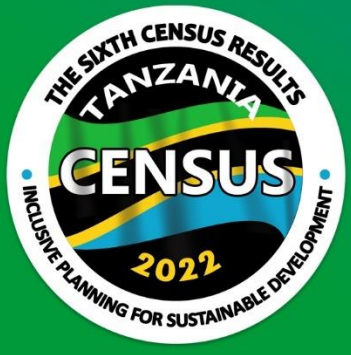
THE UNITED REPUBLIC OF TANZANIA

FERTILITY AND NUPTIALITY LEVELS AND PATTERNS IN TANZANIA



The United Republic of Tanzania

FERTILITY AND NUPTIALITY LEVELS AND PATTERNS IN TANZANIA

National Bureau of Statistics

Ministry of Finance

Tanzania

and

Office of the Chief Government Statistician

Presidents' Office - Finance and Planning

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MAP 1: UNITED REPUBLIC OF TANZANIA, ADMINISTRATIVE BOUNDARIES

Foreword

The 2022 Population and Housing Census (PHC) for the United Republic of Tanzania had its reference as the midnight of the 22nd/23rd August 2022. This was the Sixth and the first digital Census after the Union of Tanganyika and Zanzibar in 1964. Other post union censuses were carried out in 1967, 1978, 1988, 2002 and 2012. The Sixth Phase Government of Tanzania under the leadership of Her Excellency Dr. Samia Suluhu Hassan, and the Eighth Phase Government of Zanzibar under the leadership of Dr. Hussein Ali Mwinyi, have fulfilled their obligation of conducting the 2022 PHC according to the United Nations Principles and Recommendations for the Population and Housing Census. We owe them much appreciation for their commitment and support during Census implementation.

The 2022 PHC was conducted in accordance with the Statistics Act Cap 351, which mandates the Government of the United Republic of Tanzania to conduct Population and Housing Census every ten years. It also followed the United Nations Principles and Recommendations for conducting the 2020 Round of Population and Housing Census, including adoption and use of advanced Information and Communication Technology (ICT) at all stages during Census implementation. Indeed, the country's decision to use advanced technology to capture data during cartographic mapping, enumeration, data transmission, and processing made the 2022 PHC the first ever digital census to be conducted in Tanzania.

The 2022 PHC results are to be aligned and integrated into national and sustainable development plans in order to increase awareness and transparency of resources allocation at all administrative levels, basing on the actual population. In addition, the results will be used by the Government of United Republic of Tanzania and development partners in monitoring and evaluating various national, regional and international development frameworks including the Tanzania Development Vision 2050 and Zanzibar Development Vision 2050; the Third National Five -Year Development Plan 2021/22 - 2025/26 and Zanzibar Development Plan 2021/22 - 2025/26; the East African Community Vision 2050; Southern and African Development Community Vision 2050 and the African Development Agenda 2063.

Results will also enable the country to evaluate the progress in implementing Sustainable Development Goals (SDG); particularly goals that aim at achieving equality and poverty eradication by 2030. The census data will also provide basis for the computation of several development indicators such as enrolment and literacy rates, infant and maternal mortality rates, unemployment rate and others.

The Fertility and Nuptiality Levels and Patterns report in Tanzania is the eighth in a series of planned 2022 PHC publications. The major reports that have been produced previously are (i) Administrative Units Population Distribution Reports, (ii) Age and Sex Reports and (iii and iv) Constituency Population Distribution Report, produced in two volumes, one representing the United Republic of Tanzania and the other Tanzania Zanzibar. Other reports include the (v and vi) National and Regional Basic Demographic and Socioeconomic Profiles and (vii) building census reports. The first two major reports are in three volumes for the United Republic of Tanzania, Mainland Tanzania and Tanzania Zanzibar. The main purpose of this report is to provide in depth analysis of nuptiality and fertility from the 2022 PHC.

The success of 2022 PHC depended on the cooperation and contributions from the Government, specifically Census Committees from national to the lowest administrative level. These include the National Central Census Committee; National Census Advisory Committee; National Census Technical Committee; Census Committees at regional, district, wards, village/mtaa and hamlet. There were also forums from Non-States Actors including Collaborators Forum, Private Sector, various institutions and the public at large.

A word of thanks goes to Government leaders at all levels, particularly, Minister for Finance; Minister of State - President's Office, Finance and Planning, Zanzibar; members of parliament; members of the house of representatives; councillors/shehas; regional and district census committees chaired by regional and district commissioners of respective areas; census coordinators (National and Zanzibar); regional and district census coordinators; supervisors; enumerators; local leaders and all respondents (heads of households, members of households and other individuals).

Special gratitude is extended to the following Development Partners:- United Nations Population Fund (UNFPA); World Bank (WB); United Nations Children's Fund (UNICEF); UN-Women; International Organization for Migration (IOM); United States Agency for International Development (USAID); Foreign, Commonwealth and Development Office (FCDO); United States Census Bureau (USCB), The Republic of South Korea, The People's

Republic of China and other Development Partners for providing equipment, expertise, training and financial support in making the 2022 Population and Housing Census a success. We also thank religious, traditional and political leaders, non-governmental organization leaders, the media and all citizens and non-citizens in general for their participation and contributions in the successful implementation of the Census.

Special thanks also goes to Honourable Anne Semamba Makinda - Census Commissar for Mainland Tanzania and Former Speaker of the National Assembly; and Honourable Ambassador Mohamed Haji Hamza - Census Commissar for Tanzania Zanzibar, for their effective leadership and management in educating and sensitizing all citizens and non-citizens to participate in the 2022 Population and Housing Census thus, resulting in enhanced quality, smooth and timely execution of the Census exercise.

Last but not least, we acknowledge the unprecedented efforts and commitment of the management and staff of the NBS under the leadership of Dr. Amina Msengwa, the Statistician General; and staff of the Office of the Chief Government Statistician, Zanzibar under the leadership of Mr. Salum Kassim Ali; Chief Government Statistician; Dr. Albina Chuwa, former Statistician General, staff from the Ministry of Lands, Housing and Human Settlements Development; Ministry of Information, Communication and Information Technology; as well as other Government officials who worked tirelessly in ensuring that the 2022 Population and Housing Census was implemented successfully.

Kassim Majaliwa Majaliwa (MP)
Prime Minister of
The United Republic of Tanzania

Hemed Suleiman Abdulla (MRC)
Second Vice President of Zanzibar

Acknowledgement

The Government of the United Republic of Tanzania through Ministry of Finance in coordination of the National Bureau of Statistics (NBS) and Office of the Chief Government Statistician, Zanzibar (OCGS) conducted the 2022 Population and Housing Census (PHC) to provide necessary information for policy formulation, planning, monitoring and evaluation of development processes. The 2022 Census was conducted alongside other national exercises of Building Census and the National Physical Addressing. The Population Census collected detailed information on demographic, social and economic data for policymaking, planning and administration. Information on the size, distribution and characteristics of a country's population is essential for describing and assessing its economic, social and demographic circumstances and for developing sound policies and programmes aimed at fostering the welfare of a country and its population.

The Tanzania Building Census (TBS) collected information on the building structures for development of a basis for planning housing and human settlement programmes and policies, public and private sector studies of urban and other non-agricultural land use, evaluation of the adequacy of housing stock and assessment of the need and market for new housing, and studies of the living conditions of the homeless and those living in temporary or substandard housing. The 2022 Census also collected information on physical addresses to facilitate planning and enabling digital transformation in various aspects.

This report presents a comprehensive analysis of fertility and nuptiality levels and patterns in Tanzania, focusing on their implications for population dynamics and socio-economic planning. It provides detailed statistics on key indicators, including nuptiality patterns, fertility levels and patterns across various demographic and socio-economic groups. The report also examines historical trends, differentials, and the influence of factors such as education, urban-rural residence on nuptiality and fertility behaviour. The analysis leverages data from national surveys, previous censuses and other reliable sources to offer insights into how these patterns vary over time and across regions. Additionally, it investigates disparities among rural and urban areas and regions, such as age cohorts, and uncovers the underlying drivers of fertility and nuptiality trends.

The findings aim to support evidence-based decision-making by policymakers, researchers, and planners. By identifying key determinants and highlighting actionable trends, the report equips stakeholders to design targeted interventions that address population challenges, enhance reproductive health services, and promote gender equality. Ultimately, this work

seeks to contribute to achieving national development goals and improving the well-being of Tanzanians.

We therefore express our sincere appreciation to all experts who have put their time and efforts to produce this report. In particular we would like to thank Prof. Akim Mturi, Internal Technical Advisor responsible of overseeing writing of the monograph; Ms. Edith Mbatia, Lead Author of the Monograph; Dr. Ruth Davison Minja, Director of Population Census and Demographic Statistics; Fahima Mohamed Issa, Director of Social Statistics Department, OCGS; Seif Ahmad Kuchengo, Manager for Population Census and Vital Statistics and the National Census Coordinator; Abdul-Majid Jecha Ramadhan, Tanzania Zanzibar Census Coordinator; Steven Lwendo, Information Technology Experts; the National Census Technical Team; Statisticians; Demographers; and Geographic Information System officers for their commitment which led to successful completion of this report.

Our appreciation is as well extended to regional and district supervisors, enumerators and field supervisors as well, the media and all professionals for their dedicated work. Certainly, without their commitment and dedication, the Census would not have been successful. We would also like to thank the public for their cooperation during the entire period of the Census.

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Executive Summary

Fertility and Nuptiality Levels and Patterns in Tanzania provides a detailed analysis on fertility and nuptiality status as collected from the Census 2022. The report summary is divided into seven sections. Section one is on the Fertility Levels and Trends. The findings show the Total Fertility Rate (TFR) in Tanzania is 4.6 children per woman. This means that, at current fertility levels an average woman residing in Tanzania would have given birth to 4.6 children by the end of reproductive age. Fertility shows a standard pattern observed in many developing countries. In 2022 PHC the Age-Specific Fertility Rate (ASFR) show "broad peak" of fertility age pattern. The TFR level decreased from 6.9 recorded in the 1978 Census which is equivalent to a reduction of 2.3 children per woman for the past 44 years. Fertility is slightly higher in Tanzania Zanzibar (4.7 children per woman) than in Mainland Tanzania (4.6 children per woman).

Results show the Adolescent Fertility is about 77 births per thousand women aged 15 – 19 years. Adolescent fertility contributed to 1.7 percent of the total TFR in the country. Fourteen percent of adolescents had at least one birth at the time of the Census in 2022. Adolescent fertility is low in Tanzania Zanzibar with 25.4 births per thousand women aged (15 – 19 years) as compared with 78.5 births per thousand women aged 15 – 19 years in Mainland Tanzania. Early marriage seems to be a strong factor underlying adolescent fertility. The relative contribution of adolescent fertility was highest in Ruvuma, Mtwara, Songwe, Lindi, Tabora, Morogoro and Dodoma regions, where early marriages are common.

Findings further shows fertility differentials in Tanzania such as residence, marital status, education level and occupation differ across socio-economic aspects. The TFR for Tanzania is 5.3 children per woman in rural areas and 3.8 children per woman in urban areas. TFR is highest in Kaskazini Pemba Region (6.5 children per woman) and lowest in Dar es Salaam Region (3.1 children per woman). In addition, fertility is negatively associated with the educational attainment of the mother, decreasing from 5.5 children per woman for women with no education or attended pre-primary education only to 2.3 children per woman for women with tertiary education or above. Women engaged in agricultural activities (farmers, livestock keepers and fishers) have a relatively higher TFR (4.9) compared with women engaged in clerks with TFR of 1.6. Fertility levels are low among women engaged in occupations that require professional training or other skills.

Results on Marital Status revealed marriage is almost universal in Tanzania where the percentage of the population still single is only 3.5 percent for males and 4.1 percent for females at the age 60 years and above. Over fifty percent of the population aged 15 years

and above of both males and females were either married or living together at the time of the Census. More than sixty-two-point five percent (62.5%) of women living in rural areas are married compared to fifty-point nine percent (50.9%) of those living in urban areas. There is also a difference in the percentage of married males living in rural and urban areas (58.1% and 51.7% respectively). Widowhood increases with age irrespective of sex, but with higher proportions among females. The proportions of widowed males in age groups 50-54 years, 55-59 years and 60 years and above are 2%, 3% and 8.8% respectively. The proportions of widowed females in corresponding ages are 15.0 percent, 21.7 percent and 47.6 percent, respectively. The percentage of divorced female population aged 15 years and above (4.7%) is almost twice that of the male population (2.5%). The proportion of females in Tanzania Zanzibar who are divorced is higher (8.1 percent) than that for Mainland Tanzania (4.6%). It should be noted that in polygamous marriages the divorce of one or more wives does not categorize the husband as divorced if still living with other wife (wives).

Results on Age at First Marriage indicated males marry at a relatively older age as compared to females. The Singulate mean age at first marriage (SMAM) for males is 26.4 years compared with 22.1 years for females. On average, the mean age at first marriage is 24.1 years and is slightly higher in urban areas (25.9 years) than in rural areas (22.8 years). SMAM remained almost same in 2012 and 2022 Censuses. Dar es Salaam region has the highest mean age at first marriage (29.2 years for males and 25.7 years for females) followed by Kilimanjaro region (29.0 years for males and 24.5 years for females) and Mjini Magharibi region (28.1 years for males and 24.5 years for females). The region with the lowest SMAM is Rukwa (23.8 years for males and 20.9 years for females).

Findings show the Net Nuptiality Life average expected years of single life remaining before marriage in Tanzania at age 15 is 10.6 years for males and 8.2 years for females. The average expected years of single life remaining before marriage at age 15 is higher (11.4 years) for males in Zanzibar compared with those in Mainland Tanzania (10.6 years).

Additionally, with regard to Population of Childless Women results show more than five percent (5.2%) of the female population aged 45 – 49 years were childless. The percentage of childless women in the 45-49 age group is higher in Tanzania Zanzibar (7.1%) compared with Mainland Tanzania (5.1%). Urban areas have a higher proportion (6.2%) of female population aged 45-49 years who were childless compared with rural areas (4.6%).

Summary of Key Indicators; Tanzania, 2022 PHC

Region	TFR	Childless Women (45 to 49 Years) (%)	Adolescent Fertility (Births per 1000 Women)
Tanzania	**4.6**	**5.2**	**76.5**
Rural	**5.3**	**4.6**	**95.3**
Urban	**3.8**	**6.2**	**45.4**
Mainland Tanzania	**4.6**	**5.1**	**78.5**
Dodoma	4.7	3.6	95.2
Arusha	4.6	4.5	59.9
Kilimanjaro	3.7	4.6	44.0
Tanga	4.8	3.3	72.3
Morogoro	4.2	5.3	85.3
Pwani	3.7	5.3	54.4
Dar es Salaam	3.1	7.0	26.0
Lindi	3.7	5.1	79.2
Mtwara	4.2	6.3	90.0
Ruvuma	4.6	4.8	103.9
Iringa	4.1	4.6	53.7
Mbeya	3.8	4.5	69.3
Singida	5.7	3.9	87.5
Tabora	5.4	5.3	115.8
Rukwa	6.1	3.2	117.0
Kigoma	5.3	9.1	69.4
Shinyanga	5.0	5.9	97.5
Kagera	5.6	3.7	77.5
Mwanza	4.6	6.1	69.2
Mara	5.4	4.8	95.3
Manyara	6.0	4.6	90.1
Njombe	4.0	5.3	55.6
Katavi	5.6	5.9	105.8
Simiyu	6.3	4.9	96.5
Geita	5.3	5.1	91.3
Songwe	5.5	3.6	120.6
Tanzania Zanzibar	**4.7**	**7.1**	**25.4**
Kaskazini Unguja	4.8	10.9	26.9
Kusini Unguja	4.0	9.3	36.4
Mjini Magharibi	4.2	6.9	19.3
Kaskazini Pemba	6.5	3.7	33.9
Kusini Pemba	6.1	5.8	31.4

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List of Abbreviations

AFR	Adolescent Fertility Rate
ASMRs	Age Specific Marriage Rates
ASFR	Age-Specific Fertility Rate
CBR	Crude Birth Rate
CEB	Children Ever Born
CFR	Completed Fertility Rate
CMR	Crude Marriage Rate
CWR	Child Woman Ratio
DHS	Demographic and Health Survey
EA	Enumeration Area
EAC	East African Community
FLE	Family Life Education
GFR	General Fertility Rate
GMR	General Marriage Rate
GRR	Gross Reproduction Rate
MDGs	Millennium Development Goals
MKUZA	Mpango wa Kupunguza Umasikini Zanzibar
NBS	National Bureau of Statistics
NHIF	National Health Insurance Fund
NSGRP	National Strategy for Growth and Reduction of Poverty
NRR	Net Reproduction Rate
OCGS	Office of Chief Government Statistician
OMR	Optical Mark Reader
PHC	Population and Housing Census

PPR	Parity Progression Ratio
RLS	Reproductive Life Span
SMAM	Singulate Mean Age at Marriage
TDHS-MIS	Tanzania Demographics and Health and Malaria Indicator Survey
TFR	Total Fertility Rate
THMIS	Tanzania HIV/AIDS and Malaria Indicator Surveys
UN	United Nations
UNDP	United Nations Development Programme
UNFPA	United Nation Population Fund
UNICEF	United Nations Population Fund
URT	United Republic of Tanzania
USAID	United States Agency for International Development
WHO	World Health Organization
ZSGRP	Zanzibar Strategy for Growth and Reduction of Poverty

Definition of Terminologies

Adolescent Fertility Rate is number of births per 1,000 women ages 15-19.

Age is number of years one lived as at last birthday in reference to the census night.

Age Specific Fertility Rate is calculated as number of live births per 1,000 women within a specific age group in a year

Crude Marriage Rate (CMR) measures the incidence of marriage defined as the marriages per one thousand of the total population.

Childlessness is the condition of having no children.

Child Woman Ratio (CWR) is a number of children below the age of five years per 1,000 women in the population (15-49 age).

Crude Birth Rate (CBR) is a demographic indicator that measures the number of live births occurring in a population during a specific period, normally one year, per 1,000 people in a total population.

Divorced Persons are persons who were once married but marriages were permanently terminated and have not remarried. Note that in polygamous marriages the divorce of one or more wives does not categorize the husband as divorced if still living with other wife (wives).

Fecundity: a biological capacity, of a woman, a man or a couple, to produce live birth.

Fertility refers to a number of births a woman can have.

General Fertility Rate (GFR) is defined as a number of live births per 1,000 women aged 15-49 years in a population per year.

General Marriage Rate (GMR) is a number of marriages per one thousand of the marriageable age population. marriageable

Gross Reproduction Ratio (GRR) It is the average number of daughters that would be born to a woman (or a group of women) during her lifetime if she passed through her childbearing years conforming to the age specific fertility rates of a given year.

Live Birth is defined as a complete expulsion or extraction of a product of conception from its mother, irrespective of duration of pregnancy, which after separation, breathes or shows any other evidence of liveliness.

Mean Children Ever Born (MCEB) is the mean number of children born alive to an age or age group of women.

Natality: Natality expresses the frequency of births in a population.

Never Married: Persons who remained single throughout their lives excluding persons who have lived with another person and now living alone.

Net Reproduction Rate (NRR) is average number of daughters who could be born to a female (or a group of females) through lifetime conforming to the age-specific fertility and mortality rates of a given year.

Nuptiality refers to the frequency, patterns, and characteristics of marriage within a population.

Parity is the number of children born alive to a woman.

Parity Progression Ratio (PPR) is the probability of having another child given that the mother has reached certain parity.

Total Fertility Rate (TFR) is the average number of children that would be born to a woman during childbearing period if she were to pass through all her childbearing years conforming to the age-specific fertility rates of a given year.

Chapter One
Introduction

1.1 Background on 2022 Population and Housing Census

National Bureau of Statistics (NBS), in collaboration with Office of the Chief Government Statistician (OCGS), Zanzibar, conducted population and housing censuses (PHC) in the United Republic of Tanzania (URT) in the year 2022, in accordance with the Statistics Act CAP 351, requiring a census to be conducted in every ten years. This is the sixth Census since the established Union of Tanganyika and Zanzibar in 1964. The Census is conducted in accordance with international standards in particular; the United Nations Principles and Recommendations for Population Counts. In the URT, previous censuses were conducted in the years 1967, 1978, 1988, 2002 and 2012.

The Census referenced as the night of 22nd/23rd August 2022, was undertaken on a *de-facto* basis. Unlike the previous censuses, the 2022 PHC enumerated people basing on place of residence on the census night. All persons found in the country were enumerated, regardless of nationalities or citizenship. However, the enumeration planned for seven days; took nine days. PHC 2022 applied mobile technology in data and information collection which makes it the first digital census in Tanzania.

The censuses show that Tanzania's population increased from 12.3 million in 1967 to 61.7 million people in 2022 (Figure 1.1). Also, the average annual population growth rate of Tanzania increased from 2.7 percent in 2002-2012 to 3.2 percent in 2012-2022, intercensal periods.

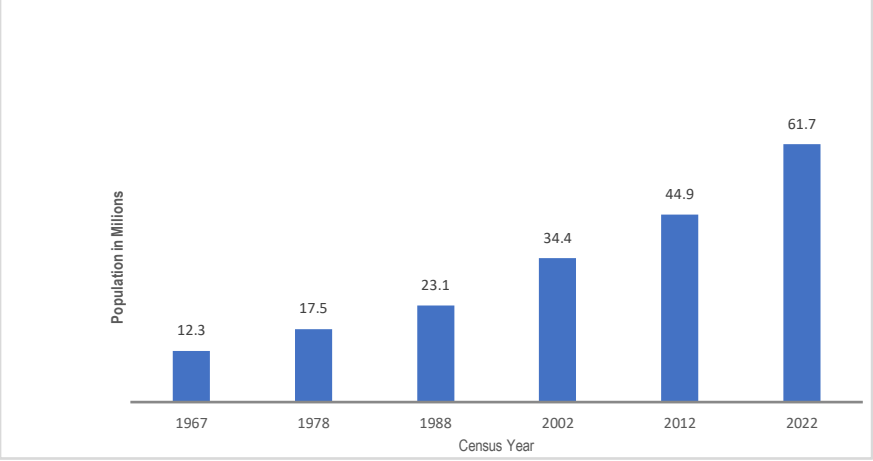


Figure 1.1:Tanzania's Population since 1967 - 2022

1.2 Objectives of the 2022 Population and Housing Census

The main objective of 2022 PHC is to provide information to the government on population size, distribution, composition and other social-economic characteristics as well as housing conditions. The referred Census is envisioned to improve access to timely, relevant, current and reliable data that can influence policy formulation, development planning, evidence-based decision making, population and socio-economic programmes monitoring and evaluating and quality services delivery.

Specific objectives of the Tanzania 2022 PHC are to:

a) Enhance availability and accessibility of accurate, timely and reliable data on demographic, socio-economic and environment characteristics;

b) Promote information and knowledge management of socio-economic, demographic characteristics, environment, patterns and trends in population growth;

c) Promote use of disaggregated socio-economic, demographic and environment data from lower administrative levels;

d) Enhance NBS and OCGS's capacity in carrying out population and housing census and other statistical data; and

e) Establish a comprehensive buildings and National Physical Addresses database that enables evidence-based decisions as a key tool for enhancing access to social services, expansion of tax base and quality of development programmes in general.

1.3 Fertility and Nuptiality Monograph: Purpose

This monograph sought to determine levels, patterns, trends of nuptiality and fertility in Tanzania. Analysis of nuptiality levels and patterns bases on proportions of marital status categories assessed in the 2022 census. Fertility is one of the key three components of population change; the other two being mortality and migration. This is an analysis using measurements or indices of fertility levels and trends, including: average parities, Total Fertility Rate (TFR), Age-Specific Fertility Rate (ASFR), Crude Birth Rate (CBR) and Age Specific Parity. Fertility differentials (FD) are based on respondent's place of residence, marital status, education levels and occupation. Indirect techniques are used to adjust some of the measurements and indices to reduce substantial inherent errors in direct fertility levels and trends estimation.

1.4 Comparison of 2012 and 2022 PHC Fertility and Nuptiality Census Questions

The 2022 PHC used more questions in nuptiality and fertility than the 2012 Census. In measuring nuptiality and fertility, categories on marital status were the same. Regarding fertility, questions on children ever born were the same while current fertility had one question in 2022 compared with the two questions in that of 2012. The questions in the 2012 Census were: how many male/female children were born alive to (Name) in the last 12 months and how many male/female children who were born alive in the previous 12 months still alive. While in 2022 the question asked was how many male/female children were born alive in the 12 months preceding the Census. The 2022 PHC used six marital status categories: Never married, married, living together, divorced, separated and widowed. The question asked in the 2022 PHC was: "*What is current marital status of* [NAME]?" (See Appendix 2 for more details).

Another difference related to questions between the two Census is data for Age at First Marriage (AFM) and Age at First Birth (AFB) were not collected in the 2022 PHC compared to the 2012 PHC. The lack of AFM and AFB data may have significant consequences in various demographic, public health, and socioeconomic contexts. AFM often correlates with interruption in girls' education. Without such data, programmes aiming at improving educational level attainment and delay marriage might become less effective. On the other hand, it is difficult to analyse fertility timing, which is critical for understanding population growth and reproductive behaviour without AFB data.

1.5 Quality of Fertility and Nuptiality Data

Like other developing countries, census data in Tanzania, has coverage and content errors, varying both in nature and magnitude from one region to the other. Coverage errors result from omission of certain pockets of population, while content errors pertain to misreporting or misclassification. Common census problems in developing countries such as over/under reporting of live births by younger women, under/over-reporting of live births by older women and misreporting the other type of events were found and had to be managed accordingly in this analysis, with more efforts on ensuring generation of complete and accurate data on fertility and nuptiality reports.

Fertility estimates in this monograph is based on current and lifetime fertility data, while nuptiality estimates are on marital status data. Errors that affect current fertility data include age misreporting, omission of births, incorrect recent births dates or reference period error and use of short period creating uncertainties in reported fertility levels. Errors affecting

lifetime fertility data include possible misstatement of women age especially in early lifetime fertility, under-reporting of births to women above 35 years and unmarried adolescents who dislike being reported as mothers. Other errors in reported births are omission of births to older women mainly due to memory lapse, especially for those births that ended with an early child death. Older women also tend to forget to list in the household roster children born to another husband or man or those who left household soon after birth or not present at home for various reasons. Errors in such data may also occur due to inclusion of still births and late foetal deaths. There are also other factors that may inflate number of births, for example the inclusion of step or adopted children or grandchildren, dead children and parity of a sizeable proportion of women who did not disclose parities or a dash or a space left blank (Kumar and Yadav, 2024; United Nations {UN}, 1983).

Age and sex structure of a population is also important in explaining levels, patterns and trends of fertility and nuptiality. Hence, quality of age data is assessed mainly by examining the extent of age misreporting and age heaping by women of reproductive age. Furthermore, examining average parities, parity distributions and proportion of childless women would provide further insights in quality of various cohorts fertility data reporting. On the other hand, individual perceptions influence nuptiality data quality. Therefore, validation of such data is embedded in cultural norms and practices that determines respondent's perceptions and engagement into marital status and conditions. Given the possibilities of these distortions, caution needs to be taken in interpreting reported data. In this situation, indirect techniques shouldn't be avoided.

Nuptiality data shows patterns in marriage, divorce, and remarriage. The changes in marital behaviour may be driven by factors like extra marital affairs commonly known as "nyumba ndogo", which tend to influence marriage stability, divorce rates, remarriage rates and general family dynamics impacting the Tanzania nuptiality data.

Extramarital affairs introduce significant uncertainty to nuptiality data by masking the true causes of marital instability and dissolution, as they are often hidden and underreported in official records and surveys. Additionally, Individuals in a society witnessing widespread extramarital affairs might have a varied value, thinking and approach to marriage. This may lead to delayed commencement of marital life particularly in youth and younger generations may opt for cohabitation than having a formal marriage leading to fewer registration of formal marriages.

1.6 Methodology

1.6.1 Data Collection Method

Socio-demographic data were collected to evaluate fertility levels and other general characteristics its population. Fertility data in censuses provides information on recent births (live births occurred in households in the 12 months preceding the census), and about lifetime fertility (live children ever born in the woman's reproductive life). Questions on live births in the last 12 months allow measurement of current fertility. Information on all live births (ever born children) is used to determine the past childbearing ages for women (i.e., lifetime fertility).

1.6.2 Indirect Methods of Fertility Indicators Adjustments

Fertility data collected in 2022 census was adjusted using indirect methods to estimate fertility indicators. Demographers globally have developed a set of techniques that allows indirect estimation of key fertility indicators from census and survey data. Although there are many indirect methods of estimating fertility indicators such as the Arriaga, Brass P/F ratio and Gompertz relational methods, the Arriaga method was found to be the most appropriate for determining fertility levels in Tanzania. The Brass P/F method could not be applied since fertility in Tanzania declined in recent years. The alpha and beta parameters of Gompertz relational failed to converge indicating unsuitability of the method to the Tanzania 2022 PHC data. The Arriaga fertility method was applied as it compares two or more sets of average children ever born (CEB) in estimating fertility levels. The estimates are then used to adjust observed fertility pattern in a manner like the Brass P/F ratio method. The Arriaga method used in this monograph combines the 2022 with 2012 data in considering recent decline of fertility in Tanzania. The estimation procedure of the Arriaga and other methods used are described in Appendix 3. The El-Badry correction procedure was applied before application of Arriaga method to compute the fertility indicators, to adjust for the high percentage of women with not stated parity (See details in Appendix 3).

1.7 Linkage between Nuptiality and Fertility

Analysis of nuptiality trends and differentials contribute to understanding of fertility trends and differentials since childbearing occurs within marriage mostly. Changes in fertility are conditioned usually by differences in proportions of marrying and the age at marriage. Marriage is one of the proximate determinants of fertility (Bongaarts, 1978). Nuptiality patterns are a cornerstone of fertility dynamics. Understanding the timing, prevalence and cultural context of marriage provides a crucial insight in fertility levels and trends also enables development of appropriate interventions and reproductive health policies.

Chapter Two

Nuptiality Patterns

Key Points

- Marriage is still common in Tanzania. Over 95 percent of the population aged 15 years and above have ever been married in their lifetime.
- Singulate Mean Age at Marriage (SMAM) is relatively high in Dar es Salaam, Kilimanjaro, Mjini Magharibi and Iringa; but relatively low in Katavi, Tabora, Rukwa and Songwe.
- The average expected years to marriage at age 15 has remained more or less constant (10.2 years) over the 2012-2022 intercensal period, in Tanzania.
- The Law of Marriage Act (1971) allows girls to marry at 15 with parental consent and at 14 with court approval, while the legal age for boys is 18. Raising the legal age at marriage to 18 and ensuring consistent enforcement of marriage laws is critical in Tanzania. This decision, together with supportive policies in education, health and economic empowerment, can help protect children, promote gender equality and drive sustainable development.

2.1 Introduction

Nuptiality status is one of the basic population characteristics generally determined in population censuses and household surveys. Nuptiality refers to various aspects of the institution of marriage as a population phenomenon, including the rate at which it occurs, characteristics of persons united in marriage, and dissolution of such unions through divorce, separation and widowhood. The institution of marriage is therefore a milestone stage in growth of human evolution.

Analysis of nuptiality patterns is important in helping to understand the social dynamics of a society and they change over time. Indeed, marriage is a major determinant of fertility, especially in a country such as Tanzania where the majority of children are born in wedlock. Thus, knowing how many people are in union or not and at what age they tend to get married enables people to understand more about fertility. In addition, the comparison of the distribution of marital status at different periods provides information on how a society is evolving.

2.2 Age-Specific Marriage Rates

The age-specific marriage rate (ASMR) is a demographic measurement that shows the rate at which individuals in a particular age group get married within a specified period (usually a year), it's often expressed per 1,000 people in that age group. Therefore: -

ASMR = $\frac{nM_x}{nP_x}$ *1000

Where

nM_x = number of marriages in a year between ages x and x + n

nP_x = number of persons in the age group (x, x + n)

However, the rate does not take into consideration the fact that married couples may not be of the same age, which is one of the shortcomings of the method. It should also be noted that since generally husbands tend to be older than the wives, the age-specific marriage rates might differ with sex. Hence it is more advisable to have an age-sex specific marriage rate.

Table 2.1 presents Age-Specific Marriage Rates by Place of Residence in the 2022 Census. Marriage rates increase with increasing age for both males and females. The table reveals that marriage rates are low in younger age groups but reach peak in 40 – 44 years' age group. Age Specific Marriage Rate for males (ASMRm) rises slowly but shows a sharp increase in 25 – 29 years' age which corresponds with average age at first marriage for male of 26 years. On the other hand, Age Specific Marriage Rate for females (ASMRf) rises sharply in the 20 – 24 age group consistent with average age at first marriage for females of 22 years. ASMRm for males reaches 746 per thousand population for those aged 60 years and above but that for women drops to 344 per thousand for the same age group. Similar patterns are observed in rural and urban areas.

Table 2. 1: Age-Sex Specific Marriage Rate Per 1,000 Population for Population Aged 15 Years and Above by Five Years Age Group, Place of Residence and Sex: Tanzania, 2022 PHC

Place / Residence	Tanzania			Rural			Urban		
	Both Sexes	Male	Female	Both Sexes	Male	Female	Both sexes	Male	Female
Total	**511.6**	**502.8**	**519.7**	**557.5**	**539.7**	**574.0**	**440.2**	**445.9**	**434.9**
15 - 19	106.7	20.9	194.7	137.1	25.9	262.0	54.1	11.1	91.7
20 - 24	382.7	229.8	522.2	491.8	312.3	658.3	247.1	125.2	355.9
25 - 29	573.1	507.3	635.8	683.1	622.9	738.9	444.5	376.2	511.6
30 - 34	684.2	679.8	688.4	743.1	742.4	743.6	608.2	603.2	613.3
35 - 39	724.8	745.2	706.2	760.9	778.6	745.6	671.7	699.6	644.0
40 - 44	730.4	774.1	690.5	753.8	792.7	720.2	692.0	745.7	638.7
45 - 49	726.2	788.0	668.9	745.5	801.6	695.4	691.9	765.1	619.6
50 - 54	702.0	790.8	621.9	716.5	803.0	641.0	673.9	768.3	583.1
55 - 59	678.7	798.7	564.5	692.0	809.3	581.9	653.7	779.2	531.1
60 and above	525.2	745.9	344.3	532.7	754.7	351.1	507.8	725.8	328.7

2.3 Singulate Mean Age at First Marriage

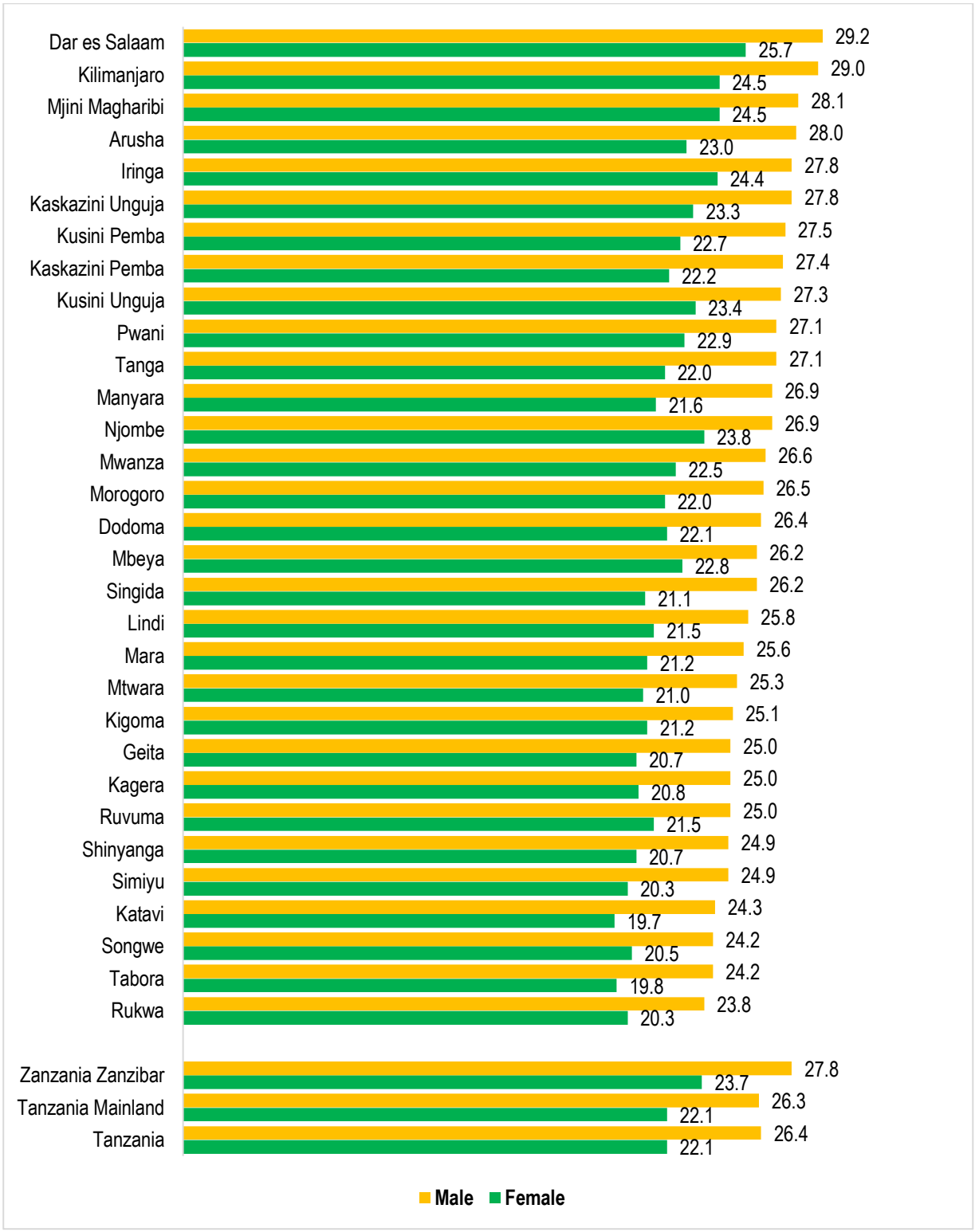
Age at first marriage is one of the proximate determinants of fertility. The population, in which age at first marriage is low, tends to have early childbearing and high fertility. Since there was no direct question on age at first marriage in the 2022 PHC, the mean age at first marriage was calculated using the Singulate Mean Age at Marriage (SMAM) method. The Singulate Mean Age at Marriage is defined as an average length of single life expressed in years among those who marry before age 50. Details on how SMAM is computed are presented in Appendix 4.

Table 2.2 shows results on Singulate Mean Age at first marriage, by sex and place of residence in the 2022 Census. The Singulate Mean Age in Tanzania at first marriage was found to be 24.1 years, where Mainland Tanzania had 24.1 and Zanzibar 25.6 years. The Singulate Mean Age at first marriage is higher for males (26.4 years) as compared to females (22.1 years), with a difference of 4.3 years. The results show that on the average, individuals living in urban areas get married 3 years later than those in rural areas. The Singulate Mean Age at first marriage is therefore higher in urban areas (25.9 years) than in rural areas (22.8 years).

