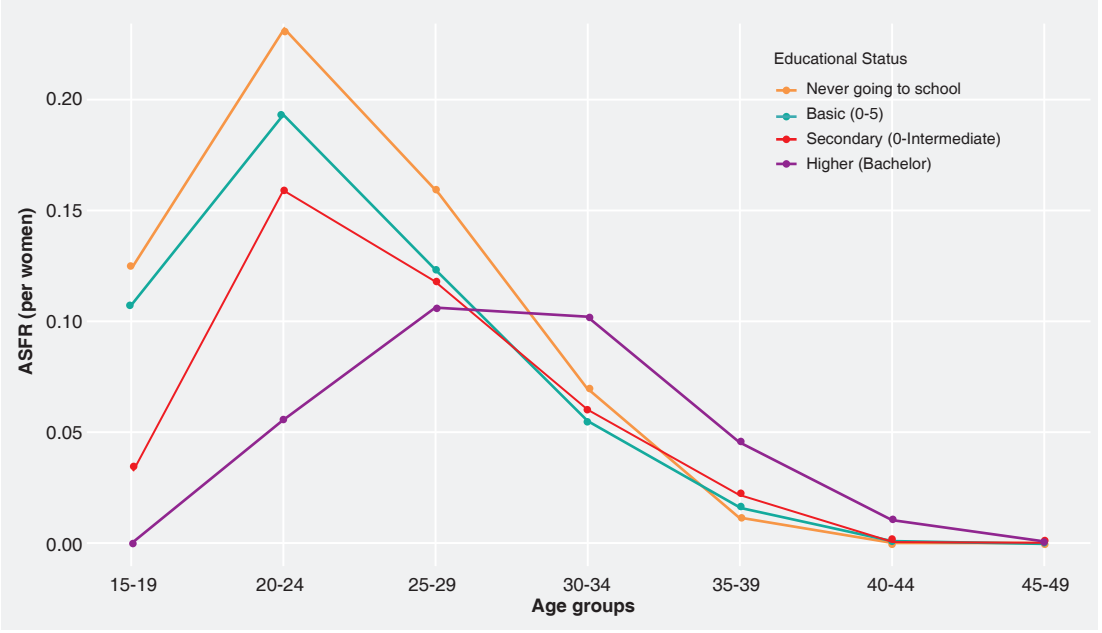


This noticeable difference suggests that education plays a crucial role in shaping fertility decisions. Educated women tend to have better access to family planning services, greater awareness of reproductive health, and more autonomy in making decisions regarding childbirth. Additionally, higher educational attainment is often associated with delayed marriage and childbearing, as well as economic empowerment, which reduces the incentive for having larger families.

Extensive literature highlights the impact of education on fertility. Educated women are more likely to access reproductive health services, delay marriage and childbirth, and opt for smaller family sizes (World Bank, 2021). The United Nations Population Fund (2022) emphasizes that higher educational attainment enhances women's autonomy, empowering them to make informed family planning decisions. These factors collectively reduce fertility rate, showcasing education as a critical driver of demographic transitions and gender equity.

Examining the ASFRs across different educational categories provides further insights into reproductive behaviours at various stages. Women who have never gone to school have the highest fertility rate across all age groups, particularly in the 20-24-year age group, where the ASFR peaks at 0.232, meaning 23.2 percent of women in this age group are having children. This high fertility in early reproductive years could be linked to early marriage, limited access to education and fewer opportunities for career advancement. Women who have not gone to school also experience relatively high fertility in the 15-19-year age group (ASFR 0.126), suggesting a higher prevalence of adolescent pregnancies compared to their more educated counterparts.

Figure 4. 5: Age-specific fertility rate(ASFR) by educational status of women, NPHC 2021



Women with basic education (grades 0-5) also have relatively high fertility rate, although lower than women without literacy skills. Their TFR is 2.48, and their highest ASFR occurs in the 20-to-24-year age group at 0.194. The decline in ASFR after the age of 25 for this group indicates that they tend to complete childbearing earlier than women without literacy skills.

The fertility patterns for women with secondary education (grade 6 to intermediate) reflect a more moderate fertility profile, with a TFR of 1.99. Their highest fertility is observed in the 20-24 age group (ASFR 0.160), lower than both women without literacy skills and women with basic education. This suggests that secondary education empowers women to delay childbearing and reduces the overall number of children. Women with secondary education also demonstrate greater control over their fertility in the older age groups, with ASFRs declining sharply after the age of 30.

For women with higher education (bachelor's and above), fertility patterns shift dramatically. The TFR for this group is the lowest at 1.60, and they exhibit different reproductive timing compared to less educated women. Unlike other groups, women with higher education have their highest ASFR in the 25-29-year age group (ASFR 0.106), indicating delayed childbearing. The ASFR for highly educated women in the 15-19 and 20-24 age groups are almost negligible (ASFR 0.000 and 0.055, respectively), showing that these women prioritize education and career opportunities over early marriage and motherhood. Their fertility remains relatively stable in their late twenties and early thirties, reflecting a more planned and controlled approach to childbearing.

In conclusion, the data clearly demonstrates that higher educational attainment is associated with reduced fertility, delayed childbearing, and greater reproductive control. Women without literacy skills and those with lower educational levels tend to have higher fertility, start childbearing earlier, and have children at a faster pace, often due to socio-economic constraints and limited access to reproductive health services. In contrast, women with secondary and higher education exhibit lower fertility rate, later childbearing, and a more deliberate approach to family planning, driven by career opportunities, greater autonomy, and access to healthcare.

These findings underscore the importance of promoting education, particularly for women, as a means of improving reproductive health outcomes and empowering women to make informed choices about their fertility. Adolescent fertility significantly impacts educational attendance and attainment; as early childbearing often interrupts schooling. Studies show that a smaller percentage of girls with children remain in school compared to their peers (UNESCO, 2021). Conversely, staying in school reduces the likelihood of adolescent pregnancies, illustrating the bidirectional relationship between education and fertility (Lloyd, 2015).

4.5 Total fertility rate at the district level

The 2021 Census revealed significant variations in TFRs across its 77 districts, demonstrating how diverse socio-economic, cultural and geographic factors can influence fertility patterns. In general, higher fertility rate are observed in certain districts where factors such as limited access to healthcare, family planning, and socio-cultural norms play a major role (MoHP, 2022). A closer look at the five districts with the highest and lowest TFRs offers a clearer picture of the underlying causes and policy implications.