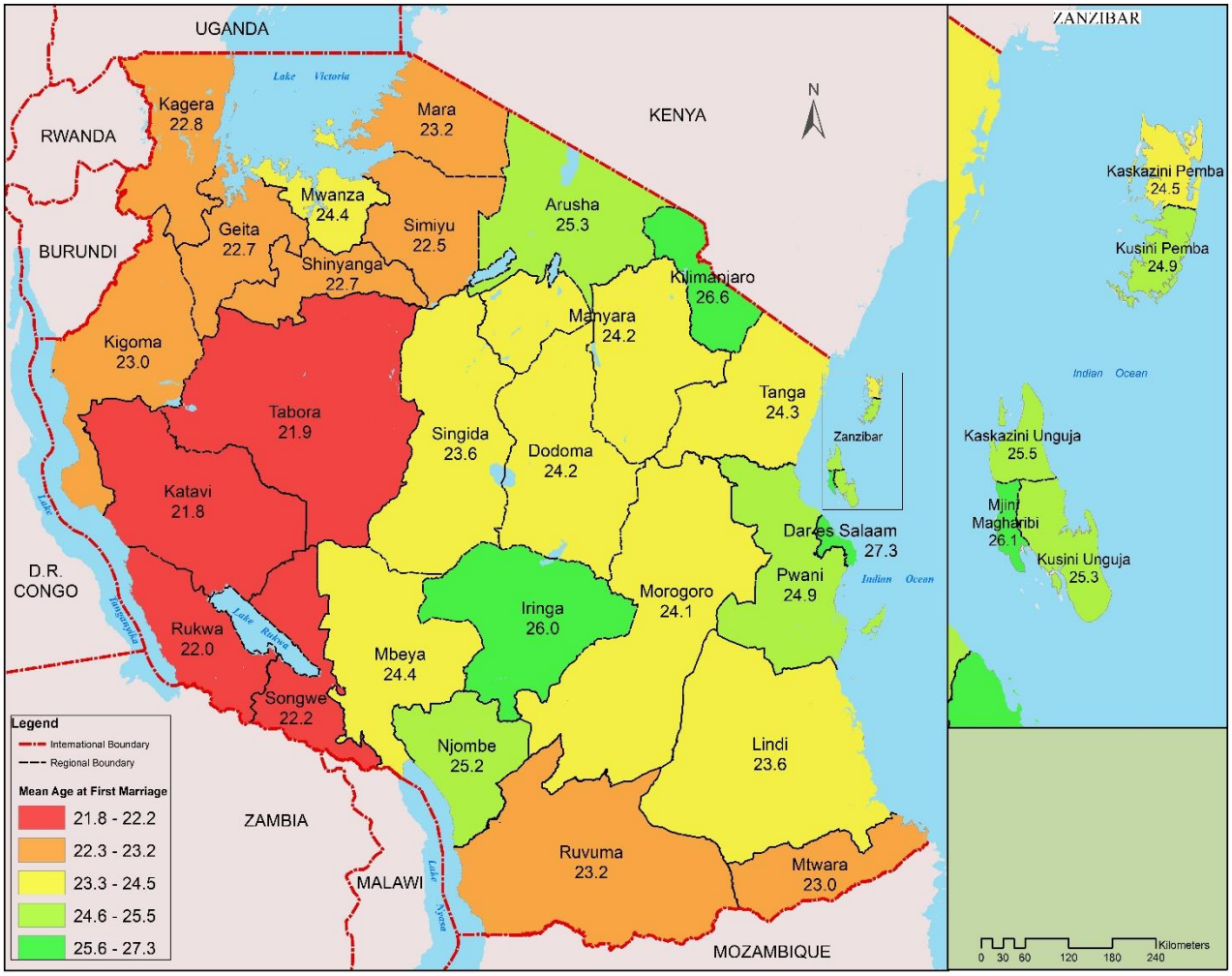
Figure 2.1 and Map 2.1 show that there are variations in the Singulate Mean Age at first marriage across regions. Dar es Salaam region has the highest Singulate Mean Age for both males (29.2 years) and females (25.7 years), followed by Kilimanjaro (29.0 years for males and 24.5 years for females) and Mjini Magharibi (28.1 years for males and 24.5 years for females). While the region with the lowest Singulate Mean Age at first marriage is Katavi

(24.3 years for males and 19.7 years for females). Generally, regions with high singulate mean ages at first marriage have low fertility rates compared with those with low mean ages at marriage (See Chapters 3 and 4 of this Volume).

Figure 2.1:Singulate Mean Age at First Marriage (in years) by Place of Residence and Sex; Tanzania, 2022 PHC

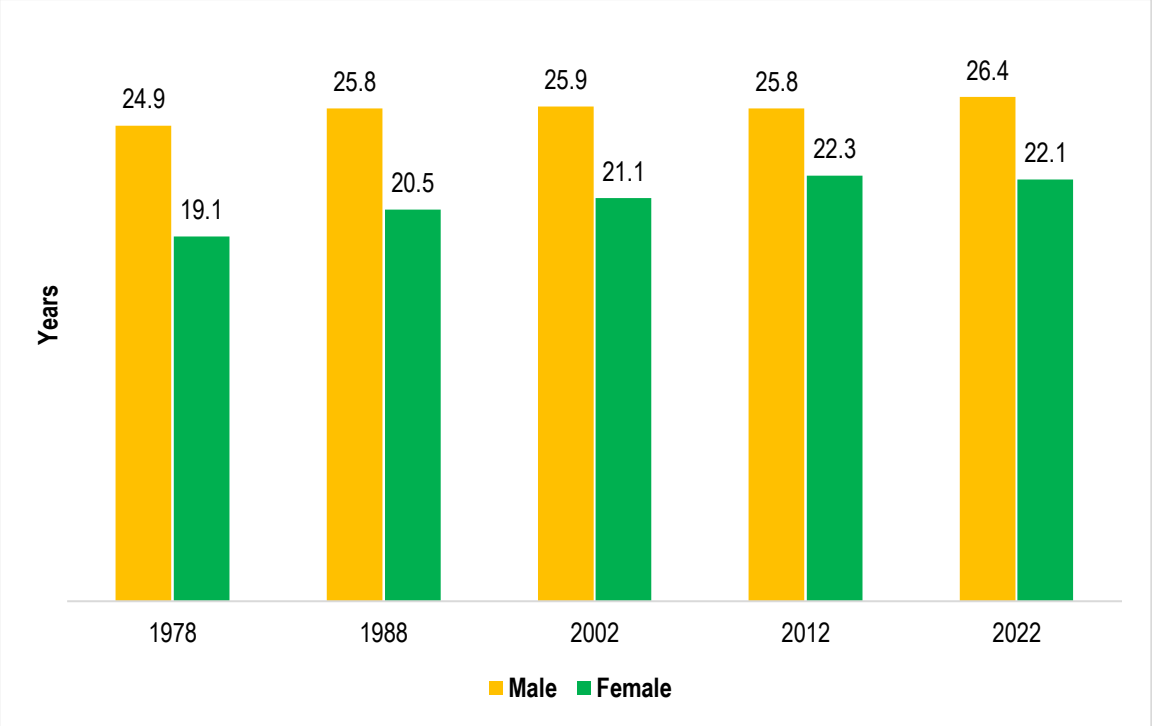


Map 2.1: Singulate Mean Age at First Marriage in Years by Region; Tanzania, 2022 PHC



The Singulate Mean Age at first marriage was estimated for 1978, 1988, 2002, 2012 and 2022, and the results are presented in Figure 2.2. An increase in the Singulate Mean Age at first marriage is found in both males and females during 1978 to 2022. The Singulate Mean Age at first marriage for males increased from 24.9 years in 1978 to 26.4 years in 2022, with an increase of more than one year. While the Singulate Mean Age at first marriage for females increased by three years from 19.1 years to 22.1 years during the same period.

Figure 2.2: Singulate Mean Age at First Marriage by Sex; Tanzania, 1978 – 2022 PHCs



2.4 Mean Age at First Birth

Populations with low age at first birth tend to have high fertility. The mean age at first birth was estimated using a similar approach as the one used in the calculation of Singulate Mean Age at Marriage (SMAM), since there was no direct question on age at first birth in the 2022 PHC. The mean age at first birth is defined as an average length of being childless expressed in years among those who experienced childbearing before the age 50.

Table 2.2 presents the mean age at first birth by place of residence in 2022 Census. The mean age at first birth was 23.9 years for Tanzania, 23.8 years for Mainland Tanzania and 25.8 years for Tanzania Zanzibar. The results further reveal that females in urban areas delay having first births by almost three years as compared to those in rural areas. On average, women in urban areas stay in school longer and are more informed on family planning services, which may explain the difference. Likewise, mean age at first marriage was higher in Tanzania Zanzibar (25.6 years) than in Mainland Tanzania (24.1 years). The education system in Tanzania Zanzibar, where Form Four education is compulsory enables young women to stay longer in school thus delaying childbearing. Whereas education is only compulsory to class seven in Mainland Tanzania, therefore limiting entrance of high number of girls into secondary education thus forced into childbearing at an early age.

Comparison of mean age at first marriage and mean age at first birth indicate that many females give birth before getting married. On average, females were married 2 years later after giving birth to their first births (Table 2.2). However, the difference between mean age at first marriage and the average age at first birth is less than one year in Tanzania Zanzibar.

Table 2. 2: Singulate Mean Age at First Marriage by Sex and Average Age at First Birth by Place of Residence

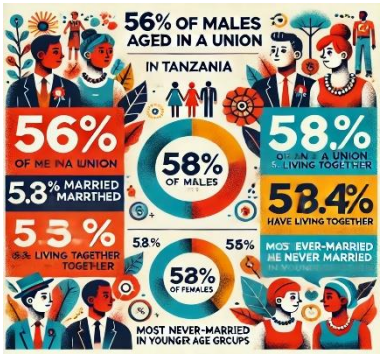
Place of Residence	Singulate Mean Age at First Marriage			Average Age at First Birth for Mothers
	Both Sexes	Male	Female	
Tanzania	**24.1**	**26.4**	**22.1**	**23.9**
Rural	22.8	25.2	20.6	22.5
Urban	25.9	27.9	24.2	25.2
Mainland Tanzania	**24.1**	**26.3**	**22.1**	**23.8**
Rural	22.8	25.2	20.6	22.5
Urban	25.9	27.9	24.2	25.1
Dodoma	24.2	26.4	22.1	28.2
Arusha	25.3	28.0	23.0	25.0
Kilimanjaro	26.6	29.0	24.5	25.5
Tanga	24.3	27.1	22.0	24.6
Morogoro	24.1	26.5	22.0	23.8
Pwani	24.9	27.1	22.9	24.7
Dar es Salaam	27.3	29.2	25.7	25.8
Lindi	23.6	25.8	21.5	24.1
Mtwara	23.0	25.3	21.0	23.9
Ruvuma	23.2	25.0	21.5	22.5
Iringa	26.0	27.8	24.4	25.2
Mbeya	24.4	26.2	22.8	24.0
Singida	23.6	26.2	21.1	23.4
Tabora	21.9	24.2	19.8	21.3
Rukwa	22.0	23.8	20.3	21.8
Kigoma	23.0	25.1	21.2	23.6
Shinyanga	22.7	24.9	20.7	21.9
Kagera	22.8	25.0	20.8	24.3
Mwanza	24.4	26.6	22.5	23.7
Mara	23.2	25.6	21.2	22.0
Manyara	24.2	26.9	21.6	23.1
Njombe	25.2	26.9	23.8	25.4
Katavi	21.8	24.3	19.7	21.3
Simiyu	22.5	24.9	20.3	21.5
Geita	22.7	25.0	20.7	22.0
Songwe	22.2	24.2	20.5	22.0
Tanzania Zanzibar	**25.6**	**27.8**	**23.7**	**25.8**

Place of Residence	Singulate Mean Age at First Marriage			Average Age at First Birth for Mothers
	Both Sexes	Male	Female	
Rural	24.9	27.3	22.7	7
Urban	26.3	28.3	24.6	26.1
Kaskazini Unguja	25.5	27.8	23.3	25.6
Kusini Unguja	25.3	27.3	23.4	25.5
Mjini Magharibi	26.1	28.1	24.5	26.0
Kaskazini Pemba	24.5	27.4	22.2	25.6
Kusini Pemba	24.9	27.5	22.7	25.9

Source: Tanzania, 2022 PHC

2.5 Differentials in Marital Status

Table 2.3 presents the marital status of persons aged 15 years and above in the 2022 PHC. About fifty-six percent of the male population aged 15 years and above are in union (50.3% of the married males and 5.3% of males living together) which is slightly lower than that for females (52.4% of the married females and 5.6% of females living together). The proportion of people who have never been married is significantly higher among the male (39.4%) than the female population (27.1%). Most of never married persons are in younger age groups.



The proportion of married male population in Mainland Tanzania (50.2 percent) is almost the same as that for Tanzania Zanzibar (50.3%), while the proportion of married males is higher in Tanzania Zanzibar (52.4%). Results further show extremely low proportions of persons living together in Tanzania Zanzibar (0.7% for both males and females) compared with those in Mainland Tanzania (5.5% for males and 5.7% for females). The proportion of females who are divorced is higher (8.1%) in Tanzania Zanzibar than that of Mainland Tanzania (4.6%) which may be explained by the differences in religious belief and culture in Mainland Tanzania and Tanzania Zanzibar.

Table 2. 3: Percentage Distribution of Population Aged 15 Years and Above by Marital Status and Sex

Marital status	Tanzania		Mainland Tanzania		Tanzania Zanzibar	
	Male	Female	Male	Female	Male	Female
Total	**16,859,980**	**18,481,151**	**16,330,480**	**17,892,486**	**529,500**	**588,665**
Never married	39.4	27.1	39.3	27.0	43.3	29.9
Married	50.3	52.4	50.2	52.3	52.4	55.6
Living together	5.3	5.6	5.5	5.7	0.7	0.7
Divorced	2.5	4.7	2.4	4.6	2.8	8.1
Separated	1.2	2.3	1.3	2.3	0.3	0.6
Widowed	1.3	7.9	1.3	8.0	0.6	5.1

Source: Tanzania, 2022 PHC

Table 2.4 compares the percentage distribution of population aged 15 years and above by marital status in 1978, 1988, 2002, 2012 and 2022 PHCs. Major observation from the results is the patterns of males versus females. Whereas male proportions have remained almost unchanged since 1978 in all marital status categories, females show major change in never married and widowed categories. The percentage of never married females has almost doubled from 15.5 percent in 1978 to 27.1 percent in 2022 while the percentage of widowed females dropped from 9.1 percent in 1978 to 4.2 percent in 2012 and thereafter increasing to 7.9 percent in 2022. Doubling of never married females is associated, among other things, with the development in education sector whereby girls are increasingly getting equal opportunities in education and spending more years in schools compared with the past three decades.

Table 2. 4: Percentage of Distribution of Population Aged 15 Years and Above by Sex and Marital Status

Census Year	Male				Female			
	Never married	Married	Divorced	Widowed	Never married	Married	Divorced	Widowed
1978	33.2	61.4	3.7	1.7	15.5	69.5	5.8	9.1
1988	38.3	57.0	3.1	1.6	21.5	63.8	6.2	8.5
2002	39.2	56.1	3.2	1.5	24.5	60.1	6.7	8.6
2012	38.3	56.8	3.0	1.9	33.0	58.1	4.7	4.2
2022	39.4	55.6	3.7	1.3	27.1	58.0	7.0	7.9

Source: Tanzania Census, 1978 to 2022 PHCs

2.5.1 Marital Status by Age and Sex

Marriage is associated with the individual's age, hence, the distribution by marital status concurrently varies with the age. The proportion of males who have never been married in the population decreases significantly from 97.7 percent for those in 15–19 age group to 3.5

percent for those aged 60 years and above. Corresponding figures for females are 80.6 and 4.1 percent respectively (Table 2.5). Like in many sub-Saharan African countries, marriage is almost universal and this is confirmed by results that show that at age 50, the percentage of the population that is still single is only 5.6 percent for males and 5.5 percent for females.

Observation on the marriage age structure shows that widowhood also increased with age irrespective of the sex, females are having higher proportions than males. For males in age groups 50-54 years, 55-59 years and 60 years and over, the proportion of the widowed is 2.0 percent, 3.0 percent and 8.8 percent, respectively. The proportion of the widowed females in the corresponding age groups is 15.0 percent, 21.7 percent and 47.6 percent, respectively. There are three factors that may explain the differences in the percentage of the widowed between the two sexes. Firstly, in many marriages, wives are younger than husbands; secondly, women on average tend to live longer than men (as presented in the Mortality Monograph) and thirdly, most widowed men re-marry after the death of wives as opposed to widowed women.

Table 2. 5: Percentage Distribution of Population Aged 15 Years and Above, by Age, Sex and Marital Status

Age	Total	Never Married	Married	Living Together	Divorced	Separated	Widowed
Male Total	**16,859,980**	**39.4**	**50.3**	**5.3**	**2.5**	**1.2**	**1.3**
15-19	3,096,585	97.7	2.0	0.2	0.0	0.0	0.0
20-24	2,560,784	73.9	21.7	3.5	0.5	0.3	0.0
25-29	2,220,552	38.8	51.0	7.9	1.6	0.8	0.1
30-34	1,902,813	19.2	68.0	8.8	2.6	1.2	0.2
35-39	1,532,158	11.7	74.5	8.3	3.5	1.7	0.4
40-44	1,315,192	8.4	77.1	7.5	4.2	2.1	0.7
45-49	1,121,985	6.7	78.4	6.8	4.6	2.3	1.2
50-54	906,156	5.6	78.8	6.0	5.0	2.6	2.0
55-59	616,932	4.7	79.4	5.4	4.9	2.6	3.0
60 and above	1,586,823	3.5	75.4	4.5	5.0	2.7	8.8
Female Total	**18,481,151**	**27.1**	**52.4**	**5.6**	**4.7**	**2.3**	**7.9**
15-19	3,185,808	80.6	16.5	2.3	0.4	0.2	0.0
20-24	3,005,171	37.4	51.6	7.3	2.3	1.1	0.2
25-29	2,507,599	21.2	64.2	8.3	3.9	1.9	0.5
30-34	2,053,128	13.4	69.5	7.8	5.4	2.5	1.4
35-39	1,676,186	9.5	71.1	7.0	6.5	3.1	2.8
40-44	1,396,310	7.6	69.4	6.1	7.6	3.7	5.5
45-49	1,168,068	6.4	67.2	5.3	8.0	4.0	9.1
50-54	947,230	5.5	62.4	4.4	8.5	4.2	15.0
55-59	636,406	5.1	56.7	3.6	8.7	4.2	21.7
60 and above	1,905,245	4.1	35.4	2.1	7.3	3.4	47.6

Source: Tanzania, 2022 PHC

2.5.2 Marital Status by Place of Residence

A higher population in rural areas is more likely to be married than those living in urban areas. Percentage of never married urban population (43.9% in males and 35.6% in females) is higher than that of rural population (36.7% in males and 21.6% in females). The marital patterns by place of residence observed are consistent with fertility patterns in chapter four. The higher proportion of never-married individuals in urban areas is a result of a complex interplay of education, economic opportunities and cultural changes that contrast sharply with rural settings. Urban environments promote individualism, financial independence, and delayed life milestones, leading to a change in traditional marriage patterns. Many societies in developing countries regard marriage as a necessity and important for reproduction and social status (Table 2.6).

Furthermore, relatively harder economic conditions in urban areas compared to rural may contribute to many persons in urban areas to remaining single. Results further show that the percentage of widowed female population (7.9%) is more than six times that of the male population (1.3%). As highlighted in Section 2.5.1 of this chapter, this is caused by several factors including a higher probability of remarrying for widowed males than females.

Table 2. 6: Percentage Distribution of Population Aged 15 Years and Above by Sex, Marital Status and Rural-Urban Residence

Sex and Marital Status	Number			Percentage		
	Tanzania	Rural	Urban	Tanzania	Rural	Urban
Male	16,859,980	10,446,522	6,413,458			
Never Married	6,645,128	3,830,770	2,814,358	39.4	36.7	43.9
Married or Living Together	9,379,961	6,065,917	3,314,044	55.6	58.1	51.7
Divorced or Separated	623,906	409,702	214,204	3.7	3.9	3.3
Widowed	210,985	140,133	70,852	1.3	1.3	1.1
Female	18,481,151	11,302,037	7,179,114			
Never Married	4,999,632	2,444,952	2,554,680	27.1	21.6	35.6
Married or Living Together	10,716,889	7,060,897	3,655,992	58.0	62.5	50.9
Divorced or Separated	1,299,023	810,877	488,146	7.0	7.2	6.8
Widowed	1,465,607	985,311	480,296	7.9	8.7	6.7

Source: Tanzania, 2022 PHC

The proportion of the population which has never married is higher in urban than in rural areas for all age groups and for both sexes. A relatively higher percentage of urban unmarried women in 25–39 years age group has a more negative impact on urban fertility compared with that of rural areas (Table 2.7).

Table 2. 7: Percentage Distribution of Never Married Population Aged 15 Years and Above by Five Years Age Groups, place of Residence and Sex

Age	Population				Percentage			
	Rural		Urban		Rural		Urban	
	Male	Female	Male	Female	Male	Female	Male	Female
Total	**10,446,522**	**11,302,037**	**6,413,458**	**7,179,114**	**36.7**	**21.6**	**43.9**	**35.6**
15-19	2,061,774	1,964,852	1,034,811	1,220,956	97.2	74.6	98.8	90.1
20-24	1,516,675	1,730,685	1,044,109	1,274,486	66.7	26.1	84.5	52.7
25-29	1,252,923	1,400,168	967,629	1,107,431	30.4	13.2	49.5	31.2
30-34	1,085,036	1,171,571	817,777	881,557	15.0	8.7	24.8	19.8
35-39	897,085	995,083	635,073	681,103	9.6	6.2	14.6	14.2
40-44	791,916	855,123	523,276	541,187	7.2	5.3	10.2	11.3
45-49	702,527	748,300	419,458	419,768	5.9	4.7	8.0	9.6
50 and above	2,138,586	2,436,255	971,325	1,052,626	4.0	4.0	5.0	6.2

Source: Tanzania, 2022 PHC

The results reveal changing marital patterns in Tanzania between 1988 and 2022, highlighting delayed marriage across age groups and a narrowing gender gap in early marriages. Among youth (15-19 years), the percentage of never-married individuals is consistently high, particularly for males, increasing from 95.9% in 1988 to 97.7% in 2022. For females, this value rose from 70.6% in 1988 to 80.6% in 2022, reflecting reduced early marriages likely driven by educational reforms and awareness campaigns. In young adulthood (20-24 years), while the percentage of never-married males remained stable (around 70%), females saw a significant increase from 25.9% in 1988 to 46.2% in 2012, followed by a slight decline to 37.4% in 2022, indicating a period of delayed marriage followed by potential stabilization (Table 2.8).

For older age groups (25 years and above), a gradual increase in never-married individuals is observed, especially up to 2012, before stabilizing or slightly declining by 2022. Males consistently report higher percentage of never-married status than females, reflecting traditional norms of later male marriage. However, among women, there was a notable rise in never-married percentage across all age groups, peaking in 2012. By 2022, these trends show some reversal, especially among females aged 25-34, suggesting evolving societal norms and economic factors influencing marriage decisions. Overall, the data reflect shifts toward delayed and potentially declining marriage rates in Tanzania, with significant gender and age dynamics influenced by cultural, economic, and policy changes (Table2.8).

Table 2. 8: Percentage Distribution of Never Married Population Age 15 and Above by Five Years Age Group

Age	Male				Female			
	1988	2002	2012	2022	1988	2002	2012	2022
Total	**38.3**	**39.2**	**38.3**	**39.4**	**21.5**	**24.5**	**33.0**	**27.1**
15-19	95.9	96.5	92.2	97.7	70.6	74.8	83.3	80.6
20-24	69.2	69.3	68.7	73.9	25.9	30.0	46.2	37.4
25-29	36.0	36.2	37.5	38.8	11.6	15.8	24.9	21.2
30-34	17.0	18.4	20.3	19.2	6.3	10.0	16.8	13.4
35-39	9.3	11.4	13.6	11.7	3.8	7.3	13.3	9.5
40-44	6.5	8.0	10.4	8.4	2.7	5.9	12.1	7.6
45-49	4.8	6.5	6.8	6.7	2.4	4.7	9.6	6.4
50-54	4.2	5.5	7.2	5.6	2.0	4.3	11.9	5.5
55-59	3.5	4.8	6.9	4.7	1.9	4.2	13.5	5.1
60 and above	3.1	4.3	6.5	3.5	2.4	5.2	15.0	4.1

Source: Tanzania, 1988 – 2022 PHCs

2.6 Net Nuptiality Life Tables

Nuptiality is a key demographic indicator used to study family formation, fertility patterns, and social structures. It is also analysed using nuptiality tables, which could track likelihood of marriage and how it changes across different ages, genders, and populations. Factors like culture, religion, socioeconomic conditions, and legal frameworks could influence nuptiality rates. There are mainly two types of nuptiality life tables- (1) the gross nuptiality table and (2) the net nuptiality life table. The gross nuptiality life table is based on the number of marriages that occur without considering the influence of mortality. It simply tracks how many people of a particular age group get married, assuming no one dies before reaching that age. This means the table focuses only on marriage transitions, ignoring mortality factors. The net nuptiality life table takes both marriage and mortality into account. It calculates the probability of getting married at each age, considering that some individuals might die before reaching the marriable age.

In the nuptiality life table, age 15 is considered as a minimum age for males as well as females keeping in view the distribution of population by marital status. In the same basis the maximum age for males and females is considered as 50 years and above. It must have viewed that estimates provided in the Net Nuptiality Life Tables are the result of two types of age specific attrition probabilities- the death probabilities and marriage probabilities (Mohammed and Naushin, 1974). Details of the computational procedures are provided in Appendix 4.

The net nuptiality life tables also highlight marriage probability for males and females respectively. It shows that for females, marriage probabilities are higher in younger ages

than corresponding probabilities for males, but in higher ages the male probabilities remain at a relatively higher level compared to that of females.

The last column of the net nuptiality life table provides years of single life remaining at start of age x, or the average expected years to marriage for those singles surviving up to a particular age ($°e_x$). The complete Net Nuptiality Life Tables are presented in Appendix 3. The results presented in the summary table show that the average expected years to get married in Tanzania at age 15 are 10.6 for males and 8.2 for females (Table 2.8).

Similarly, for higher ages corresponding estimates are provided for average years and beyond the age of getting married. The average expected years of single life before marriage remained at 15 years of age is higher (11.4 years) to males in Tanzania Zanzibar compared to males of Tanzania and Mainland Tanzania (10.6 years). The average number of single life remained higher in females than that of males from 19 years of age and above, also observed that both males and females record the lowest expectancy of single life of 44 years of age onwards (Appendices 3.13 – 3.18).

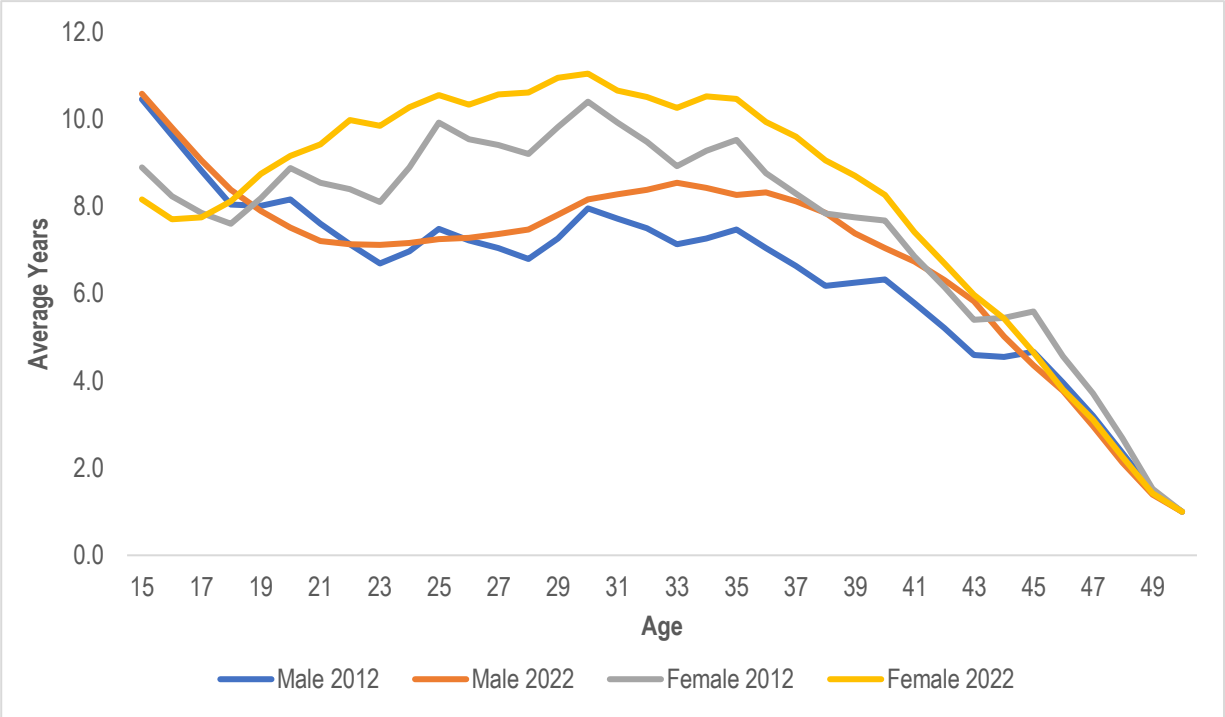
Table 2. 9: Summary of the Net Nuptiality Life Tables

Place of Residence	2012		2022	
	Male	Female	Male	Female
Tanzania	10.5	8.9	10.6	8.2
Mainland Tanzania	10.4	8.9	10.6	8.1
Tanzania Zanzibar	11.0	9.3	11.4	8.0

Source: Appendices 3.13 to 3.18

Results further indicate that there has been an increase in the average expected years to get married for singles surviving up to a particular age ($°e'_x$) for both male and female, between 2012 and 2022. The increase is more pronounced at age of 31 to 41 years for males than for females whose increase is more pronounced at age of 21 to 40 years (Figure 2.3).

Figure 2.3: Expected Average Years to Marriage 2012 and 2022 PHCs



The future perspectives of nuptiality in Tanzania are shaped by evolving societal and economic dynamics, including the growing prevalence of single motherhood, cross-generational relationships, delayed marriages among men, and increasing rates of divorce and separation. As urbanization and education expand, traditional expectations surrounding marriage are shifting, with young men postponing marriage due to financial pressures and aspirations for stability. Simultaneously, cultural and economic factors contribute to cross-generational sexual relationships, often rooted in economic dependency. The rise in single motherhood reflects changing attitudes towards family structures, while divorce and separation are becoming more common as individuals prioritize personal freedom and equality in relationships. These trends indicate a gradual move away from traditional marital norms towards more diverse and unstable marriage institutions, necessitating legal and social frameworks to adapt and provide support for changing family dynamics.

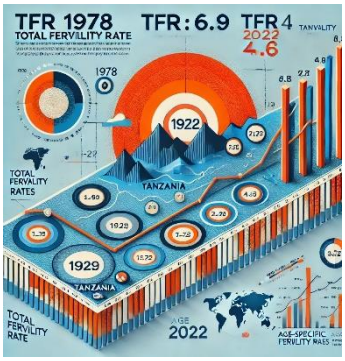
Chapter Three

Fertility Patterns, Levels and Trends

Key Points

- The Age Specific Fertility Rates (ASFR) show “broad peak of fertility” in Tanzania.
- National Total Fertility Rate (TFR) declined from 6.9 children per woman in 1978 to 4.6 in 2022 whereas in Mainland Tanzania is TFR of 4.6 and Tanzania Zanzibar is 4.7.
- The TFR is lower in urban areas (3.8) compared with rural areas (5.8).
- The Net Reproductive Rate (NRR) for Tanzania is 2.1, which is above the replacement level of one daughter per woman.
- As it stands, Tanzania should therefore reconsider her policies on fertility since it is heading towards population replacement.

3.1 Introduction



Fertility is a key driver of population change, shaping both the demographic and economic landscape of a society. This analysis offers essential information that supports effective policy-making and targeted interventions. Fertility measures are intimately connected to a society’s economic conditions, highlighting a broader link between population dynamics and socio-economic development. Examining fertility estimates in the context of socio-economic factors is therefore vital for developing policies that promote balanced growth and sustainable development.

The fertility measures discussed in this chapter rely on two main data points: (1) reported live births within the past 12 months, categorised by the mother’s age at the time of the census, and (2) the total number of children ever born, also categorised by the mother’s age. These data provide insights into fertility across different age groups, which are essential for understanding age-specific fertility rates and lifetime fertility trends.

3.2 Crude Birth Rate

Tanzanian women are estimated to have given 1,467,325 births in the 12 months prior to the 2022 Census. Crude Birth Rate (CBR) is a general indicator showing changes in total population in respect of births that took place over a 12-month period prior to the census. The CBR in Tanzania and Mainland Tanzania was 24 births per 1,000 people, while in Tanzania Zanzibar was 29 births per 1,000 people in 2022. CBR is lower in urban areas (21) compared to rural areas (25) To compute an adjusted CBR, basic CBR is typically refined to reflect the population actually at risk of giving birth—mainly women of reproductive age (15–49 years). However, since the CBR itself cannot be "adjusted" in a strict formulaic sense without losing its nature as a crude rate, demographers usually shift to more refined fertility measures like the General Fertility Rate (GFR) or age-standardized rates instead (Table 3.1).

Table 3.1: Reported and Adjusted Crude Birth Rates

Region	Crude Birth Rate	
	Reported	Adjusted
Tanzania	**24**	**35**
Rural	25	36
Urban	21	34
Mainland Tanzania	**24**	**35**
Dodoma	24	33
Arusha	23	37
Kilimanjaro	21	27
Tanga	26	34
Morogoro	21	32
Pwani	19	30
Dar es Salaam	19	31
Lindi	18	28
Mtwara	21	32
Ruvuma	21	35
Iringa	20	32
Mbeya	22	31
Singida	26	36
Tabora	24	39
Rukwa	27	43
Kigoma	24	36
Shinyanga	23	38
Kagera	27	39
Mwanza	25	34
Mara	28	37
Manyara	25	40
Njombe	18	32
Katavi	26	39
Simiyu	29	41
Geita	28	37
Songwe	26	42
Tanzania Zanzibar	**29**	**36**
Kaskazini Unguja	30	37
Kusini Unguja	26	33
Mjini Magharibi	27	36
Kaskazini Pemba	33	40
Kusini Pemba	31	39

Source: Tanzania, 2022 PHC

3.3 General Fertility Rate

The General Fertility Rate (GFR) is a birth rate expresses the number of births per 1,000 women of a reproductive age group. The advantage of GFR over CBR is that it controls age and sex structure by relating the births to women at the risk of having them. However, the GFR represents an improvement over the CBR, which also has its limitation. The limitation arises from the fact that frequency of births varies within women in the range of reproductive ages. The GFR indicates, the extent to which age composition of population attributes the level of births in a country. General Fertility Rate for Tanzania and Mainland Tanzania is 144 births per 1,000 women and for Tanzania Zanzibar is 140 births per 1,000 women. The GFR is lower in urban areas (120 births per 1,000 women) than in rural area (162 births per 1,000 women). Across the regions, GFR ranges from 97 in Dar es Salaam to 191 births in Simiyu, per 1,000 women (Table 3.6).

3.4 Total Fertility Rate

3.4.1 Choice of the Method Used to Estimate TFR

The age-specific and total fertility rates from the 2012 and 2022 PHCs are either directly estimated from reported births in the 12 months preceding the census or indirectly estimated using each of the methods discussed. Some adjustment methods to estimate the TFR levels for 2022 were used as indicated to overcome this limitation and for 2012 PHC estimates the Arriaga method was used. Appendix 3 presents the whole procedure undertaken in the method used to estimate TFR. The Arriaga's Method was selected because of the following advantages: -

- Total Fertility Rate (TFR) calculation requires complete birth registration while Arriaga's Method relies on demographic snapshots from censuses. This flexibility is an advantage for Tanzania as vital registration system is not complete.
- Arriaga's Method is relatively straightforward, involving fewer calculations but still providing robust adjustments. It is particularly providing quick and reliable fertility estimates without extensive using computational resources.
- Given its design to function with limited, census-based data, Arriaga's Method is commonly applied as detailed demographic data is not always accessible. This focus makes it a standard choice in many global health and development studies.
- Less sensitive to age distribution distortions unlike the Children-Women Ratio, which may be skewed by an irregular age distribution of women in reproductive ages,

Arriaga's Method compensates for these variances by adjusting basic age-specific fertility rates.

3.4.2 Age Pattern of Fertility

Age-Specific Fertility Rates (ASFRs) was used to measure age pattern of fertility. ASFRs measure the fertility rate within specific age groups, usually in five-year intervals (e.g., 15-19, 20-24, 25-29, etc.). This method enables a detailed understanding of fertility behaviour across different age groups, indicates when fertility rates peak and identifies age-specific trends (Table 3.2).

ASFRs are usually calculated by dividing number of births to women in a specific age group by the number of women in that age group, often expressed per 1,000 women. These rates are crucial in examining age-related patterns and widely used in demographic studies and population planning. The trends in ASFR values across each age group are fundamental in demography and public health, as they help policymakers understand reproductive behaviour and allocate health resources accordingly (Table 3.2).

Table 3.2: Recorded and Adjusted Age Specific Rate

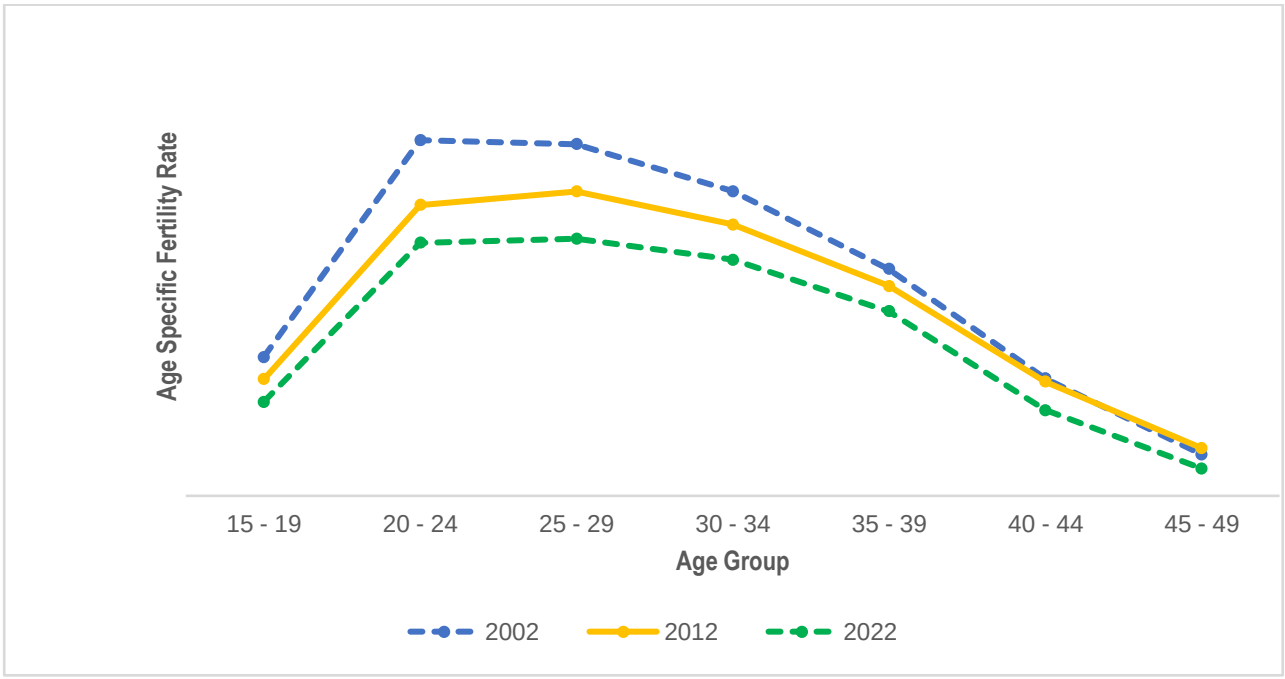
Age	Age Specific Fertility Rates (ASFR)	
	Reported	Adjusted
15-19	0.045	0.077
20-24	0.137	0.206
25-29	0.143	0.209
30-34	0.134	0.192
35-39	0.108	0.150
40-44	0.052	0.070
45-49	0.02	0.022
Total Fertility Rate (TFR)	**3.2**	**4.6**

Source: Tanzania, 2022 PHC

The age-specific fertility rates (ASFR) for the three censuses show "early peak" fertility for the 2002 PHC, suggesting a significant portion of births occurred at young ages which has high impact on TFR. The ASFR in 2012 PHC show "late peak" fertility, a pattern where childbearing is more common among women aged 25-29 years in a population which has a low impact in TFR. The 2022 PHC ASFR show a "broad peak" fertility indicating that fertility rates relatively spread evenly across 20-29 years' age range, rather than being concentrated

in younger or older age groups. A broad ASFR peak reflecting a stable fertility pattern across a wide age range (20-29 years), often indicate flexibility in childbearing choices and support for families across different stages of life. This age pattern contributed to populations with stable socio-economic structures and supportive family policies (Figure 3.1).

Figure 3.1: Age-Specific Fertility Rates; Tanzania, 2002-2022 PHCs



3.4.3 Total Fertility Rate

The results show that both Tanzania and Mainland Tanzania have TFR of 4.6 while Tanzania Zanzibar is 4.7. The TFR is lower in urban areas (3.8) compared with in rural areas (5.8), There is a wide variation of TFRs among regions, ranging from 3.1 for Dar es Salaam to 6.3 in Simiyu while in Tanzania Zanzibar ranges from 6.5 Kaskazini Pemba to 4.0 in Kusini Unguja (Table 3.3 and Map 3.1).

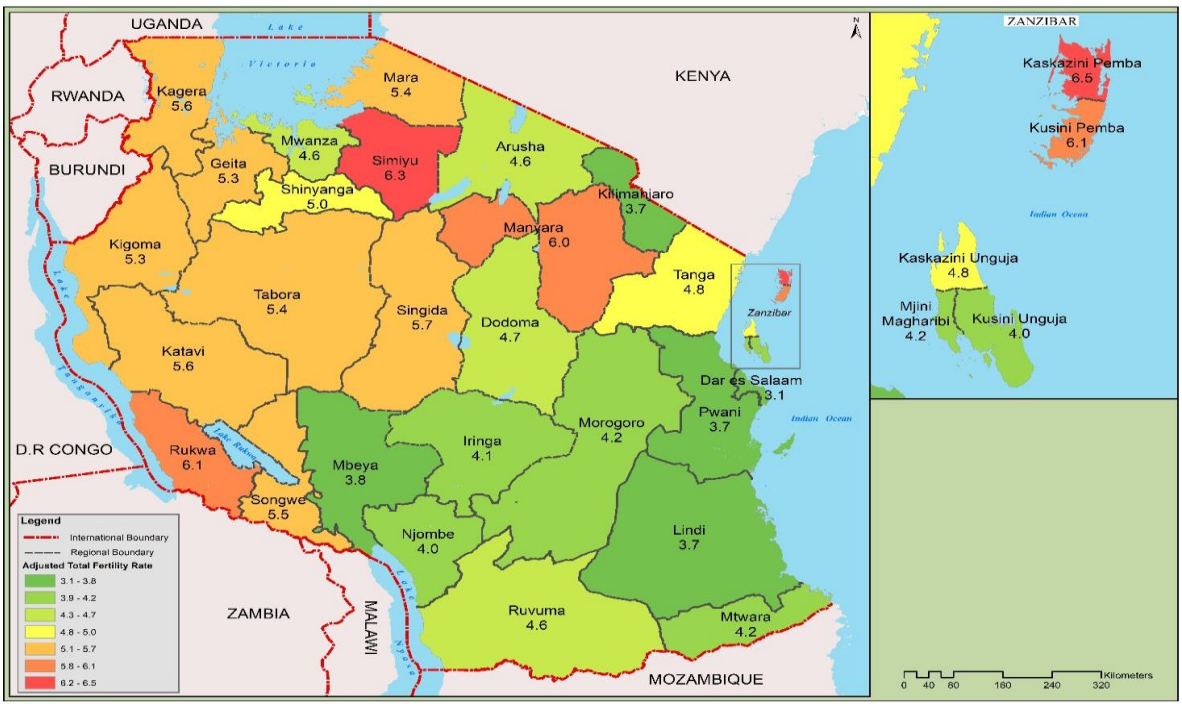
The Total Fertility Rate (TFR) is a critical demographic indicator that reflects the average number of children a woman is expected to have during her reproductive years (15–49). For Tanzania in 2022, two key sources provide TFR estimates: the 2022 Population and Housing Census (4.6) and the 2022 Tanzania Demographic and Health Survey (TDHS) (4.8). While both estimates are reliable and reflect declining fertility trends, it is recommended to use TFR from TDHS as the official rate.

Table 3.3: Reported and Adjusted Total Fertility Rates

Region	Total Fertility Rate	
	Reported	Adjusted
Tanzania	**3.2**	**4.6**
Rural	3.8	5.3
Urban	2.4	3.8
Mainland Tanzania	**3.2**	**4.6**
Dodoma	3.5	4.7
Arusha	2.8	4.6
Kilimanjaro	2.9	3.7
Tanga	3.8	4.8
Morogoro	2.4	4.2
Pwani	2.4	3.7
Dar es Salaam	1.9	3.1
Lindi	2.4	3.7
Mtwara	2.7	4.2
Ruvuma	2.8	4.6
Iringa	2.5	4.1
Mbeya	2.7	3.8
Singida	4.2	5.7
Tabora	3.5	5.4
Rukwa	4.0	6.1
Kigoma	3.7	5.3
Shinyanga	3.1	5.0
Kagera	3.9	5.6
Mwanza	3.4	4.6
Mara	4.1	5.4
Manyara	3.8	6.0
Njombe	2.3	4.0
Katavi	3.8	5.6
Simiyu	4.6	6.3
Geita	4.0	5.3
Songwe	3.4	5.5
Tanzania Zanzibar	**3.8**	**4.7**
Kaskazini Unguja	3.9	4.8
Kusini Unguja	3.3	4.0
Mjini Magharibi	3.2	4.2
Kaskazini Pemba	5.4	6.5
Kusini Pemba	4.9	6.1

Source: Tanzania, 2022 PHC

Map 3.1: Adjusted Total Fertility Rates by Region; Tanzania, 2022 PHC



3.4.4 Comparison of 2022 TFR levels with Other Neighbouring Countries

Tanzania TFR is significantly higher than that of Kenya (3.8 children per woman) and Rwanda (4.1 children per woman) but it is lower than that Mozambique (5.0 children per woman), reflecting disparities in reproductive health services, education, and socio-economic development in the countries. Kenya and Rwanda demonstrated success in lowering TFR through enhanced access to contraception and education levels (Table 3.4).

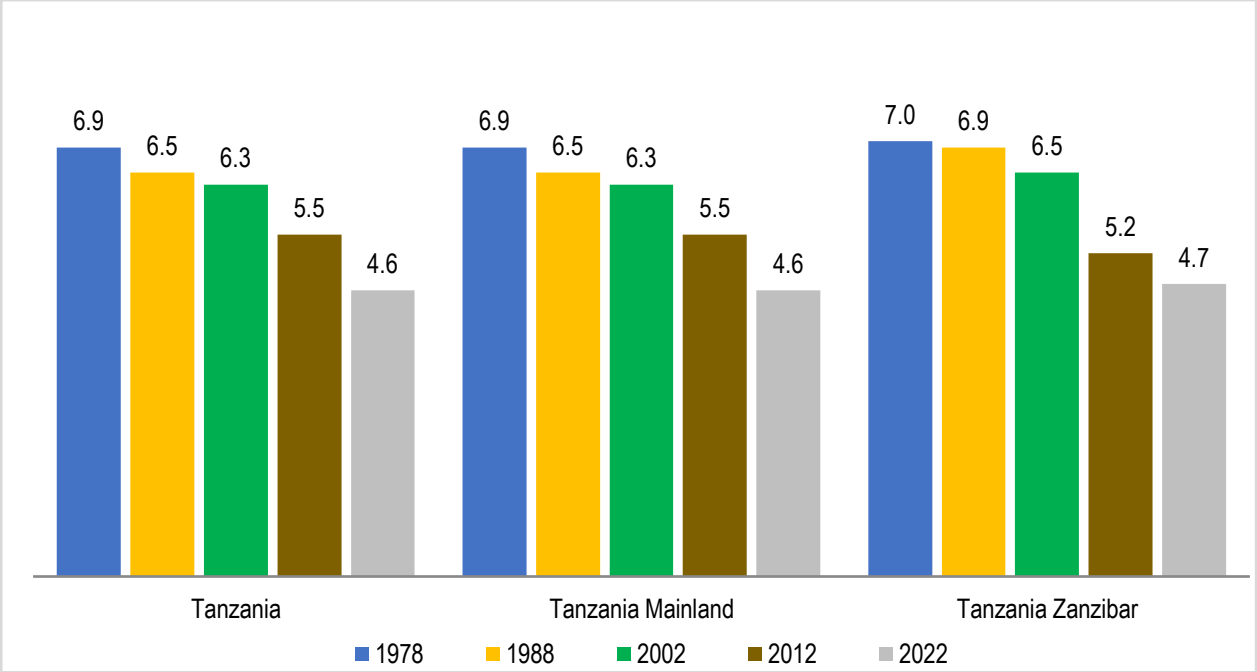
Table 3.4: TFR for Tanzania Compared with Neighbouring Countries

Country	TFR (2022)	Source
Burundi	5.4	UNICEF Fertility Estimates 2022: UNICEF Data
Kenya	3.8	United Nations World Population Prospects (2022): UN Data
Malawi	4.4	World Population Review: Malawi TFR
Mozambique	5.0	World Bank: Fertility Rate Data.
Rwanda	4.1	UNFPA Rwanda Reports: UNFPA Rwanda.
Tanzania	4.6	2022 PHC
Uganda	5.0	DHS Uganda 2021-2022: DHS Data
Zambia	4.8	World Population Review: Zambia TFR.

3.4.5 Fertility Trends

The results from the past censuses indicate a downward trend of fertility in the country. The Total Fertility Rate (TFR) decline from 6.9 children per woman in 1978 to 4.6 in 2022 (Figure 3.2).

Figure 3.2: Estimated Total Fertility Rates for Tanzania, Mainland Tanzania and Tanzania Zanzibar; 1967 – 2012 PHCs



The TFR at regional level shows a consistent and substantial decline in 2022 Census TFR from 1978 Census. Regions in Mainland Tanzania with high reduction of TFR, between 1978 and 2022 are: Kilimanjaro from 7.6 to 3.7 (reduction of 3.9) and Mbeya from 7.4 to 3.6 (reduction of 3.6) while the region with lowest reduction are Tabora from 6.2 to 5.4 (reduction of 0.8) and Singida from 6.9 to 5.7 (reduction of 1.2) while in Tanzania Zanzibar there is only Kusini Unguja from 6.6 to 4.0 (reduction of 2.6) and lowest reduction is in Kaskazini Pemba from 7.8 to 6.5 (reduction of 1.3) (Table 3.5).

Table 3.5: Estimated Total Fertility Rates by Region; Tanzania

Region	1978	1988	2002	2012	2022
Tanzania	**6.9**	**6.5**	**6.3**	**5.5**	**4.6**
Mainland Tanzania	**6.9**	**6.5**	**6.3**	**5.5**	**4.6**
Dodoma	7.4	6.7	6.8	5.9	4.7
Arusha	6.9	6.6	5.3	4.3	4.6
Kilimanjaro	7.6	7.1	5.2	4.3	3.7
Tanga	7.1	6.4	6.1	5.7	4.8
Morogoro	6.3	6.3	5.7	4.9	4.2
Pwani	5.3	5.0	5.5	4.7	3.7
Dar es Salaam	5.7	4.6	4.3	3.6	3.1
Lindi	5.9	5.7	5.3	4.6	3.7
Mtwara	6.2	5.7	4.8	4.1	4.2
Ruvuma	6.4	6.6	5.7	4.9	4.6
Iringa	7.3	6.7	5.6	4.6	4.1
Mbeya	7.4	6.5	5.7	5.1	3.8
Singida	6.9	6.1	7.5	7.4	5.7
Tabora	6.2	6.4	7.7	7.0	5.4
Rukwa	8.7	7.5	7.7	7.3	6.1
Kigoma	7.1	6.9	7.6	7.3	5.3
Shinyanga	7.1	7.2	7.2	6.1	5.0
Kagera	7.6	7.2	7.1	6.4	5.6
Mwanza	7.4	7.0	7.2	6.7	4.6
Mara	7.4	7.6	7.6	7.0	5.4
Manyara	N/A	N/A	7.1	6.3	6.0
Njombe	N/A	N/A	5.5	4.2	4.0
Katavi	N/A	N/A	8.1	7.4	5.6
Simiyu	N/A	N/A	8.1	7.9	6.3
Geita	N/A	N/A	8.1	8.5	5.3
Songwe	N/A	N/A	N/A	N/A	5.5
Tanzania Zanzibar	**7.0**	**6.9**	**6.5**	**5.2**	**4.7**
Kaskazini Unguja	7.0	6.8	6.8	5.5	4.8
Kusini Unguja	6.6	6.9	6.4	4.8	4.0
Mjini Magharibi	6.2	6.4	5.4	4.3	4.2
Kaskazini Pemba	7.8	7.4	8.5	7.3	6.5
Kusini Pemba	7.5	7.3	8.2	7.4	6.1

Source: 1978-2012 PHCs

Note

i. *N/A – Not Applicable*

ii. *Manyara, Njombe, Katavi, Simiyu, Geita, Songwe, Kaskazini Unguja, Kusini Unguja, Mjini Magharibi, Kaskazini Pemba and Kusini Pemba regions did not exist during the corresponding Censuses*

3.5 Gross Reproduction Ratio

Three indicators (TFR, GRR and NRR) are used to predict levels at which population will be replaced. Population to be replaced, TFR should be greater or equal to 2.1 children per woman as well as Gross Reproduction Ration (GRR) and Net Reproduction Ratio (NRR) should be greater than or equal to one (1) to ensure that each female is replaced by a daughter for a population to be replaced. The GRR is a measurement like TFR, but it refers only to female births. The GRR is interpreted as the average number of daughters that would replace each woman in absence of female mortality from birth up to childbearing age, based on a set of age specific fertility rates. This index assumes that none of the girls die before reaching reproduction age.

Ensuring that fertility does not fall below replacement level (usually around 2.1 children per woman) is considered important for several social, economic, and demographic reasons. Maintaining fertility at or above replacement level is essential to ensure long-term population stability, economic sustainability, and a balanced age structure. When fertility rates fall below replacement, populations begin to shrink and age rapidly, leading to a declining workforce, increased pressure on healthcare and pension systems, and reduced economic growth. A smaller younger generation may struggle to support a growing elderly population, creating financial and social challenges. For these reasons, many governments view sustaining replacement-level fertility as critical to national planning and societal well-being.

Analysis of 2022 Census data indicate a GRR of 2.3 meaning that, each woman in the population is expected to have 2.3 daughters over her reproductive lifetime, on the average assuming current age-specific fertility rates and no female mortality. This measurement indicates a rate at which the female births population could replace itself through. GRR greater than 1.0 suggests potential population growth, while a GRR less than 1.0 indicates that the population might not fully replace itself in the future, holding constant other demographic factors. Furthermore, the GRR in urban is 1.9 lower than 2.6 in rural areas. However, at regional level the results revealed that GRR ranges from 1.4 in Dar es Salaam to 4.0 in Kaskazini Pemba (Table 3.6).

3.6 Net Reproduction Rate

The NRR is a demographic measure that indicates the average number of daughters a woman will have during her childbearing years, considering both fertility and mortality rates, considering female age specific fertility and mortality rates of a given period. This index assumes that some of the girls will die before completing childbearing years. TFR gives a

broad sense of fertility in a population, while NRR is more specifically tailored to generational replacement and sustainability of population size. Both measurements are crucial in demographic studies for assessing population dynamics and guiding policy on family planning and reproductive health.

Generally, a NRR of 1.0 implies that each generation of women is being replaced exactly by the next, resulting in a stable population if there is no immigration or emigration. The present findings showing NRR of 2.1 children per woman in Tanzania suggests that, on the average, each woman is giving birth to more than one daughter in her lifetime, accounting for the survival of daughters to reproductive age. Therefore, basing on the results on NRR in Tanzania, it indicates that the population is growing, since each generation is producing enough daughters to replace themselves and add additional members. The NRR for Tanzania regions ranges from 1.3 (Dar es Salaam) to 2.9 (Simiyu and Kaskazini Pemba) (Table 3.6).

Table 3.6: Adjusted Crude Birth Rates, General Fertility Rates, Gross Reproduction Rates and Net Reproduction Rates

Region	General Fertility Rate	Gross Reproduction Rate	Net Reproduction Rate
Tanzania	**144.1**	**2.3**	**2.1**
Rural	162	2.6	2.4
Urban	120	1.9	1.7
Mainland Tanzania	**144**	**2.3**	**2.1**
Dodoma	143	2.2	2.1
Arusha	143	2.2	2.1
Kilimanjaro	111	1.8	1.6
Tanga	145	2.4	2.1
Morogoro	131	2.0	1.8
Pwani	117	1.8	1.6
Dar es Salaam	98	1.5	1.3
Lindi	112	1.8	1.6
Mtwara	125	2.1	1.8
Ruvuma	141	2.3	2.1
Iringa	129	2.0	1.9
Mbeya	121	1.9	1.7
Singida	174	2.8	2.6
Tabora	175	2.6	2.4
Rukwa	189	3.0	2.7
Kigoma	159	2.6	2.4
Shinyanga	163	2.4	2.3
Kagera	172	2.8	2.5
Mwanza	142	2.2	2.0

Mara	165	2.7	2.4
Manyara	182	2.9	2.8
Njombe	124	2.0	1.8
Katavi	178	2.7	2.6
Simiyu	191	3.1	2.9
Geita	168	2.6	2.4
Songwe	172	2.4	2.5
Tanzania Zanzibar	**140**	**2.3**	**2.1**
Kaskazini Unguja	147	2.8	2.1
Kusini Unguja	125	2.4	1.8
Mjini Magharibi	128	2.4	1.8
Kaskazini Pemba	179	4.0	2.9
Kusini Pemba	170	3.6	2.8

Source: Tanzania, 2022 PHC

Chapter Four
Fertility Differentials

Key Points

- Fertility is higher (5.3 children per woman) in rural than in urban areas (3.8 children per woman).
- TFR is highest in Kaskazini Pemba (6.5 children per woman) and lowest in Dar es Salaam (3.1 children per woman).
- Regions around Lake Victoria and Western part of the country have higher fertility rates compared with other parts of the country.
- Fertility is negatively associated with education decreasing from 5.5 children per woman for women without education or those who attended pre-primary education to 2.3 children per woman for those with tertiary education.
- Women engaged in agricultural activities (farmers, livestock keepers and fisher men) have a relatively higher TFR (4.9 children per woman) compared with women engaged in other occupations or those not working.
- The observed fertility differentials are associated with cultural and existing socio-economic status of women in respective areas.

4.1 Introduction

Fertility differentials in developing countries can be influenced by a variety of factors, including place of residence, education, age at first union, family planning**,** socioeconomic conditions and cultural practices. Other factors include child mortality, family size, polygamy and the practice of levirate marriage (Ezeh and Zulu, 2004). Fertility differentials discussed in this chapter are residence, marital status, education and occupation.

4.2 Fertility by Place of Residence and Region

The urban-rural differential in Total Fertility Rate (TFR) is a well-documented demographic pattern, with urban areas generally demonstrating lower fertility rates than rural areas. The

difference may be caused by various socio-economic, cultural, and healthcare access factors (United Nations, 2015 and Brockerhoff and Yang, 1994). Children in rural settings are often seen not only as a source of farming family labour but also as a form of old age social security. Urbanization may lead to changes in family dynamics, priorities, and access to resources, contributing to smaller family sizes (United Nations, 2019).

Generally, urban fertility rates especially in developing countries are lower than rural fertility rates. Studies show that on average urban fertility in sub-Saharan Africa is almost 30 percent lower than the rural fertility (Shapiro and Tambashe, 2000). Results from the 2022 Tanzania PHC show a similar pattern with the TFR of rural areas been higher (5.3 children per woman) compared with that of urban areas (3.8 children per woman), implying that, on average, women living in rural areas have about two children more than those living in urban areas.

Across all regions in Tanzania, the TFR is highest in Kaskazini Pemba (TFR of 6.5 children per woman) followed by Rukwa and Kusini Pemba (6.1 children per woman each) and Manyara (6.0 children per woman). Other regions with TFRs of 5 or more children per woman are Singida (5.7 children per woman), Kagera and Katavi (5.6 children per women each), Songwe (5.4 children per woman), Tabora and Mara (5.4 children per woman each). On the other hand, Dar es Salaam Region has the lowest TFR of 3.1 children per woman (Table 4.1).

The 2022 PHC results further reveal that regions around Lake Victoria, Western part of the country, Southern Highlands and Pemba have high fertility rates compared with other parts of the country. The high level of fertility in these regions is consistent with low the mean age at first marriage. The average mean age at first marriage in most of these regions is below the national average of 22 years (See Chapter 2 of this Volume).

TFRs for rural areas are relatively higher than those of urban areas across all regions in Tanzania. Regions with relatively large TFR differences between rural and urban areas are Dodoma, Arusha and Rukwa (difference of 1.9 children each) and Singida and Manyara (1.8 children each). Regions with TFR differences of less than one are Mtwara and Iringa (0.8 children), Mbeya (0.6 children), Kilimanjaro (0.4 children) and Lindi and Mjini Magharibi (difference of 0.2 children each). Variations observed in most regions in fertility rates between rural and urban areas are probably due to, among other factors, differences in socio-economic development between rural and urban areas.

Table 4.1: Estimated Total Fertility Rates by Region

Region	TFR 2022			Difference (Rural-Urban
	Total	Rural	Urban	
Tanzania	**4.6**	**5.3**	**3.8**	**1.5**
Mainland Tanzania	**4.6**	**5.3**	**3.8**	**1.5**
Dodoma	4.7	5.7	3.8	1.9
Arusha	4.6	5.5	3.6	1.9
Kilimanjaro	3.7	3.7	3.3	0.4
Tanga	4.8	5.1	3.8	1.4
Morogoro	4.2	4.9	3.7	1.2
Pwani	3.7	3.9	3.6	0.3
Dar es Salaam	3.1	N/A	3.1	N/A
Lindi	3.7	3.6	3.5	0.2
Mtwara	4.2	4.3	3.5	0.8
Ruvuma	4.6	4.5	4.3	0.3
Iringa	4.1	4.4	3.5	0.8
Mbeya	3.8	4.1	3.5	0.6
Singida	5.7	6.1	4.2	1.8
Tabora	5.4	5.6	4.2	1.4
Rukwa	6.1	6.5	4.6	1.9
Kigoma	5.3	5.7	4.5	1.2
Shinyanga	5.0	5.7	4.4	1.3
Kagera	5.6	5.6	4.2	1.4
Mwanza	4.6	5.3	3.9	1.4
Mara	5.4	5.7	4.9	0.8
Manyara	6.0	6.2	4.4	1.8
Njombe	4.0	4.1	3.6	0.5
Katavi	5.6	5.9	5.2	0.6
Simiyu	6.3	6.7	5.1	1.6
Geita	5.3	5.8	5.0	0.9
Songwe	5.5	6.1	4.6	1.4
Tanzania Zanzibar	**4.7**	**5.2**	**4.3**	**0.9**
Kaskazini Unguja	4.8	5.0	4.0	1.0
Kusini Unguja	4.0	4.1	3.6	0.5
Mjini Magharibi	4.2	4.4	4.2	0.2
Kaskazini Pemba	6.5	6.6	5.6	1.0
Kusini Pemba	6.1	6.3	5.3	1.0

Source: Tanzania, 2012 and 2022 PHCs

*Note: * Songwe regional TFR was calculated using the Mbeya regional data.*

N/A- Not Applicable

Dar es Salaam region is completely urban and therefore a difference of TFR between rural and urban area cannot be calculated.

4.3 Fertility by Marital Status

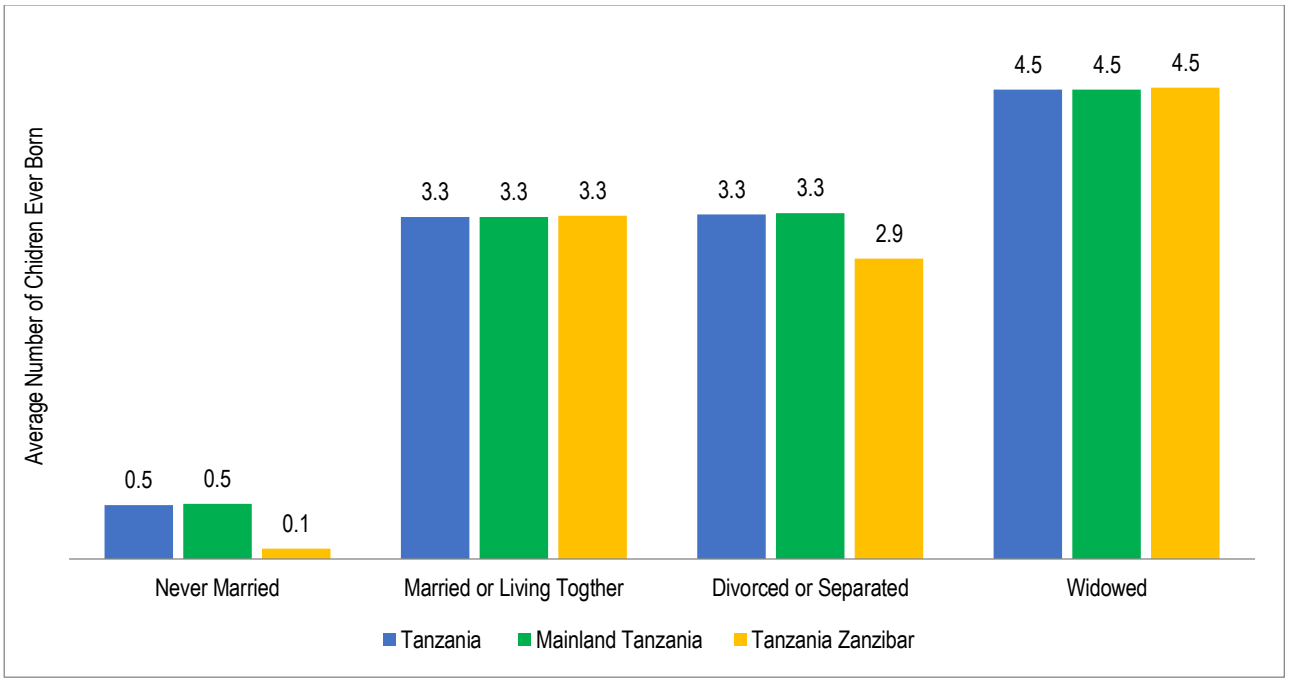
The relationship between marital status and fertility is a key area in demographic studies, since marital status significantly impacts fertility patterns. Married women generally have higher fertility rates than unmarried women (single, separated, divorced, or widowed). This is because marriage typically provides a stable social and economic environment conducive to childbearing (Bongaarts and Potter, 1983).

Unmarried women, particularly in societies where marriage is closely tied to childbearing, often have lower fertility. Divorced and widowed women tend to have lower fertility rates due to a lesser exposure to childbearing within a stable partnership. However, re-marriage can influence fertility since women who re-marry may have additional children, though the extent depends on age, cultural norms, and socioeconomic factors.

Furthermore, cohabitation in many regions is becoming more common and is increasingly associated with fertility like marriage, especially in contexts where cohabiting relationships are socially accepted and legally recognized. Cohabitating women may exhibit fertility rates closer to those of married women, though this can vary by region and cultural context (Lesthaeghe, 2010**).** Tanzania, unlike many other countries in sub–Saharan Africa, marriage is a strong determinant of fertility, because women are expected to bear children once married. Analysis in this section is using the average mean number of children ever born by marital status. TFR is age selective hence the categories of marital status show awkward TFRs because marital status is also age selective.

The relatively higher fertility among the divorced and separated women in Tanzania (Figure 4.1) does not conform to the situation in most countries and this may probably be a result of most of women been divorced after completing lifetime fertility. This may also be the case for the relatively higher average number of children ever born to widowed women.A relatively low average number of children ever born to unmarried women in Tanzania Zanzibar may be explained by the culture which prohibiting women having children before marriage (Figure 4.1).

Figure 4.1: Average Number of Children Ever Born by Marital Status; Tanzania, 2022 PHC



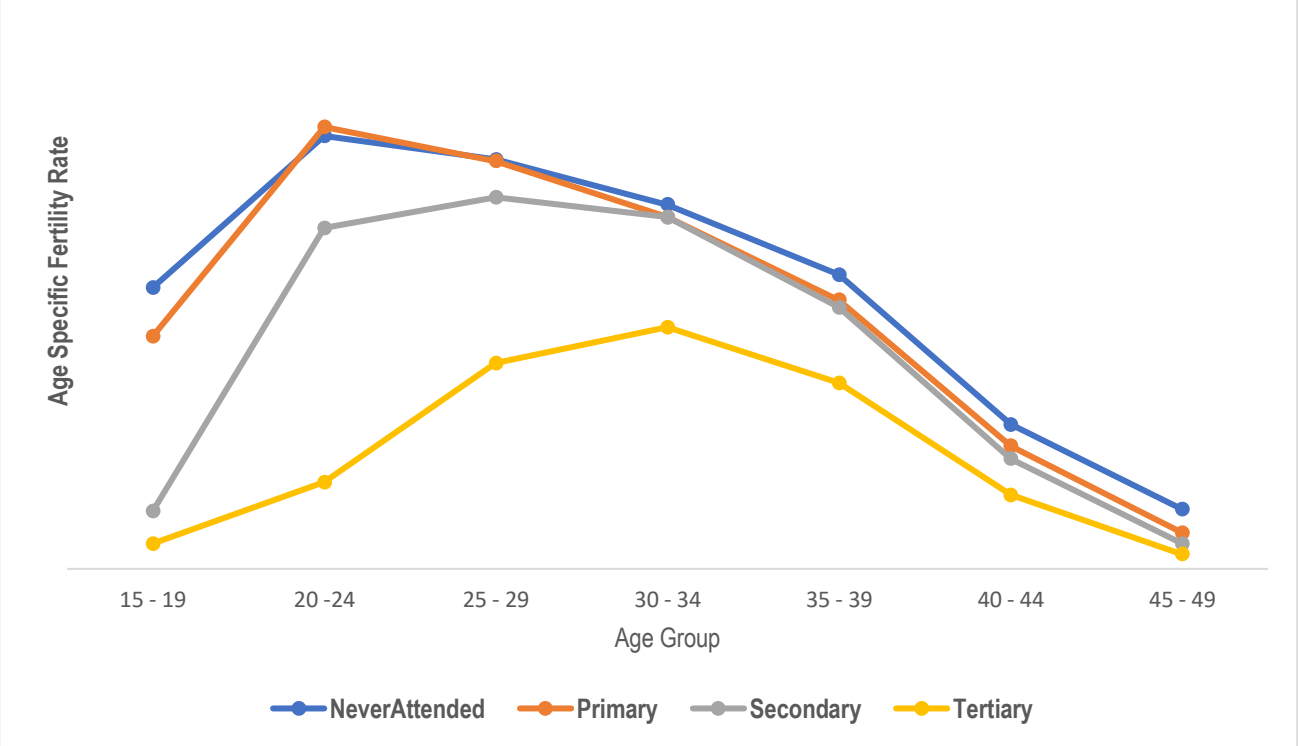
4.4 Fertility by Education Level

Education level is one of the important factors that affecting fertility levels in a society. Effects of education on fertility can be divided into three parts associated with: demand for children; supply of children; and costs of fertility regulation (World Bank, 2018). Education facilitates acquisition of information on family planning and is associated with the use of more effective contraceptive methods. Education increases husband-wife communication and imparts a sense of control over one's destiny, which may encourage attempts to control childbearing. Furthermore, education increases couple's income potential, making a wide range of contraceptive methods affordable and delays entry into marital unions (Kpedkepo, 1982) and in so doing reduces fertility. Regions with lower educational attainment tend to have higher TFRs, because limitation in education can lead to early marriages and less use of family planning (Bongaarts, 2003).

The Age-Specific Fertility Rates (ASFR) by education level, emphasizing the strong influence of educational attainment on fertility patterns and timing of childbearing. The graph illustrates Age-Specific Fertility Rates (ASFR) by education level, showing that fertility peaks in the 20–29 age range across all groups but varies considerably by education level. Women with no education have the highest fertility rates, starting childbearing earlier and maintaining higher rates across all ages, while those with primary education follow a similar but slightly lower trend. Fertility declines further for women with secondary education, and university-

educated women exhibit the lowest fertility rates, with a delayed peak in the 30–34 age group. Overall, higher education is associated with lower fertility and delayed childbearing, reflecting the influence of education on reproductive behaviour (Figure 4.2)

Figure 4.2: Age-Specific Fertility Rates by Education Level; Tanzania, 2022 PHC

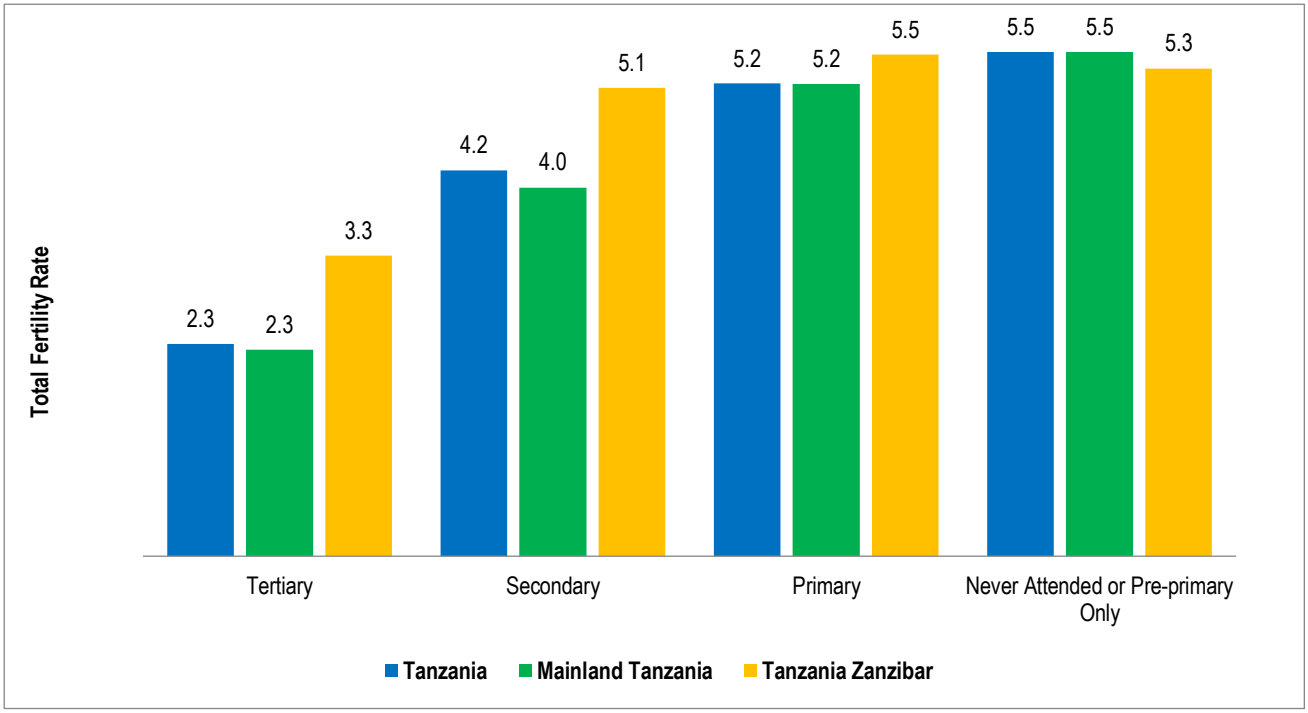


Findings from the 2022 PHC show that fertility is negatively associated with the educational attainment of the mother. Figure 4.2 shows that the TFR decreases as the education level of the mother increases; decreasing from 5.5 children per woman for women without education or attended pre-primary education only to 2.3 children per woman for women with tertiary education or above (university or related in Mainland Tanzania). Results show a decrease in TFR in Tanzania Zanzibar from 5.3 children per woman for women without education or attended pre-primary education to only 3.3 children per woman for women with tertiary education (university or related in Tanzania Zanzibar) (Figure 4.3). Findings show educated women in Zanzibar have a higher TFR compared to those in Mainland Tanzania. With exception of the TFR of women who never attended school and those with pre-primary education, TFRs are higher for women residing in Zanzibar than for those residing in Mainland Tanzania.

This suggests that the national TFR of 4.6 children per woman is mainly influenced by fertility of women who never attended school or with pre-primary education. These findings are in

line with those of other countries whereby educated women have fewer children compared with women without formal education.

Figure 4.3: TFR by Education Level Attained; Tanzania, 2022 PHC



The Total Fertility Rate (TFR) trends by education level in Tanzania for 2012 and 2022, categorized into Tanzania overall, Mainland Tanzania, and Tanzania Zanzibar. Across all regions, the TFR decreases with higher levels of education. Those with "Never Attended or Pre-primary Only" consistently show the highest TFR, while individuals with tertiary education have the lowest. Between 2012 and 2022, there is a general decline in fertility rates across most education levels, with the most significant reductions observed in the lower education categories.

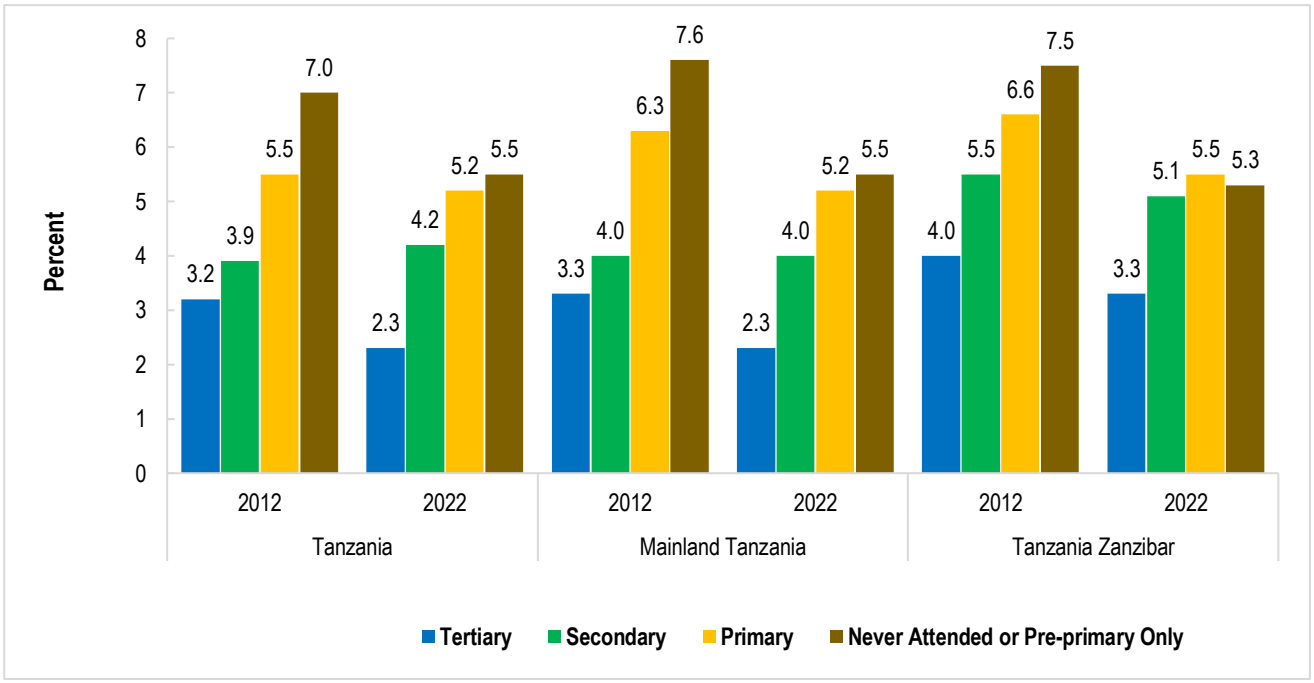
In Mainland Tanzania, the TFR for individuals with no or limited education dropped significantly, from 7.6 in 2012 to 5.5 in 2022, while tertiary-educated individuals experienced a slight decrease from 3.3 in 2012 to 2.3 in 2022. Similar trends are observed in Zanzibar, though TFR levels are generally lower than in Mainland Tanzania. For example, Zanzibar's TFR for "Never Attended or Pre-primary Only" declined from 7.5 in 2012 to 5.3 in 2022, and TFR for tertiary education declined from 4.0 in 2012 to 3.3 in 2022.

Overall, the data highlights the strong correlation between higher education levels and reduced fertility rates, reflecting the impact of education on family planning and reproductive behaviour. The declining TFR in lower education categories suggests progress in access to education and awareness of family planning, while the relatively low TFR in Tanzania

Zanzibar compared to the Mainland Tanzania may indicate differing socioeconomic or cultural factors.

Total Fertility Rate (TFR) by education level in Tanzania, divided into three categories: Tanzania (overall), Mainland Tanzania, and Tanzania Zanzibar, for the years 2012 and 2022. Each education category—Tertiary, Secondary, Primary, and "Never Attended or Pre-primary Only"—is displayed with corresponding fertility rates (Figure 4.4).