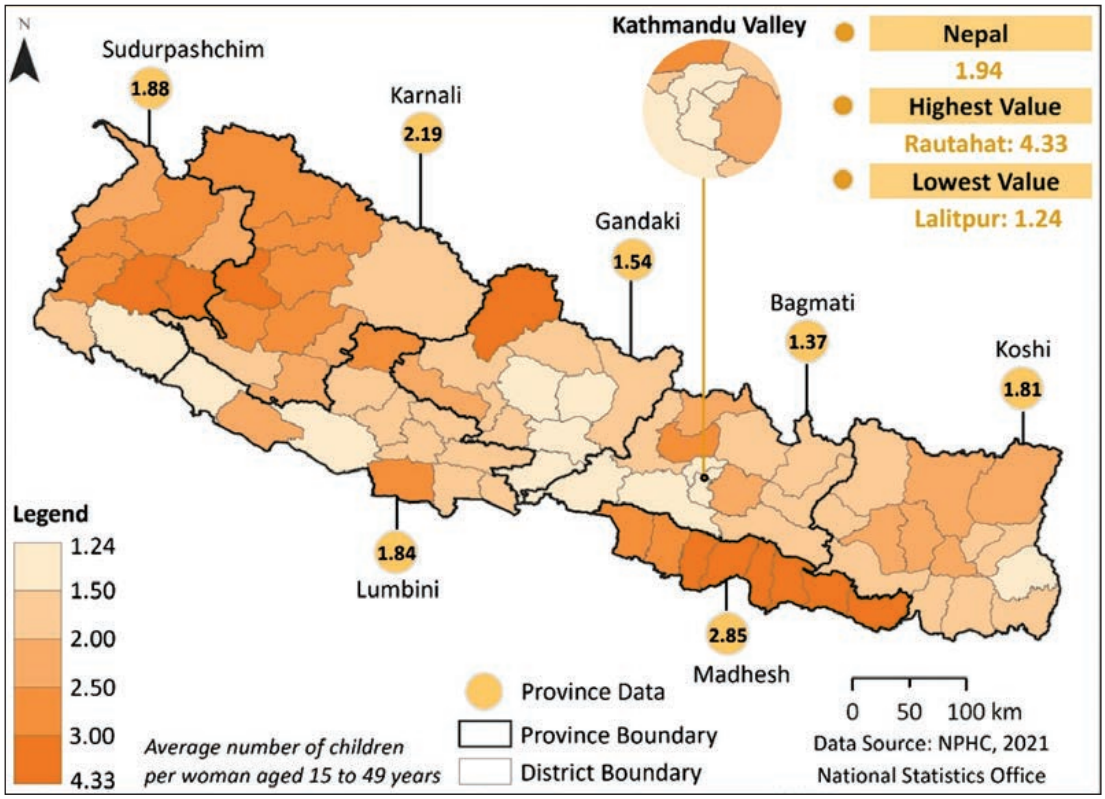
Table 4.5: Top five districts with highest and lowest total fertility rate, NPHC 2021

Districts	Age specific fertility rate (ASFR)							Total fertility rate (TFR)
	15-19	20-24	25-29	30-34	35-39	40-45	45-49	
Highest fertility rate (5 districts)								
Rautahat	0.422	1.389	1.151	0.770	0.392	0.172	0.063	4.33
Dhanusa	0.409	1.253	0.948	0.659	0.402	0.206	0.106	3.94
Achham	0.231	1.197	0.957	0.594	0.226	0.172	0.105	3.47
Mahottari	0.340	1.204	0.963	0.555	0.201	0.044	0.000	3.29
Mustang	0.166	0.509	0.642	0.634	0.527	0.311	0.547	3.18
Lowest fertility rate (5 districts)								
Lalitpur	0.059	0.285	0.410	0.342	0.148	0.006	0.000	1.24
Kathmandu	0.048	0.295	0.450	0.347	0.139	0.014	0.000	1.29
Bardiya	0.218	0.559	0.355	0.170	0.014	0.000	0.000	1.3
Bhaktapur	0.069	0.319	0.479	0.329	0.118	0.007	0.000	1.31
Nawalparasi East	0.194	0.557	0.457	0.139	0.001	0.000	0.002	1.33

Table 4.5 shows that districts with the highest TFRs, such as Rautahat (4.33), Dhanusa (3.94), Achham (3.47), Mahottari (3.29), and Mustang (3.18), highlight diverse reasons for high fertility. While districts like Achham and Mustang are relatively remote, characterized by geographical barriers and limited healthcare infrastructure, other high-fertility districts, particularly Rautahat, Dhanusa, and Mahottari, are more accessible. These three districts, located in the southern plains, have road access and proximity to healthcare facilities, but fertility remains high due to deep-rooted socio-cultural practices, low levels of female education, and early marriage.

On the other hand, districts with the lowest TFRs, including Lalitpur (1.24), Kathmandu (1.29), Bardiya (1.30), Bhaktapur (1.31), and Nawalparasi East (1.33), illustrate how education, urbanization, and better access to health care services can dramatically reduce fertility. These districts are primarily urban or semi-urban, with Kathmandu at the heart of Nepal's capital region. In these areas, women have more opportunities for education, better access to healthcare and are more likely to use family planning methods. Social norms also tend to favour smaller families, which, combined with economic factors, such as the high cost of living in urban areas, lead to lower fertility rate (MoHP, 2022).

Map 4.1: Total fertility rate(TFR) by province and district, Nepal, 2021



Of particular concern are the 23 districts where TFRs remain above 2.5. Twelve districts exhibit TFRs in the range of 2.5 to 2.99, and 11 districts report rate exceeding 3.0, indicating persistent fertility levels well above replacement (Map 4.1). These high-fertility districts, typically characterized by limited access to healthcare and strong cultural preferences for larger families, require targeted interventions to promote family planning, improve education, and address socio-cultural factors (MoHP, 2022).

The broad range of fertility rate in Nepal are highlighted in the categorization of districts by TFRs.

Table 4.6: Number of district by total fertility rate, NPHC 2021

Range of TFR	Number of districts
1.0-1.49	12
1.5- 1.99	28
2.0-2.49	14
2.5-2.99	12
Above 3	11
Total	**77**

TFRs in Nepal's 77 districts demonstrate substantial variations, with fertility rate falling both below and above the replacement level of 2.1. A significant proportion, 40 districts, reported TFRs below replacement level, reflecting regions. This includes 12 districts with TFRs between 1.0 and 1.49, and 28 districts where the TFR ranges between 1.5 to 1.99. Conversely, 14 districts reported TFRs between 2.0 and 2.5, hovering near replacement level.