Figure 4.4: Trend of TFR by Education Level Attained; Tanzania, 2012 and 2022 PHCs



4.5 Fertility by Occupation

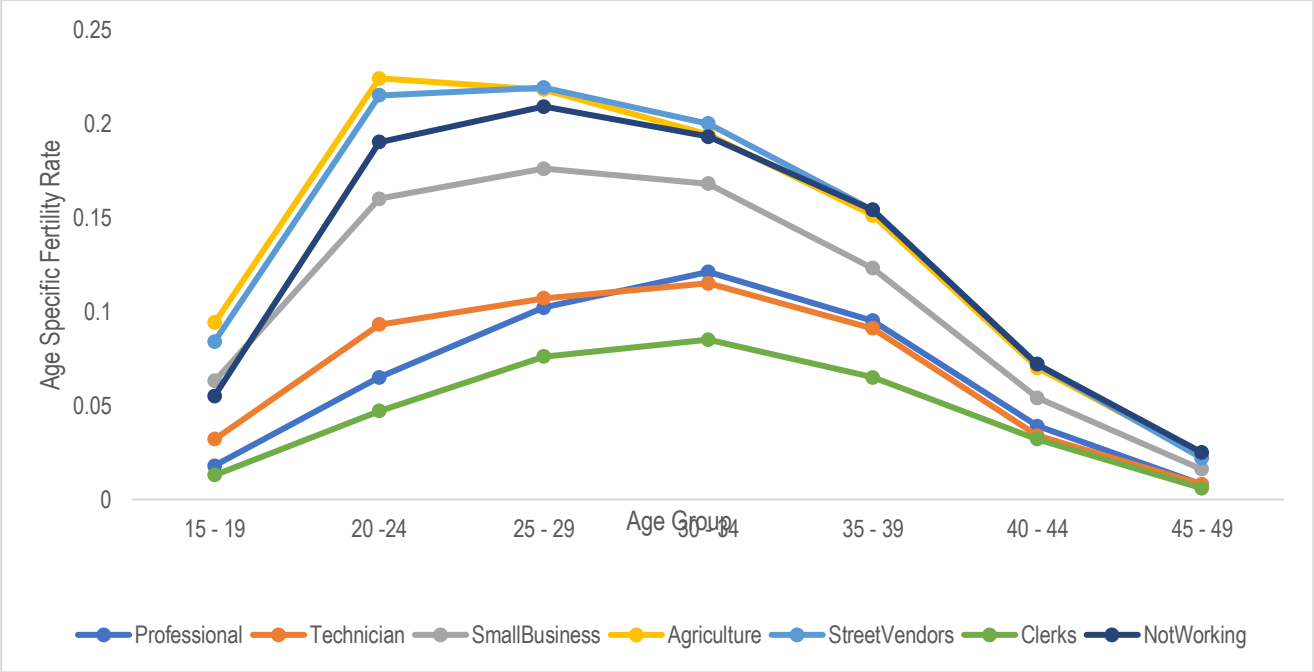
4.5.1 Age-Specific Fertility Rates by Occupation of Women

Age-Specific Fertility Rates (ASFR) by occupational categories reveal how fertility patterns vary among women aged 15–49 based on employment types. This measure highlights the relationship between work engagement and reproductive behaviour, reflecting the impact of socio-economic factors, work environments, and lifestyles on childbearing. Analysing these patterns helps inform targeted policies addressing fertility and labour-related challenges.

Figure 4.5 displays Age-Specific Fertility Rates (ASFR) by occupational categories, showing different fertility patterns across age groups (15–49 years) for various employment types. Fertility peaks across most occupations in the 25–29 age group, with "Agriculture", " Street Vendors " and "Not Working" showing the highest ASFR values. "Technicians" and "Small Business" categories follow a similar path but at lower rates, while "Clerks" and "Professional" maintain consistently lower fertility across all age groups. The steep decline in fertility rates after 35–39 years is evident across all occupations. This suggests that

women in agriculture and street vendors roles experience higher fertility compared to those in professional or clerk categories, possibly due to socio-economic and lifestyle differences.

Figure 4.5: Age-Specific Fertility Rates by Occupation Categories; Tanzania, 2022 PHC



4.5.2 Total Fertility Rate by Occupation of Women

Total Fertility Rate (TFR) often varies by occupation, as different types of work are associated with varying socio-economic conditions, time demands, cultural norms and job security level. Occupations requiring higher education or extensive time commitments, such as professional and managerial roles, tend to be associated with lower TFRs. Women in these occupations often have fewer children due to career priorities.

According to Frejka and Calot (2001), occupations with better job security, maternity benefits and flexible work options can influence TFR positively by reducing the opportunity cost of childbearing. On the other hand, women in informal or low-income occupations may have higher fertility rates than those in formal, stable employment due to socio-economic constraints and limited access to family planning resources.

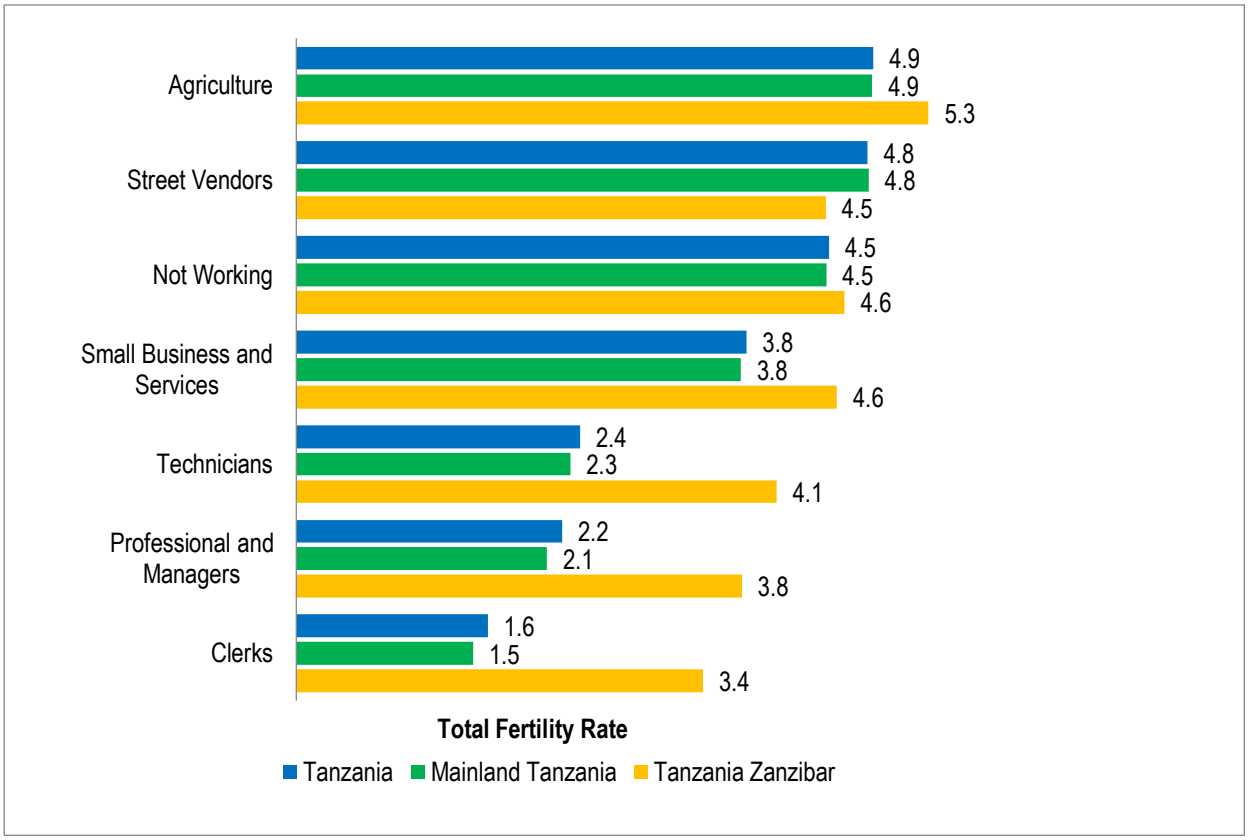
Results from the 2022 PHC show that, women in Tanzania engaged in agricultural activities (farmers, livestock keepers and fishers) have a relatively higher TFR (4.9 children per woman) compared with women engaged in other occupations or not working (Figure 4.6). On the other hand, women engaged in clerical work recorded the lowest TFR of 1.6 births per woman while professionals, technicians and those engaged in small businesses or

services estimated TFRs of 2.2 to 3.8 children per woman. A similar pattern is observed in Mainland Tanzania.

Women in Tanzania Zanzibar engaged in agricultural activities (farmers, livestock keepers and fisher men) have the highest TFR (5.3 children per woman) while clerks have the lowest TFR (3.4 children per woman). In general, with except of the street vendors, TFRs for all occupation categories in Tanzania Zanzibar are higher than those of Mainland Tanzania (Figure 4.6).

These findings are in line with those of other countries whereby working women have fewer children as they are more educated and therefore well informed on advantages of having a small family. Work commitment and career advancement also limit employed and professional women from having many children. On the other hand, most of the unemployed women are less educated and reside in rural areas where accessibility to family planning services is limited.

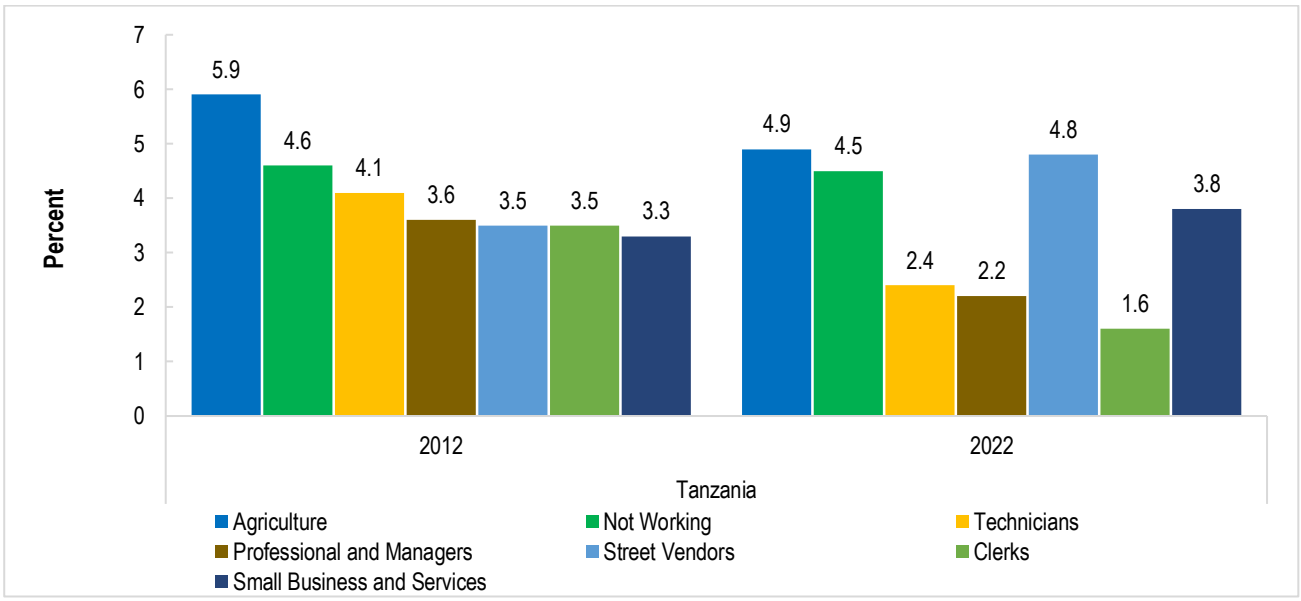
Figure 4.6: Total Fertility Rates by Occupation of Women; Tanzania, 2022 PHC



4.5.3 Trends in Total Fertility Rates by Occupation of Women: 2012-2022 PHC

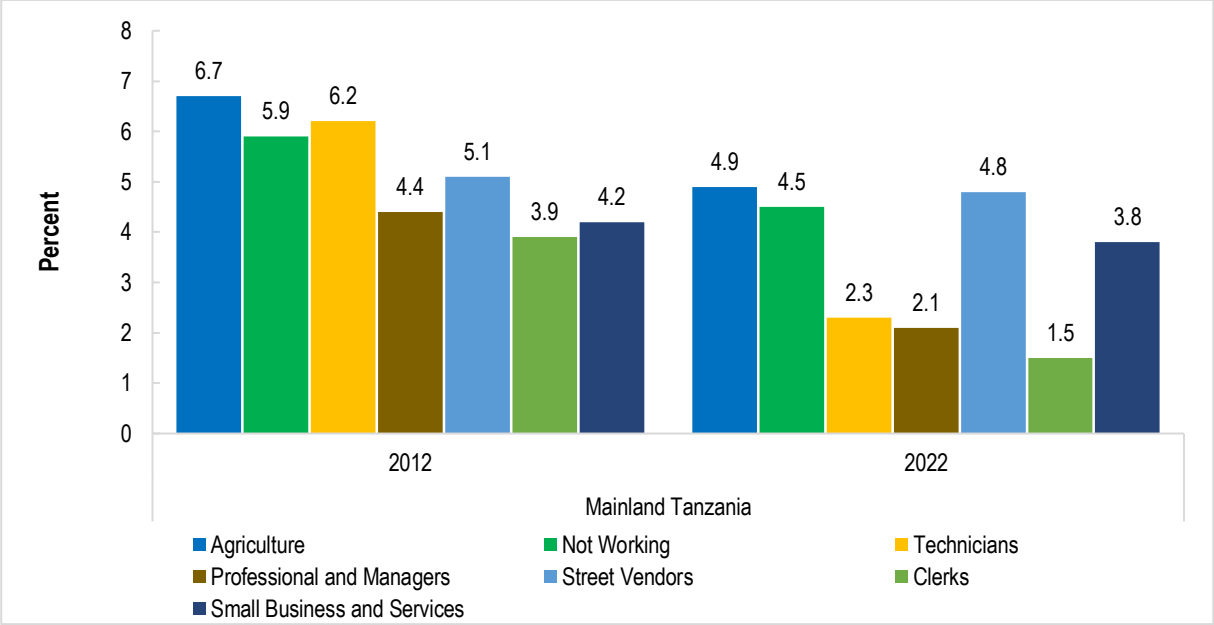
Fertility levels are closely related with profession of a woman. Women who are employed or working have lower fertility than those who are not working. Results from the 2012 PHC show that generally, in Tanzania, women who are engaged in agricultural activities (farmers, livestock keepers and fishers) have the highest TFR (5.9 children per woman) compared to those engaged in the small business and service (3.3 children per woman). The same trend has been observed in the 2022 PHC where majority of women engaged in agricultural activities has highest TFR (4.9 children per women) followed by those employed as a street vendor (4.8 children per woman**)**. On the other hand, there is a significant change of TFR for women employed as clerks, where the TFR has declined from 3.5 children per women in 2012 to 1.6 children per women in 2022 PHC (Figure 4.7).

Figure 4.7: Trend of Total Fertility Rates by Occupation of Woman; Tanzania, 2012 and 2022 PHCs



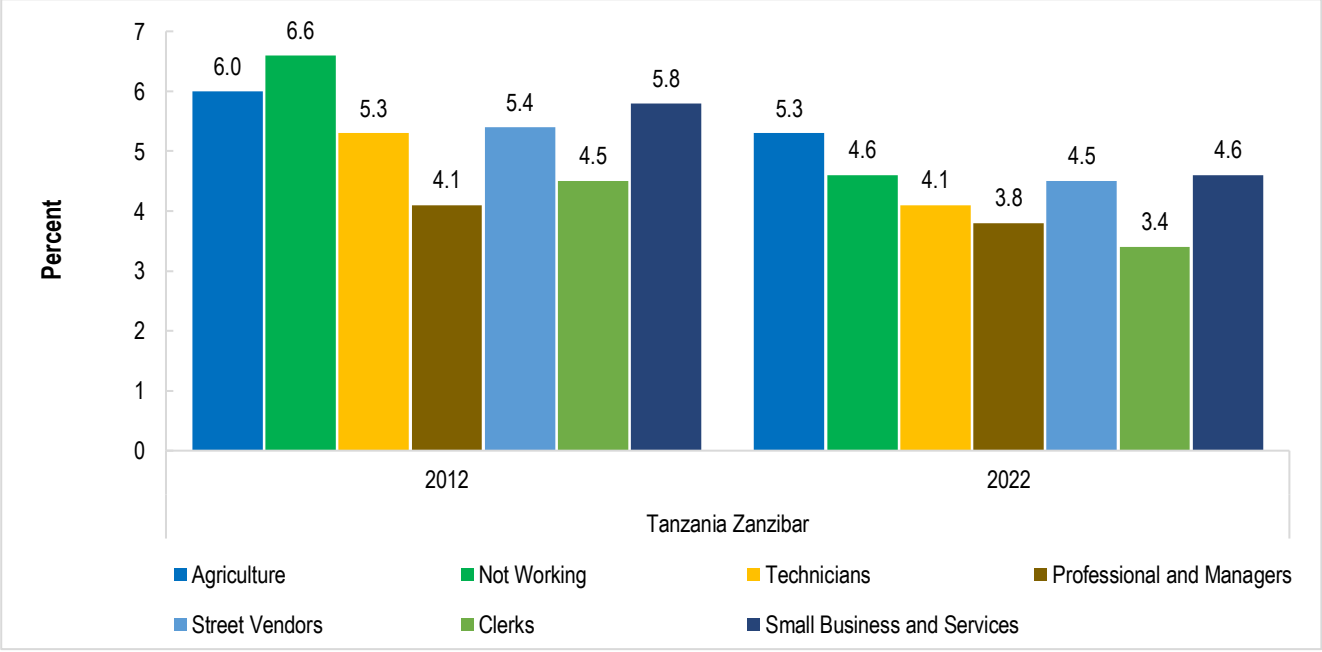
In Mainland Tanzania results from the 2012 PHC show fertility was highest for those women engaged in agricultural activities (farmers, livestock keepers and fishers) with a TFR of 6.7 children per women while in 2022 PHC the TFR for women engaged in the same occupation declined to 4.9 children per women. In addition, results indicate that those women employed as professionals and managers had a TFR of 4.4 children per women in 2012 while in 2022 the number of children per women employed in the same occupation declined to 2.1 children per women (Figure 4.8).

Figure 4.8: Trend of Total Fertility Rates by Occupation of Woman; Mainland Tanzania, 2012 and 2022 PHCs



In Tanzania Zanzibar results from the 2012 PHC show TFR was highest (6.6 children per woman), for women who were not working. In 2022 PHC the highest TFR was recorded for those women employed as street vendors (5.3 children per woman) followed by those engaged in small business and those not working recorded a fertility level of around 4.6 respectively. Women employed as clerks recorded the lowest TFR of 4.1 births per woman in 2012 while in 2022 they also recoded the lowest birth of 3.4 births per women (Figure 4.9).

Figure 4.9: Trend of Total Fertility Rates by Occupation of Woman; Tanzania Zanzibar, 2012 and 2022 PHCs



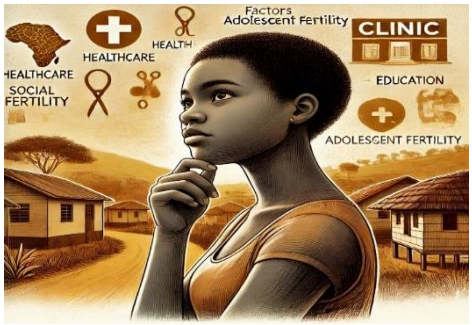
Chapter Five

Adolescent Fertility

Key Points

- Adolescent Fertility Rate (AFR) for Tanzania is about 77 children per 1,000 women aged 15–19 years.
- The AFR is significantly higher in rural areas (about 95 children per 1,000 women) than in urban areas (about 45 children per 1,000 women).
- Adolescent fertility contributes 1.7 percent to the Total Fertility Rate (TFR) at the national level, much higher contribution observed in Mainland Tanzania (1.7%) compared with Tanzania Zanzibar (0.5%)
- Policy options to reduce adolescent fertility could include Implementing programmes that keep girls in school longer including a “back to school” policy for girls who become pregnant and provide scholarships or vocational training to empower them economically.

5.1 Introduction



The concept of adolescent fertility is important for health, social and economic reasons. Children born to adolescent women (mothers aged 15 – 19 years) face an increased risk of illness and death. Adolescent mothers are more likely to experience difficult pregnancy outcomes and maternity-related mortality than older women and they are more constrained in their ability to pursue educational opportunities than their counterparts who delay childbearing. As of 2019, adolescents in developing countries aged 15–19 years experienced approximately 21 million pregnancies annually, with about half of being unintended. These unintended pregnancies resulted in an estimated 12 million births. Furthermore, 55 percent of unintended pregnancies ended in abortion, many of which were unsafe due to limited access to proper reproductive health services (WHO 2024; Sully *et al.,* 2020).

Early childbearing is associated with lower educational attainment and persistent poverty among those becoming mothers at adolescent ages. The 2022 Tanzania Demographic and Health Survey, reports that teenagers' pregnancies decrease with increasing education. For instance, 53 percent of women aged 15-19 years without education ever had a live birth, as compared with 9 percent of women aged 15-19 years with secondary education or higher. Teenage pregnancy also decreases with increasing wealth, from 35 percent in the lowest wealth quintile to 12 percent in the highest quintile (MoHCDGEC and MoH, 2022). UNFPA and global stakeholders continue to prioritize reducing adolescent pregnancy, engaging youth in policy decisions and enhancing access to reproductive services, aligning with the 1994 International Conference on Population and Development (ICPD) goals.

5.2 Levels of Adolescent Fertility

The PHC 2022 results indicate that the Adolescent Fertility Rate (AFR) for Tanzania is about 77 children per 1,000 women aged 15–19 years, with a higher rate in Mainland Tanzania (about 79 children per 1,000 women) compared to Tanzania Zanzibar (about 25 children per 1,000 women) (Table 5.1). The AFR is also significantly higher in rural areas (about 95 children per 1,000 women) than in urban areas (about 45 children per 1,000 women).

Adolescent Fertility Rates (AFRs) of regions in Mainland Tanzania is generally higher compared with those in Tanzania Zanzibar, except for Dar es Salaam region. This disparity may be explained by differences in the education systems between Mainland Tanzania and Tanzania Zanzibar; the education system in Tanzania Zanzibar allows young girls to stay in school longer than mainland, thereby delaying marriage and childbearing. AFRs varies significantly across regions, ranging from 19.3 in Mjini Magharibi to 120.6 in Songwe. Ruvuma, Tabora, Rukwa Katavi and Songwe regions report AFRs exceeding 100.

Table 5.1: Adolescent Fertility Rate by Region and Place of Residence

Region	Total		Rural		Urban	
	Adolescent Fertility (Births per 1,000 Women)	Percentage Contribution of Women Age 15-19 to TFR	Adolescent Fertility (Births per 1,000 Women)	Percentage Contribution of Women Age 15-19 to TFR	Adolescent Fertility (Births per 1,000 Women)	Percentage Contribution of Women Age 15-19 to TFR
Tanzania	**76.5**	**1.7**	**95.3**	**1.8**	**45.4**	**1.2**
Mainland Tanzania	**78.5**	**1.7**	**97.2**	**1.8**	**46.8**	**1.2**
Dodoma	95.2	2.0	127.7	2.2	59.2	1.5
Arusha	59.9	1.3	84.1	1.5	28.4	0.8
Kilimanjaro	44.0	1.2	46.7	1.2	30.9	0.9
Tanga	72.3	1.5	83.9	1.6	39.3	1.0
Morogoro	85.3	2.0	113.5	2.3	54.0	1.5
Pwani	54.4	1.5	64.4	1.6	42.5	1.2
Dar es Salaam	26.0	0.9	NA	NA	26.0	0.9
Lindi	79.2	2.1	82.1	2.3	54.8	1.6
Mtwara	90.0	2.2	100.9	2.4	52.5	1.5
Ruvuma	103.9	2.3	111.7	2.5	68.7	1.6
Iringa	53.7	1.3	62.1	1.4	34.8	1.0
Mbeya	69.3	1.8	87.3	2.1	43.7	1.2
Singida	87.5	1.5	95.5	1.6	48.0	1.1
Tabora	115.8	2.1	124.3	2.2	63.4	1.5
Rukwa	117.0	1.9	131.1	2.0	67.7	1.5
Kigoma	69.4	1.3	77.7	1.4	49.3	1.1
Shinyanga	97.5	1.9	113.5	2.0	72.1	1.6
Kagera	77.5	1.4	79.8	1.4	41.3	1.0
Mwanza	69.2	1.5	90.6	1.7	42.5	1.1
Mara	95.3	1.8	106.6	1.9	76.4	1.6
Manyara	90.1	1.5	94.3	1.5	56.8	1.3
Njombe	55.6	1.4	63.1	1.5	37.6	1.0
Katavi	105.8	1.9	116.8	2.0	76.0	1.5
Simiyu	96.5	1.5	103.1	1.5	74.0	1.4
Geita	91.3	1.7	105.3	1.8	75.1	1.5
Songwe	120.6	2.2	146.6	2.4	70.3	1.5
Tanzania Zanzibar	**25.4**	**0.5**	**30.9**	**0.6**	**20.1**	**0.5**
Kaskazini Unguja	26.9	0.6	27.7	0.6	23.1	0.6
Kusini Unguja	36.4	0.9	36.3	0.9	37.2	1.0
Mjini Magharibi	19.3	0.5	24.1	0.5	18.4	0.4
Kaskazini Pemba	33.9	0.5	35.3	0.5	25.8	0.5
Kusini Pemba	31.4	0.5	33.2	0.5	23.9	0.5

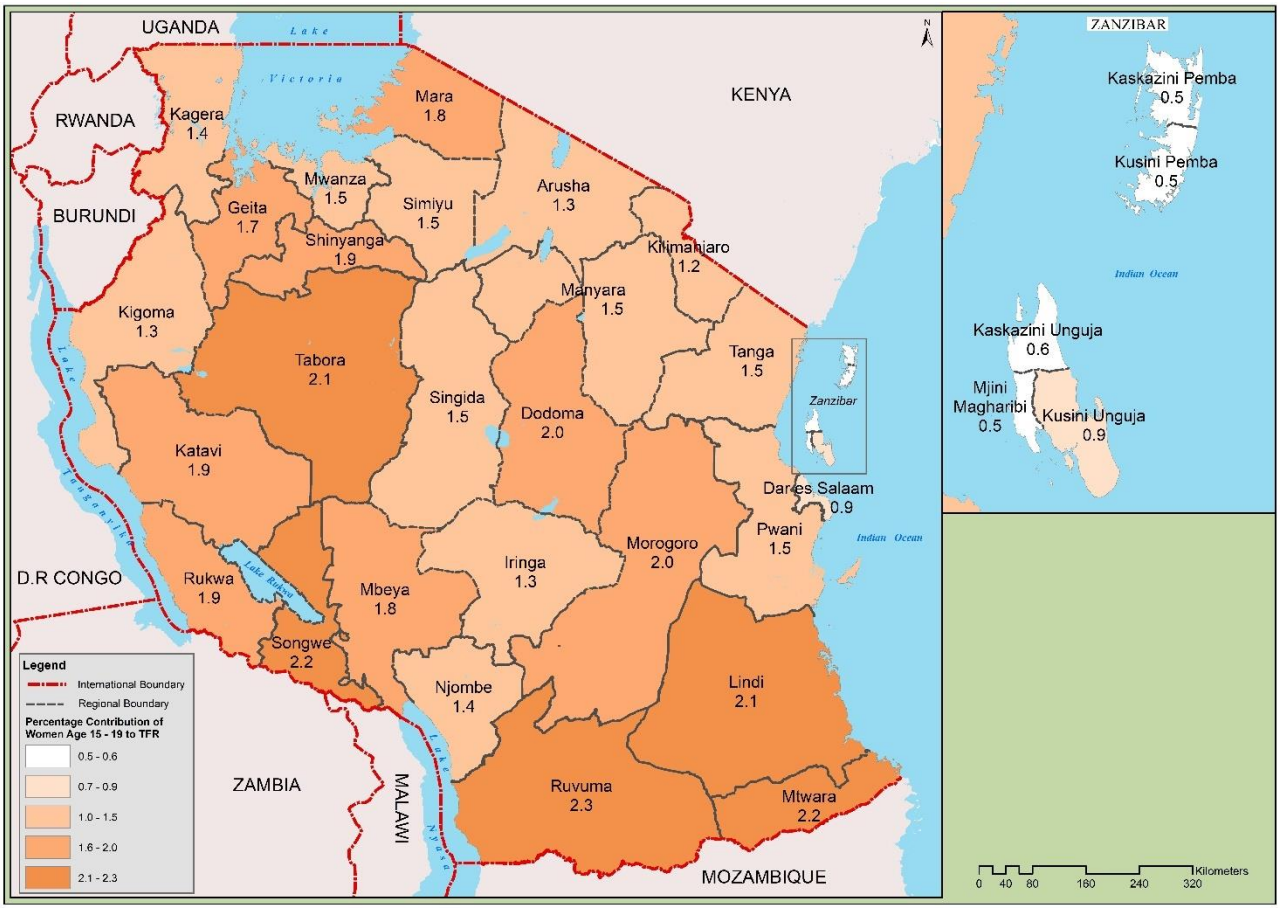
Source: Tanzania 2022 PHC

5.3 Contribution of Adolescent Fertility to Total Fertility Rate

Adolescent fertility overall contributes 1.7 percent to the Total Fertility Rate (TFR) at national level, with a higher contribution in Mainland Tanzania (1.7%) compared with Tanzania Zanzibar (0.5%) (Table 5.1). The regions which contribute mostly to adolescent fertility are Ruvuma (2.3%), Mtwara and Songwe (2.2% each), Lindi and Tabora (2.1% each) and Dodoma and Morogoro (2.0%) respectively. These regions are characterized by a relatively

higher prevalence of early marriages than others. On the other hand, the AFR's contribution to TFR remains below 1 percent in all regions in Tanzania Zanzibar (Map 5.1).

Map 5.1: Percentage Contribution of Adolescent Fertility to TFR by Region; Tanzania, 2022 PHC



5.4 Adolescent Fertility Differentials

5.4.1 Adolescent Fertility by Education Status

Findings from table 5.2 show percentage of girls who had at least one birth at the time of Census and education attainment. Results confirm that early childhood fertility is negatively related to girls' education status. Teenagers without education are more likely to start childbearing than the more educated. Results show that 38.7 percent of girls without education started childbearing compared to 7.0 percent with secondary or higher education.

Table 5.2: Adolescents with at Least One Birth by their Education Attainment

Education Attainment	Number of Females						Percentage					
	Total	15	16	17	18	19	Total	15	16	17	18	19
Total	**3,042,091**	**602,288**	**620,094**	**613,370**	**652,363**	**553,976**	**16.9**	**4.3**	**6.5**	**12.3**	**25.1**	**37.5**
Never Attended	295,514	45,795	49,883	53,970	81,687	64,179	38.7	9.8	18.6	33.2	49.8	65.2
Primary	1,050,135	247,908	151,219	183,774	242,628	224,606	26.6	4.3	11.2	21.0	37.7	54.1
Secondary and above	1,696,442	308,585	418,992	375,626	328,048	265,191	7.0	3.4	3.4	5.0	9.5	16.8

Source: Tanzania, 2022 PHC

Findings showed adolescent fertility is strongly associated with education of the head of the household. It was revealed that adolescents living in households headed by least educated heads were most likely to have started childbearing as compared to those headed by better educated heads. For instance, 20.8 percentage of adolescents living in households headed by heads who never attended school had already started childbearing at the time of the Census against 7.3 percent of those living in households headed by heads with secondary or higher education (See Table 5.3). Generally, education of the head of the households is related with general welfare of the household. Households headed by less educated heads are more likely to experience poverty, suggesting a positive association between adolescent fertility and household poverty status.

Table 5.3: Percentage of Adolescents with at Least One Birth by Education Attainment of the Household Head

Education Attainment	Number of Females						Percentage					
	Total	15	16	17	18	19	Total	15	16	17	18	19
Total	**3,082,308**	**612,545**	**629,304**	**621,503**	**660,262**	**558,694**	**14.4**	**1.5**	**3.9**	**9.7**	**22.7**	**35.6**
Never Attended	606,820	128,695	125,674	118,525	133,281	100,645	20.8	2.8	7.2	16.6	33.5	49.3
Primary	1,825,655	375,861	380,294	368,717	381,320	319,463	14.7	1.3	3.6	9.8	23.7	38.5
Secondary and above	649,833	107,989	123,336	134,261	145,661	138,586	7.3	0.6	1.4	3.5	10.0	18.7

Source: Tanzania, 2022 PHC

5.4.2 Adolescent Fertility by Place of Residence

Table 5.4 gives proportion of adolescent girls with at least one birth by rural-urban residence. Results show that 14.0 percent of all adolescents had given at least one birth. Fertility among adolescents is very low at age 15 years and 16 years but becomes substantial at ages 17 years to 19 years. The percentage of adolescents who have started childbearing was higher in rural (17.7%) than in urban areas (8.1%) and higher in Mainland Tanzania (14.3%) than Tanzania Zanzibar (4.0%).

Table 5.4: Percentage Distribution of Adolescents with at Least One Birth by Place of Residence; Tanzania, 2022 PHC

Age	United Republic of Tanzania			Mainland Tanzania			Tanzania Zanzibar		
	Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban
Total	**14.0**	**17.7**	**8.1**	**14.3**	**18.0**	**8.3**	**4.0**	**4.9**	**3.1**
15	1.5	1.8	0.9	1.5	1.8	0.9	0.4	0.4	0.3
16	3.8	4.9	2.0	3.9	5.0	2.0	0.6	0.8	0.5
17	9.5	12.6	4.7	9.8	12.9	4.9	1.9	2.4	1.4
18	22.1	28.5	11.8	22.6	29.1	12.2	5.6	7.1	4.2
19	34.4	44.0	20.5	35.2	44.7	21.1	12.0	15.6	8.9

5.4.3 Adolescent Fertility Rate by Marital Status

Marital status is a strong predictor of fertility, in accordance with social expectations and norms around childbearing. Table 5.5 shows that the Adolescent Fertility Rates (AFR) for ever-married adolescent females in Tanzania is significantly higher (195 children per 1,000 women aged 15–19 years) compared with never-married adolescents (16 children per 1,000 women). Ever-married adolescents face stronger expectations for childbearing with greater opportunity for pregnancy, thus contributing to higher AFR. In the contrast, never-married adolescents may encounter social, cultural, or religious restrictions against childbearing, resulting in a lower AFR.

The AFR for ever-married adolescents is higher in rural areas (202 children per 1,000 women) compared with urban areas (170 children per 1,000 women), while the AFRs remain similar in rural and urban areas for never-married adolescents (18 children per 1,000 women). This higher AFR among ever-married adolescents in rural areas may create differences in socio-economic development, educational opportunities and access to reproductive health services. Limited access to family planning and healthcare services in rural areas may contribute to higher birth rates among married adolescents.

Furthermore, the AFRs are higher in Mainland Tanzania for both ever-married (197 children per 1,000 women) and never-married adolescents (17 children per 1,000 women) while compared with Tanzania Zanzibar (150 and 11 children per 1,000 women for never-married).

Table 5.5: Adolescent Fertility Rate by Marital Status and Place of Residence

Place of Residence	Ever Married	Never Married
Tanzania	**195.2**	**16.0**
Rural	201.5	18.0
Urban	170.4	18.0
Mainland Tanzania	**196.9**	**17.0**
Rural	202.9	20.0
Urban	175.9	18.0
Tanzania Zanzibar	**150.0**	**11.0**
Rural	155.8	11.0
Urban	143.6	10.0

Source: Tanzania 2022 PHC

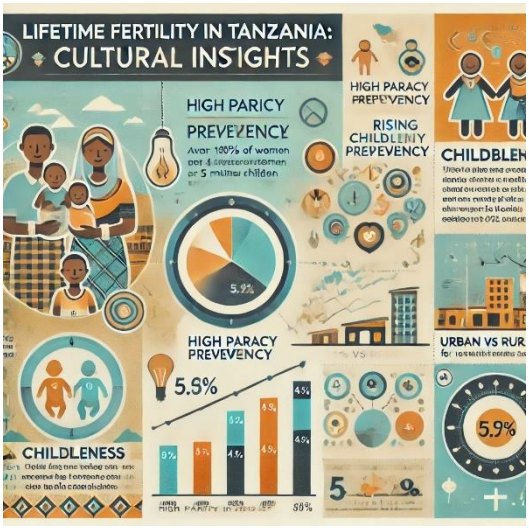
Chapter Six

Lifetime Fertility

Key Points

- Lifetime fertility shows that childbearing is still embedded in Tanzania culture.
- The phenomenon of having high parities is still acceptable; over 10% of women have parity 5 or above.
- The percentage of women aged 45 – 49 years who were childless increased from 4.4 percent in 2012 to 5.2 percent in 2022.
- The percentage of childless women is relatively higher among urban women (6.2 percent) compared with rural women (4.6 percent).

6.1 Introduction



Lifetime fertility refers to total number of children a woman has in her lifetime. It reflects a woman's reproductive behaviour, showing the total childbearing outcomes by the end of her reproductive years. This is often measured by looking at a woman's completed fertility (i.e., how many children she has had by the time she reaches the end of her childbearing years) and examining patterns in different populations over time (Bongaarts and Casterline 2013). The analysis of lifetime fertility is a vital tool for understanding and responding to demographic trends. It informs policymakers, health experts and economists on the likely trajectory of population growth and needs of future generations as well as enabling the development of strategies of balancing economic, social, and environmental factors.

This chapter analyses lifetime fertility for women aged 15-49 years using parity distribution and progressive ratios. The expected pattern is that the number of children would increase with the age of the mother. The number of children ever born alive is used to capture lifetime fertility of a woman. Lifetime fertility is therefore the number of children born alive during the entire reproductive period of a woman.

6.2 Measurement of Lifetime Fertility

There are several key measurements used to assess and analyse lifetime fertility, such measurements are Total Fertility Rate (TFR), Completed Fertility Rate (CFR), Children Ever Born (CEB), Age Specific Fertility Rate (ASFR), Parity Distribution, Parity Progression Ratios (PPR) and Reproductive Life Span (RLS). Measurements such as the TFR, CFR, and ASFR are more appropriate for better understanding of fertility behaviour, predict future trends, and inform policy, because they provide a more detailed and nuanced understanding of fertility patterns. While CEB is useful for understanding past fertility outcomes, it lacks the temporal, dynamic, and cohort-specific information needed for a comprehensive analysis of lifetime fertility (United Nations**.** 2003). On the other hand, parity distribution helps in identifying trends in family size, fertility control and reproductive behaviour and shows fertility patterns such as whether women are more likely to have larger families or smaller ones as fertility norms evolve. Likewise, PPR is a useful measurement for assessing lifetime fertility as it provides insight into to the distribution of births across different parties in a population.

6.3 Parity Distribution

Parity distribution refers to statistical representation of the number of children born by women in a population. It is crucial in assessing fertility patterns and reproductive behaviours within different demographic groups, as it helps to reveal insights into family size preferences, birth rates, and potential implications for population growth.

The changes in fertility by age may be explained by examining the parity distribution of women. Zero parity women denotes women without live births. The parity distribution of women showed a zero parity for 86.2 percent of women in age groups 15-19. The percentage of zero parity women decreases as the age of women increases. One to two parity women are mostly found in age group 20-29 years, whereas 3-4 party women are in age group 25-39 years. Women with parity 5 or above are mostly found in age group 30-49 years. (Table 6.1).

The parity distribution of women for rural and urban areas shows some variations. Results show that proportion of women in urban areas (36.1 percent) with zero parity was higher than rural areas (27.2 percent). This observation may be influenced by the higher number of urban women aged 15-24 years with zero parity against rural areas. The percentage of women with zero parity decreased steadily with age for both urban and rural women. (Tables 6.1 and 6.2).

Analysis of rural–urban differences in reported parities reveal that urban parities are lower than rural for all age groups. The decline in average number of children ever born indicates that Tanzania is on the path to fertility decline.

Table 6.1: Percentage Distribution of Women Five year's Age group 15 - 49 by Total Children Ever Born; Tanzania Rural, 2022 PHC

Age Group	Number of Children Ever Born											
	Number of Women	0	1	2	3	4	5	6	7	8	9	10+
Total	**8,710,355**	**27.2**	**13.4**	**13.0**	**11.5**	**9.9**	**8.0**	**6.4**	**4.8**	**3.5**	**2.4**	**-**
15 - 19	1,930,035	82.5	14.1	2.9	0.5							
20 - 24	1,699,798	26.2	31.7	25.5	12.0	4.2	0.5	-				
25 - 29	1,375,195	10.2	14.0	23.9	23.0	16.6	9.1	3.2	-			
30 - 34	1,152,769	6.2	6.3	13.7	18.8	18.9	15.9	11.8	6.9	1.5		
35 - 39	977,903	4.9	3.5	7.0	12.2	15.9	16.1	14.8	12.0	8.9	4.8	
40 - 44	840,003	4.8	3.4	5.6	9.0	12.8	14.6	14.9	13.6	11.9	9.4	
45 - 49	734,652	4.6	3.9	5.6	8.1	11.3	13.5	14.7	14.2	13.2	10.9	

Table 6.2: Percentage Distribution of Women Five year's Age group 15 - 49 by Total Children Ever Born; Tanzania Urban, 2022 PHC

Age Group	Number of Children Ever Born											
	Number of Women	0	1	2	3	4	5	6	7	8	9	10+
Total	**6,020,739**	**36.1**	**16.7**	**15.4**	**11.8**	**8.3**	**5.0**	**3.1**	**1.8**	**1.1**	**0.6**	**-**
15 - 19	1,199,845	92.0	6.9	1.0	0.1						-	
20 - 24	1,254,558	49.8	30.5	14.2	4.2	1.2	0.1			-		
25 - 29	1,089,825	22.2	26.4	26.9	14.6	6.6	2.5	0.8				
30 - 34	867,162	10.8	15.1	24.7	21.9	14.1	7.3	4.0	1.8	0.4		
35 - 39	669,094	7.2	8.5	16.8	21.4	18.5	11.9	7.6	4.3	2.6	1.2	
40 - 44	529,912	6.4	7.0	13.3	18.1	18.2	13.7	9.8	6.3	4.4	2.7	
45 - 49	410,343	6.2	7.1	12.4	16.3	16.9	13.6	10.6	7.5	5.5	3.7	

6.4 Parity Progression Ratios

Parity Progression Ratio (PPR) is one of the fertility measurements based on cohort data and uses the data on number of children ever born classified by birth cohort (age group). A PPR is simply the probability of having another child given that one has already had a certain number of children ever born. It measures the rate at which families are growing and likelihood that a woman with "n" children proceeds to "n+1" children. For example, if a woman has already had three births, it is the probability of her having a fourth.

Table 6.3 presents PPR by five years' age groups for women aged 15 – 49 years. The findings reveal probability of a woman having an additional child is high and stable between

81 to 95 percent up to the fifth child. After the fifth child, PPR decreases from 76 percent for the sixth child to 44 percent for the ninth child suggesting that most women with already high parity are likely to pursue additional childbearing.

Variation is observed between rural and urban areas. The results show that 56 to 80 percent and 46 to 67 percent of women aged 30-49 years in rural and urban areas respectively, are likely to have an additional child after the sixth child (Table 6.3).

Table 6.3: Parity Progression Ratios by Age, Residence

Age Group	2	3	4	5	6	7	8	9
Tanzania								
20 - 24	0.511	0.365	0.274	0.103	-	-	-	-
25 - 29	0.769	0.612	0.515	0.404	0.257	-	-	-
30 - 34	0.890	0.775	0.682	0.610	0.537	0.405	0.175	-
35 - 39	0.941	0.876	0.795	0.726	0.679	0.610	0.521	0.343
40 - 44	0.949	0.905	0.846	0.783	0.735	0.673	0.594	0.430
45 - 49	0.947	0.910	0.865	0.812	0.764	0.698	0.614	0.444
Tanzania Rural								
20 - 24	0.571	0.394	0.280	0.106	-	-	-	-
25 - 29	0.844	0.685	0.556	0.424	0.260	-	-	-
30 - 34	0.933	0.844	0.745	0.656	0.559	0.416	0.174	-
35 - 39	0.964	0.924	0.856	0.781	0.716	0.634	0.533	0.347
40 - 44	0.965	0.940	0.896	0.834	0.774	0.701	0.610	0.440
45 - 49	0.959	0.938	0.906	0.855	0.797	0.722	0.629	0.453
Tanzania Urban								
20 - 24	0.392	0.281	0.247	0.089	-	-	-	-
25 - 29	0.660	0.477	0.405	0.331	0.246	-	-	-
30 - 34	0.830	0.667	0.557	0.489	0.456	0.355	0.184	-
35 - 39	0.908	0.801	0.682	0.598	0.569	0.518	0.468	0.323
40 - 44	0.925	0.846	0.753	0.670	0.628	0.578	0.529	0.382
45 - 49	0.925	0.857	0.780	0.708	0.668	0.613	0.551	0.402

Source: Tanzania, 2022 PHC

6.5 Population of Women who are Childless

The concept of childless, based on Shyrock and Seigel (1976), is the state of never giving live childbirth. UNFPA (1993) considers childless or infertility as the inability to conceive. The concept is tied to replacement or reproductively in the sense that a high proportion of childless women suggests that replacement may be low because capability of reproducing would now depend on women who can reproduce.

Analysis in Table 6.4 deals with women aged 45-49 years who are close to menopause or have reached menopause. The percentage of childless women at the end of the reproductive period (45 – 49 years) is an indicator of the prevalence of sterility in a population. This measurement, however, overestimates the realistic prevalence of sterility because some of the childless women at the end of reproductive period may not have had children for reasons not related to physiological ability to become pregnant or to give birth. Moreover, Census results indicate some of the women aged 45 – 49 years actually gave births in the last 12 months prior to the Census, so it is not definite that all these women would remain childless.

Findings from Table 6.4 shows that 5.2 percent of women aged 45 – 49 years were childless at the time of the Census in 2022. However, there are regional variations. Percentage of women aged 45 – 49 years without children ranged from 3.2 percent in Rukwa to 10.9 percent in Kaskazini Unguja. With exception of Mwanza and Katavi regions, percentage of women of age 45-49 years without children was higher in urban than rural areas (Table 6.4 and Figure 6.1).

In addition, proportion of women without children aged (45-49) years depends on whether they lived in rural or urban areas. Percentage of childless women is relatively higher among urban women (6.2 percent) compared with rural women (4.6 percent). This variation reflects various factors such as supportive customary fertility practices in rural areas and effects of modernization and urbanization in urban areas. Results further show the highest proportion (19.5 percent) of women without children aged 45-49 years who were living in Kaskazini Unguja followed by the ones residing in Kusini Unguja (9.8 percent) in Tanzania Zanzibar. This might be caused by presence of migrant women aged 45-49 years without children from other countries found in urban areas in both regions.

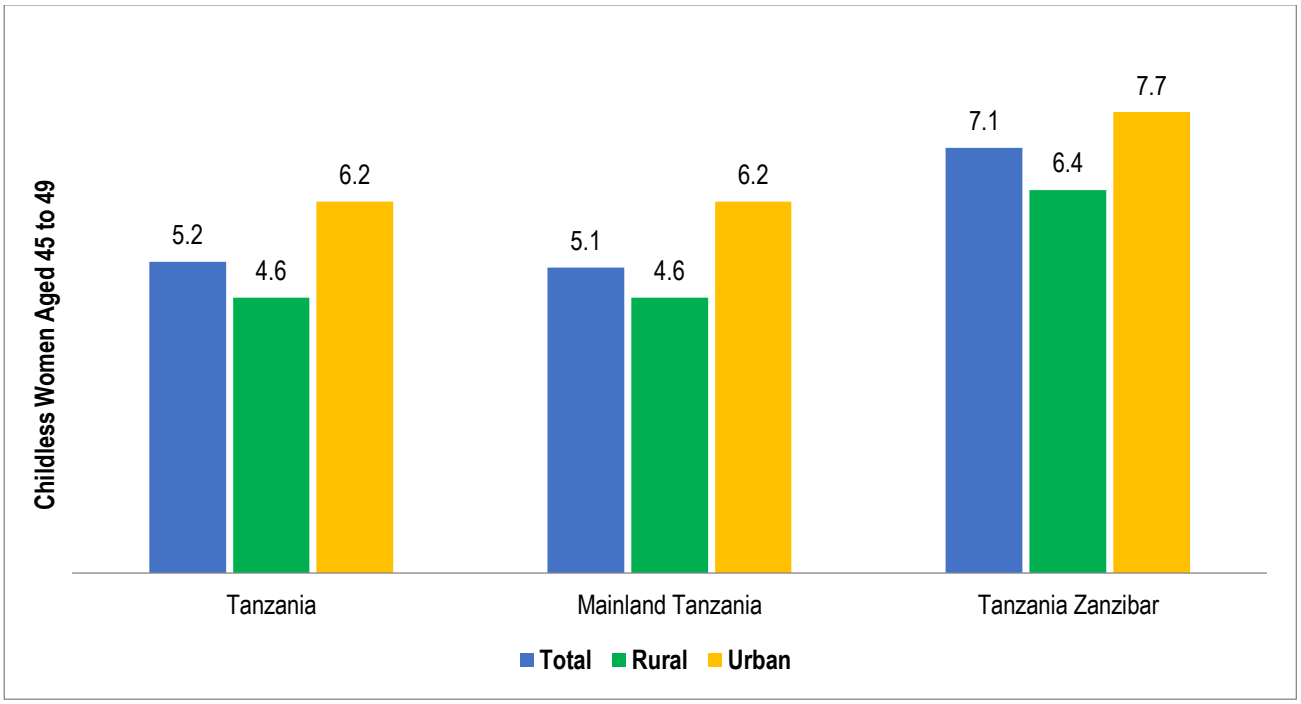
Greater access to education and career opportunities, changing social norms regarding marriage and motherhood and the desire for financial independence attribute to the high percentage of childless women aged 45-49 years in urban areas. Urban environment often provides women more choices and a focus on personal and professional development, leading some to postpone or forgo childbearing altogether.

Table 6.4: Percentage Distribution of Childless Women Aged 45 to 49 by Place of Residence

Place of Residence	Number of Women			Percentage of Women who are Childless		
	Total	Rural	Urban	Total	Rural	Urban
Tanzania	**1,144,995**	**734,652**	**410,343**	**5.2**	**4.6**	**6.2**
Mainland Tanzania	**1,108,976**	**717,284**	**391,692**	**5.1**	**4.6**	**6.2**
Dodoma	58,444	37,993	20,451	3.6	2.8	5.1
Arusha	46,629	25,741	20,888	4.5	4.0	5.2
Kilimanjaro	45,107	34,737	10,370	4.6	4.2	5.9
Tanga	57,175	41,906	15,269	3.3	2.8	4.7
Morogoro	40,731	24,115	16,616	5.3	5.1	5.6
Pwani	40,731	24,115	16,616	5.3	5.1	5.6
Dar es Salaam	112,699	-	112,699	7.0	-	7.0
Lindi	29,865	24,206	5,659	5.1	4.9	6.0
Mtwara	43,010	33,351	9,659	6.3	5.9	7.4
Ruvuma	39,491	30,797	8,694	4.8	4.5	6.0
Iringa	25,353	18,989	6,364	4.6	4.3	5.4
Mbeya	45,264	27,782	17,482	4.5	4.2	4.9
Singida	35,240	29,089	6,151	3.9	3.6	5.5
Tabora	51,376	42,310	9,066	5.3	5.2	6.0
Rukwa	23,170	18,114	5,056	3.2	2.9	4.2
Kigoma	41,816	30,636	11,180	9.1	9.1	9.2
Shinyanga	35,614	24,052	11,562	5.9	5.4	6.8
Kagera	56,718	50,126	6,592	3.7	3.5	5.1
Mwanza	65,148	39,336	25,812	6.1	6.1	6.0
Mara	43,381	29,801	13,580	4.8	4.5	5.5
Manyara	32,579	26,893	5,686	4.6	4.6	4.7
Njombe	20,564	15,505	5,059	5.3	4.6	7.4
Katavi	15,168	11,540	3,628	5.9	6.1	5.1
Simiyu	34,248	27,386	6,862	4.9	4.0	8.6
Geita	44,588	29,971	14,617	5.1	4.7	5.8
Songwe	24,867	18,793	6,074	3.6	3.3	4.3
Tanzania Zanzibar	**36,019**	**17,368**	**18,651**	**7.1**	**6.4**	**7.7**
Kaskazini Unguja	4,737	3,948	789	10.9	9.1	19.5
Kusini Unguja	3,877	3,114	763	9.3	9.2	9.8
Mjini Magharibi	17,486	2,952	14,534	6.9	5.7	7.1
Kaskazini Pemba	5,029	3,903	1,126	3.7	3.3	5.2
Kusini Pemba	4,890	3,451	1,439	5.8	4.7	8.5

Source: ; Tanzania, 2022 PHC

Figure 6.1: Percentage Distribution of Childless Women Aged 45 to 49 by Place of Residence; Tanzania, 2022 PHC



6.6 Trend of Childless Women in the past decade

The trend of childless women aged 45 -49 years in Tanzania increased from 4.4 percent in 2012 to 5.2 percent in 2022. Although the trend shows an increase of 0.8, the 5.2 percent is within the acceptable range; however, the increasing trend is concerning. Similar trends are observed in Mainland Tanzania and in Tanzania Zanzibar. The increase is from 5.2 percent in 2012 to 6.2 percent in 2022 census in urban areas, whereas in rural areas is from 4.0 percent in 2012 census to 4.6 percent in 2022 census. The percentage of childless women aged 45-49 years is higher in urban areas than in rural areas both in Mainland Tanzania and Tanzania Zanzibar.

Table 6.5: Percentage Distribution of Childless Women Aged 45 to 49 by Place of Residence; Tanzania

	2012			2022		
Place of Residence	Total	Rural	Urban	Total	Rural	Urban
Tanzania	**4.4**	**4.0**	**5.2**	**5.2**	**4.6**	**6.2**
Mainland Tanzania	4.3	4.0	5.2	5.1	4.6	6.2
Tanzania Zanzibar	5.2	4.7	5.7	7.1	6.4	7.7

Source: 2012 and 2022 PHC

Chapter Seven

Summary, Conclusions and Policy Recommendations

7.1 Introduction

There is a strong relationship between levels of national development with nuptiality and fertility. The existing level of fertility has some implications to the development of the country and population dynamics and nuptiality is almost universal in developing countries (Kumar and Yadav, 2024; Todaro, 1992). Furthermore, nuptiality and fertility levels must reflect the national and international population goals and targets like the National Population Policy of Tanzania (2006) and the Sustainable Development Goals (2015-2030).

7.2 Nuptiality

Marriage remains a central institution, with most adults being in marital unions, though the proportions of single individuals (never married widowed and divorced/separated) increased between the intercensal period. The growing prevalence of divorced/separated individuals signifies changing attitudes toward marriage or unstable marriage institution. The distribution of marital status reveals significant variations across age groups, sex and regions. The findings revealed that marriage is still common practice in Tanzania. In addition, Singulate Mean Age at Marriage (SMAM) is relatively high in Dar es Salaam, Kilimanjaro, Mjini Magharibi and Iringa and relatively low in Katavi, Tabora, Rukwa and Songwe regions. The comparison between Singulate Mean Age at Marriage (SMAM) and age at first birth emphasises a critical demographic insight. Results reveal that, the age at first birth occurs earlier than the SMAM, reflecting occurrences of childbearing outside formal marital unions. Generally, this pattern is particularly notable among young women, pointing to shifts in society norms on marital status. The gap between these indicators has implications for policies aimed at reducing adolescent pregnancies and supporting maternal health.

The net nuptiality life tables, which assess the likelihood of entering and exiting marital unions across age groups, highlight significant gender differences. Women generally enter marriage earlier and are more likely to experience widowhood, while men have higher remarriage rates. These patterns emphasize the need for targeted support for widowed and divorced individuals, particularly women to address social and economic vulnerabilities. A key factor influencing nuptiality rates by sex is the difference in social roles and expectations placed on men and women regarding marriage. Women tend to marry at younger ages due to cultural norms that associate femininity with early family formation and childbearing. On the other hand men are often expected to achieve financial stability before marrying, which

can delay their entry into marriage. Men, on the other hand, are more likely to remarry after divorce or widowhood, contributing to higher remarriage rates among males. These gendered expectations and life course differences significantly shape nuptiality patterns by sex.

The average expected years to marriage at age 15 years (10.2 years) has remained more or less constant in Tanzania over the 2012-2022 intercensal period. The Law of Marriage Act (1971) allows girls to marry at 15 with parental consent and 14 with court approval, while the legal age for boys is 18. Raising the legal age at marriage to 18 years and ensuring consistent enforcement of marriage laws are critical steps for Tanzania. These reforms, together with supportive policies in education, health and economic empowerment, can help to protect children, promote gender equality and drive sustainable development. Furthermore, an observed increase of mean age at first marriage for girls from 19.1 to 22.1 years that has been seen between 1978 and 2022 censuses may lower fertility at large, since the length of reproduction span of women of about 30 years is reduced. Nonetheless, marriage at older ages may push women to bear children above age 35 years, which may risk maternal and child health.

The PHC results show that proportion of married females decreased from 69.5 percent in 1978 to 52.4 percent in 2022. The same trend is observed among males which decreased from 61.4 percent in 1978 to 50.3 percent in 2022. These results are supported by an increase in the average age at first marriage from 24.9 years in 1978 to 26.4 years in 2022 for males and from 19.1 years in 1978 to 22.1 percent in 2022 for females. The mean age at first marriage was higher in urban areas than rural areas. These results indicated that, to maintain and improve marital statuses at national levels, more interventions hinging on social and economic development should be initiated in all regions, with more emphasis to “less” developed and periphery regions. These include interventions on awareness creation among parents about the benefits of delayed marriage for girls. Further, implementation of programmes to keep girls in school longer including a “back to school” policy for girls who become pregnant and providing scholarships or vocational training would empower them economically. This may delay age at marriage, reduce fertility rates, and improve socio-economic outcomes.

7.3 Fertility Patterns, Levels, and Trends

Fertility level provides key demographic insights. The Total Fertility Rate (TFR) of 4.6 reflects a moderate level of fertility, indicating a transition from historically high fertility levels towards

lower levels. However, it remains well above the replacement level of 2.1. The Age-Specific Fertility Rates (ASFR) show a "broad peak" of fertility in the 20–29 years' age range, highlighting notable higher reproduction occurs within this age group. This pattern is typical of societies undergoing demographic and fertility transitions. The declining trend in the TFR from 6.9 in 1978 to 4.6 in 2022, signifies significant progress in access to family planning, education, healthcare and socio-economic development over time. NRR of 2.1 indicates that each generation is more than replacing itself, driving population growth in the absence of significant emigration or other demographic shifts.

Further the observed decline of TFR will ultimately lead to the decline in NRR (2.1) which is heading towards replacement level. Thus, there is a need to have a policy intervention targeting to sustain the ongoing fertility while addressing the challenges of population growth through prioritizing investments in health, education, and economic opportunities. In addition, regional variations in NRR (ranging from 1.3 to 2.9) underscore disparities in fertility drivers across the country, emphasizing the need for region-specific policies and human resources development interventions. This analysis highlights importance of sustaining efforts to improve fertility levels further through investments in women's empowerment, education, and reproductive health services. To this end, the National Population Policy needs to be reviewed to integrates the fertility challenges and observed dynamics.

7.4 Fertility Differentials

The findings revealed that, fertility is higher in rural than urban areas. Fertility is higher in regions around Lake Victoria and Western part compared to other areas of the country. The high level of fertility in these regions is consistent with the mean age at first marriage which is below the national average of 22 years. However, fertility is generally negatively associated with the educational attainment of the mother. The TFR decreases from 5.5 children per woman for women without education or attended pre-primary education to 2.3 children per woman for women with tertiary education (university or related). Women engaged in agricultural activities (farming, livestock keeping and fishing) have a relatively higher TFR (4.9 children per woman) compared with those in other occupations or not working (4.5 children per woman). The findings further reveal that work commitment and career advancement also limit employed and professional women from having many children. On the other hand, most of the unemployed women reside in rural areas where accessibility to family planning services is limited, thus indicating a higher chance of having more children in reproductive lifetime compared to counterparts in urban areas.

Fertility patterns in Tanzania highlight a significant regional, educational and employment-related disparities. Understanding these trends help to guide policy and decision makers on how to address fertility issues, especially in rural areas and among less-educated women. The rural and urban socio-economic disparities led to uneven distribution of the national cake which constrained poor household resources and limited economic productivity, especially in rural settings where incomes tend to be lower and employment opportunities are rare. Fertility differentials observed imply that existing interventions and programmes in place in Tanzania since 1974 (Ujamaa villages) have not been effective especially in rural areas. It is likely to be major cause of regional and occupational fertility variations over time among women living in regions around Lake Victoria and Western areas However, existing policies (e.g., National population policy, 2006 and Health Policy, 2017) are silent on women lifetime fertility associated risks to the entire community in relation to human reproduction systems. The fact that fertility is negatively associated with women education and occupational status, there is a need to review the existing policies to integrate and mainstream efforts to educate women on how to improve their socio-economic welfare. Educating women to tertiary levels often encourages delayed marriage, provides reproductive health knowledge and increase women's participation in the workforce.

7.5 Adolescent Fertility

Adolescent fertility in Tanzania demonstrates significant variation across geographic, socio-economic, and educational contexts. The national Adolescent Fertility Rate (AFR) is higher in Mainland Tanzania (79 per 1,000) than in Zanzibar (25 per 1,000) with rural areas showing higher AFRs (95 per 1,000) than urban areas (45 per 1,000). Regional disparities on AFR revealed that Songwe has higher AFR (121 per 1000) while Mjini Magharibi has low AFR (19 per 1000). Adolescent fertility contributes 1.7% to the national Total Fertility Rate (TFR), with higher contributions in Mainland Tanzania (1.7%) compared to Zanzibar (0.5%). AFRs variations were determined by available socio-economic factors, education, employment opportunities and accessibility to healthcare services in respective areas. Education emerged as a critical determinant of adolescent fertility, with higher fertility rates observed among teenagers and households with lower educational attainment. Adolescents living in households headed with less income and uneducated individuals experienced early childbearing, which is associated with household poverty and limited access to opportunities. Marital status is a strong predictor of fertility, with ever-married adolescents experiencing significantly higher AFRs than never-married counterparts. This disparity reflects societal expectations, perceptions, limited reproductive healthcare and differences in socio-economic development between rural and urban areas.

The differential in AFR between Mainland Tanzania and Tanzania Zanzibar and between urban and rural areas, highlights partly the role of education in delaying adolescent childbearing. Policies should prioritize keeping girls in school longer including a “back to school” policy for girls who become pregnant. Additionally, the elevated AFR in rural areas, nearly double that of urban areas, calls for rural development interventions. Improving access to reproductive health services, family planning and economic opportunities for rural adolescents may reduce young age fertility rates. Community outreach programmes and mobile health services could bridge the urban-rural gap in access to health information and contraceptives. Since adolescent fertility correlates with poverty and the education level of the household head, policies that address socioeconomic disparities may help to lower AFR. Programmes aimed at improving household income, vocational training and skills development for young women in poor households could empower them economically and delay early childbearing. Addressing adolescent fertility requires a multifaceted approach for instance, prioritising and stating clearly the age and compulsory duration for girl child education in education policy, particularly in rural areas in regions with high-AFRs.

7.6 Lifetime Fertility

The trends of lifetime fertility in Tanzania have shown that childbearing is still embedded in culture and socio-economic development across regions. The phenomenon of having high parities is also still usual, for instance over 10% of women have parity 5 or above. Furthermore, proportion of childless women aged 45 – 49 years increased from 4.4 percent in 2012 to 5.2 in 2022. Percentage of childless women is relatively higher among urban women (6.2 percent) compared with rural women (4.6 percent). Childlessness is an indirect measure of the prevalence of sterility in a population, although it overestimates the actual prevalence of sterility because some of the childless women at the end of reproductive period may have not had children for reasons not related to physiological ability to become pregnant or to give birth. In addition, results show that the population of childless women who has not had any children by the time she reaches the end of her reproductive years, usually 45-49 years is increasing over time and vary across regions. It should be noted that, a high proportion of childless women suggests a possibility of low replacement because the capability of reproducing would now depend on women who can reproduce.

7.7 Existing Policy Gaps on Fertility Management in Tanzania

The existing policy on lifetime fertility for working or employed women provides employment entitlements to provision of social services such as health care, maternity/paternity leave and related services and is limited to four children of civil servants, either male or female.

This child limitation may impact future TFR and NRR, thus calling for a policy change to provide unlimited children benefits thus enabling employed couples to have unlimited fertility. Although childless women often experience poorer lifetimes physical and mental health outcomes, existing policies (e.g. National population policy, 2006 and Health Policy, 2017) are silent on women lifetime fertility and associated risks. Tanzania does not have a specific policy exclusively focused on childless women. However, the National Strategy for Gender Development and National Gender and Women Development Policy address various aspects of gender equality and women's rights, which can indirectly impact childless women. These aim at ensuring that gender perspectives are mainstreamed into all policies, programmes and strategies, promote equality and empowerment for all women, regardless of marital or parental status.

7.8 Policy Recommendations

7.8.1 Policy Recommendations for addressing the TFR

i) **Youth Reproductive Health Education**: Continue investing in reproductive health education targeted at young adults. Programmes should focus on informed family planning, early pregnancies health impacts, and safe reproductive choices resource availability.

ii) **Social Support Systems for Parents**: Expand social support programmes, including affordable childcare, parental counselling and young families' financial support. These services may reduce economic strain on parents and improve fertility.

iii) **Demographic and Economic Planning**: Policy makers should adopt a forward-looking approach to demographic planning, focusing on sustainable economic development. Housing, healthcare, education and infrastructure investment would accommodate gradual population growth resulting from broad fertility peak.

iv) **Broaden Reproductive Health Services**: Ensure availability and accessibility of reproductive health services and to women of 20 -34 years. This support may involve around increasing funding for maternal health clinics, family planning resources, and postnatal care.

v) **Flexible Work and Family Policies**: Encourage or mandate family-friendly policies in workplaces to accommodate working mothers. Initiatives could

include paid parental leave, flexible scheduling, remote work options and on-site childcare services.

vi) **Comprehensive Family Planning Programmes**: Strengthen family planning programmes that promote awareness and access to contraceptives, allow individuals to space births and manage family sizes according to personal circumstances. This approach could support women in balancing educational or career pursuits with family goals.

vii) **Strengthen education provision for Girls:** Implement programmes to keep girls in school longer including a “back to school” policy for girls who become pregnant and provide scholarships or vocational training for economic empower. This would improve socio-economic outcomes.

viii) **Fertility awareness counselling** to educate young women about age-related fertility declines and their implications.

7.8.2 Policy Recommendations to reduce the increasing percentage of Childless Women

i) Government and other stakeholders to strengthen counselling programmes to young women about age-related, declines in fertility and the costs to future population declines to the nation and succession rates of reproductive health

ii) Special programmes to enable women living in regions having alarming high percentage of childless women such as regions around Lake Victoria and Western parts to access reproductive health services at an affordable cost.

iii) The fact that fertility is negatively associated with education calls for more efforts to be made to educate women to equip them with informed choice of family size and enable them to improve their economic welfare.

iv) Provision of fertility awareness counselling to educate young women about age-related fertility declines and their implications, promote public awareness campaigns on infertility and its treatment options, encourage early health check-ups for couples planning to conceive.

v) Mental health and social support to integrate mental health services into reproductive health programmes to support women experiencing involuntary childlessness. Establish peer support groups for childless individuals to foster emotional well-being.

vi) Promote access to maternal and reproductive health services by providing affordable reproductive health services in regions with high childlessness rates.

vii) Increase the access and availability of infertility treatments, including in vitro fertilization (IVF) and counselling and promote family planning services.

viii) Monitor fertility trends by establishing data systems to track fertility trends, childlessness rates, and their underlying causes for evidence-based policy-making

ix) Targeted research by conducting studies to understand the drivers of increasing childlessness, including socioeconomic, cultural, and health factors, to guide interventions.

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Appendices

Appendix 1: List of Contributors

Contributors to the Fertility and Nuptiality Levels and Patterns in Tanzania:

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Appendix 2: Questionnaires

The United Republic of Tanzania

QUESTIONNAIRE FOR THE 2022 POPULATION AND HOUSING CENSUS

TANZANIA SENSA 23 Agosti 2022 Jiandae Kuhesabiwa

The Sixth Post Union Census

Strictly Confidential

This census is conducted in accordance with Section 6(2)(a) of the Statistics Act Cap. 351 || All responses collected in this census are protected under this Act

SECTION A: IDENTIFICATION

Region	District	Council	Constituency	Division/Wadi	Ward/Shehia	Village/Mtaa	Hamlet/Enumeration Area (EA)	Household Number	CONFIDENTIAL

A01 Please State the number all persons who Spent here at the Census Night

SECTION B: DEMOGRAPHICS INFORMATION

B01 No.	B02 HOUSEHOLD MEMBERS	B03 RELATIONSHIP TO THE HEAD							B04 SEX		B05 AGE	B06 MARITAL STATUS (APPLICABLE TO AGE 10+)							B07 MOBILE PHONE (AGE 15+)
	Please state the names of all persons who spent the census night, that is Monday night before Tueday 23rd August, 2022 in your household, starting with the name of the head of household. DO NOT FORGET TO INCLUDE ALL INFANTS, HOUSEHOLD MEMBERS WHO SLEPT IN A NEARBY FUNERAL AND THOSE WORKING NIGHT SHIFTS SUCH AS NURSES, DOCTORS, POLICE, GUARDS, ETC. WRITE DOWN FULL NAME OF EACH HOUSEHOLD MEMBER	What is the relationship of [NAME] to the head of the household?							Is [NAME] a male or a female?		How old is [NAME]? WRITE AGE IN COMPLETE YEARS. IF UNDER ONE YEAR WRITE "00" FOR 97 YEARS AND ABOVE WRITE '97'	What is current marital status of [NAME]? never married, married, living together, divorced, separated, widowed?							Please give the mobile number of [NAME]? WRITE THE MOBILE NUMBER OF ALL HOUSEHOLD MEMBERS AGED 15+.
		Head	Spouse	Son/Daughter	Biological Parent	Grand Child	Other Relative	Not Related	Male	Female		Never Married	Married	Living Together	Divorced	Separated	Widowed	Not Stated	
		1	2	3	4	5	6	7	1	2		1	2	3	4	5	6	9	
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03																			
04																			
05																			
06																			
07																			
08																			

SECTION A: IDENTIFICATION

Region	District	Council	Constituency	Division/Wadi	Ward/Shehia	Village/Mtaa	Hamlet/Enumeration Area (EA)	Household Number	CONFIDENTIAL

SECTION C: INFORMATION ON DISABILITIES/DIFFICULTIES

B01	C01 ALBINISM	C02 SEEING	C03 HEARING	C04 WALKING	C05 REMEMBERING	C06 SELFCARE
No.	Is [NAME] an albino?	Does (NAME) have difficulty seeing, even if wearing glasses?	Does (NAME) have difficulty hearing, even if using a hearing aid?	Does [NAME] have difficulty walking or climbing steps?	Does (NAME) have difficulty remembering or concentrating?	Does (NAME) have difficulty with self-care, such as washing all over or dressing?
	Yes (1) / No (2)	No Difficulty (1) / Some Difficulty (2) / A Lot of Difficulty (3) / Unable to See (4) / Not Applicable (5)	No Difficulty (1) / Some Difficulty (2) / A Lot of Difficulty (3) / Unable to Hear (4) / Not Applicable (5)	No Difficulty (1) / Some Difficulty (2) / A Lot of Difficulty (3) / Unable to Walk (4) / Not Applicable (5)	No Difficulty (1) / Some Difficulty (2) / A Lot of Difficulty (3) / Unable to Remember (4) / Not Applicable (5)	No Difficulty (1) / Some Difficulty (2) / A Lot of Difficulty (3) / Unable to Care (4) / Not Applicable (5)
01						
02						
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SECTION A: IDENTIFICATION

Region	District	Council	Constituency	Division/Wadi	Ward/Shehia	Village/Mtaa	Hamlet/Enumeration Area (EA)	Household Number	
									CONFIDENTIAL

SECTION C: INFORMATION ON DISABILITIES/DIFFICULTIES

B01	C07 COMMUNICATION	C08 OTHER DISABILITIES	C09 CAUSE OF DISABILITY	C10 ASSISTIVE DEVICES AND MATERIALS
No.	USING THE COMMON LANGUAGE: Does [NAME] have difficulty communicating; for example understanding or being understood?	Does, [NAME] have other type of disabilities/difficulties among the following? READ ALL TYPES OF DISABILITIES/ DIFFICULTIES TO RESPONDENT Yes = 1 | No = 2 | Don't know = 9	ASK FOR EVERY TYPE OF DISABILTY FROM C02 TO C07 IF CODE 3 OR 4 OR CODE 1 IN QUESTION C08 What is the cause of disability for [NAME]? MULTIPLE RESPONSE IS ALLOWED	ASK IF QC01 = 1 OR ANY QUESTION FROM QC02 TO Q07 = 3 OR 4 OR QC08 IS CODE 1 FOR B,C,D Does [NAME] has disability assistive devices or materials? Yes = 1 | No = 2

		No Difficulty	Some Difficulty	A Lot of Difficulty	Unable to communicate	Not Applicable	Cleft Palate	Hydrocephalus	Spinal bifida	Spinal cord injuries	Epilepsy or seizures	Psoriasis	Storiasis	Autism	Mental Health	Mental Disorder	Person with short stature	Leprosy	Person with hunchback	Other disability	Inborn	Disease	Accident	Old age	Beaten	Contaminated water	Stress	Drug abuse	Pregnancy/birth complications	
		1	2	3	4	5	A	B	C	D	E	F	G	H	I	J	K	L	M	X	A	B	C	D	E	F	G	H	I	
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SECTION A: IDENTIFICATION

Region	District	Council	Constituency	Division/Wadi	Ward/Shehia	Village/Mtaa	Hamlet/Enumeration Area (EA)	Household Number	CONFIDENTIAL

SECTION D: MIGRATION INFORMATION

B01	D01 CITIZENSHIP	D02 DUAL CITIZENSHIP	D03 PLACE OF RESIDENCE	D04 WHERE RESPONDENT SPENDS MOST OF THE DAY TIME	D05 PLACE OF BIRTH
No.	What is (NAME) country of citizenship? IF TANZANIAN, WRITE CODE 001 IF NON-TANZANIAN WRITE APPROPRIATE CODE, FOR DUAL CITIZENSHIP WRITE "888" ►IF THE ANSWER IS CODE OF RESPECTIVE COUNTRY GO TO DO3	What is (NAME) countries of citizenship? WRITE CODES FOR THE COUNTRIES MULTIPLE RESPONSE IS ALLOWED FISRT COUNTRY SECOND COUNTRY	Which region/country does [NAME] usually live? WRITE CODE FOR THE COUNTRY, REGION AND DISTRICT IF LIVING IN TANZANIA, OR COUNTRY CODE IF LIVING OUTSIDE TANZANIATHEN GO TO THE NEXT QUESTION	Where do you spend most of your time during the day? WRITE COUNTRY, REGION AND DISTRICT CODES IF SPENDS MOST OF THE DAY TIME IN TANZANIA OR COUNTRY CODE IF OUTSIDE TANZANIA THEN GO TO THE NEXT QUESTION CODES FOR THE 8th BOX Rural =1 Regional /District Headquarters =2 Other Urban= 3	In which region/country was [NAME] born? WRITE CODE FOR COUNTRY, REGION AND DISTRICT IF BORN IN TANZANIA OR COUNTRY CODE IF BORN OUTSIDE TANZANIA. IF COUNTRY OF BIRTH IS UNKNOWN WRITE "9999999" ►IF THE RESPONDENT WAS BORN IN THE REGION WHERE THE INTERVIEW IS TAKING PLACE GO TO D10
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0 4					
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0 6					
0 7					
0 8					

SECTION A: IDENTIFICATION

Region	District	Council	Constituency	Division/Wadi	Ward/Shehia	Village/Mtaa	Hamlet/Enumeration Area (EA)	Household Number	
									CONFIDENTIAL

SECTION D: MIGRATION INFORMATION

B01	D06 TIME OF ARRIVE	D07 LIVING PERIOD	D08 PREVIOUS RESIDENCE	D09 MAIN REASON FOR MIGRATION	D10 PLACE OF RESIDENCE IN YEAR 2012	D11 PLACE OF RESIDENCE IN YEAR 2021
No.	When did [NAME] arrive to live in this region/country? WRITE MONTH AND YEAR OF ARRIVAL OF A CURRENT PLACE MM YYYY	How long has [NAME] been living in this region/Country? WRITE COMPLETE YEARS. IF LESS THAN ONE YEAR WRITE "00"	Where was [NAME] living before coming here? IF IN TANZANIA WRITE CODE 01 FOR RURAL, 02 FOR URBAN AREA AND COUNTRY CODE FOR OUTSIDE TANZANIA AND IF COUNTRY IS UNKWOWN WRITE CODE 999	What was [NAME's] main reason for moving to this region/to Tanzania?	In which Region /Country was [NAME] living during 2012 census? WRITE CODE FOR THE COUNTRY, REGION AND DISTRICT IF LIVING IN TANZANIA, OR COUNTRY CODE IF LIVING OUTSIDE TANZANIA THEN GO TO THE NEXT QUESTION IF COUNTRY IS UNKOWN WRITE CODE 999 ►TO BE ASKED FOR PERSONS AGED 11 YEARS OR ABOVE	In which Region /Country was [NAME] living in 2021? WRITE CODE FOR THE COUNTRY, REGION AND DISTRICT IF LIVING IN TANZANIA, OR COUNTRY CODE IF LIVING OUTSIDE TANZANIA THEN GO TO THE NEXT QUESTION ► FOR CHILDREN AGED '00' DON'T ASK THIS QUESTION SKIP TO E01

				To take up a paid job	Job transfer	To look for work/green pasture/clients	Study/training	Marriage	Family moved/joining familiy	Medical treatment/health care	Conflict/insecurity/natural disater	Looking for suitable land for agriculture	Looking for suitable site for fishery activities	Looking for suitable grazing land	Cost of living	Moving into a new homestead	Visit friend/family	Conflict of Marriage/Family	Death of parent (s)	To be cared
				01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17
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SECTION A: IDENTIFICATION

Region	District	Council	Constituency	Division/Wadi	Ward/Shehia	Village/Mtaa	Hamlet/Enumeration Area (EA)	Household Number	
									CONFIDENTIAL

SECTION E: INFORMATION ON POSSESSION OF NATIONAL DOCUMENTS AND ORPHANHOOD

B01	E01 BIRTH CERTIFICATE, PASSPORT, AND HEALTH INSURANCE	E02 OTHER DOCUMENTS - FOR PERSON AGED 18+	E02F ENTREPRENEUR ID - FOR PERSON AGED 5+	E03 SURVIVAL OF PARENTS (APPLICABLE TO PERSONS BELOW AGE 18)
No.	Does [NAME] have the following Identification? Yes = 1 | No = 2 | Don't know = 9 QUESTION E01F SHOULD BE ASKED FOR A PERSON AGED 60 YEARS OR ABOVE	Does [NAME] have the following National Documents? Yes = 1 | No = 2 | Don't know = 9 ► IF D01 NOT TANZANIAN DON'T ASK CODE C, E AND F E02A1: IF A or B IS CODE 1, ASK, Please, mention National ID number of [NAME] E02C1: IF CODE C IS 1, ASK, Please, mention Zanzibar ID number of [NAME]	► IF D01 NOT TANZANIAN DON'T ASK THIS QUESTION Does [NAME] have small entrepreneur ID? Yes = 1 | No = 2 | Don't know = 9 IF CODE 2 OR 9 SKIP TO E03 E02F1: IF CODE 1, ASK, Please, mention Entrepreneur ID number of [NAME] IF ID IS NOT FOUND OR DOES NOT REMEMBER THE ID NUMBER WRITE CODE "999999999"	Is [NAME]'s Father alive? Is [NAME]'s Mother alive? Yes = 1 | No = 2 | Don't Know = 9

		Birth Certificate	Birth Notification	Travel Passport	National Health Insurance/ Community Health Insuarence	Other Health Insuarence	Card for elderly treatment	National ID (NIDA)	National ID Number (NIDA)	Zanzibar ID	Driving Licence	Voter's ID	FILL ID NUMBER		FILL ID NUMBER	Father	Mother
		A	B	C	D	E	F	A	B	C	D	E					
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0	3																
0	4																
0	5																
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0	8																

SECTION A: IDENTIFICATION

Region	District	Council	Constituency	Division/Wadi	Ward/Shehia	Village/Mtaa	Hamlet/Enumeration Area (EA)	Household Number	CONFIDENTIAL

SECTION F: EDUCATION INFORMATION - ALL PERSONS AGED 4 YEARS OR ABOVE

B01	F01 READING AND WRITING	F01A NUMERACY	F02 SCHOOL ATTENDANCE	F03 REASON FOR SCHOOL DROPOUT - 4 TO 24 YEARS	F04 LEVEL OF EDUCATION
No.	Can [NAME] read and write a short sentence in Kiswahili, English, Kiswahili and English or any other language? Kiswahili = 1 English = 2 Kiswahili and English = 3 Other Languages = 4 Illiterate = 5	Can [NAME] do a simple arithmetics addition, substraction, division or multiplication? Yes = 1 | No = 2	Is [NAME] currently attending, partially attended, completed or never attended school? Now attending =1 Partially attended =2 Completed =3 Never attended =4 ► IF CODE 1 OR 3 SKIP TO F04	What was the main reason for [NAME] school dropout/never attended? Financial Constraints (01); School too far away (02); Ill/Sick (03); Disability (04); Pregnancy (05); Truancy/Refusal (06); Indispine behaviour /Expulsion (07); To work/looking for work (08); Caring for the sick/children (09); Marriage (10); Difficulty/dangerous environment (11); Unfriendly infrastructure (12); Not started school (13)	► ASK IF F02 CODED 1, 2 OR 3 What level of education has [NAME] completed or is currently attending? WRITE THE APPROPRIATE CODE
01					
02					
03					
04					
05					
06					
07					
08					