The variation in fertility across Nepal underscores the necessity for region-specific policies. In districts with TFRs below replacement, policies should focus on maintaining access to reproductive health services and addressing potential socio-economic challenges linked to population aging and labor force declines. Meanwhile, high-fertility districts require intensified efforts to increase awareness and uptake of family planning services and address barriers to female education and empowerment.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

National population and Housing Census 2021 show remarkable progress in the decline in fertility in Nepal, in line with global trends, decreasing from 5.74 in 1961 to 1.94 in 2021, highlighting the country's transition towards smaller families and slower population growth. However, there are still considerable regional, socio-economic, and demographic differences within the country. Provinces such as Madhesh and Karnali have a high rate of fertility, at 2.85 and 2.19 respectively, marked by a lack of access to adequate health services and lower levels of female education. Urbanized and developed areas, such as Bagmati, on the other hand, show significantly lower fertility rate (1.37). due to urbanization and access to education and family planning services. These differences warrant targeted interventions, including expanding access to health care, education, and driving change around social norms and cultural practices that drive high fertility in rural and less developed areas.

In 1952-54, the CBR was within a range of 45-50 live births per 1,000 populations, in 2021 it is 14.2 – a significant decrease. Age-specific fertility rate indicate that the major age group contributing to fertility is 20- to 29-year-olds, reflecting delays in childbearing. In addition, in the last two decades, adolescent fertility rate (aged 15 to 19 years) have declined by 33.8 percent, although there are still concerns around adolescent fertility in rural and less developed areas which need to be addressed through targeted interventions.

The GFR is also still variable, with the highest GFR recorded in Karnali (67.9) and the lowest in Bagmati (39.2). Rural areas also have higher GFRs (58.2) than urban areas (46.6), again exposing inequalities around reproductive health service and education access. Levels of education also correlate with fertility. Women with higher education have lower fertility, postpone childbearing and have more autonomy over their bodies than women with lower education. Socioeconomic factors also clearly impact patterns of fertility. The highest woman and those living in urban areas give birth to fewer children, marked by better access to education, healthcare, and family planning services. The highest quintile also has the lowest fertility rate (TFR 1.55), while the lowest quintile has the highest (TFR 2.70). Geography, as well as demographic disparities, account for differences in fertility measures such as the child-woman ratio (CWR) and children ever born (CEB), reflecting socio-economic inequalities and access to health care. High fertility districts such as Rautahat and Dhanusa require more concentrated efforts towards changing prevailing norms that favour large families and improving reproductive health services, while low fertility districts must deal with the future impact of an aging population.

The declining fertility rate, coupled with the gradual increase in the mean age at childbearing, suggests that Nepal is moving towards a demographic transition characterized by slower population growth. Regional and socio-economic differences in fertility trends, however, highlight the need for targeted policies to ensure balanced demographic outcomes and sustainable and equitable development across Nepal. Understanding patterns of fertility is crucial for planning future policies and programmes, particularly to address disparities between rural and urban areas, as well as different castes and ethnic groups.

Key trends in Nepal's fertility landscape include:

1. Delayed marriage and childbearing: There is a notable trend in delayed marriage and childbearing, especially in urban areas and among wealthier, more educated women. The increasing SMAM and MACB reflect shifting social norms that prioritize education and career advancement.
2. Adolescent fertility: Despite overall declines, adolescent fertility remains of significant concern, particularly in rural areas and among disadvantaged groups. Early marriage practices persist in provinces like Madhesh and Karnali, resulting in a higher proportion of births among adolescents aged 15 to 19.
3. Wealth and education disparities: Higher wealth and education levels, especially among women, are associated with lower fertility rate. Increased educational attainment contributes to delayed marriage and childbearing, resulting in smaller family sizes.

5.2 Recommendations

Fertility analysis is highly important for developing effective policies in Nepal as it provides insights into population dynamics, socio-economic inequalities and demographic transitions. These trends help policymakers to map population growth and identify challenges. Fertility analysis is also an integral to developing policies and interventions that tackle socio-economic inequities creating conditions for sustainable development and enhancing life quality for all.

Fertility data is also helpful in understanding the socio-economic determinants of reproductive behaviour such as the inverse relationship of wealth with fertility. Women in the highest quintile with a TFR of 1.55 are less likely to have children due to better education and health facilities; as opposed to the lowest quintile, with a TFR of 2.70. Such information can help shape suitable policies that promote family planning awareness and access to health services among lower-income groups. Specific fertility measures including the ASFR or average age at childbearing will also help policymakers to determine demographic trends in the future.

While declines in fertility have been observed among urban, wealthier, and educated groups, higher fertility rate still persist in rural areas and among poor, and disadvantaged population groups. These extremes call for targeted actions including increased access to education for rural girls; wider coverage of family planning programmes; poverty alleviation efforts; and investments in infrastructure in underserved areas. A multi-sectoral approach that tackles health education, and economic inequities will be key to tackling high fertility rate.

Provinces with relatively high fertility like Madhesh (TFR 2.85) and Karnali (TFR 2.19) highlight the need for the expansion of healthcare, including family planning, investments in infrastructure, and increased access to education for females in rural, remote, and disadvantaged areas. The high GFR in rural areas (58.2) compared to urban areas (46.6) again suggests that efforts should be targeted towards improving reproductive health services in rural areas.

The transition in fertility also holds implications for the broader demographic structure, with lower fertility rate contributing to population aging. This shift will necessitate long-term planning for healthcare, pensions, and labour market adjustments, underscoring the importance of fertility data in shaping multi-sectoral development policies. As the fertility transition continues in Nepal, policymakers should adopt region-specific strategies to address the inequities while ensuring the sustainability of demographic trends. In high-fertility regions such as Madhesh and Karnali Provinces, education for women and girls could delay marriages, increase the age of childbearing and reduce fertility. Community awareness campaigns could be implemented to promote discussions around family size, taking cultural values and socio-economic factors that may drive reproductive behaviours into account. Economic investment, including job creation could also perhaps alleviate pressures to have larger families.

In low-fertility areas, where TFRs have dipped below replacement levels, pro-natalist policies such as child allowances, paid parental leave and cheap daycare could be put in place to encourage family growth. Continuous examination of fertility patterns and interventions specific to identified issue could help in ensuring equitable and sustainable demographic and economic development across Nepal.

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ANNEX

Annex 1: Age-specific fertility rate (ASFR) and Total fertility rate (TFR) in district level by Arriaga method, 2021 census

District	Age-specific fertility rate (ASFR) per 1000 women							TFR
	15-19	20-24	25-29	30-34	35-39	40-44	45-49	
Taplejung	58	134	118	78	36	14	40	**2.36**
Sankhuwasabha	56	148	121	80	38	11	0	**2.25**
Solukhumbu	40	139	97	56	34	8	0	**1.85**
Okhaldhunga	34	136	96	42	2	0	0	**1.53**
Khotang	56	152	119	72	34	6	0	**2.16**
Bhojpur	57	144	112	70	41	10	20	**2.23**
Dhankuta	46	124	117	76	37	14	0	**2.04**
Tehrathum	50	133	109	66	19	0	0	**1.86**
Panchthar	59	131	99	65	28	0	0	**1.87**
Ilam	35	102	89	45	32	2	0	**1.50**
Jhapa	26	121	103	61	16	0	0	**1.62**
Morang	38	141	108	59	14	0	0	**1.79**
Sunsari	50	144	108	58	17	0	0	**1.87**
Udayapur	48	127	98	38	2	0	0	**1.54**
Saptari	61	217	171	108	53	23	5	**3.17**
Siraha	68	238	168	97	44	10	5	**3.12**
Dhanusa	82	251	190	132	80	41	21	**3.94**
Mahottari	68	241	193	111	40	9	0	**3.29**
Sarlahi	66	234	187	108	40	3	0	**3.17**
Rautahat	84	278	230	154	78	34	13	**4.33**
Bara	70	220	171	96	33	2	0	**2.94**
Parsa	58	216	174	102	41	7	0	**2.98**
Dolakha	28	144	109	67	31	1	0	**1.89**
Sindhupalchok	35	134	106	63	20	0	0	**1.78**
Rasuwa	26	153	121	88	55	14	0	**2.25**
Dhading	44	134	111	49	8	0	0	**1.71**
Nuwakot	45	156	134	81	41	37	13	**2.52**
Kathmandu	10	59	90	69	28	3	0	**1.29**
Bhaktapur	14	64	96	66	24	1	0	**1.31**
Lalitpur	12	57	82	68	30	1	0	**1.24**
Kavrepalanchok	31	119	128	86	54	33	4	**2.26**
Ramechhap	33	144	125	64	33	4	0	**2.00**
Sindhuli	47	147	95	37	1	0	0	**1.61**
Makwanpur	43	118	84	33	5	0	0	**1.39**
Chitawan	31	101	103	39	3	0	0	**1.37**
Gorkha	43	123	115	51	9	5	0	**1.71**

District	Age-specific fertility rate (ASFR) per 1000 women							TFR
	15-19	20-24	25-29	30-34	35-39	40-44	45-49	
Manang	27	82	82	81	52	9	0	**1.65**
Mustang	33	102	128	127	105	62	109	**3.18**
Myagdi	52	135	108	66	30	4	0	**1.93**
Kaski	19	80	109	53	8	0	0	**1.34**
Lamjung	38	106	95	37	9	0	3	**1.42**
Tanahu	44	107	97	41	3	0	0	**1.42**
Nawalparasi (East)	39	111	91	28	0	0	0	**1.33**
Syangja	28	129	108	44	7	0	0	**1.57**
Parbat	42	138	104	37	8	0	0	**1.62**
Baglung	47	164	132	75	36	6	0	**2.28**
Rukum (East)	73	156	127	94	82	25	19	**2.78**
Rolpa	60	158	106	53	11	9	0	**1.95**
Pyuthan	52	164	110	37	3	0	0	**1.8**
Gulmi	47	154	103	31	14	1	0	**1.73**
Arghakhanchi	52	160	111	29	3	1	0	**1.76**
Palpa	45	127	106	49	27	4	0	**1.76**
Nawalparasi (West)	23	145	108	54	10	0	0	**1.69**
Rupandehi	17	146	114	67	17	0	0	**1.80**
Kapilbastu	18	188	169	116	55	6	0	**2.76**
Dang	42	125	81	29	2	0	0	**1.38**
Banke	38	148	119	74	25	0	0	**2.01**
Bardiya	44	112	71	34	3	0	0	**1.3**
Dolpa	38	149	116	68	16	0	0	**1.91**
Mugu	86	222	171	85	10	0	0	**2.84**
Humla	83	213	168	109	4	0	0	**2.83**
Jumla	61	172	127	47	18	85	35	**2.70**
Kalikot	54	242	187	114	33	0	0	**3.13**
Dailekh	73	203	148	88	40	2	0	**2.74**
Jajarkot	87	210	160	104	41	4	0	**3.00**
Rukum (West)	78	191	106	48	7	0	1	**2.12**
Salyan	78	182	95	50	14	10	0	**2.11**
Surkhet	62	138	93	40	8	0	0	**1.67**
Bajura	57	215	136	58	3	0	0	**2.32**
Bajhang	53	231	165	77	8	0	0	**2.65**
Darchula	52	173	133	62	4	0	0	**2.10**
Baitadi	39	218	158	87	36	0	0	**2.68**
Dadeldhura	46	194	145	81	35	3	0	**2.51**
Doti	41	234	177	97	51	4	0	**3.01**
Achham	46	239	191	119	45	34	21	**3.47**
Kailali	32	113	83	42	7	0	0	**1.37**
Kanchanpur	28	128	104	46	7	0	0	**1.56**