CODES FOR F03

Education level	Code
Pre Primary	00
Std 1	01
Std 2	02
Std 3	03
Std 4	04
Std 5	05
Std 6	06
Std 7	07
Std 8	08

Secondary Education

Education level	Code
Pre form one	18
Form 1	09
Form 2	10
Form 3	11
Form 4	12
Form 5	13
Form 6	14

Education after Primary/Secondary School

Education level	Code
University and other related	15
Training after Primary Education	16
Training after secondary education	17
Unit (People with mental disabilities/mental health disabilities)	19

SECTION A: IDENTIFICATION

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SECTION G: INFORMATION ON ECONOMIC ACTIVITY - ALL PERSONS AGED 5 YEARS OR ABOVE

B01	G01 WORK DURING LAST WEEK	G02 TEMPORARY ABSENCE	G03 SEEKING WORK	G04 AVAILABLE TO WORK
No.	During the period of Last week, which of the following work/activity did [NAME] do for many hours? ENUMERATOR: READ CATEGORIES	Even though [NAME] did not work last week, did [NAME] have a paid job,or any kind of business, or farming or other activity to generate income that you were absent from and definitely you will return to? EXAMPLES OF TEMPORARY ABSENCE • WAGE JOBS: LEAVE, STOOD DOWN, ILLNESS, STUDY LEAVE BUT STILL ATTACHED TO A JOB • BUSINESS/AGRIC: TEMPORARY ABSENCES WHILE ACTIVITY CONTINUES DURING THAT ABSENCE; • UNPAID WORKERS AND CASUAL WORKERS SHOULD NOT BE INCLUDED UNDER TEMPORARY ABSENT.	Did [YOU/NAME] taken any steps during the past four weeks to look for a paid job or start a business or an activity to generate income?	At present are [YOU/NAME] available to take up a paid job,or do any kind of business, farming or any activity to generate income if such opportunity arises?
	To take up a paid job (1) Do activity or business for generate income/help a family member in paid job or business? (2) Work or help in family agricultural activities including crop farming, livestock or fishing? (3) Own account work - Prepare or preserved food or drinks for storage/Construction work or help a family member with similar (4) Did not do any work or activity (5)	Yes . . . . . 1 No 2	Yes (1) No (2)	Yes (1) No (2)
	► IF CODE 1, 2, 3 OR 4 SKIP TO G05	► IF CODE 1 SKIP TO G05		► FOR ANY ANSWER SKIP TO G08
0 1				
0 2				
0 3				
0 4				
0 5				
0 6				
0 7				
0 8				

SECTION A: IDENTIFICATION

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SECTION G: INFORMATION ON ECONOMIC ACTIVITY - ALL PERSONS AGED 5 YEARS OR ABOVE

B01	G05 OCCUPATION		G06 OWNER OF THE ENTERPRISE											G07 MAIN ECONOMIC ACTIVITY		G08 MINING AND QUARRYING ACTIVITY								G09 EMPLOYMENT STATUS				
No.	ENUMERATOR: THE FOLLOWING QUESTIONS ARE ABOUT [NAME'S] MAIN JOB OR BUSINESS. YOUR MAIN JOB IS THE ONE ON WHICH YOU USUALLY SPEND MOST OF YOUR WORKING TIME INCLUDING THOSE WHO WERE TEMPORARY ABSENT In main job, what kind of work does [NAME] usually do? WRITE OCCUPATION FULLY OR AT LEAST IN TWO WORDS		In your main work, who is the owner of the enterprise?											What is the main activity of the business or place where [NAME] work[s]? WRITE ACTIVITY FULLY OR AT LEAST IN TWO WORDS		During the period of 12 Months that is from August 2021 to the day before the census Night, Did [YOU/NAME] work on the following mining or quarrying activities? ► IF CODE "Z" SKIP TO QN. G10 READ RESPONSES								In [YOUR/NAME's] job, [do/does] [YOU/NAME] work as....?				
	DESCRIPTION	TASCO CODES	Central Government	Local Government	Parastatal Organization	NGO,religious organisation, political party, Non-profit institution	International organization or foreign embassy	Private business (non-farm)	Registered partnership or cooperative	Own or familily farm	Household(s) domestic worker	Household - Other economic activities	Other Private	DESCRIPTION	ISIC CODES	Tanzanite	Gold	Diamond	Sands	stone/gravel	Other precious gems	Other non-precious gems	Not Applicable	Paid Employee	Self Emplyed without employees	Self employed with employees	casual worker	Workers not clasifiable by status
			01	02	03	04	05	06	07	08	09	10	11			A	B	C	D	E	F	G	Z	1	2	3	4	5
01																												
02																												
03																												
04																												
05																												
06																												
07																												
08																												

SECTION A: IDENTIFICATION

Region	District	Council	Constituency	Division/Wadi	Ward/Shehia	Village/Mtaa	Hamlet/Enumeration Area (EA)	Household Number	CONFIDENTIAL

SECTION G: INFORMATION ON ECONOMIC ACTIVITY - ALL PERSONS AGED 5 YEARS OR ABOVE

B01	G10 AGRICULTURAL ACTIVITIES						G11 TYPES OF CROPS		G11A LEGAL RIGHT OVER THE OWNERSHIP								G12 TYPES OF LIVESTOCK				G13 TYPES OF FISHERY AND ACQUACULTURE		G14 TYPES OF FOREST TREES	
No.	Does [NAME] involved in agricultural activities during 2021/22 agricultural year? MULTIPLE RESPONCE IS ALLOWED ► IF CODE Z SKIP TO QN. G15						Fill Crop Type Codes (At most two)		What legal right do you have over the ownership of the land used for crop production in the aagricultural year 2021/22?								Fill Livestock Type Codes (At most two)				Fill Capture Fishery, Acquaculture Activity and Sea Weeds production Codes (At most two)		Fill Forestry/Tree Activity Type Codes (At most two)	
	Crop Farming A	Livestock Keeping B	Capture Fishery and Acquaculture (Fish farming, Crab, Sea Weeds production etc) C	Forestry/Tree Activity D	Not Applicable Z		FIRST CROP	SECOND CROP	Title deed A	Customary law B	Contract C	Rented D	Share cropped E	Land under other forms of tenure F	Doesnot own G	Don't know Z	1st LIVESTOCK	2nd LIVESTOCK			1st ACTIVITY	2nd ACTIVITY	1st ACTIVITY	2nd ACTIVITY
0 1																								
0 2																								
0 3																								
0 4																								
0 5																								
0 6																								
0 7																								
0 8																								

Codes for COL. G11

Maize	11	Field peas	37	Banana	71	soursop	215	Seaweed	19
Paddy	12	Fiwi	101	Avocado	72	Rassberry	216	Cashew nut	46
Sorghum	13	Sunflower	41	Mango	73	flower	217	Tobacco	51
Bulrush Millet	14	Sesame	42	Papaw	74	Lime	851	Pyrethrum	52
Finger Millet	15	Groundnut	43	Pineapple	75	Lemon	852	Sisal	53
Wheat	16	Palm Oil	44	Orange	76	Cabbage	86	Coffee	54
Barley	17	Coconut	45	Grapes	78	Spinach	88	Tea	55
Cassava	21	Soyabeans	47	Mandarin	79	Carrot	89	Cocoa	56
Sweet Potatoes	22	Caster seed	48	Guava	80	Chilies	90	Rubber	57
Irish potatoes	23	Cotton	50	Plums	81	Amaranths	91	Sugar cane	60
Yams	24	Malay apple	38	Apples	82	Pumpkins	92	Cardamom	61
Cocoyams	25	Bread fruit	67	Pears	83	Cucumber	93	Jute	62
Onions	26	Jack fruit	69	Peaches	84	Egg Plant	94	Cinnamon	64
Ginger	27	Passion Fruit	70	Durian	97	Water Mellon	95	Clove	66
Garlic	28	Solanum Nigrum	903	Rambutan	99	Cauliflower	96	Olive	110
Beans	31	collard greens	904	Custard Apple	200	Okra	100	Green Tomato	300
Cowpeas	32	Grapefruit	77	God Fruit	201	Coriander seed	102	Lemon grass	307
Green gram	33	Pomelo	68	Plum	203	Tomatoes	871	Other	998
Pigeon pea	34	Bilimbi	98	Date	210	White eggplant	872	Pumpkin leaves	906
Lentils	35	Star fruit	39	Vanilla	212	Green pepper	901	Black Pepper	18
Bambara nuts	36	Nutmeg	65	Strawberry	213	Brocol	905	Not applicable	999

Codes for COL. G12

Cattle	1
Goat	2
Sheep	3
Pig	4
Horse	5
Donkey	6
Chicken	7
Duck	8
Turkey	9
Rabbit	10
Other livestock	98
Not Applicable	99

Codes for COL. G13

Capture Fishery	1
Acquaculture (fish farming, crab, etc exclude sea weed)	2
Sea Weed Production	3
Not Applicable	9

Codes for COL. G14

Bee Keeping	1
Production of Seedling	2
Tree Plantation	3
Forest Product	4
Gathering and Hunting	5
Other forestry activities	8
Not Applicable	9

SECTION A: IDENTIFICATION

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SECTION G: INFORMATION ON ECONOMIC ACTIVITY - ALL PERSONS AGED 5 YEARS OR ABOVE

B01	G15 INFORMAL ECONOMIC ACTIVITIES	G16 ECONOMIC ACTIVITY		G17 BUSINESS LOCATION	G18 MACHINGA UNION FEDERATION - SHIUMA MEMBERSHIP	G19 CURRENT CAPITAL (TZS)								G20 MAIN SOURCE OF CAPITAL												
No.	Does [NAME] engage in any informal economic activitiy? Yes = 1 | No = 2 ►IF CODE 2 SKIP TO H01	What is the main activity of [NAME]'s business? WRITE ACTIVITY FULLY OR AT LEAST IN TWO WORDS		In which area does [NAME] mostly work?	Is [NAME] a member of Machinga Union Federation (SHIUMA)? Yes = 1 | No = 2	Currently, how much capital does [NAME] have?								What is the main source of [NAME]'s capital?												
		DESCRIPTION	ISIC CODE			Less than 10,000	10,000 - 49,999	50,000 - 99,999	100,000 - 199,999	200,000 - 499,999	500,000 - 999,999	1,000,000 - 9,999,999	10,000,000 or more	Own sources (Personal savings from salary/crops	Government assistance	Loan from Government	TASAF	Private persons assistance (friends,	Donor Assistance/Loan	Loan from Banks	Loan from Pension Funds (PSSSF, NSSSF, etc)	Loan from Cooperatives associations	Employer Assistance	Loan from Employer	Loan from SACCOS/VICOBA	Loan from SHIUMA
						1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	9	10	11	12	13
0 1																										
0 2																										
0 3																										
0 4																										
0 5																										
0 6																										
0 7																										
0 8																										

CODES FOR QUESTION G17

WITHOUT PERMANENT PRIMISES

Hawking/mobile	01
Improvised post on the roadside	02
Permanent post on the roadside	03
Vehicle, motor bike, Tricycle, Bicycle	04
Customer's home	05
In my own/partner's home without special installation	06
Online bussiness	07
Improvised post in a market	08
Garbage area	09
Construction sites	10
Other without permanent premises	11

WITH PERMANENT PRIMISES

Permanent premises in a market (shop, kiosk, shed)	12
Workshop, shop, restaurant, hotel	13
Taxi station in permanent structure/ Public transport with fixed route	14
Bicycle /Boda boda/ Tricycle stations	15
Mining site	16
Farm/fishing or grazing area	17
Industrial area	18
Other area with permanent premises	19
In my own/partner's home with special installation	20

SECTION A: IDENTIFICATION

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									CONFIDENTIAL

SECTION H: LAND OWNERSHIP AND INFORMATION REGARDING ICT

B01	LAND OWNERSHIP - ALL PERSONS										INFORMATION REGARDING ICT - 4 YEARS OR ABOVE																	
No.	H01 OWNERSHIP OF LAND					H02 TITLE DEED					H03 EQUIPMENTS OWNERSHIP				H04 EQUIPMENTS USED				H05 EQUIPMENT USE									
	Does [NAME] own any agricultural or non agricultural land either alone or jointly with someone else? ► IF THE ANSWER IS 4 OR 9 SKIP TO H03					Does [NAME] have title deed with his/her name on it?					Did [NAME] own the following equipments in the past 3 months? YES = 1 | NO = 2 | Don't Know = 9				Did [NAME] use the following equipments in the past 3 months? Yes = 1 | No = 2 | Don't Know = 9 ► IF CODE 2 OR/AND 9 FOR ALL, SKIP TO QN. I01				In which of the following activities did [YOU/NAME] you use the equipments? Yes = 1 | No = 2 | Don't Know = 9 READ ALL CATEGORIES									
	Alone	Jointly	Both alone and jointly	Does not own	Don't Know	Alone	Jointly	Both alone and jointly	No title deed	Don't Know	Smart phone/Tablet	Mobile phone	Desktop	Laptop	Smart phone/Tablet	Mobile phone	Desktop	Laptop	Communication	Search/receive information	Online buisness	Learning	Playing games/Entertainment	Sending and receiving money				
	1	2	3	4	9	1	2	3	4	9	A	B	C	D	A	B	C	D	A	B	C	D	E	F				
01																												
02																												
03																												
04																												
05																												
06																												
07																												
08																												

SECTION A: IDENTIFICATION

Region	District	Council	Constituency	Division/Wadi	Ward/Shehia	Village/Mtaa	Hamlet/Enumeration Area (EA)	Household Number	CONFIDENTIAL

SECTION I:INFORMATION ON FERTILITY - FEMALES AGED 10 YEARS OR ABOVE

B01		CHILDREN EVER BORN - CHILDREN SURVIVING			FERTILITY IN LAST 12 MONTHS FOR WOMEN AGED 10 TO 49 YEARS
No.	I01 BIRTH	I02 BORN ALIVE IN HOUSEHOLD	I03 BORN ALIVE LIVING ELSEWHERE	I04 CHILDREN DIED	I05 CHILDREN BORN ALIVE
	Have you ever given live birth? Yes = 1 | No = 2 ► IF CODE "2" SKIP TO I04	How many male/female children were born alive to [NAME] and are now living with you/her in this household? IF SHE IS NOT LIVING WITH ANY OF HER CHILDREN WRITE "00"	How many male/female children were born alive to [NAME] and are now living elsewhere? IF SHE HAS NO CHILDREN LIVING ELSEWHERE WRITE "00"	How many male/female children were born alive to [NAME] and are now unfortunately dead? IF NONE OF HER CHILDREN HAS DIED WRITE "00" ► IF QN 101 = 2 AND IO4 = 0 SKIP TO J01	How many of the male/female children who were born alive to [NAME] in the last 12 months? (22 AGOST, 2022 BACK TO 23 AGOST, 2021) IF THERE IS NO CHILD SURVIVING WRITE "0" ► IF THERE IS NO CHILD BORN ALIVE IN THE LAST 12 MONTHS WRITE "0" THEN GO SECTION J. DON'T ASK FEMALES AGED 50 YEARS OR ABOVE
		MALE FEMALE	MALE FEMALE	MALE FEMALE	MALE FEMALE
0 1					
0 2					
0 3					
0 4					
0 5					
0 6					
0 7					
0 8					

SECTION A: IDENTIFICATION

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SECTION J: INFORMATION ON GENERAL AND MATERNAL DEATHS IN THE HOUSEHOLD

PLEASE RECORD INFORMATION ON DEATHS THAT OCCURRED IN THE HOUSEHOLD DURING THE LAST 12 MONTHS. DO NOT FORGET CHILDHOOD MORTALITY

J01 Was there any death which occurred in this household during the last 12 months? (i.e. 22 AUGUST 2022 - 23 AUGUST 2021)

Yes = 1 | No= 2 ☐

► IF THE ANSWER IS NO, SKIP TO SECTION K

J02 How many number of death occurred in this household during the last 12 months

RECORD THE NUMBER OF DEATHS ☐☐

J03	SEX AND AGE OF DECEASED; AND CAUSE OF DEATH			IF DEATH IS OF A WOMAN AGED 10 TO 49 YEARS			
Death Serial Number	J04 SEX OF DECEASED	J05 AGE OF DECEASED	J06 CAUSE OF DEATH	J07 DURING PREGNANCY	J08 DURING CHILDBIRTH	J09 DURING SIX WEEKS	J10 PLACE OF DEATH
	Was the deceased a male or a female? Male =1 Female =2	How old was the deceased at the time of death? WRITE AGE IN COMPLETE YEARS. IF UNDER ONE YEAR WRITE "00" IF 97 YEARS OR ABOVE WRITE '97'	What was the main cause of death?	Did the death occur during pregnancy? Yes = 1 No = 2 ► IF CODE 1 SKIP TO QUESTION J10	Did the death occur during childbirth? Yes = 1 No = 2 ► IF CODE 1 SKIP TO QUESTION J10	Did the death occur during the 6 weeks period following the end of pregnancy, irrespective of the way the pregnancy ended? Yes = 1 No = 2	ASK IF QJ07 OR J08 OR J09 = 1 Did this death occurred at home or in health facility? Home = 1 Health facility = 2 On the way = 3
			Road Accident (1) / Other Accidents (2) / Suicide (3) / Domestic Violence/Homicide (4) / Sickness/Disease (5) / Martenal Death (6) / Killed (7) / Unspecified reasons (8)				
01							
02							
03							
04							
05							
06							
07							
08							

SECTION A: IDENTIFICATION

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SECTION K: HOUSING OWNERSHIP, CONDITIONS, CHARACTERISTICS AND ASSETS

K01 OWNERSHIP OF THE HOUSE/BUILDING

What is the ownership status of the main dwelling used by this household?

► IF CODE 2 or ABOVE SKIP TO K03

1	Owned by household
2	Lived in without paying any rent
3	Rented privately
4	Rented by employer
5	Rented by Government at susdize rent
6	Owned by employefr - free of charge
7	Owned by employer - with rent

K02 LEGAL RIGHT OVER THE OWNERSHIP

What legal right do you have over the ownership of this land where your house is built?

1	Title deed
2	Residential licence
3	Letter of offer/Acknoleggement of payments
4	Customary ownership
5	Contract
6	Land Registration Card (Zanzibar)
7	Official document from Mtaa/Kijiji/Shehia
8	No legal right

K03 ROOFING MATERIALS

What is the main roofing material used for the main building of this household?

1	Iron sheets
2	Tiles
3	Concrete
4	Asbestos
5	Grass/Leaves
6	Mud and Leaves
7	Plastics/Box
8	Tent

K04 FLOORING MATERIALS

What is the main flooring material used for the main building of this household?

1	Cement
2	Ceramic tiles
3	Parquet or Polished wood
4	Terazzo
5	Vinyl or Asphalt strips
6	Wood Planks
7	Palm/Bamboo
8	Earth/Sand
9	Dung
10	Tent/Containers

K05 WALL MATERIALS

What is the main wall material used for the main building of this household?

1	Stones
2	Cement bricks/rock bricks
3	Sundried bricks
4	Burnt bricks
5	Timber
6	Timber and Sheets
7	Poles and mud
8	Grass
9	Glass/Aluminium
10	Tent/Containers

K06 ROOMS FOR SLEEPING

How many rooms are available for sleeping in this household?

RECORD NUMBER OF ROOMS FOR SLEEPING

K07 MAIN SOURCE OF DRINKING WATER

What is the main source of drinking water for this household?

01	Piped water into dwelling
02	Piped water in the yard/plot
03	Public tap/standpipe
04	Neighbours tap/standpipe
05	Tubewell/borehole
06	Protected dug well
07	Unprotected dug well
08	Protected spring
09	Unprotected spring
10	Rain water
11	Bottled water
12	Bicycle/Motorcycle/Cart with small tank/drum
13	Tanker truck
14	Surface water (river, dam, lake, pond, stream,charco, canal, irrigation channels)

K08 MAIN SOURCE OF ENERGY FOR COOKING

What is the main source of energy used by this household for cooking?

01	Electricity (TANESCO/ZECO)
02	Solar
03	Generator/private sources
04	Gas
05	Biogas
06	Wind generated Electricity
07	Paraffin
08	Coal
09	Charcoal
10	Firewood
11	Wood/ residuals
12	Animal residuals
13	Charcoal briquette
99	Not Applicable

SECTION A: IDENTIFICATION

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SECTION K: HOUSING OWNERSHIP, CONDITIONS, CHARACTERISTICS AND ASSETS

K09 What is the main source of energy used by this household for lighting?

01	02	03	04	05	06	07	08	09	10	11	12	13
Electricity (TANESCO/ZECO)	Solar	Generator (private source)	Gas (Industrial)	Gas (Biogas)	Wind generated Electricity	Acetylene lamp	Kerosene (lantern/chimney)	Kerosene (Wick lamps)	Candles	Firewood	Torch/Chines lamp	Electricity (Generated from plant residues)

K10 What is the main type of toilet facility used by this household?

01	02	03	04	05	06	07	08	09	10	11
Flush/pour flush to piped sewer system	Flush/pour flush to septic tank	Flush/pour flush to covered pit	Flush/pour flush to somewhere else	Ventilated improved pit (VIP) latrine	Pit latrine with washable slab and with lid	Pit latrine with washable slab without lid	Pit latrine with not-washable/ soil slab	Pit latrine without slab/ open pit	Bucket	No facility/bush/field/ beach

K11 How does the household dispose solid waste?

► IF RESPONSE IS CODE 3-9 SKIP TO K13

01	02	03	04	05	06	07	08	09
Regularly collected	Irregularly collected	Burnt	Roadside dumping	Burying/pit	Open space	Ocean/Lake/River/Shores	In the farm/manure	Bush/ravine

K12 Which authorities usually collect waste from your household?

1	2	3	4
Contractor	Waste collecting groups	Council	Private Individual(s)

K13 Does your household usually sort kitchen waste, plastic waste, glass waste, metal waste and electronic waste?

YES = 1 | NO = 2

K14 What is the main method that is used by your household to dispose E-Waste?

1	2	3	4	5	6	7	8	9
Mixed with other Refused	Collected by Government	Collected by Private Company	Dumped in the compound/street	Dumped in the Latrine	Burnt in open/pit	Buried	Sold/given as gift	Collected by individual (s)

K15 OWNERSHIP OF EQUIPMENTS/ASSETS

Does your household have/own the following assets?

Yes = 1 | No = 2

FOR CODE 1, ASSETS SHOULD BE IN WORKING CONDITION. SELECT THE APPROPRIATE ANSWER FOR EACH ITEM

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y
Radio	Telephone (Land Line)	Mobile Phone	Bicycle	Motor vehicle	Motorcycle/Vespa	Tricycle (Guta)	Tri motorcycle (Bajaj)	Television	Electric Iron	Charcoal Iron	Cooker (Electric or Gas)	Refrigerator/Freezer	Computer /Laptop	Internet Facility	Plough	Power tiller	Hand hoe	Wheelbarrow	Oxen	Draft animals (Donkey/Camel)	House	Land/Farm	Tractor	Don't have/own

SECTION A: IDENTIFICATION

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SECTION L: INFORMATION ON AGRICULTURE, LIVESTOCK, FISHERIES AND FORESTRY

L01 AGRICULTURE

Did this household use the land for crop production in the agricultural year 2021/22?

Yes = 1 | No = 2 ☐

► IF CODE 2 SKIP TO L03

IF CODE 1, how many acres is the land used for agriculture?

LAND FOR CROP PRODUCTION SHOULD BE AT LEAST 25 SQUARE METERS

L02 CROPS

Which of the following crops did the household grow during 2021/22 agricultural year?

MULTIPLE RESPONSE IS ALLOWED

Yes = 1 | No = 2

Maize	Paddy	Cassava	Banana	Sunflower	Other food crops	Cash crops
A	B	C	D	E	F	G

L03 LIVESTOCK

Did this household raise or care cattle, goats, sheep or poultry for the agricultural year 2021/22?

Yes = 1 | No = 2 ☐

► IF CODE 2 SKIP TO L06

L04 NUMBER OF LIVESTOCK

How many cattle, goats, sheep, pig, donkey or poultry were available during the Census night

IF NO LIVESTOCK , WRITE CODE "00000"

Cattle	
Goat	
Sheep	
Pig	
Donkey	
Poultry	

L05 TYPE OF GRAZING

What type of grazing is practiced in this household?

Free range = 1
Zero grazing = 2
Ranch = 3
Pastoralism = 4

THIS QUESTION SHOULD BE ASKED FOR EACH TYPE OF LIVESTOCK MENTIONED IN QUESTION L04

Cattle	
Goat	
Sheep	
Pig	
Donkey	
Poultry	

L06 FISHING/SEAWEED FARMING

Did this household engaged in fishing/fish farming/Sericulture/crabs/seaweed farming activities for the agricultural year of 2021/22?

MULTIPLE RESPONSE ALLOWED

Yes = 1 | No = 2

A	Fishing	
B	Fish farming/Sericulture/Crabs	
C	Seaweed farming	

L07 OWNERSHIP OF PLANTATION

Did this household operate any land for woodlot(s) during 2021/22 agricultural year?

Yes = 1 | No = 2 ☐

LAND FOR WOODLOTS SHOULD BE AT LEAST 0.5 ACRES

L08 BEEKEEPING

Is there any person in this household involved in beekeeping business/activity?

Yes, individually = 1 | Yes, in groups = 2 I No= 3 ☐

SECTION A: IDENTIFICATION

Region	District	Council	Constituency	Division/Wadi	Ward/Shehia	Vilage/Mtaa	Hamlet/Enumeration Area (EA)	Household Number	CONFIDENTIAL

INFORMATION ON PHYSICAL ADDRESS

A01A	Does this household have a physical address?	Yes = 1 | No = 2	▶ IF CODE 2 SKIP TO SECTION Z	
A01B	Please, state the Physical Address Number			
A01C	Name of the Road/Hamlet			

SECTION Z: TOTAL NUMBER OF HOUSEHOLD MEMBERS

Male	
Female	
Total	

Date of Interview D D M M Y Y Y Y

Appendix 3: Methodology for Estimating Fertility Data

Estimation and Adjustment of the 2022 PHC Fertility Data

Estimation of fertility levels for Tanzania and its regions from the 2022 census is based on reported live births by age of mother in the 12 months preceding the census and reported number of children ever born by age of mother. However, given the limitations of the 2022 census data explained in chapter one of this document, several indirect methods were used to estimate adjusted fertility indicators to evaluate the direct estimates of age-specific and total fertility rates based on births in the year preceding the census. Finally, a decision about the most plausible level of fertility in Tanzania and its regions in 2022 has been informed by review of estimated fertility levels and trends based on the 2002 and 2012 censuses; nationally representative Demographic and Health Surveys undertaken in 1991, 1996, 1999, 2004-5, 2010, 2015-16 and 2022 (TDHS-MIS); and the 2007-08 Tanzania HIV/AIDS and Malaria Indicator Survey (THMIS).

Direct Estimates of Age-specific and Total Fertility Rates

The fertility rates are based on reported births in the year preceding the census may be subject to misreporting due to the reference period or underreporting or over-reporting for other reasons. Analysis of fertility data from censuses conducted in Tanzania and in other countries has historically involved indirect estimation for assessing data quality, inferring trends, and adjusting fertility levels if appropriate. Five indirect techniques were used to derive alternative fertility estimates from the 2022 census. These techniques are Brass's P/F ratio, Brass's relational Gompertz method, a synthetic intercensal Brass P/F ratio method, Arriaga's two-census (Arriaga et al 1994: 207-211; United Nations 1983: chapter 2) and the own-children (East-West Center 1992).

The P/F ratio and relational Gompertz methods use reported births and children ever born from one census and assume that fertility is relatively stable over the 15 to 20 years preceding the inquiry. The synthetic P/F ratio and Arriaga techniques use data from two censuses to allow for changing fertility during an intercensal period. Each of these methods makes other assumptions about the data used in estimation, including accurate age reporting by women and roughly consistent reporting of births and children ever born by women in each 5-year age group (15 to 49). The own-children technique relies on children and mothers tabulated by age of children and age of mother plus an estimate of mortality level and pattern in the population. The technique estimates births during the fifteen years preceding the census from surviving children at different ages and age-specific fertility rates

by matching these births to a population of women survived by enumerated women from the census.

The P/F Ratio Technique

Brass's P/F ratio method is widely used in estimating fertility when the quality of available census data is unknown or suspect. The P/F ratio technique adjusts an age-specific fertility pattern to a level of fertility derived from comparison of information on children ever born (parity, P) and cumulated age-specific fertility (F). Underlying the method is the empirical observation that respondents, when asked about their fertility, are likely to provide reports which may contain at least two types of errors: (1) in responding to the question on children ever born, older women commonly omit some births, possibly a high proportion of the dead rather than the living children, so that the average parities of women 45-49 cannot be used to measure completed fertility without some allowance for this omission; and (2) over or under-representation of births in the 12 months preceding the census on the part of all women of reproductive age, even though the information on live births in the 12 months preceding the census generally provides a fair idea of the age pattern of fertility.

The P/F ratio method provides a useful check on the quality of directly estimated age-specific and total fertility from census data provided that (1) the distribution of numbers of children ever born is the same for women who report and those who did not report, and (2) fertility has been constant. If fertility has not been constant but rather, declining, the results of the technique may be biased upward.[1] In analysing the 2022 census, the ratio of parity to cumulated fertility for women ages 25-34 was used to adjust all reported age-specific fertility rates because women in the age group 25-34 are less likely than older women to have memory lapse in reporting their ages and the number of their children. Brass's P/F Ratio technique yields an estimate of 5.2 births per woman, or 2.0 births per woman more than the reported total fertility rate, for the period preceding the 2022 census. (Appendix 3.1)

[1] *In addition, underreporting of children ever born will cause a downward bias in the adjusted estimates. Children who died in infancy (especially in very early infancy), as well as those living away from home, are the births most likely to be omitted, especially by older women. Over-reporting of children ever born will cause an upward bias in the adjusted estimates. Over-reporting of children can sometimes occur when stillbirths, late foetal deaths, or adopted children are mistakenly included. In addition, if the pattern of fertility taken as the "actual" pattern contains errors, the estimated age-specific fertility rates will be incorrect. This may also affect the level of the total fertility rate (Arriaga, 2012:246).*

The Relational Gompertz Technique

The relational Gompertz technique also estimates total fertility rates based on information on the number of children ever born by age of mother and a pattern of fertility (Brass, 1981). The technique uses the Gompertz function, which closely follows the pattern of cumulative fertility rates (Arriaga, 1994). Once the total fertility rate has been estimated, an age-specific fertility rate pattern can be adjusted to the estimated level as measured by that total fertility rate. The relational Gompertz technique applied to data from the 2022 census indicates a total fertility rate of 5.1 (Appendix 3.1).

Arriaga's Technique

Arriaga's technique (for two dates) was also used to estimate fertility. This technique uses average numbers of children ever born in two censuses, and the change in children ever born between the two censuses for women in each age group, to obtain a set of age-specific fertility rates and a total fertility rate for the period immediately following the first census and for the period immediately preceding the second census. Since the technique does not assume that fertility is constant, it can provide an estimate of fertility when it has been changing. Arriaga's technique, which provided the TFR estimate was accepted as the best estimate for the 2012 census, indicates that total fertility in 2022 is 4.6 children per woman. This is an implied decrease of about 0.9 children per woman (Appendix 3.1).

The synthetic relational Gompertz Technique

The synthetic relational Gompertz model is an extension of the relational Gompertz method for the estimation of age-specific and total fertility and makes use of two sets of parity data, collected at different points in time, together with estimates of current fertility for the intervening period based on reports of recent births classified by age. The method explicitly allows changes in fertility to be taken into account and is designed to be applied to censuses or surveys conducted either 5 or 10 years apart. TFR as measured by synthetic relational Gompertz technique is 5.2 (Appendix 3.1).

The Own-Children Technique

This technique provides estimates of age-specific and total fertility for each of 15 years preceding the inquiry using matched children and their mothers, the ages of those children and mothers, and an index of mortality to reverse-survive children and mothers. Census data on births and children ever born are not required by this method. The own-children

technique estimate of TFR from the 2022 census is slightly lower -- between 5.1 (mean value for 2016-2020) and 5.4 (mean for 2007 to 2009) using an estimate of life expectancy at birth of 60 years and Coale-Demeny North model mortality (Appendix 3.1).

Determination of a Most Likely Estimate of Fertility for 2022

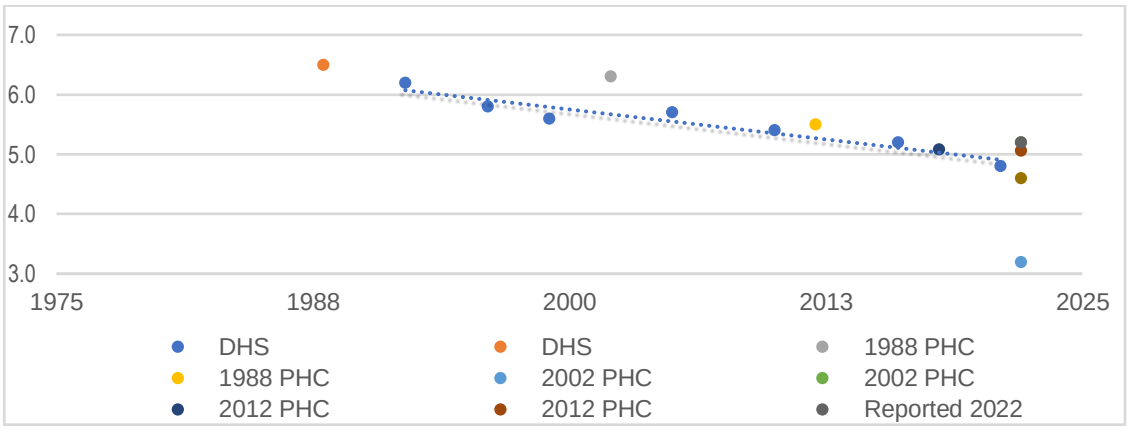
Age-specific and total fertility rates from the 2012 and 2022 censuses either directly estimated from reported births during the 12 months preceding the census or as indirectly estimated using each of the methods discussed. The range of TFR estimates for 2022 is 3.2 children per woman (reported) to 5.2 children per woman (P/F ratio and synthetic rGompertz techniques). The reported TFR level of 3.2 is likely to be too low, reflecting a history of underreporting of births in Tanzanian censuses, but some additional information may be useful in making a choice of most likely TFR level for 2022 (Appendix 3.1).

Appendix 3.1: Summary of Results of Methods Used to Determine Total Fertility Rates from the 2012 and 2022; Tanzania, 2012 and 2022 PHCs

Age	Reported		Brass P/F Ratio		Relational c Gompertz		Arriaga*		synthetic rGompertz	Own children
	2012	2022	2012	2022	2012	2022	2012	2022	2012-22	2016-20
15-19	0.072	0.045	0.113	0.089	5.884	0.104	0.095	0.077	0.114	0.091
20-24	0.203	0.137	0.275	0.231	5.859	0.207	0.237	0.206	0.194	0.198
25-29	0.221	0.143	0.289	0.234	5.897	0.223	0.249	0.209	0.210	0.224
30-34	0.199	0.134	0.255	0.215	5.912	0.204	0.221	0.192	0.203	0.217
35-39	0.157	0.108	0.199	0.169	5.912	0.167	0.171	0.150	0.183	0.167
40-44	0.089	0.052	0.106	0.078	5.868	0.091	0.093	0.070	0.116	0.091
45-49	0.042	0.020	0.046	0.026	5.970	**0.015**	0.039	0.022	0.025	0.027
TFR	**4.9**	**3.2**	**6.4**	**5.2**	**5.9**	**5.1**	**5.5**	**4.6**	**5.2**	**5.1**

* Estimates shown for 2012 are based on the 2002 and 2012 PHC's; for 2022 are on the 2012 and 2022 PHC's

Appendix 3.2:Total Fertility Rate Estimates: Censuses and Surveys Data; 1988 - 2022



The own-children technique, derived from a cross-tabulation of mothers and children by age from the 2022 PHC, show a TFR of 3.2 children per woman for the 5-year period preceding the census. Taken together, estimates from the 2022 PHC show a possible range of total fertility of 3.2 to 5.2 children per woman for 2022, centred on a value of around 5 children per woman. Fertility indicators presented in the following section are based on this assessment of national fertility levels and trend up to 2022.

The Arriaga technique estimates from the 1988, 2002, 2012 and 2022 censuses show a slowly declining trend in total fertility culminating in a level of 4.6 children per woman in 2022. The Brass P/F ratio, relational Gompertz and synthetic rGompertz estimated high TFRs at around 5. children per woman (Appendix 3.2).

These estimates are on the higher side because of the historically high fertility reflected in the children ever born used to adjust fertility patterns in these methods. In contrast, the DHS direct estimates, based on pregnancy history data, suggest a slowly declining TFR trend but at a lower level. Specifically, averages of the two DHS estimates for periods 0-4 and 5-9 years prior to each survey are circled to draw attention to the fact that DHS surveys in Tanzania consistently exhibit more rapidly declining TFRs for each survey than does the data for the surveys taken collectively. The average TFR estimates for periods 0-4 and 5-9 years prior to each survey from the seven DHS surveys indicate a relatively slow decline in TFR over time, a trend implying a value of about 4.6 children per woman for 2022.

The own-children technique, derived from a cross-tabulation of mothers and children by age from the 2022 PHC, show a TFR of 5.1 children per woman for the 5-year period preceding the census. Taken together, estimates from the 2022 PHC suggest a possible range of total fertility of 3.2 to 5.2 children per woman for 2022, cantered on a value of around 4.2 children

per woman. The DHS survey trendline and own children estimate for the period preceding the 2022 census strongly show that a TFR estimate of about 4.6 children per woman is the most likely estimate for the 2022 PHC (Appendix 3.2).