Annex 2: Children ever born in district level, 2021 census

District	CEB	15-19	20-24	25-29	30-34	35-39	40-44	45-49
Taplejung	**47,970**	706	3,994	6,879	8,335	9,129	9,616	9,311
Sankhuwasabha	**64,570**	802	4,891	9,204	11,412	13,101	13,276	11,884
Solukhumbu	**40,671**	376	2,820	5,417	6,821	8,486	8,940	7,811
Okhaldhunga	**53,335**	480	3,946	7,326	9,051	10,544	11,295	10,693
Khotang	**70,185**	988	5,532	9,732	11,048	13,490	14,606	14,789
Bhojpur	**61,796**	873	4,688	8,288	10,280	12,101	12,788	12,778
Dhankuta	**56,651**	689	3,808	7,343	9,797	11,238	12,327	11,449
Tehrathum	**34,465**	450	2,594	4,823	5,957	6,700	6,957	6,984
Panchthar	**65,973**	995	5,282	9,200	11,076	13,089	13,439	12,892
Ilam	**96,118**	960	6,033	12,837	16,440	19,693	21,206	18,949
Jhapa	**390,729**	2,672	22,707	53,270	72,852	85,751	82,644	70,833
Morang	**470,550**	3,147	32,968	70,957	87,241	104,347	92,920	78,970
Sunsari	**393,080**	2,713	30,576	62,544	74,701	83,957	74,189	64,400
Udayapur	**147,327**	1,600	11,070	21,400	27,088	30,094	29,366	26,709
Saptari	**325,979**	2,748	31,821	54,786	61,866	72,771	55,452	46,535
Siraha	**371,408**	3,524	37,463	63,691	70,610	81,979	60,448	53,693
Dhanusa	**449,125**	4,572	48,156	80,523	83,516	97,952	70,739	63,667
Mahottari	**365,032**	3,233	34,147	62,866	70,326	81,887	60,698	51,875
Sarlahi	**433,240**	3,868	39,420	73,573	82,765	95,064	75,035	6,3515
Rautahat	**421,159**	4,732	42,486	71,378	80,379	90,655	71,791	59,738
Bara	**376,249**	3,697	34,335	62,731	73,794	82,200	63,954	55,538
Parsa	**316,334**	2,777	26,478	52,121	63,267	69,532	54,811	47,348
Dolakha	**67,070**	483	4,185	8,995	11,717	13,516	14,410	13,764
Sindhupalchok	**107,973**	759	6,587	13,963	18,231	22,329	23,643	22,461
Rasuwa	**19,783**	149	1,224	2,819	3,651	3,847	4,248	3,845
Dhading	**139,615**	1,252	9,797	19,815	24,551	29,154	28,997	26,049
Nuwakot	**11,3635**	901	7,573	15,818	19,951	23,202	24,071	2,2119
Kathmandu	**654,212**	1,995	25,473	79,576	131,864	152,310	145,080	117,914
Bhaktapur	**148,530**	472	5,692	17,837	29,701	33,970	33,472	27,386
Lalitpur	**173,761**	602	6,485	19,054	32,337	40,332	41,099	33852
Kavrepalanchok	**146257**	880	7942	18521	25403	30811	32362	30,338
Ramechhap	**66,847**	456	4,338	8,115	10,762	13,486	14,397	15,293
Sindhuli	**137,625**	1,473	10,356	18,930	23,394	28,256	28,713	26,503
Makwanpur	**197,930**	1,968	13,924	27,867	36,147	40,383	41,054	36,587
Chitawan	**289,135**	2,241	17,018	40,717	54,886	62,659	60,541	51,073
Gorkha	**101,029**	871	6,553	13,747	17,513	20,266	21,881	20,198
Manang	**1,605**	9	74	189	298	317	376	342
Mustang	**4,268**	21	190	535	762	927	910	923

District	CEB	15-19	20-24	25-29	30-34	35-39	40-44	45-49
Myagdi	**43,452**	493	3,263	6,326	7,614	8,720	8,897	8,139
Kaski	**223,117**	1,131	11,036	30,464	43,995	50,426	47,422	38,643
Lamjung	**57,844**	494	3,691	8,165	10,580	12,163	11,393	11,358
Tanahu	**135,373**	1,390	8,862	19,467	24,921	27,737	27,186	25,810
Nawalparasi (East)	**164,800**	1,571	10,518	23,895	31,685	34,587	33,734	28,810
Syangja	**101,485**	663	6,157	14,077	17,735	20,028	21,388	21,437
Parbat	**55,072**	485	3,774	8,325	9,989	10,767	11,077	10,655
Baglung	**107,770**	1,183	8,530	16,601	19,345	21,103	21,334	19,674
Rukum (East)	**25,021**	432	2,476	3,755	4,304	4,834	4,737	4,483
Rolpa	**112,253**	1,567	10,975	16,778	20,645	20,812	21,996	19,480
Pyuthan	**116,530**	1,251	10,170	17,880	21,514	23,030	22,500	20,185
Gulmi	**111,520**	1,104	8,395	16,638	19,515	21,967	21,791	22,110
Arghakhanchi	**84,385**	805	6,372	12,843	14,723	16,294	16,869	16,479
Palpa	**103,754**	1,075	6,935	14,829	18,789	20,754	20,889	20,483
Nawalparasi (West)	**171,609**	935	11,328	26,317	33,480	38,776	34,133	26,640
Rupandehi	**489,695**	2,210	30,160	73,617	97,385	112,885	97,019	76,419
Kapilbastu	**326,148**	1,420	21,480	49,661	65,079	73,501	64,387	50,620
Dang	**304,719**	3,216	24,559	48,245	58,652	62,727	58,419	48,901
Banke	**276,247**	2,027	21,078	43,930	55,231	60,268	52,024	41,689
Bardiya	**211,112**	1,976	16,289	32,184	38,737	45,444	40,801	35,681
Dolpa	**20,069**	192	1,552	3,089	3,791	4,125	3,831	3,489
Mugu	**33,586**	459	3,479	5,328	6,437	6,338	5,972	5,573
Humla	**28,881**	319	2,365	4,017	5,805	6,041	5,518	4,816
Jumla	**57,332**	737	6,037	9,340	10,956	10,786	10,106	9,370
Kalikot	**74,839**	779	7,517	10,992	13,399	14,402	14,407	13,343
Dailekh	**128,236**	1,603	13,163	19,497	20,882	25,444	24,545	23,102
Jajarkot	**102,270**	1,580	10,886	14,994	17,503	20,386	19,712	17,209
Rukum (West)	**84,409**	1,440	9,313	12,955	15,109	15,651	16,118	13,823
Salyan	**121,212**	1,984	13,051	18,333	20,557	22,703	23,411	21,173
Surkhet	**201,488**	2,900	18,367	31,221	37,896	41,234	37,992	31,878
Bajura	**68,746**	715	6,622	9,243	11,733	14,481	13,412	12,540
Bajhang	**97,923**	1,050	8,981	13,658	17,083	19,792	20,339	17,020
Darchula	**63,377**	601	5,647	9,193	11,877	12,937	12,148	10,974
Baitadi	**121,290**	815	10,930	17,912	21,818	24,477	23,716	21,622
Dadeldhura	**70,158**	628	6,282	10,530	12,352	14,427	13,234	12,705
Doti	**109,138**	727	9,662	16,733	20,139	21,691	21,974	18,212
Achham	**121,611**	944	10,251	17,018	21,649	24,810	25,158	21,781
Kailali	**406,724**	2,968	29,110	59,700	77,818	88,023	80,380	68,725
Kanchanpur	**245,553**	1,521	17,337	37,140	46,435	51,771	49,142	42,207