Appendix 3.3: Mean Number of Children Ever Born 2012 and 2022

Pi	Age Group	Tanzania		Mainland Tanzania		Tanzania Zanzibar	
		2012	2022	2012	2022	2012	2022
1	15-19	0.337	0.167	0.343	0.171	0.170	0.049
2	20-24	1.421	1.119	1.437	1.135	0.942	0.649
3	25-29	2.731	2.202	2.746	2.218	2.271	1.755
4	30-34	3.946	3.275	3.952	3.288	3.746	2.918
5	35-39	4.949	4.293	4.942	4.298	5.166	4.143
6	40-44	5.600	4.772	5.583	4.770	6.113	4.808
7	45-49	5.945	4.960	5.924	4.956	6.510	5.091

Appendix 3. 4: Adjusted Age Specific Fertility Rates, 2022

Region	Age Group						
	15 - 19	20 -24	25 - 29	30 - 34	35 - 39	40 - 44	45 - 49
Tanzania	**0.077**	**0.206**	**0.209**	**0.192**	**0.150**	**0.070**	**0.022**
Rural	0.095	0.244	0.236	0.211	0.166	0.077	0.026
Urban	0.045	0.158	0.181	0.173	0.130	0.059	0.016
Mainland Tanzania	**0.078**	**0.208**	**0.209**	**0.191**	**0.149**	**0.069**	**0.022**
Dodoma	0.095	0.198	0.199	0.191	0.154	0.076	0.022
Arusha	0.060	0.203	0.214	0.191	0.147	0.070	0.026
Kilimanjaro	0.044	0.168	0.188	0.165	0.118	0.048	0.010
Tanga	0.072	0.218	0.220	0.199	0.156	0.076	0.024
Morogoro	0.085	0.187	0.183	0.166	0.130	0.063	0.019
Pwani	0.054	0.164	0.167	0.159	0.123	0.062	0.019
Dar es Salaam	0.026	0.117	0.147	0.146	0.109	0.052	0.015
Lindi	0.079	0.163	0.159	0.143	0.116	0.066	0.018
Mtwara	0.090	0.175	0.173	0.163	0.135	0.076	0.021
Ruvuma	0.104	0.198	0.190	0.181	0.145	0.077	0.020
Iringa	0.054	0.191	0.199	0.183	0.132	0.053	0.013
Mbeya	0.069	0.170	0.175	0.161	0.121	0.056	0.016
Singida	0.088	0.262	0.256	0.235	0.188	0.090	0.028
Tabora	0.116	0.260	0.240	0.210	0.160	0.068	0.025
Rukwa	0.117	0.264	0.259	0.237	0.202	0.101	0.040
Kigoma	0.069	0.225	0.237	0.223	0.187	0.089	0.034
Shinyanga	0.097	0.243	0.231	0.204	0.148	0.063	0.020
Kagera	0.078	0.271	0.265	0.236	0.175	0.075	0.023
Mwanza	0.069	0.207	0.209	0.191	0.151	0.065	0.022
Mara	0.095	0.260	0.250	0.216	0.164	0.069	0.023
Manyara	0.090	0.265	0.278	0.247	0.195	0.090	0.030
Njombe	0.056	0.189	0.187	0.169	0.126	0.057	0.015
Katavi	0.106	0.246	0.240	0.222	0.179	0.089	0.036
Simiyu	0.096	0.286	0.289	0.258	0.208	0.084	0.033
Geita	0.091	0.244	0.237	0.215	0.171	0.072	0.028
Songwe	0.121	0.238	0.233	0.218	0.169	0.088	0.029
Tanzania Zanzibar	**0.025**	**0.160**	**0.229**	**0.232**	**0.187**	**0.083**	**0.028**
Kaskazini Unguja	0.027	0.167	0.232	0.235	0.197	0.076	0.027
Kusini Unguja	0.036	0.143	0.186	0.187	0.158	0.072	0.022
Mjini Magharibi	0.019	0.135	0.209	0.217	0.167	0.079	0.019
Kaskazini Pemba	0.034	0.239	0.324	0.309	0.244	0.111	0.047
Kusini Pemba	0.031	0.215	0.308	0.293	0.240	0.094	0.047

Appendix 3.5: Mean Number of Children Ever Born by Region, 2022

Parity	1	2	3	4	5	6	7
Region	**15 - 19**	**20 - 24**	**25 - 29**	**30 - 34**	**35 - 39**	**40 - 44**	**45 - 49**
Tanzania	**0.170**	**1.126**	**2.209**	**3.282**	**4.300**	**4.779**	**4.968**
Mainland Tanzania	**0.174**	**1.142**	**2.225**	**3.295**	**4.306**	**4.778**	**4.964**
Dodoma	0.218	1.177	2.262	3.426	4.531	5.151	5.345
Arusha	0.128	0.952	1.948	2.883	3.737	4.191	4.407
Kilimanjaro	0.086	0.790	1.725	2.646	3.483	3.938	4.162
Tanga	0.148	1.101	2.254	3.310	4.370	4.896	5.097
Morogoro	0.203	1.142	2.131	3.109	4.037	4.542	4.781
Pwani	0.126	0.941	1.906	2.859	3.714	4.238	4.470
Dar es Salaam	0.055	0.560	1.311	2.147	2.868	3.258	3.395
Lindi	0.188	1.053	1.899	2.743	3.596	4.165	4.456
Mtwara	0.193	1.073	1.919	2.775	3.573	4.045	4.196
Ruvuma	0.242	1.223	2.194	3.182	4.141	4.665	4.866
Iringa	0.105	0.919	1.909	2.935	3.914	4.484	4.778
Mbeya	0.177	1.044	2.016	3.015	3.991	4.501	4.725
Singida	0.192	1.373	2.620	3.833	5.033	5.569	5.667
Tabora	0.271	1.548	2.864	4.042	5.116	5.430	5.485
Rukwa	0.255	1.532	2.902	4.166	5.482	6.027	6.146
Kigoma	0.149	1.169	2.446	3.633	4.931	5.507	5.716
Shinyanga	0.211	1.387	2.611	3.772	4.814	5.184	5.232
Kagera	0.146	1.297	2.607	3.842	4.995	5.485	5.656
Mwanza	0.152	1.153	2.349	3.550	4.645	5.052	5.188
Mara	0.203	1.452	2.808	4.108	5.233	5.603	5.584
Manyara	0.196	1.267	2.529	3.732	4.826	5.426	5.602
Njombe	0.103	0.927	1.852	2.804	3.680	4.239	4.539
Katavi	0.275	1.530	2.859	4.087	5.285	5.676	5.746
Simiyu	0.201	1.508	3.012	4.333	5.616	5.906	5.922
Geita	0.209	1.436	2.798	4.089	5.341	5.736	5.819
Songwe	0.253	1.320	2.384	3.500	4.607	5.242	5.474
Tanzania Zanzibar	**0.049**	**0.649**	**1.755**	**2.918**	**4.143**	**4.808**	**5.091**
Kaskazini Unguja	0.053	0.699	1.788	2.940	4.212	4.944	5.124
Kusini Unguja	0.078	0.702	1.715	2.748	3.753	4.336	4.785
Mjini Magharibi	0.037	0.511	1.516	2.618	3.671	4.335	4.602
Kaskazini Pemba	0.058	0.958	2.445	3.872	5.341	6.124	6.214
Kusini Pemba	0.058	0.868	2.266	3.534	5.071	5.714	5.897

Appendix 3. 6: Selected Indicators of Fertility and Nuptiality in Tanzania, 2022

Region	CBR (000)	TFR	CWR	Gross Reproduction Rate	Net Reproduction Rate	% Never married			% Married		
						Both Sexes	Male	Female	Both Sexes	Male	Female
Tanzania	35	4.6	632.6	2.3	2.1	32.9	39.4	27.1	51.4	50.3	52.4
Rural	36	5.3		2.6		28.9	36.7	21.6	54.7	52.6	56.7
Urban	34	3.8		1.9		39.5	43.9	35.6	46.1	46.5	45.8
Mainland Tanzania	**34.9**	**4.6**	**634.9**	**2.3**	**2.1**	**32.8**	**39.3**	**27.0**	**51.3**	**50.2**	**52.3**
Dodoma	33.2	4.7	637.2	2.5	2.1	31.8	38.8	25.3	51.2	50.3	52.0
Arusha	37.4	4.6	580.9	2.1	2.2	34.9	41.6	29.2	54.0	51.2	56.4
Kilimanjaro	26.6	3.7	504.2	2.1	2.1	36.7	42.2	31.7	47.2	47.0	47.4
Tanga	33.7	4.8	612.0	2.8	2.0	30.4	38.8	22.8	52.8	50.5	54.9
Morogoro	32.2	4.2	578.4	1.7	2.1	32.9	38.7	27.4	46.8	46.0	47.5
Pwani	30.4	3.7	511.1	1.7	2.0	34.0	39.6	28.8	51.1	50.6	51.6
Dar es Salaam	30.7	3.1	368.8	1.4	2.0	43.8	46.9	41.0	43.3	43.8	42.9
Lindi	28.3	3.7	502.9	1.8	2.1	30.8	37.1	25.0	48.1	47.5	48.7
Mtwara	31.9	4.2	482.3	2.0	2.1	29.6	35.0	24.9	49.7	49.9	49.5
Ruvuma	34.7	4.6	576.6	2.1	2.1	31.1	35.7	26.9	52.9	52.5	53.3
Iringa	32.2	4.1	533.7	1.9	2.2	35.6	42.1	29.8	48.3	48.1	48.6
Mbeya	31.3	3.8	571.6	1.9	2.1	32.5	38.5	27.3	51.3	51.6	51.0
Singida	36.4	5.7	797.0	3.1	2.2	30.8	39.0	23.0	55.2	52.6	57.8
Tabora	38.5	5.4	818.4	2.5	2.1	28.4	35.9	21.5	57.7	55.4	59.8
Rukwa	42.7	6.1	799.2	2.9	2.1	27.0	33.5	21.2	46.7	46.4	46.9
Kigoma	35.6	5.3	799.4	2.7	2.1	30.2	37.5	23.9	54.2	53.8	54.6
Shinyanga	37.9	5.0	724.3	2.3	2.1	30.3	37.4	23.7	52.8	51.5	54.1
Kagera	39.4	5.6	712.4	2.9	2.1	28.3	35.6	21.6	49.3	48.5	50.1
Mwanza	34.0	4.6	670.8	2.5	2.1	36.2	42.6	30.3	48.8	48.2	49.3
Mara	36.9	5.4	738.7	3.0	2.1	31.8	40.1	24.6	56.0	54.0	57.7
Manyara	39.5	6.0	763.9	2.7	2.2	32.2	40.4	23.8	57.6	52.7	62.6
Njombe	31.9	4.0	499.3	1.7	2.2	33.4	38.8	28.9	47.7	48.9	46.8
Katavi	39.2	5.6	858.9	2.8	2.2	27.1	34.2	20.2	56.3	54.0	58.6
Simiyu	40.6	6.3	881.7	3.4	2.2	29.6	38.6	21.7	59.1	56.1	61.8
Geita	37.3	5.3	815.2	2.9	2.1	30.5	38.1	23.4	54.4	52.7	56.1
Songwe	41.8	5.5	674.9	2.4	2.1	25.6	32.6	19.5	62.0	61.0	62.8
Tanzania Zanzibar	**36.0**	**4.7**	**563.8**	**2.8**	**2.1**	**36.2**	**43.3**	**29.9**	**54.1**	**52.4**	**55.6**
Kaskazini Unguja	37.3	4.8	571.4	2.8	2.1	34.3	41.6	27.4	56.5	54.3	58.5
Kusini Unguja	32.6	4.0	528.8	2.4	2.1	33.2	40.2	26.2	55.3	53.7	56.9
Mjini Magharibi	35.9	4.2	495.9	2.4	2.0	38.1	44.3	32.6	51.9	51.0	52.8
Kaskazini Pemba	40.3	6.5	721.9	4.0	2.1	34.3	43.2	26.6	57.4	54.2	60.1
Kusini Pemba	39.0	6.1	703.6	3.6	2.1	35.5	44.2	28.0	55.5	52.4	58.1

Appendix 3.7: Recorded and Adjusted Crude Birth Rate by Region, 1967-2022 Censuses

Region	1967		1978		1988		2002		2012		2022	
	Recorded	Adjusted	Recorded	Adjusted	Recorded	Adjusted	Recorded	Adjusted	Recorded	Adjusted	Recorded	Adjusted
Tanzania	**NA**	**47**	**46**	**49**	**38**	**47**	**35**	**43**	**36**	**42**	**24**	**35**
Mainland	**NA**	**47**	**46**	**49**	**38**	**47**	**35**	**43**	**37**	**42**	**24**	**35**
Dodoma	61	48	44	52	40	48	35	44	37	42	24	33
Arusha	56	47	48	48	40	46	33	43	31	35	23	37
Kilimanjaro	57	51	46	48	38	47	28	36	24	30	21	27
Tanga	58	46	42	47	35	46	33	40	34	41	26	34
Morogoro	50	44	48	45	34	45	31	41	32	38	21	32
Pwani	48	37	40	35	34	33	30	38	32	36	19	30
Dar es Salaam	NA	33	42	48	34	38	24	35	30	37	19	31
Lindi	NA		41	43	34	42	28	37	30	35	18	28
Mtwara	49	35	38	47	34	44	28	36	31	32	21	32
Ruvuma	62	46	44	47	35	46	30	41	35	37	21	35
Iringa	58	55	45	53	35	49	30	40	31	35	20	32
Mbeya	62	52	46	55	36	51	32	42	33	41	22	31
Singida	55	45	40	47	41		35	43	40	48	26	36
Tabora	55	40	43	45	38	45	35	48	43	50	24	39
Rukwa			56	62	42	52	39	52	50	52	27	43
Kigoma	54	43	54	52	42	47	43	56	42	48	24	36
Shinyanga	65	51	48	49	47	51	41	49	39	44	23	38
Kagera	53	50	48	49	46	49	42	48	41	44	27	39
Mwanza	62	49	48	51	43	50	40	46	41	48	25	34
Mara	62	52	68	53	42	53	42	47	43	49	28	37
Manyara	NA	NA	NA	NA	NA	NA	38	46	36	42	25	40
Njombe	NA	NA	NA	NA	NA	NA	NA	NA	16	33	18	32
Katavi	NA	NA	NA	NA	NA	NA	NA	NA	NA	51	26	39
Simiyu	NA	NA	NA	NA	NA	NA	NA	NA	50	52	29	41
Geita	NA	NA	NA	NA	NA	NA	NA	NA	NA	57	28	37
Songwe	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	26	42
Tanzania Zanzibar	**58**	**48**	**48**	**48**	**45**	**49**	**32**	**43**	**35**	**39**	**29**	**36**
Kaskazini Unguja	NA	NA	47	46	47	44	31	43	33	39	30	37
Kusini Unguja	NA	NA	39	41	42	46	28	38	38	38	26	33
Mjini Magharibi	NA	NA	47	47	40	51	30	42	31	36	27	36
Kaskazini Pemba	NA	NA	54	53	47	52	36	46	38	46	33	40
Kusini Pemba	NA	NA	53	48	51	51	35	45	42	48	31	39

Appendix 3.8: Child Woman Ratio (per 1,000 Women) by Region, 2022 PHC

Region	Child Woman Ratio (Children aged 0-4 to women aged 15-49) per 1,000 Women		
	Total	Rural	Urban
Tanzania	633	710	467
Mainland Tanzania	635	715	467
Dodoma	637	744	485
Arusha	581	731	408
Kilimanjaro	504	535	426
Tanga	612	677	463
Morogoro	578	668	465
Pwani	511	560	453
Dar-es-salaam	369	NA	369
Lindi	503	527	421
Mtwara	482	506	417
Ruvuma	577	603	500
Iringa	534	584	443
Mbeya	572	647	477
Singida	797	1,597	879
Tabora	818	371	375
Rukwa	799	1,295	1,195
Kigoma	799	667	716
Shinyanga	724	1,344	253
Kagera	712	645	2,259
Mwanza	671	587	276
Mara	739	787	222
Manyara	764	236	471
Njombe	499	1,157	568
Katavi	859	1,796	977
Simiyu	882	1,015	1,816
Geita	815	406	226
Songwe	675	143	54
Tanzania Zanzibar	564	510	468
Kaskazini Unguja	571	402	455
Kusini Unguja	529	748	8,445
Mjini Magharibi	496	716	43
Kaskazini Pemba	722	680	832
Kusini Pemba	704	-	-

Appendix 3.9: Mean Age at First Marriage and Age First Birth by Region and District, 2022 PHC

Region	Average Age at First Marriage				Ave Age First Birth	
District	Total	Males	Females	Age Difference	Age	FB - Mar diff
Tanzania Total	**24.1**	**26.4**	**22.1**	**4.3**	**23.8**	**1.7**
Tanzania Rural	**22.8**	**25.2**	**20.6**	**4.6**	**22.5**	**1.9**
Tanzania Urban	**25.9**	**27.9**	**24.2**	**3.7**	**25.1**	**0.9**
Mainland Tanzania Total	**24.1**	**26.3**	**22.1**	**4.2**	**23.7**	**1.6**
Mainland Tanzania Rural	**22.8**	**25.2**	**20.6**	**4.6**	**22.4**	**1.8**
Mainland Tanzania Urban	**25.9**	**27.9**	**24.2**	**3.7**	**25.1**	**0.9**
Zanzibar Total	**25.6**	**27.8**	**23.7**	**4.1**	**25.8**	**2.1**
Zanzibar Rural	**24.9**	**27.3**	**22.7**	**4.6**	**25.7**	**3.0**
Zanzibar Urban	**26.3**	**28.3**	**24.6**	**3.7**	**26.1**	**1.5**
Dodoma	**24.2**	**26.4**	**22.1**	**4.3**	**22.6**	**0.5**
Kondoa District Council	24.7	28.5	21.0	7.5	24.4	3.4
Kondoa Town Council	25.5	28.5	22.6	5.9	26.2	3.6
Mpwapwa District Council	22.4	24.2	20.6	3.6	21.2	0.6
Kongwa District Council	23.1	25.0	21.2	3.8	21.3	0.1
Chamwino District Council	22.5	24.6	20.5	4.1	21.2	0.7
Dodoma Municipal Council	26.4	28.1	24.8	3.3	24.9	0.1
Bahi District Council	22.3	24.5	20.2	4.3	21.6	1.4
Chemba District Council	23.5	26.7	20.2	6.5	23.1	2.9
Arusha	**25.3**	**28.0**	**23.0**	**5.0**	**25.0**	**2.0**
Monduli District Council	22.8	26.5	20.5	6.0	22.6	2.1
Meru District Council	26.3	28.9	24.1	4.8	25.7	1.6
Arusha District Council	25.3	27.8	23.3	4.5	25.6	2.3
Longido District Council	22.4	26.7	19.6	7.1	21.8	2.2
Karatu District Council	26.6	28.9	24.1	4.8	25.1	1.0
Ngorongoro District Council	21.7	26.1	18.8	7.3	21.1	2.3
Arusha City Council	26.7	28.7	25.0	3.7	25.8	0.8
Kilimanjaro	**26.6**	**29.0**	**24.5**	**4.5**	**25.5**	**1.0**
Rombo District Council	27.5	30.0	25.2	4.8	25.6	0.4
Mwanga District Council	26.3	28.9	23.9	5.0	25.3	1.4
Same District Council	25.2	27.6	23.0	4.6	25.1	2.1
Moshi District Council	27.7	29.5	25.8	3.7	25.9	0.1
Moshi Municipal Council	27.0	29.2	24.8	4.4	25.5	0.7
Hai District Council	26.5	28.8	24.4	4.4	25.4	1.0
Siha District Council	25.4	28.0	23.1	4.9	25.7	2.6
Tanga	**24.3**	**27.1**	**22.0**	**5.1**	**24.6**	**2.6**
Lushoto District Council	23.4	26.5	21.3	5.2	25.7	4.4
Bumbuli District Council	24.2	27.7	21.5	6.2	25.9	4.4
Korogwe District Council	24.2	27.2	21.6	5.6	25.0	3.4
Korogwe Town Council	25.7	27.6	24.2	3.4	25.8	1.6
Muheza District Council	25.1	27.6	23.0	4.6	25.1	2.1
Tanga City Council	26.4	28.5	24.4	4.1	25.4	1.0
Pangani District Council	24.3	26.6	22.2	4.4	24.9	2.7
Handeni District Council	23.5	26.5	20.9	5.6	23.6	2.7
Handeni Town Council	24.6	27.3	22.3	5.0	25.2	2.9
Kilindi District Council	22.3	25.4	19.6	5.8	21.0	1.4
Mkinga District Council	24.6	27.1	22.3	4.8	23.9	1.6
Morogoro	**24.1**	**26.5**	**22.0**	**4.5**	**23.4**	**1.4**
Kilosa District Council	23.9	26.2	21.7	4.5	22.3	0.6
Morogoro District Council	23.5	26.2	21.0	5.2	23.9	2.9
Morogoro Municipal Council	26.7	28.6	24.9	3.7	25.2	0.3
Mlimba District Council	23.6	26.1	21.4	4.7	23.0	1.6
Ifakara Town Council	25.1	27.3	23.2	4.1	25.2	2.0
Ulanga District Council	22.6	25.1	20.1	5.0	22.4	2.3
Malinyi District Council	22.2	24.9	19.6	5.3	21.8	2.2
Mvomero District Council	23.7	26.2	21.2	5.0	23.2	2.0
Gairo District Council	22.9	24.8	21.1	3.7	21.2	0.1

Note: ***FB - Mar diff: It is the difference between age at first birth and age at first Mariage***

Appendix 3.10: Average Age at First Marriage and First Birth, Tanzania: 2022 -- continued

Region	Average Age at First Marriage				Ave Age First Birth	
District	Total	Males	Females	Age Difference	Age	FB - Mar diff
Pwani	**24.9**	**27.1**	**22.9**	**4.2**	**24.7**	**1.8**
Bagamoyo District Council	25.3	27.3	23.5	3.8	25.3	1.8
Chalinze District Council	24.2	26.7	22.1	4.6	24.1	2.0
Kibaha District Council	25.6	27.6	23.7	3.9	24.6	0.9
Kibaha Town Council	26.2	28.1	24.5	3.6	25.2	0.7
Kisarawe District Council	25.0	27.2	22.9	4.3	25.3	2.4
Mkuranga District Council	24.5	26.9	22.7	4.2	24.7	2.0
Rufiji District Council	24.3	26.7	21.7	5.0	23.3	1.6
Mafia District Council	24.4	26.9	22.0	4.9	25.7	3.7
Kibiti District Council	24.5	27.0	22.0	5.0	23.6	1.6
Dar-es-salaam	**27.3**	**29.2**	**25.7**	**3.5**	**25.8**	**0.1**
Kinondoni Municipal Council	28.0	29.6	26.6	3.0	26.3	-0.3
Dar es Salaam City	27.0	29.0	25.2	3.8	25.7	0.5
Temeke Municipal Council	26.9	28.9	25.1	3.8	25.6	0.5
Kigamboni Municipal Council	26.7	28.6	25.0	3.6	25.6	0.6
Ubungo Municipal Council	28.0	29.8	26.5	3.3	26.1	-0.4
Lindi	**23.6**	**25.8**	**21.5**	**4.3**	**24.1**	**2.6**
Kilwa District Council	23.4	26.1	20.9	5.2	24.0	3.1
Mtama District Council	23.4	25.5	21.5	4.0	24.3	2.8
Lindi Municipal Council	24.8	26.9	22.8	4.1	24.6	1.8
Nachingwea District Council	23.3	25.3	21.4	3.9	23.8	2.4
Liwale District Council	23.7	25.9	21.7	4.2	24.0	2.3
Ruangwa District Council	23.5	25.5	21.5	4.0	24.0	2.5
Mtwara	**23.0**	**25.3**	**21.0**	**4.3**	**23.9**	**2.9**
Mtwara District Council	23.3	25.9	20.9	5.0	24.1	3.2
Nanyamba Town Council	22.3	24.9	20.0	4.9	24.5	4.5
Mtwara Mikindani Municipal Council	26.0	28.0	24.2	3.8	25.5	1.3
Newala District Council	22.3	24.5	20.3	4.2	24.2	3.9
Newala Town Council	23.5	25.9	21.4	4.5	24.6	3.2
Masasi District Council	22.4	24.4	20.5	3.9	22.7	2.2
Masasi Town Council	23.9	25.8	22.2	3.6	24.2	2.0
Tandahimba District Council	22.3	25.0	20.0	5.0	24.1	4.1
Nanyumbu District Council	22.0	23.9	20.2	3.7	22.1	1.9
Ruvuma	**23.2**	**25.0**	**21.5**	**3.5**	**22.5**	**1.0**
Tunduru District Council	23.0	25.1	21.0	4.1	22.2	1.2
Songea District Council	22.9	24.9	20.7	4.2	21.5	0.8
Songea Municipal Council	25.1	26.8	23.6	3.2	24.7	1.1
Madaba District Council	25.0	27.0	23.0	4.0	24.4	1.4
Mbinga District Council	22.1	23.7	20.6	3.1	22.3	1.7
Mbinga Town Council	23.1	24.5	21.8	2.7	23.1	1.3
Nyasa District Council	22.1	23.9	20.3	3.6	22.1	1.8
Namtumbo District Council	23.0	25.0	21.3	3.7	21.3	0.0
Iringa	**26.0**	**27.8**	**24.4**	**3.4**	**25.2**	**0.8**
Iringa District Council	25.4	27.6	23.4	4.2	24.9	1.5
Iringa Municipal Council	27.5	29.0	26.1	2.9	25.9	-0.2
Mafinga Town Council	25.9	27.4	24.7	2.7	24.9	0.2
Mufindi District Council	25.5	27.3	23.8	3.5	25.2	1.4
Kilolo District Council	25.5	27.5	23.6	3.9	24.9	1.3
Mbeya	**24.4**	**26.2**	**22.8**	**3.4**	**24.0**	**1.2**
Chunya District Council	22.5	24.7	20.3	4.4	21.6	1.3
Mbeya District Council	23.4	25.1	22.0	3.1	24.3	2.3
Mbeya City Council	26.4	28.0	25.0	3.0	25.5	0.5
Kyela District Council	24.8	26.7	23.2	3.5	24.1	0.9
Rungwe District Council	24.7	26.4	23.2	3.2	24.6	1.4
Busekelo District Council	25.3	27.2	23.6	3.6	23.5	-0.1
Mbarali District Council	23.2	25.4	21.3	4.1	22.3	1.0

Appendix 3.11: Average Age at First Marriage and First Birth, Tanzania: 2022 -- continued

Region	Average Age at First Marriage				Ave Age First Birth	
District	Total	Males	Females	Age Difference	Age	FB - Mar diff
Singida	**23.6**	**26.2**	**21.1**	**5.1**	**23.4**	**2.3**
Iramba District Council	23.2	25.7	20.6	5.1	22.7	2.1
Singida District Council	24.4	27.3	21.5	5.8	26.2	4.7
Singida Municipal Council	26.0	28.4	23.8	4.6	25.6	1.8
Manyoni District Council	22.4	24.6	20.3	4.3	21.3	1.0
Itigi District Council	22.0	24.5	19.5	5.0	21.5	2.0
Ikungi District Council	23.1	26.0	20.4	5.6	22.8	2.4
Mkalama District Council	23.8	26.3	21.2	5.1	24.3	3.1
Tabora	**21.9**	**24.2**	**19.8**	**4.4**	**21.3**	**1.5**
Nzega Town Council	24.0	26.2	22.0	4.2	23.7	1.7
Nzega District Council	21.2	23.5	19.1	4.4	21.4	2.3
Igunga District Council	21.4	23.7	19.3	4.4	21.5	2.2
Uyui District Council	21.2	23.6	19.0	4.6	21.5	2.5
Urambo District Council	22.6	25.0	20.5	4.5	22.0	1.5
Sikonge District Council	21.2	23.8	18.9	4.9	22.0	3.1
Tabora Municipal Council	25.3	27.4	23.4	4.0	24.2	0.8
Kaliua District Council	21.2	23.5	19.2	4.3	21.1	1.9
Rukwa	**22.0**	**23.8**	**20.3**	**3.5**	**21.8**	**1.5**
Kalambo District Council	21.0	22.9	19.4	3.5	21.7	2.3
Sumbawanga District Council	20.9	22.9	19.2	3.7	20.9	1.7
Sumbawanga Municipal Council	24.2	25.9	22.7	3.2	24.5	1.8
Nkasi District Council	22.0	23.8	20.5	3.3	21.5	1.0
Kigoma	**23.0**	**25.1**	**21.2**	**3.9**	**23.6**	**2.4**
Kibondo District Council	22.1	24.0	20.4	3.6	23.8	3.4
Kasulu District Council	22.0	24.0	20.2	3.8	21.4	1.2
Kasulu Town Council	23.4	25.2	22.0	3.2	24.4	2.4
Kigoma District Council	24.3	26.8	22.4	4.4	24.9	2.5
Kigoma-Ujiji Municipal Council	26.2	28.3	24.5	3.8	25.3	0.8
Uvinza District Council	22.4	24.8	20.4	4.4	21.9	1.5
Buhigwe District Council	23.2	25.4	21.5	3.9	25.3	3.8
Kakonko District Council	22.3	24.5	20.4	4.1	24.1	3.7
Shinyanga	**22.7**	**24.9**	**20.7**	**4.2**	**21.9**	**1.2**
Ushetu District Council	21.4	23.7	19.3	4.4	20.9	1.6
Kahama Municipal Council	23.6	25.8	21.7	4.1	23.6	1.9
Msalala District Council	21.9	24.2	19.8	4.4	21.2	1.4
Kishapu District Council	22.5	24.9	20.3	4.6	22.5	2.2
Shinyanga District Council	22.0	24.1	19.8	4.3	21.3	1.5
Shinyanga Municipal Council	25.5	27.6	23.7	3.9	24.6	0.9
Kagera	**22.8**	**25.0**	**20.8**	**4.2**	**24.3**	**3.5**
Karagwe District Council	22.6	24.9	20.5	4.4	24.0	3.5
Bukoba District Council	23.5	26.0	21.4	4.6	25.4	4.0
Bukoba Municipal Council	24.8	26.9	23.0	3.9	25.7	2.7
Muleba District Council	23.2	25.4	21.2	4.2	25.0	3.8
Biharamulo District Council	21.9	24.1	20.0	4.1	21.8	1.8
Ngara District Council	22.1	24.0	20.5	3.5	24.0	3.5
Kyerwa District Council	21.9	24.1	20.0	4.1	23.5	3.5
Missenyi District Council	23.7	26.2	21.3	4.9	24.6	3.3
Mwanza	**24.4**	**26.6**	**22.5**	**4.1**	**23.7**	**1.2**
Ukerewe District Council	24.6	26.7	22.6	4.1	23.9	1.3
Magu District Council	23.8	26.2	21.7	4.5	23.5	1.8
Mwanza City Council	25.6	27.8	23.7	4.1	25.2	1.5
Kwimba District Council	22.7	24.9	20.4	4.5	21.4	1.0
Sengerema District Council	23.8	26.0	21.7	4.3	22.3	0.6
Buchosa District Council	23.7	25.9	21.6	4.3	22.6	1.0
Ilemela Municipal Council	26.1	28.1	24.4	3.7	25.2	0.8
Misungwi District Council	23.4	25.6	21.3	4.3	22.0	0.7

Appendix 3.12: Average Age at First Marriage and First Birth, Tanzania: 2022 -- continued

Region	Average Age at First Marriage				Ave Age First Birth	
District	Total	Males	Females	Age Difference	Age	FB - Mar diff
Mara	**23.2**	**25.6**	**21.2**	**4.4**	**22.0**	**0.8**
Tarime District Council	21.8	24.1	19.8	4.3	21.5	1.7
Tarime Town Council	23.4	25.5	21.8	3.7	23.5	1.7
Serengeti District Council	22.2	24.8	20.1	4.7	21.4	1.3
Musoma District Council	24.1	26.3	21.9	4.4	21.9	0.0
Musoma Municipal Council	26.1	28.3	24.4	3.9	25.1	0.7
Bunda District Council	23.9	26.4	21.6	4.8	22.1	0.5
Bunda Town Council	24.3	26.4	22.5	3.9	23.1	0.6
Butiama District Council	23.1	25.6	21.0	4.6	21.8	0.8
Rorya District Council	22.9	25.6	20.7	4.9	21.2	0.5
Manyara	**24.2**	**26.9**	**21.6**	**5.3**	**23.1**	**1.5**
Babati District Council	25.5	28.0	22.9	5.1	25.0	2.1
Babati Town Council	26.4	28.5	24.5	4.0	25.4	0.9
Hanang District Council	24.4	26.7	21.9	4.8	24.3	2.4
Mbulu District Council	25.0	27.0	22.7	4.3	24.1	1.4
Mbulu Town Council	26.5	28.3	24.4	3.9	25.9	1.5
Simanjiro District Council	22.3	26.1	19.2	6.9	21.4	2.2
Kiteto District Council	21.7	24.9	19.1	5.8	22.0	2.9
Njombe	**25.2**	**26.9**	**23.8**	**3.1**	**25.4**	**1.6**
Njombe District Council	25.0	26.7	23.6	3.1	24.9	1.3
Njombe Town Council	25.8	27.3	24.5	2.8	25.6	1.1
Makambako Town Council	25.6	27.1	24.4	2.7	25.8	1.4
Ludewa District Council	24.5	26.5	22.8	3.7	24.7	1.9
Makete District Council	24.8	26.5	23.3	3.2	25.8	2.5
Wanging'ombe District Council	25.0	26.9	23.4	3.5	25.3	1.9
Katavi	**21.8**	**24.3**	**19.7**	**4.6**	**21.3**	**1.6**
Mpanda Municipal Council	23.4	25.7	21.5	4.2	23.5	2.0
Nsimbo District Council	22.0	24.5	19.6	4.9	21.1	1.5
Tanganyika District Council	21.2	23.7	19.0	4.7	21.3	2.3
Mlele District Council	21.4	23.8	19.2	4.6	21.5	2.3
Mpimbwe District Council	21.0	23.5	18.9	4.6	22.0	3.1
Simiyu	**22.5**	**24.9**	**20.3**	**4.6**	**21.5**	**1.2**
Bariadi District Council	21.6	24.2	19.5	4.7	21.0	1.5
Bariadi Town Council	25.0	27.3	22.3	5.0	21.8	-0.5
Itilima District Council	21.4	23.9	19.5	4.4	21.8	2.3
Meatu District Council	21.5	23.7	19.7	4.0	21.3	1.6
Maswa District Council	22.3	24.4	20.3	4.1	21.6	1.3
Busega District Council	23.5	25.8	21.5	4.3	22.9	1.4
Geita	**22.7**	**25.0**	**20.7**	**4.3**	**22.0**	**1.3**
Geita District Council	22.6	24.9	20.5	4.4	21.8	1.3
Geita Town Council	24.1	26.2	22.3	3.9	24.3	2.0
Nyang'hwale District Council	22.4	24.6	20.1	4.5	21.1	1.0
Mbogwe District Council	22.0	24.2	19.8	4.4	21.3	1.5
Bukombe District Council	22.4	24.6	20.5	4.1	21.7	1.2
Chato District Council	22.7	24.9	20.7	4.2	22.1	1.4
Songwe	**22.2**	**24.2**	**20.5**	**3.7**	**22.0**	**1.5**
Momba District	20.2	22.4	18.4	4.0	21.8	3.4
Tunduma Town	23.4	25.2	22.0	3.2	24.6	2.6
Songwe District	21.5	23.9	19.3	4.6	22.3	3.0
Mbozi District	22.7	24.6	21.0	3.6	23.6	2.6
Ileie District	22.7	24.4	21.2	3.2	23.5	2.3
Kaskazini Unguja	**25.5**	**27.8**	**23.3**	**4.5**	**25.6**	**2.3**
Kaskazini A District	25.7	28.0	23.5	4.5	25.5	2.0
Kaskazini B District	25.1	27.4	23.0	4.4	25.8	2.8
Kusini Unguja	**25.3**	**27.3**	**23.4**	**3.9**	**25.5**	**2.1**
Kati Town Council	25.0	27.0	23.0	4.0	25.3	2.3
Kusini District Council	26.0	27.7	24.2	3.5	25.8	1.6
Mjini Magharibi	**26.1**	**28.1**	**24.5**	**3.6**	**26.0**	**1.5**
Mjini Municipal Council	27.0	28.9	25.3	3.6	25.8	0.5
Magharibi A Municipal Council	25.4	27.5	23.7	3.8	25.8	2.1
Magharibi B Municipal Council	26.2	28.1	24.6	3.5	26.3	1.7
Kaskazini Pemba	**24.5**	**27.4**	**22.2**	**5.2**	**25.6**	**3.4**
Wete Town Council	24.8	27.7	22.5	5.2	25.4	2.9
Micheweni District Council	24.2	27.0	21.9	5.1	25.9	4.0
Kusini Pemba	**24.9**	**27.5**	**22.7**	**4.8**	**25.9**	**3.2**
Chake Chake Town Council	25.0	27.5	22.9	4.6	25.6	2.7
Mkoani Town Council	24.8	27.5	22.5	5.0	26.2	3.7

Appendix 3.13: Net Nuptiality Table for Males; Tanzania, 2022 PHC

Males			Proportion Single	Probability of Marriage	Probability of Dying at	Net Probability of						
x	Populati	Single	Sx	nx	qx	nx`	qx`	lx`	dx`	Nx`	Lx`	Tx`	ex`
15	628,831	627,10	0.99725	0.00826	0.01543	0.00819	0.0153	91,65	1,40	751	90,57	959,36	10.
16	625,841	618,96	0.98902	0.00468	0.01634	0.00464	0.0163	89,49	1,45	415	88,55	868,78	9.8
17	640,327	630,33	0.98439	0.01719	0.01726	0.01704	0.0171	87,62	1,49	1,49	86,12	780,23	9.1
18	629,042	608,58	0.96747	0.02516	0.01817	0.02493	0.0179	84,62	1,51	2,11	82,81	694,10	8.4
19	507,304	478,45	0.94313	0.07261	0.01908	0.07192	0.0183	81,00	1,48	5,82	77,34	611,29	7.9
20	591,772	517,59	0.87465	0.05317	0.01999	0.05264	0.0194	73,68	1,43	3,87	71,02	533,95	7.5
21	412,822	341,87	0.82814	0.10495	0.02016	0.10389	0.0191	68,37	1,30	7,10	64,16	462,92	7.2
22	624,878	463,17	0.74123	0.12072	0.02033	0.11949	0.0191	59,96	1,14	7,16	55,80	398,75	7.1
23	455,112	296,62	0.65175	0.11674	0.02051	0.11554	0.0193	51,65	997	5,96	48,17	342,94	7.1
24	423,122	243,57	0.57567	0.14268	0.02068	0.14121	0.0192	44,68	858	6,31	41,10	294,77	7.2
25	505,228	249,34	0.49353	0.11610	0.02085	0.11489	0.0196	37,51	737	4,31	34,99	253,67	7.2
26	414,294	180,72	0.43623	0.13362	0.02117	0.13220	0.0197	32,47	641	4,29	30,00	218,67	7.3
27	440,538	166,49	0.37794	0.12315	0.02148	0.12183	0.0201	27,53	555	3,35	25,58	188,67	7.4
28	452,382	149,91	0.33140	0.13419	0.02180	0.13273	0.0203	23,62	481	3,13	21,81	163,09	7.5
29	361,687	103,77	0.28693	0.17596	0.02212	0.17401	0.0201	20,01	404	3,48	18,06	141,27	7.8
30	529,824	125,27	0.23644	0.10857	0.02243	0.10735	0.0212	16,12	342	1,73	15,08	123,20	8.2
31	279,964	59,008	0.21077	0.12129	0.02296	0.11989	0.0215	14,05	303	1,68	13,05	108,11	8.3
32	463,785	85,896	0.18521	0.09918	0.02348	0.09802	0.0223	12,06	269	1,18	11,33	95,058	8.4
33	279,668	46,659	0.16684	0.13319	0.02400	0.13159	0.0224	10,61	238	1,39	9,795	83,720	8.5
34	310,229	44,864	0.14462	0.02366	0.02452	0.02337	0.0242	8,978	218	210	8,765	73,925	8.4
35	370,385	52,296	0.14119	0.13459	0.02504	0.13290	0.0233	8,551	200	1,13	7,883	65,160	8.3
36	310,220	37,906	0.12219	0.06968	0.02617	0.06877	0.0252	7,215	182	496	6,875	57,278	8.3
37	273,135	31,049	0.11368	0.07516	0.02729	0.07413	0.0262	6,536	172	485	6,208	50,402	8.1
38	329,736	34,666	0.10513	0.05975	0.02842	0.05890	0.0275	5,880	162	346	5,626	44,194	7.9
39	215,901	21,342	0.09885	0.02903	0.02954	0.02860	0.0291	5,372	156	154	5,217	38,568	7.4
40	379,844	36,458	0.09598	0.10182	0.03067	0.10026	0.0291	5,062	147	507	4,734	33,351	7.0
41	169,856	14,643	0.08621	0.04213	0.03217	0.04145	0.0315	4,407	139	183	4,246	28,617	6.7
42	328,023	27,087	0.08258	0.07964	0.03368	0.07830	0.0323	4,085	132	320	3,859	24,371	6.3
43	219,329	16,669	0.07600	0.03190	0.03519	0.03133	0.0346	3,633	126	114	3,514	20,512	5.8
44	190,633	14,026	0.07358	-0.03236	0.03670	-0.03176	0.0372	3,394	127	-108	3,384	16,998	5.0
45	299,948	22,783	0.07596	0.11669	0.03821	0.11447	0.0359	3,375	121	386	3,121	13,614	4.4
46	193,523	12,984	0.06709	0.01881	0.04137	0.01843	0.0409	2,867	117	53	2,782	10,493	3.8
47	200,758	13,216	0.06583	0.03343	0.04453	0.03268	0.0437	2,697	118	88	2,594	7,711	3.0
48	241,003	15,335	0.06363	0.02092	0.04769	0.02042	0.0471	2,491	118	51	2,406	5,117	2.1
49	163,534	10,188	0.06230	0.29707	0.05085	0.28951	0.0433	2,322	101	672	1,936	2,711	1.4
50+	3,051,60	133,63	0.04379	1.00000	0.38647	0.80677	0.1932	1,549	299	1,25	775	775	1.0