Annex 3: Number of female population in district level, 2021 census

District	Total	15-19	20-24	25-29	30-34	35-39	40-44	45-49
Taplejung	**31,377**	6,537	5,932	5,082	4,102	3,600	3,277	2,847
Sankhuwasabha	**40,579**	7,849	7,044	6,519	5,600	5,218	4,585	3,764
Solukhumbu	**26,672**	5,113	4,847	4,245	3,649	3,390	2,970	2,458
Okhaldhunga	**36,302**	7,448	6,616	5,645	4,605	4,315	4,042	3,631
Khotang	**43,385**	9,593	8,041	6,707	5,228	4,962	4,579	4,275
Bhojpur	**39,628**	7,923	7,039	6,098	5,199	4,841	4,489	4,039
Dhankuta	**40,795**	7,174	6,991	6,289	5,719	5,316	5,047	4,259
Tehrathum	**23,441**	4,329	4,204	3,685	3,193	2,935	2,678	2,417
Panchthar	**45,352**	8,662	8,306	7,406	6,144	5,601	4,916	4,317
Ilam	**78,222**	12,878	12,961	12,785	11,215	10,707	9,815	7,861
Jhapa	**291,664**	46,866	46,776	46,261	43,914	42,324	36,786	28,737
Morang	**329,949**	53,924	56,532	53,715	47,483	47,531	39,390	31,374
Sunsari	**270,018**	42,846	48,074	45,853	39,979	37,751	30,850	24,665
Udayapur	**96,104**	18,023	17,111	15,505	13,768	12,494	10,518	8,685
Saptari	**190,677**	33,315	35,650	30,790	26,122	27,378	20,395	17,027
Siraha	**200,491**	35,213	38,091	32,896	27,715	28,447	20,310	17,819
Dhanusa	**232,681**	40,662	45,106	39,535	31,509	32,648	22,861	20,360
Mahottari	**185,955**	35,557	33,924	30,310	25,356	26,110	18,745	15,953
Sarlahi	**223,538**	43,799	41,729	35,639	29,985	30,244	22,985	19,157
Rautahat	**201,762**	41,799	38,375	31,426	26,576	26,469	20,196	16,921
Bara	**196,932**	38,514	35,668	31,179	27,423	26,867	20,217	17,064
Parsa	**167,285**	32,572	28,968	26,514	23,838	23,039	17,458	14,896
Dolakha	**44,440**	8,380	7,608	6,916	6,002	5,603	5,228	4,703
Sindhupalchok	**68,266**	12,399	11,153	10,443	9,103	9,049	8,547	7,572
Rasuwa	**11,893**	2,213	2,106	1,946	1,688	1,398	1,354	1,188
Dhading	**87,227**	16,169	15,258	13,921	11,815	11,541	10,074	8,449
Nuwakot	**70,001**	12,183	11,806	11,106	9,708	9,326	8,564	7,308
Kathmandu	**642,356**	91,043	111,872	110,709	102,044	91,053	77,524	58,111
Bhaktapur	**132,385**	17,381	21,281	22,816	21,572	19,351	16,921	13,063
Lalitpur	**167,957**	23,299	27,158	27,170	25,743	24,685	22,401	17,501
Kavrepalanchok	**101,190**	16,750	16,565	15,963	14,300	13,776	12,732	11,104
Ramechhap	**43,490**	8,620	7,535	6,220	5,424	5,479	5,143	5,069
Sindhuli	**81,770**	17,120	15,026	12,467	10,510	10,180	8,874	7,593
Makwanpur	**130,065**	23,204	23,368	21,621	18,912	16,788	14,506	11,666
Chitawan	**216,166**	33,339	36,722	35,591	32,512	30,690	26,572	20,740
Gorkha	**66,634**	11,663	10,839	10,363	9,130	8,767	8,495	7,377
Manang	**1,331**	136	198	237	223	179	192	166
Mustang	**3,459**	519	510	598	494	471	439	428

District	Total	15-19	20-24	25-29	30-34	35-39	40-44	45-49
Myagdi	**27,560**	4,838	4,718	4,417	3,809	3,617	3,317	2,844
Kaski	**182,984**	27,973	31,722	30,291	27,833	26,051	22,160	16,954
Lamjung	**41,726**	6,671	6,875	6,735	6,013	5,853	4,960	4,619
Tanahu	**94,326**	15,694	15,715	15,520	13,908	12,861	11,049	9,579
Nawalparasi	**116,187**	18,444	19,629	19,619	17,954	16,256	13,840	104,45
Syangja	**71,114**	11,809	11,708	11,469	9,932	9,235	8,783	8,178
Parbat	**35,980**	6,051	6,058	5,910	5,114	4,621	4,353	3,873
Baglung	**69,632**	12,820	12,460	11,280	9,453	8,700	7,957	6,962
Rukum (East)	**15,088**	3,222	3,098	2,328	1,883	1,702	14,90	1,365
Rolpa	**66,189**	13,906	13,471	10,294	8,919	7,363	6,689	55,47
Pyuthan	**67,789**	14,001	12,908	10,764	9,149	8,151	6,999	5,817
Gulmi	**68,975**	12,982	11,824	11,152	9,383	8,688	7,729	7,217
Arghakhanchi	**50,424**	9,289	8,632	8,229	6,881	6,390	5,792	5,211
Palpa	**72,793**	12,456	12,406	12,022	10,582	9,534	8,360	7,433
Nawalparasi	**113,895**	19,289	20,347	18,835	16,819	16,144	12,937	9,524
Rupandehi	**332,488**	57,883	59,268	55,091	49,405	46,829	36,806	27,206
Kapilbastu	**186,212**	38,370	34,178	30,360	26,185	23,978	18,969	14,172
Dang	**208,746**	37,499	38,654	35,477	30,202	26,894	22,398	17,622
Banke	**175,173**	31,958	33,120	29,876	25,583	23,036	18,028	13,572
Bardiya	**141,448**	24,002	26,216	24,901	20,261	18,944	15,087	12,037
Dolpa	**11,737**	2,460	2,210	1,970	1,557	1,391	1,167	982
Mugu	**16,032**	3,547	3,294	2,452	2,106	1,811	1,510	1,312
Humla	**13,301**	2,771	2,257	1,973	1,925	1,749	1,460	1,166
Jumla	**32,461**	7,189	6,739	4,960	4,152	3,538	3,282	2,601
Kalikot	**36,271**	9,226	7,865	5,104	4,150	3,734	3,289	2,903
Dailekh	**67,437**	15,418	13,809	10,111	7,770	7,720	6,710	5,899
Jajarkot	**47,794**	11,840	9,726	6,827	5,528	5,378	4,659	3,836
Rukum (West)	**46,413**	10,312	9,594	7,036	5,958	5,117	4,655	3,741
Salyan	**67,679**	14,421	13,645	10,386	8,432	7,808	7,067	5,920
Surkhet	**122,349**	24,008	23,328	19,666	1,7291	15,642	12,649	9,765
Bajura	**35,180**	8,334	7,108	4,584	4,076	4,231	3,619	3,228
Bajhang	**49,342**	12,086	9,552	6,454	5,764	5,773	5,371	4,342
Darchula	**3,6056**	7,520	6,790	5,239	4,728	4,484	3,892	3,403
Baitadi	**65,813**	14,258	13,265	9,411	8,133	7,672	6,956	6,118
Dadeldhura	**39,013**	8,172	7,887	5,935	4,868	4,693	3,900	3,558
Doti	**55,699**	12,303	10,895	8,269	7,103	6409	5,975	4,745
Achham	**58,800**	14,441	11,454	8,023	7,051	6,749	6,069	5,013
Kailali	**272,715**	50,348	52,186	45,625	39,247	35,242	28,023	22,044
Kanchanpur	**157,921**	29,056	30,441	26,341	22,127	20,050	16,708	13,198

Annex 4: Number of current birth in district level, 2021 census

District	Total	15-19	20-24	25-29	30-34	35-39	40-44	45-49
Taplejung	**1,749**	247	591	436	276	123	44	32
Sankhuwasabha	**2,017**	294	656	550	318	135	47	17
Solukhumbu	**1,527**	144	485	442	257	130	44	25
Okhaldhunga	**1,643**	167	593	480	244	104	32	23
Khotang	**2,266**	348	818	577	306	137	59	21
Bhojpur	**2,170**	347	714	595	338	121	40	15
Dhankuta	**1,893**	249	581	504	356	154	33	16
Tehrathum	**1,192**	174	380	310	204	86	31	7
Panchthar	**2,581**	389	824	727	382	173	63	23
Ilam	**3,238**	365	901	958	614	303	71	26
Jhapa	**12,453**	970	3,602	3,963	2,469	1,097	265	87
Morang	**14,378**	1,034	5,100	4,491	2,371	1,029	260	93
Sunsari	**12,454**	843	4,646	3,859	1,945	791	247	123
Udayapur	**4,629**	542	1,662	1,326	684	307	71	37
Saptari	**10,232**	803	4,698	2,834	1,160	505	143	89
Siraha	**11,658**	990	5,199	3,140	1,409	580	216	124
Dhanusa	**14,354**	1,370	6,615	3,984	1,434	657	178	116
Mahottari	**10,896**	900	4,627	3,174	1,302	570	196	127
Sarlahi	**13,043**	1,100	5,599	3,747	1,553	700	215	129
Rautahat	**15,697**	1,414	6,431	4,344	1,912	999	394	203
Bara	**11,059**	930	4,585	3,207	1,429	602	186	120
Parsa	**9,618**	734	3,881	2,898	1,270	519	190	126
Dolakha	**2,174**	193	698	714	376	125	48	20
Sindhupalchok	**3,378**	265	1,091	1,040	576	267	100	39
Rasuwa	**746**	56	215	249	150	48	21	7
Dhading	**4,357**	470	1,589	1,312	622	252	78	34
Nuwakot	**3,509**	339	1,245	1,130	539	176	56	24
Kathmandu	**20,285**	645	3,903	6,780	5,724	2,327	660	246
Bhaktapur	**4,845**	149	930	16,50	1,451	551	90	24
Lalitpur	**5,300**	191	995	1,673	1,544	669	188	40
Kavrepalanchok	**4,554**	297	1,415	1,556	826	335	87	38
Ramechhap	**1,998**	171	747	579	312	125	41	23
Sindhuli	**4,348**	546	1,629	1,248	593	232	65	35
Makwanpur	**6,557**	652	2,220	1,954	1,120	429	128	54
Chitawan	**8,329**	688	2,559	2,770	1,591	522	134	65
Gorkha	**2,895**	296	974	893	429	181	92	30
Manang	**54**	4	13	12	17	8	0	0
Mustang	**136**	6	36	40	30	15	6	3

District	Total	15-19	20-24	25-29	30-34	35-39	40-44	45-49
Myagdi	**1,308**	180	460	368	187	81	16	16
Kaski	**6,003**	370	1,635	2,108	1,279	468	107	36
Lamjung	**1,311**	145	439	422	201	68	26	10
Tanahu	**3,475**	459	1,153	1,048	533	203	45	34
Nawalparasi	**4,834**	536	1,550	1,585	818	248	71	26
Syangja	**2,702**	221	959	880	425	149	44	24
Parbat	**1,541**	176	538	472	233	73	32	17
Baglung	**3,681**	469	1,292	1,057	510	229	87	37
Rukum (East)	**901**	135	353	225	102	55	20	11
Rolpa	**4,008**	601	1,617	935	521	212	86	36
Pyuthan	**3,782**	501	1,542	1,016	459	178	56	30
Gulmi	**3,529**	442	1,379	1,051	441	156	43	17
Arghakhanchi	**2,678**	340	1,082	747	331	111	34	33
Palpa	**2,913**	385	998	901	409	156	50	14
Nawalparasi	**5,291**	298	1,953	1,785	842	271	89	53
Rupandehi	**1,5678**	703	5,383	5,370	2,791	1,037	256	138
Kapilbastu	**12,125**	440	3,945	4,037	2,111	1,065	352	175
Dang	**9,090**	1,073	3,398	2,745	1,245	426	139	64
Banke	**9,465**	659	3,210	2,913	1,600	734	233	116
Bardiya	**6,783**	665	2,523	2,133	944	337	112	69
Dolpa	**539**	58	185	154	81	41	16	4
Mugu	**1,218**	170	537	281	127	53	31	19
Humla	**1,092**	112	401	266	160	100	40	13
Jumla	**1,966**	276	897	494	176	65	31	27
Kalikot	**3,093**	338	1,342	698	390	169	94	62
Dailekh	**5,130**	709	2,255	1,232	498	262	108	66
Jajarkot	**3,865**	609	1,653	826	390	212	116	59
Rukum (West)	**3,133**	571	1,391	682	293	112	62	22
Salyan	**4,402**	777	1,970	994	420	141	64	36
Surkhet	**6,885**	1,098	2,794	1,782	784	278	100	49
Bajura	**2,573**	288	1,148	593	284	147	73	40
Bajhang	**3,319**	449	1,476	791	351	149	72	31
Darchula	**2,297**	263	1,064	564	265	82	40	19
Baitadi	**4,709**	381	2,253	1,196	513	215	98	53
Dadeldhura	**2,755**	288	1,303	765	252	85	37	25
Doti	**4,271**	331	1,929	1,144	526	184	88	69
Achham	**5,100**	470	2,154	1,332	669	295	124	56
Kailali	**13,157**	1,196	5,053	4,110	1,856	629	193	120
Kanchanpur	**8,121**	681	3,384	2,684	932	291	95	54

Annex 5: Sex ratio at birth in district level, 2021 census

Districts	Sex Ratio at Birth
Taplejung	101
Sankhuwasabha	109
Solukhumbu	109
Okhaldhunga	99
Khotang	108
Bhojpur	107
Dhankuta	99
Tehrathum	114
Panchthar	106
Ilam	99
Jhapa	111
Morang	104
Sunsari	106
Udayapur	107
Saptari	123
Siraha	128
Dhanusa	133
Mahottari	118
Sarlahi	116
Rautahat	108
Bara	108
Parsa	117
Dolakha	113
Sindhupalchok	112
Rasuwa	108
Dhading	103
Nuwakot	106
Kathmandu	116
Bhaktapur	112
Lalitpur	110
Kavrepalanchok	109
Ramechhap	111
Sindhuli	106
Makwanpur	105
Chitawan	112
Gorkha	112
Manang	100
Mustang	92
Myagdi	111

Districts	Sex Ratio at Birth
Kaski	110
Lamjung	107
Tanahu	116
Nawalparasi (Bardaghat Susta East)	114
Syangja	105
Parbat	119
Baglung	106
Rukum (East)	110
Rolpa	97
Pyuthan	109
Gulmi	108
Arghakhanchi	124
Palpa	113
Nawalparasi (Bardaghat Susta West)	111
Rupandehi	110
Kapilbastu	106
Dang	110
Banke	112
Bardiya	112
Dolpa	106
Mugu	114
Humla	99
Jumla	113
Kalikot	112
Dailekh	107
Jajarkot	103
Rukum (West)	109
Salyan	108
Surkhet	112
Bajura	107
Bajhang	110
Darchula	113
Baitadi	114
Dadeldhura	118
Doti	119
Achham	104
Kailali	120
Kanchanpur	120

Annex 6: Mean and median age in district level, 2021 census

District	Mean age	Median age
Taplejung	29.6	25.0
Sankhuwasabha	30.7	27.0
Solukhumbu	30.8	27.0
Okhaldhunga	32.2	28.0
Khotang	30.9	26.0
Bhojpur	31.5	27.0
Dhankuta	32.1	29.0
Tehrathum	31.6	28.0
Panchthar	30.7	27.0
Ilam	32.9	30.0
Jhapa	31.4	29.0
Morang	30.6	28.0
Sunsari	29.5	26.0
Udayapur	29.7	26.0
Saptari	28.7	25.0
Siraha	27.3	23.0
Dhanusa	27.1	23.0
Mahottari	26.8	22.0
Sarlahi	27.0	22.0
Rautahat	25.5	20.0
Bara	26.8	23.0
Parsa	27.2	23.0
Dolakha	33.5	30.0
Sindhupalchok	33.1	30.0
Rasuwa	30.9	27.0
Dhading	32.0	28.0
Nuwakot	32.6	29.0
Kathmandu	31.2	29.0
Bhaktapur	31.5	30.0
Lalitpur	32.6	30.0
Kavrepalanchok	32.7	30.0
Ramechhap	34.2	31.0
Sindhuli	29.7	25.0
Makwanpur	30.0	27.0
Chitawan	31.3	28.0
Gorkha	34.3	31.0
Manang	35.6	34.0
Mustang	32.8	30.0
Myagdi	32.3	28.0

District	Mean age	Median age
Kaski	31.6	29.0
Lamjung	34.7	32.0
Tanahu	32.2	29.0
Nawalparasi (East)	30.7	28.0
Syangja	34.1	31.0
Parbat	32.9	29.0
Baglung	30.9	26.0
Rukum (East)	28.0	23.0
Rolpa	27.3	22.0
Pyuthan	27.9	23.0
Gulmi	31.9	28.0
Arghakhanchi	31.4	27.0
Palpa	31.8	28.0
Nawalparasi (West)	29.7	26.0
Rupandehi	28.8	25.0
Kapilbastu	27.0	23.0
Dang	28.8	25.0
Banke	27.4	24.0
Bardiya	29.6	26.0
Dolpa	26.3	23.0
Mugu	25.3	21.0
Humla	26.6	22.0
Jumla	26.3	22.0
Kalikot	25.1	20.0
Dailekh	26.6	21.0
Jajarkot	24.8	20.0
Rukum (West)	26.5	22.0
Salyan	27.5	23.0
Surkhet	27.5	24.0
Bajura	26.4	21.0
Bajhang	26.6	20.0
Darchula	29.0	24.0
Baitadi	28.1	23.0
Dadeldhura	28.2	23.0
Doti	26.2	20.0
Achham	26.2	20.0
Kailali	28.7	25.0
Kanchanpur	28.9	25.0

Annex 7: Mean age of child bearing 15-49 years of female in district level, 2021 census

District	Mean age of childbearing (macb)
Taplejung	28.6
Sankhuwasabha	26.7
Solukhumbu	26.6
Okhaldhunga	25.0
Khotang	26.3
Bhojpur	27.5
Dhankuta	27.2
Tehrathum	25.8
Panchthar	25.8
Ilam	26.5
Jhapa	26.3
Morang	25.7
Sunsari	25.5
Udayapur	24.6
Saptari	27.2
Siraha	26.4
Dhanusa	28.0
Mahottari	26.3
Sarlahi	26.2
Rautahat	27.6
Bara	25.9
Parsa	26.4
Dolakha	26.6
Sindhupalchok	26.1
Rasuwa	27.9
Dhading	25.2
Nuwakot	28.3
Kathmandu	28.6
Bhaktapur	28.0
Lalitpur	28.5
Kavrepalanchok	28.9
Ramechhap	26.7
Sindhuli	24.4
Makwanpur	24.6
Chitawan	25.4
Gorkha	25.7
Manang	28.6
Mustang	33.4
Myagdi	26.2

District	Mean age of childbearing (macb)
Kaski	26.6
Lamjung	25.5
Tanahu	25.0
Nawalparasi (East)	24.5
Syangja	25.5
Parbat	24.9
Baglung	26.5
Rukum (East)	28.4
Rolpa	25.3
Pyuthan	24.4
Gulmi	24.9
Arghakhanchi	24.3
Palpa	26.0
Nawalparasi (West)	25.8
Rupandehi	26.4
Kapilbastu	27.7
Dang	24.3
Banke	26.3
Bardiya	24.5
Dolpa	25.9
Mugu	25.0
Humla	25.2
Jumla	29.2
Kalikot	26.2
Dailekh	25.9
Jajarkot	26.0
Rukum (West)	24.2
Salyan	24.8
Surkhet	24.5
Bajura	24.7
Bajhang	25.2
Darchula	25.1
Baitadi	26.2
Dadeldhura	26.3
Doti	26.6
Achham	28.0
Kailali	25.3
Kanchanpur	25.5

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National Statistics Office

Thapathali, Kathmandu
Tel: 5365323, 5341801, 5328406, 5345946 (47, 48) Fax No.: 977-1-5327720
E-mail: info@nsonepal.gov.np, Website: www.nsonepal.gov.np
E-mail: popcen@nsonepal.gov.np, Website: www.censusnepal.cbs.gov.np