Appendix 3.14: Net Nuptiality Table for Females; Tanzania, 2022 PHC

Females			Proportion Single	Probability of Marriage	Probability of Dying at Age x	Net Probability of Marriage							
x	Populati	Single	Sx	nx	qx	nx`	qx`	lx`	dx	Nx`	Lx`	Tx`	ex`
15	617,627	598,3	0.96885	0.04994	0.00675	0.04977	0.006	94,12	62	4,684	91,47	747,0	8.2
16	635,242	584,7	0.92046	0.07857	0.00720	0.07829	0.006	88,82	61	6,954	85,03	655,5	7.7
17	628,187	532,7	0.84814	0.18251	0.00766	0.18181	0.006	81,25	56	14,77	73,58	570,5	7.8
18	667,145	462,5	0.69335	0.13727	0.00811	0.13671	0.007	65,91	49	9,011	61,16	496,9	8.1
19	568,213	339,8	0.59817	0.22790	0.00856	0.22692	0.007	56,40	42	12,80	49,79	435,7	8.8
20	695,516	321,2	0.46185	0.04198	0.00901	0.04179	0.008	43,17	38	1,804	42,08	385,9	9.2
21	467,860	207,0	0.44246	0.21384	0.00933	0.21285	0.008	40,99	34	8,725	36,46	343,8	9.4
22	747,962	260,1	0.34785	0.06382	0.00965	0.06351	0.009	31,92	29	2,028	30,76	307,4	10.
23	533,404	173,7	0.32565	0.09569	0.00997	0.09521	0.009	29,60	28	2,818	28,05	276,6	9.9
24	494,062	145,4	0.29449	0.16784	0.01029	0.16698	0.009	26,50	25	4,425	24,16	248,6	10.
25	568,815	139,3	0.24506	0.04236	0.01061	0.04213	0.010	21,82	22	920	21,25	224,4	10.
26	478,570	112,3	0.23468	0.09029	0.01082	0.08980	0.010	20,68	21	1,857	19,64	203,2	10.
27	480,488	102,5	0.21349	0.12433	0.01104	0.12364	0.010	18,60	19	2,301	17,36	183,5	10.
28	514,180	96,12	0.18695	0.04689	0.01125	0.04662	0.010	16,11	17	751	15,65	166,2	10.
29	411,604	73,34	0.17818	0.18147	0.01147	0.18043	0.010	15,18	15	2,740	13,73	150,5	11.
30	603,626	88,03	0.14585	-0.02626	0.01168	-0.02611	0.011	12,28	14	-321	12,37	136,8	11.
31	289,484	43,32	0.14968	0.11825	0.01205	0.11754	0.011	12,46	14	1,465	11,66	124,4	10.
32	481,933	63,60	0.13198	0.01287	0.01242	0.01279	0.012	10,85	13	139	10,72	112,7	10.
33	301,846	39,32	0.13028	0.11007	0.01278	0.10937	0.012	10,58	12	1,158	9,942	102,0	10.
34	331,477	38,43	0.11594	0.10722	0.01315	0.10652	0.012	9,299	11	991	8,746	92,11	10.
35	392,503	40,62	0.10351	0.04370	0.01352	0.04340	0.013	8,193	10	356	7,961	83,36	10.
36	340,811	33,73	0.09898	0.02341	0.01449	0.02324	0.014	7,729	11	180	7,584	75,40	9.9
37	294,165	28,43	0.09667	0.08788	0.01546	0.08721	0.014	7,439	11	649	7,059	67,82	9.6
38	365,062	32,18	0.08817	-0.02386	0.01642	-0.02367	0.016	6,680	11	-158	6,704	60,76	9.1
39	246,236	22,22	0.09028	0.14088	0.01739	0.13965	0.016	6,727	10	939	6,203	54,05	8.7
40	423,481	32,84	0.07756	-0.05612	0.01836	-0.05561	0.018	5,679	10	-316	5,783	47,85	8.3
41	176,938	14,49	0.08191	0.05547	0.01921	0.05494	0.018	5,888	11	323	5,671	42,07	7.4
42	335,108	25,92	0.07737	-0.01378	0.02005	-0.01364	0.020	5,454	11	-74	5,436	36,40	6.7
43	230,326	18,06	0.07843	0.07004	0.02089	0.06931	0.020	5,418	10	376	5,176	30,96	6.0
44	199,400	14,54	0.07294	0.05607	0.02173	0.05546	0.021	4,934	10	274	4,745	25,78	5.4
45	297,535	20,48	0.06885	-0.00577	0.02258	-0.00570	0.022	4,556	10	-26	4,517	21,04	4.7
46	202,639	14,03	0.06925	0.03637	0.02464	0.03592	0.024	4,479	10	161	4,344	16,52	3.8
47	210,947	14,07	0.06673	0.12023	0.02671	0.11863	0.025	4,209	10	499	3,907	12,18	3.1
48	259,945	15,26	0.05870	-0.06837	0.02878	-0.06738	0.029	3,604	10	-243	3,672	8,276	2.3
49	172,135	10,79	0.06272	0.24583	0.03084	0.24204	0.027	3,740	10	905	3,237	4,604	1.4
50+	3,418,44	161,6	0.04730	1.00000	0.34473	0.82764	0.172	2,734	47	2,262	1,367	1,367	1.0

Appendix 3.15: Net Nuptiality Table for Males; Mainland Tanzania, 2022 PHC

Males			Proportion Single	Probability of Marriage	Probability of Dying at Age x	Net Probability of Marriage							
x	Populati	Single	Sx	nx	qx	nx`	qx`	lx`	dx`	Nx`	Lx`	Tx`	ex`
15	609,141	607,44	0.99722	0.00836	0.01544	0.00829	0.0153	91,66	1,40	760	90,57	956,82	10.
16	606,708	599,96	0.98889	0.00477	0.01635	0.00473	0.0163	89,49	1,46	424	88,55	866,24	9.8
17	620,506	610,68	0.98417	0.01767	0.01726	0.01751	0.0171	87,61	1,49	1,53	86,09	777,68	9.0
18	608,399	588,18	0.96678	0.02565	0.01817	0.02541	0.0179	84,57	1,51	2,14	82,74	691,59	8.4
19	490,557	462,09	0.94199	0.07431	0.01908	0.07360	0.0183	80,91	1,48	5,95	77,19	608,85	7.9
20	571,707	498,52	0.87199	0.05464	0.01999	0.05410	0.0194	73,47	1,42	3,97	70,76	531,66	7.5
21	397,924	328,02	0.82434	0.10629	0.02016	0.10522	0.0190	68,06	1,29	7,16	63,83	460,89	7.2
22	604,892	445,63	0.73672	0.12356	0.02033	0.12230	0.0190	59,60	1,13	7,29	55,39	397,05	7.2
23	438,083	282,86	0.64569	0.11720	0.02051	0.11600	0.0193	51,17	988	5,93	47,71	341,66	7.2
24	408,554	232,88	0.57002	0.14349	0.02068	0.14201	0.0191	44,25	849	6,28	40,68	293,94	7.2
25	488,064	238,28	0.48822	0.11645	0.02085	0.11524	0.0196	37,12	729	4,27	34,61	253,26	7.3
26	399,839	172,47	0.43137	0.13186	0.02117	0.13046	0.0197	32,11	635	4,19	29,70	218,64	7.4
27	424,871	159,11	0.37449	0.12090	0.02148	0.11960	0.0201	27,28	551	3,26	25,38	188,94	7.4
28	437,735	144,11	0.32922	0.13410	0.02180	0.13263	0.0203	23,47	477	3,11	21,67	163,56	7.5
29	349,117	99,523	0.28507	0.17342	0.02212	0.17151	0.0202	19,88	402	3,41	17,97	141,88	7.9
30	512,332	120,72	0.23563	0.10596	0.02243	0.10477	0.0212	16,07	341	1,68	15,05	123,90	8.2
31	270,263	56,935	0.21067	0.12081	0.02296	0.11942	0.0215	14,04	303	1,67	13,05	108,84	8.3
32	448,904	83,144	0.18522	0.09658	0.02348	0.09545	0.0223	12,06	270	1,15	11,35	95,788	8.4
33	269,497	45,094	0.16733	0.13184	0.02400	0.13026	0.0224	10,64	239	1,38	9,832	84,433	8.6
34	300,179	43,606	0.14527	0.02260	0.02452	0.02233	0.0242	9,020	219	201	8,810	74,601	8.5
35	357,986	50,828	0.14198	0.13315	0.02504	0.13148	0.0233	8,600	201	1,13	7,934	65,791	8.3
36	300,109	36,937	0.12308	0.06694	0.02617	0.06606	0.0252	7,268	184	480	6,936	57,857	8.3
37	263,402	30,249	0.11484	0.07908	0.02729	0.07800	0.0262	6,604	173	515	6,260	50,921	8.1
38	319,928	33,835	0.10576	0.05762	0.02842	0.05680	0.0276	5,916	163	336	5,666	44,661	7.9
39	209,042	20,834	0.09966	0.02600	0.02954	0.02562	0.0291	5,416	158	139	5,268	38,995	7.4
40	367,291	35,654	0.09707	0.10144	0.03067	0.09988	0.0291	5,120	149	511	4,790	33,727	7.0
41	164,549	14,353	0.08723	0.04215	0.03217	0.04147	0.0315	4,459	140	185	4,297	28,937	6.7
42	317,918	26,562	0.08355	0.08193	0.03368	0.08055	0.0323	4,134	134	333	3,901	24,641	6.3
43	212,711	16,316	0.07671	0.03107	0.03519	0.03052	0.0346	3,668	127	112	3,548	20,740	5.8
44	185,114	13,758	0.07432	-0.03504	0.03670	-0.03440	0.0373	3,429	128	-118	3,423	17,192	5.0
45	290,461	22,344	0.07693	0.11874	0.03821	0.11647	0.0359	3,418	123	398	3,158	13,768	4.4
46	187,987	12,744	0.06779	0.01319	0.04137	0.01292	0.0411	2,897	119	37	2,819	10,610	3.8
47	193,654	12,955	0.06690	0.04278	0.04453	0.04183	0.0435	2,741	119	115	2,624	7,791	3.0
48	235,165	15,059	0.06404	0.01795	0.04769	0.01752	0.0472	2,507	118	44	2,426	5,167	2.1
49	158,969	9,997	0.06289	0.29470	0.05085	0.28721	0.0433	2,344	102	673	1,957	2,742	1.4
50+	2,963,02	131,42	0.04435	1.00000	0.38647	0.80677	0.1932	1,569	303	1,26	785	785	1.0

Appendix 3.16: Net Nuptiality Table for Females; Mainland Tanzania, 2022 PHC

Females			Proportion Single	Probability of Marriage	Probability of Dying at Age x	Net Probability of Marriage							
x	Populati	Single	Sx	nx	qx	nx`	qx`	lx`	dx	Nx`	Lx`	Tx`	ex`
15	598,076	578,8	0.96794	0.05120	0.00753	0.05101	0.007	93,91	68	4,791	91,17	738,2	8.1
16	614,694	564,5	0.91837	0.08090	0.00803	0.08058	0.007	88,43	68	7,126	84,53	647,0	7.7
17	606,576	511,9	0.84407	0.18665	0.00853	0.18585	0.007	80,62	62	14,98	72,82	562,5	7.7
18	645,030	442,8	0.68653	0.13864	0.00903	0.13802	0.008	65,02	54	8,974	60,26	489,6	8.1
19	549,178	324,7	0.59135	0.22963	0.00953	0.22854	0.008	55,50	46	12,68	48,92	429,4	8.8
20	672,947	306,5	0.45555	0.04238	0.01003	0.04216	0.009	42,34	41	1,786	41,24	380,4	9.2
21	451,103	196,7	0.43625	0.21292	0.01038	0.21181	0.009	40,14	37	8,504	35,70	339,2	9.5
22	724,918	248,9	0.34336	0.06289	0.01073	0.06256	0.010	31,27	32	1,956	30,13	303,5	10.
23	513,347	165,1	0.32177	0.09266	0.01108	0.09215	0.010	28,99	30	2,671	27,50	273,4	9.9
24	477,284	139,3	0.29195	0.16544	0.01143	0.16449	0.010	26,01	27	4,279	23,73	245,9	10.
25	549,937	133,9	0.24365	0.03918	0.01178	0.03895	0.011	21,46	24	836	20,91	222,1	10.
26	462,207	108,2	0.23411	0.08587	0.01203	0.08535	0.011	20,37	23	1,739	19,39	201,2	10.
27	463,017	99,08	0.21401	0.12368	0.01228	0.12292	0.011	18,40	21	2,262	17,16	181,8	10.
28	497,763	93,34	0.18754	0.04348	0.01253	0.04321	0.012	15,92	19	688	15,48	164,6	10.
29	397,084	71,23	0.17938	0.17819	0.01279	0.17705	0.011	15,04	17	2,664	13,62	149,2	10.
30	583,096	85,95	0.14742	-0.02770	0.01304	-0.02752	0.013	12,20	16	-336	12,29	135,5	11.
31	279,080	42,28	0.15150	0.11835	0.01344	0.11755	0.012	12,38	15	1,455	11,57	123,2	10.
32	465,819	62,22	0.13357	0.00912	0.01384	0.00906	0.013	10,76	14	98	10,64	111,7	10.
33	290,715	38,47	0.13235	0.11264	0.01425	0.11184	0.013	10,52	14	1,177	9,864	101,0	10.
34	320,910	37,68	0.11744	0.10466	0.01465	0.10389	0.013	9,205	12	956	8,663	91,20	10.
35	378,897	39,84	0.10515	0.04217	0.01505	0.04186	0.014	8,121	12	340	7,891	82,53	10.
36	329,197	33,15	0.10072	0.01919	0.01604	0.01903	0.015	7,661	12	146	7,527	74,64	9.9
37	282,643	27,92	0.09879	0.09288	0.01703	0.09209	0.016	7,393	12	681	6,993	67,11	9.6
38	354,043	31,72	0.08961	-0.02778	0.01802	-0.02753	0.018	6,593	12	-181	6,623	60,12	9.1
39	238,089	21,92	0.09210	0.14020	0.01901	0.13887	0.017	6,654	11	924	6,133	53,50	8.7
40	409,472	32,42	0.07919	-0.05648	0.02000	-0.05591	0.020	5,612	11	-314	5,711	47,37	8.3
41	171,062	14,31	0.08366	0.05306	0.02086	0.05250	0.020	5,810	11	305	5,599	41,65	7.4
42	323,765	25,64	0.07922	-0.01152	0.02171	-0.01140	0.021	5,387	11	-61	5,359	36,06	6.7
43	223,002	17,87	0.08013	0.07253	0.02257	0.07171	0.021	5,331	11	382	5,082	30,70	6.0
44	193,483	14,38	0.07432	0.05214	0.02343	0.05153	0.022	4,833	11	249	4,653	25,61	5.5
45	287,891	20,28	0.07045	-0.00481	0.02428	-0.00475	0.024	4,474	10	-21	4,430	20,96	4.7
46	196,636	13,91	0.07079	0.02578	0.02640	0.02544	0.026	4,386	11	112	4,273	16,53	3.9
47	201,853	13,92	0.06896	0.13562	0.02852	0.13369	0.026	4,160	11	556	3,827	12,26	3.2
48	253,806	15,12	0.05961	-0.07500	0.03064	-0.07385	0.031	3,493	11	-258	3,567	8,437	2.4
49	166,996	10,70	0.06408	0.13384	0.03275	0.13164	0.030	3,640	11	479	3,345	4,870	1.5
50+	302,901	16,81	0.05550	1.00000	0.34333	0.82834	0.171	3,050	52	2,526	1,525	1,525	1.0

Appendix 3.17: Net Nuptiality Table for Males; Tanzania Zanzibar, 2022 PHC

Males			Proportion Single	Probability of Marriage	Probability of Dying at Age x	Net Probability of Marriage							
x	Population	Singles	Sx	nx	qx	nx`	qx`	lx`	dx`	Nx`	Lx`	Tx`	ex`
15	19,690	19,654	0.99817	0.00503	0.01552	0.00499	0.01548	90,217	1,397	450	89,293	1,026,724	11.5
16	19,133	19,002	0.99315	0.00174	0.01643	0.00173	0.01642	88,370	1,451	153	87,568	937,431	10.7
17	19,821	19,651	0.99142	0.00361	0.01734	0.00358	0.01731	86,766	1,502	311	85,860	849,863	9.9
18	20,643	20,392	0.98784	0.01127	0.01825	0.01116	0.01815	84,953	1,542	948	83,708	764,004	9.1
19	16,747	16,357	0.97671	0.02683	0.01916	0.02657	0.01891	82,463	1,559	2,191	80,588	680,296	8.4
20	20,065	19,072	0.95051	0.02187	0.02007	0.02165	0.01985	78,713	1,563	1,704	77,079	599,708	7.8
21	14,898	13,851	0.92972	0.05589	0.02025	0.05532	0.01968	75,446	1,485	4,174	72,617	522,628	7.2
22	19,986	17,543	0.87776	0.07991	0.02042	0.07909	0.01960	69,787	1,368	5,520	66,343	450,012	6.8
23	17,029	13,753	0.80762	0.09098	0.02059	0.09005	0.01966	62,899	1,236	5,664	59,449	383,668	6.5
24	14,568	10,695	0.73414	0.12220	0.02076	0.12093	0.01950	55,999	1,092	6,772	52,067	324,219	6.2
25	17,164	11,061	0.64443	0.11435	0.02094	0.11316	0.01974	48,135	950	5,447	44,937	272,152	6.1
26	14,455	8,250	0.57074	0.17376	0.02126	0.17192	0.01941	41,738	810	7,175	37,746	227,215	6.0
27	15,667	7,388	0.47156	0.15897	0.02157	0.15725	0.01986	33,753	670	5,308	30,764	189,469	6.2
28	14,647	5,809	0.39660	0.14648	0.02189	0.14488	0.02029	27,775	564	4,024	25,481	158,705	6.2
29	12,570	4,255	0.33850	0.23156	0.02221	0.22899	0.01964	23,187	455	5,310	20,305	133,224	6.6
30	17,492	4,550	0.26012	0.17849	0.02253	0.17648	0.02052	17,422	357	3,075	15,706	112,920	7.2
31	9,701	2,073	0.21369	0.13457	0.02305	0.13302	0.02150	13,990	301	1,861	12,909	97,214	7.5
32	14,881	2,752	0.18493	0.16798	0.02358	0.16600	0.02160	11,828	255	1,963	10,719	84,305	7.9
33	10,171	1,565	0.15387	0.18649	0.02410	0.18424	0.02185	9,609	210	1,770	8,619	73,586	8.5
34	10,050	1,258	0.12517	0.05414	0.02462	0.05348	0.02396	7,629	183	408	7,334	64,967	8.9
35	12,399	1,468	0.11840	0.19055	0.02515	0.18815	0.02275	7,038	160	1,324	6,296	57,633	9.2
36	10,111	969	0.09584	0.14234	0.02628	0.14047	0.02441	5,554	136	780	5,096	51,337	10.1
37	9,733	800	0.08219	-0.03081	0.02741	-0.03038	0.02783	4,638	129	-141	4,644	46,241	10.0
38	9,808	831	0.08473	0.12586	0.02854	0.12406	0.02674	4,650	124	577	4,299	41,597	9.7
39	6,859	508	0.07406	0.13522	0.02966	0.13321	0.02766	3,949	109	526	3,631	37,298	10.3
40	12,553	804	0.06405	0.14682	0.03079	0.14456	0.02853	3,313	95	479	3,027	33,667	11.1
41	5,307	290	0.05464	0.04923	0.03230	0.04844	0.03151	2,740	86	133	2,630	30,640	11.6
42	10,105	525	0.05195	-0.02666	0.03382	-0.02621	0.03427	2,521	86	-66	2,511	28,010	11.2
43	6,618	353	0.05334	0.08961	0.03533	0.08803	0.03375	2,501	84	220	2,348	25,499	10.9
44	5,519	268	0.04856	0.04707	0.03684	0.04620	0.03597	2,196	79	101	2,106	23,151	11.0
45	9,487	439	0.04627	0.06313	0.03835	0.06192	0.03714	2,016	75	125	1,916	21,045	11.0
46	5,536	240	0.04335	0.15253	0.04152	0.14937	0.03835	1,816	70	271	1,645	19,129	11.6
47	7,104	261	0.03674	-0.28679	0.04469	-0.28038	0.05109	1,475	75	-414	1,644	17,484	10.6
48	5,838	276	0.04728	0.11499	0.04785	0.11224	0.04510	1,813	82	204	1,671	15,839	9.5
49	4,565	191	0.04184	-8.24472	0.05102	-8.03442	0.26132	1,528	399	-12,276	7,466	14,169	1.9
50+	88,580	2,215	0.38680	1.00000	0.05418	0.97291	0.02709	13,405	363	13,042	6,702	6,702	1.0

Appendix 3.18: Net Nuptiality Table for Females; Tanzania Zanzibar, 2022 PHC

Females			Proportion Single	Probability of Marriage	Probability of Dying at Age x	Net Probability of Marriage						
x	Population	Singles	Sx	nx	qx	nx`	qx`	lx`	dx`	Nx`	Lx`	Tx`	ex`
15	19,551	19,486	0.99668	0.01366	0.01044	0.01359	0.01037	93,019	965	1,264	91,905	738,261	8.0
16	20,548	20,200	0.98306	0.02104	0.01111	0.02092	0.01099	90,791	998	1,900	89,342	646,356	7.2
17	21,611	20,798	0.96238	0.07283	0.01178	0.07240	0.01135	87,893	997	6,364	84,213	557,014	6.6
18	22,115	19,733	0.89229	0.10885	0.01245	0.10817	0.01177	80,532	948	8,711	75,703	472,801	6.2
19	19,035	15,136	0.79517	0.18305	0.01311	0.18185	0.01191	70,873	844	12,889	64,007	397,099	6.2
20	22,569	14,661	0.64961	0.06132	0.01378	0.06090	0.01336	57,140	763	3,480	55,019	333,092	6.1
21	16,757	10,218	0.60978	0.19839	0.01425	0.19697	0.01284	52,897	679	10,419	47,348	278,074	5.9
22	23,044	11,264	0.48880	0.13076	0.01472	0.12980	0.01376	41,799	575	5,425	38,798	230,726	5.9
23	20,057	8,522	0.42489	0.13744	0.01519	0.13640	0.01415	35,798	507	4,883	33,104	191,927	5.8
24	16,778	6,149	0.36649	0.21964	0.01566	0.21792	0.01394	30,409	424	6,627	26,883	158,824	5.9
25	18,878	5,399	0.28599	0.12303	0.01614	0.12203	0.01514	23,358	354	2,850	21,756	131,940	6.1
26	16,363	4,104	0.25081	0.20331	0.01654	0.20163	0.01485	20,154	299	4,064	17,972	110,184	6.1
27	17,471	3,491	0.19982	0.15406	0.01694	0.15276	0.01563	15,791	247	2,412	14,461	92,212	6.4
28	16,417	2,775	0.16903	0.14030	0.01734	0.13908	0.01612	13,132	212	1,826	12,113	77,751	6.4
29	14,520	2,110	0.14532	0.30347	0.01774	0.30078	0.01504	11,094	167	3,337	9,342	65,638	7.0
30	20,530	2,078	0.10122	0.00481	0.01814	0.00477	0.01809	7,590	137	36	7,503	56,296	7.5
31	10,404	1,048	0.10073	0.14735	0.01868	0.14597	0.01731	7,417	128	1,083	6,811	48,793	7.2
32	16,114	1,384	0.08589	0.11404	0.01923	0.11294	0.01813	6,206	113	701	5,799	41,982	7.2
33	11,131	847	0.07609	0.07721	0.01978	0.07645	0.01902	5,392	103	412	5,135	36,183	7.0
34	10,567	742	0.07022	0.17835	0.02033	0.17654	0.01851	4,877	90	861	4,402	31,048	7.1
35	13,606	785	0.05770	0.13591	0.02087	0.13449	0.01946	3,926	76	528	3,624	26,646	7.4
36	11,614	579	0.04985	0.10343	0.02192	0.10230	0.02079	3,322	69	340	3,117	23,022	7.4
37	11,522	515	0.04470	0.06196	0.02297	0.06125	0.02226	2,913	65	178	2,791	19,905	7.1
38	11,019	462	0.04193	0.11881	0.02401	0.11738	0.02259	2,670	60	313	2,483	17,114	6.9
39	8,147	301	0.03695	0.19046	0.02506	0.18807	0.02267	2,296	52	432	2,054	14,631	7.1
40	14,009	419	0.02991	-0.03558	0.02611	-0.03511	0.02657	1,812	48	-64	1,820	12,577	6.9
41	5,876	182	0.03097	0.21157	0.02701	0.20871	0.02416	1,828	44	381	1,615	10,757	6.7
42	11,343	277	0.02442	-0.09027	0.02792	-0.08901	0.02918	1,402	41	-125	1,444	9,142	6.3
43	7,324	195	0.02662	-0.04101	0.02883	-0.04042	0.02942	1,486	44	-60	1,494	7,699	5.2
44	5,917	164	0.02772	0.23681	0.02973	0.23329	0.02621	1,502	39	350	1,307	6,205	4.7
45	9,644	204	0.02115	0.11011	0.03064	0.10842	0.02895	1,112	32	121	1,036	4,897	4.7
46	6,003	113	0.01882	0.08870	0.03293	0.08724	0.03147	960	30	84	903	3,861	4.3
47	9,094	156	0.01715	-0.24395	0.03521	-0.23966	0.03951	846	33	-203	930	2,959	3.2
48	6,139	131	0.02134	0.13369	0.03750	0.13119	0.03499	1,015	36	133	931	2,028	2.2
49	5,139	95	0.01849	0.16962	0.03979	0.16625	0.03641	846	31	141	760	1,098	1.4
50+	10,358	159	0.01535	1.00000	0.35952	0.82024	0.17976	675	121	553	337	337	1.0

Appendix 3.19: Adolescent Fertility Rate; Tanzania, 2022 PHC

Region	Total					Adolescent Fertility (Births per 1000 Women)	TFR Women (15 - 49)	Percentage Contribution of Women 15 - 19 to TFR	ASFR
	Age Specific Fertility Rates								
	15	16	17	18	19				15-19
Tanzania	**0.009**	**0.025**	**0.06**	**0.122**	**0.172**	**76.5**	**4.6**	**1.7**	**0.0765**
Mainland Tanzania	**0.009**	**0.025**	**0.062**	**0.125**	**0.176**	**78.5**	**4.6**	**1.7**	**0.0785**
Dodoma	0.014	0.041	0.088	0.151	0.19	95.2	4.7	2.0	0.0952
Arusha	0.012	0.019	0.037	0.093	0.135	59.9	4.7	1.3	0.0599
Kilimanjaro	0.005	0.011	0.029	0.071	0.117	44.0	4.6	1.0	0.0440
Tanga	0.009	0.024	0.057	0.119	0.174	72.3	3.7	2.0	0.0723
Morogoro	0.014	0.037	0.079	0.134	0.168	85.3	4.8	1.8	0.0853
Pwani	0.007	0.018	0.038	0.091	0.12	54.4	4.2	1.3	0.0544
Dar es Salaam	0.004	0.007	0.015	0.035	0.063	26.0	3.7	0.7	0.0260
Lindi	0.012	0.028	0.07	0.123	0.171	79.2	3.1	2.6	0.0792
Mtwara	0.012	0.033	0.082	0.142	0.188	90.0	3.7	2.4	0.0900
Ruvuma	0.017	0.04	0.102	0.161	0.206	103.9	4.2	2.5	0.1039
Iringa	0.004	0.015	0.04	0.09	0.137	53.7	4.6	1.2	0.0537
Mbeya	0.009	0.024	0.061	0.109	0.143	69.3	4.1	1.7	0.0693
Singida	0.009	0.027	0.067	0.145	0.213	87.5	3.8	2.3	0.0875
Tabora	0.011	0.04	0.098	0.182	0.247	115.8	5.7	2.0	0.1158
Rukwa	0.011	0.034	0.091	0.194	0.256	117.0	5.4	2.2	0.1170
Kigoma	0.005	0.018	0.05	0.114	0.177	69.4	6.1	1.1	0.0694
Shinyanga	0.009	0.032	0.075	0.155	0.215	97.5	5.3	1.8	0.0975
Kagera	0.005	0.016	0.049	0.134	0.209	77.5	5.0	1.6	0.0775
Mwanza	0.007	0.022	0.053	0.111	0.165	69.2	5.6	1.2	0.0692
Mara	0.009	0.026	0.075	0.161	0.229	95.3	4.6	2.1	0.0953
Manyara	0.013	0.032	0.065	0.141	0.214	90.1	5.4	1.7	0.0901
Njombe	0.004	0.012	0.04	0.086	0.158	55.6	6.0	0.9	0.0556
Katavi	0.011	0.038	0.097	0.163	0.218	105.8	4.0	2.6	0.1058
Simiyu	0.007	0.024	0.074	0.155	0.237	96.5	5.6	1.7	0.0965
Geita	0.009	0.028	0.075	0.145	0.211	91.3	6.3	1.4	0.0913
Songwe	0.01	0.034	0.106	0.189	0.253	120.6	5.3	2.3	0.1206
Tanzania Zanzibar	**0.002**	**0.005**	**0.014**	**0.035**	**0.072**	**25.4**	**5.5**	**0.5**	**0.0254**
Kaskazini Unguja	0.001	0.004	0.016	0.037	0.082	26.9	4.8	0.6	0.0269
Kusini Unguja	0.003	0.008	0.028	0.061	0.079	36.4	4.0	0.9	0.0364
Mjini Magharibi	0.002	0.003	0.011	0.024	0.053	19.3	4.2	0.5	0.0193
Kaskazini Pemba	0.004	0.008	0.017	0.048	0.112	33.9	6.5	0.5	0.0339
Kusini Pemba	0.002	0.004	0.015	0.047	0.105	31.4	6.1	0.5	0.0314

Appendix 3.20: Adolescent Fertility Rate; Rural, Tanzania, 2022 PHC

Region	Total					Adolescent Fertility (Births per 1000 Women)	TFR Women (15 - 49)	Percentage Contribution of Women 15 - 19 to TFR	ASFR
	Age Specific Fertility Rates								
	15	16	17	18	19				15-19
Tanzania	**0.011**	**0.031**	**0.079**	**0.155**	**0.218**	**95.3**	**5.3**	**1.8**	**0.095**
Mainland Tanzania	**0.011**	**0.032**	**0.081**	**0.158**	**0.222**	**97.2**	**5.3**	**1.8**	**0.097**
Dodoma	0.019	0.055	0.125	0.205	0.256	127.7	5.7	2.2	0.128
Arusha	0.018	0.028	0.056	0.13	0.193	84.1	5.5	1.5	0.084
Kilimanjaro	0.005	0.013	0.031	0.078	0.128	46.7	3.7	1.3	0.047
Tanga	0.011	0.028	0.069	0.142	0.204	83.9	5.1	1.6	0.084
Morogoro	0.019	0.05	0.109	0.178	0.222	113.5	4.9	2.3	0.114
Pwani	0.01	0.022	0.047	0.108	0.141	64.4	3.9	1.7	0.064
Dar es Salaam	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lindi	0.01	0.03	0.074	0.129	0.176	82.1	3.6	2.3	0.082
Mtwara	0.014	0.041	0.093	0.16	0.207	100.9	4.3	2.3	0.101
Ruvuma	0.019	0.045	0.114	0.169	0.217	111.7	4.5	2.5	0.112
Iringa	0.005	0.018	0.047	0.11	0.17	62.1	4.4	1.4	0.062
Mbeya	0.012	0.032	0.08	0.135	0.177	87.3	4.1	2.1	0.087
Singida	0.009	0.029	0.077	0.159	0.231	95.5	6.1	1.6	0.095
Tabora	0.012	0.043	0.107	0.194	0.265	124.3	5.6	2.2	0.124
Rukwa	0.012	0.037	0.106	0.214	0.286	131.1	6.5	2.0	0.131
Kigoma	0.006	0.02	0.056	0.127	0.198	77.7	5.7	1.4	0.078
Shinyanga	0.011	0.039	0.089	0.182	0.254	113.5	5.7	2.0	0.114
Kagera	0.005	0.017	0.051	0.139	0.216	79.8	5.6	1.4	0.080
Mwanza	0.009	0.029	0.075	0.149	0.219	90.6	5.3	1.7	0.091
Mara	0.01	0.028	0.085	0.183	0.258	106.6	5.7	1.9	0.107
Manyara	0.014	0.035	0.068	0.148	0.222	94.3	6.2	1.5	0.094
Njombe	0.003	0.014	0.049	0.102	0.185	63.1	4.1	1.5	0.063
Katavi	0.013	0.044	0.112	0.179	0.235	116.8	5.9	2.0	0.117
Simiyu	0.007	0.026	0.08	0.165	0.259	103.1	6.7	1.5	0.103
Geita	0.01	0.031	0.089	0.168	0.247	105.3	5.8	1.8	0.105
Songwe	0.013	0.046	0.138	0.228	0.296	146.6	6.1	2.4	0.147
Tanzania Zanzibar	**0.003**	**0.006**	**0.018**	**0.045**	**0.093**	**30.9**	**5.2**	**0.6**	**0.031**
Kaskazini Unguja	0.001	0.004	0.017	0.037	0.089	27.7	5.0	0.6	0.028
Kusini Unguja	0.004	0.008	0.03	0.06	0.08	36.3	4.1	0.9	0.036
Mjini Magharibi	0.003	0.005	0.01	0.033	0.066	24.1	4.4	0.5	0.024
Kaskazini Pemba	0.004	0.008	0.019	0.052	0.116	35.3	6.6	0.5	0.035
Kusini Pemba	0.003	0.004	0.018	0.048	0.115	33.2	6.3	0.5	0.033

Appendix 3.21: Adolescent Fertility Rate; Urban, Tanzania, 2022 PHC

Region	Total					Adolescent Fertility (Births per 1000 Women)	TFR Women (15 - 49)	Percentage Contribution of Women 15 - 19 to TFR	ASFR
	Age Specific Fertility Rates								
	15	16	17	18	19				15-19
Tanzania	0.005	0.013	0.031	0.068	0.106	**45.4**	**3.8**	**1.2**	0.045
Mainland Tanzania	0.005	0.014	0.032	0.071	0.109	**46.8**	**3.8**	**1.2**	0.047
Dodoma	0.007	0.023	0.044	0.090	0.128	59.2	3.8	1.5	0.059
Arusha	0.004	0.007	0.016	0.040	0.071	28.4	3.6	0.8	0.028
Kilimanjaro	0.004	0.005	0.020	0.042	0.082	30.9	3.3	0.9	0.031
Tanga	0.004	0.011	0.027	0.056	0.100	39.3	3.8	1.0	0.039
Morogoro	0.009	0.023	0.047	0.082	0.111	54.0	3.7	1.5	0.054
Pwani	0.004	0.011	0.029	0.071	0.097	42.5	3.6	1.2	0.043
Dar es Salaam	0.004	0.007	0.015	0.035	0.063	26.0	3.1	0.9	0.026
Lindi	0.017	0.017	0.043	0.079	0.125	54.8	3.5	1.6	0.055
Mtwara	0.005	0.010	0.044	0.080	0.124	52.5	3.5	1.5	0.053
Ruvuma	0.010	0.021	0.053	0.119	0.149	68.7	4.3	1.6	0.069
Iringa	0.004	0.005	0.023	0.053	0.084	34.8	3.5	1.0	0.035
Mbeya	0.005	0.011	0.034	0.069	0.098	43.7	3.5	1.2	0.044
Singida	0.005	0.017	0.024	0.071	0.129	48.0	4.2	1.1	0.048
Tabora	0.004	0.023	0.048	0.098	0.142	63.4	4.2	1.5	0.063
Rukwa	0.008	0.023	0.045	0.117	0.154	67.7	4.6	1.5	0.068
Kigoma	0.003	0.011	0.036	0.080	0.128	49.3	4.5	1.1	0.049
Shinyanga	0.007	0.020	0.051	0.113	0.159	72.1	4.4	1.6	0.072
Kagera	0.002	0.007	0.024	0.064	0.114	41.3	4.2	1.0	0.041
Mwanza	0.005	0.013	0.025	0.064	0.107	42.5	3.9	1.1	0.043
Mara	0.007	0.024	0.058	0.123	0.183	76.4	4.9	1.6	0.076
Manyara	0.003	0.014	0.039	0.082	0.148	56.8	4.4	1.3	0.057
Njombe	0.004	0.007	0.018	0.055	0.107	37.6	3.6	1.0	0.038
Katavi	0.004	0.019	0.055	0.118	0.181	76.0	5.2	1.5	0.076
Simiyu	0.006	0.018	0.054	0.121	0.169	74.0	5.1	1.4	0.074
Geita	0.008	0.024	0.056	0.116	0.172	75.1	5.0	1.5	0.075
Songwe	0.004	0.011	0.043	0.109	0.177	70.3	4.6	1.5	0.070
Tanzania Zanzibar	0.002	0.003	0.011	0.027	0.055	**20.1**	**4.3**	**0.5**	0.020
Kaskazini Unguja	0.005	0.010	0.012	0.036	0.049	23.1	4.0	0.6	0.023
Kusini Unguja	0.000	0.008	0.021	0.067	0.078	37.2	3.6	1.0	0.037
Mjini Magharibi	0.002	0.002	0.011	0.023	0.051	18.4	4.2	0.4	0.018
Kaskazini Pemba	0.004	0.006	0.012	0.031	0.089	25.8	5.6	0.5	0.026
Kusini Pemba	0.000	0.005	0.009	0.041	0.073	23.9	5.3	0.5	0.024

Appendix 4: Measures of Nuptiality Estimates

Computation of Net Nuptiality Table

In order to study the marriage patterns, a number of statistical measures like crude marriage rates, age-sex specific marriage rates and similar other rates have been used by demographers, but the most refined device known is the Nuptiality Table. The term nuptiality is associated with the frequency of marriages and a Nuptiality Table provides the expected proportions of single persons who get married at different ages and their average expected years to marriage from each age.

To understand concept of the Nuptiality Table, it is necessary to provide first a description of the nature of a simple Life Table and the basic requirements for its construction

A Life Table is a statistical model which describes the life history of a group of persons born at one time, as it passes through different years of life, experiencing specific mortality at different ages until every one of them dies. This table is generated through the application of a given set of age-specific mortality rates on a hypothetical cohort of persons assumed to have been born at one time and provides the value of such functions as the probability of death at each age and the expected average life (or the years to death) beyond a specific age. A Nuptiality Table is also modelled after the Life Table, but it describes the effect of age-specific marriage rates on a hypothetical cohort of single persons as it passes through different ages. This table therefore gives proportions of cohort of single males or females who would be getting married at various ages assuming that the marriage rates used in constructing the table would continue to prevail. Such table when constructed without accounting for the mortality effect is called Gross Nuptiality Table. If, however, the mortality effect is also considered in addition to attrition due to marriages, the table so constructed is called Net Nuptiality Table.

To arrive at estimates of marriage probabilities at each age, the first step requires to estimate the number of marriages. This has been done by using the number of single survivors and the number of total survivors (married and unmarried inclusive), in the following way:

l_x = number of survivors at age x.

l'_x = number of single survivors at age x.

l_x- l'_x = number of married survivors at age x.

q_x= the probability of death between the age x and (x + 1)

P_X = 1- q_x = the probability of surviving between age x and (x+1)

Since (l_x- l'_x) is the number of married persons who are survivors of those already married at age (x-1) and the singles who got married between the age (x-1) and x, the estimate of the original group of which (l_x- l'_x) are the survivors, is given by $\frac{l_x - l\prime_x}{P_{x-1}}$.

The estimated number of marriages between the ages (x-1) and x is given by $\frac{l_x - l\prime_x}{P_{x-1}} - (l_{x-1-} l\prime_{x-1}) = M_{x-1}$

Similarly, M_x the number of marriages between x and (x+l) is given by

$\frac{l_{x+1} - l\prime_{x+1}}{P_x} - (l_{x-} l\prime_x) = M_x$

The marriage probability between age x and (x+1) is represented in a Nuptiality Table by the symbol n_x which is given by the following equation:

$$n_x = \frac{M_x}{l\prime_x} = \frac{\frac{l_{x+1} - l\prime_{x+1}}{P_x} - (l_{x-} l\prime_x)}{l\prime_x}$$

In the Nuptiality Table this measure forms the first column and is given as 1000 n_x.

In a nuptiality table, 1000 n_x represents the number of people (usually out of a cohort of 1,000) who are expected to remain single (or in a specific marital status) during the given age interval (x, x+n)

i. $\boldsymbol{n_x}$**:** This value represents the proportion or probability that individuals in a cohort will remain single (or in a specified marital status) over the age interval (x, x+1).
ii. **By multiplying by 1,000,** 1000nx gives you the number of people, out of an initial cohort of 1,000 individuals, expected to stay single (or remain in the marital status under consideration) within that age range.

Nuptiality tables help demographers and social scientists understand trends in marriage and the likelihood of remaining single or entering marriage across age groups.

The second column in the table gives probability of death, between age x and (x+1) and is symbolized as q_x and in the nuptiality table is given as 1000 qx.

The third column gives number of single survivors at age x or l'_x.

i. Out of the total population the ratio of single persons is computed for each age-group.
ii. Ratios for single years are then interpolated out of them
iii. These ratios are then multiplied with the number of survivors at each single age (l_x) as given in the Complete Life Table, giving the estimated number of single survivors to the respective ages (l'_x) in the Nuptiality Table

The fourth column gives deaths at age x while single which is represented by the symbol d'_x in Nuptiality Table and is given by the following formula.

$d'_x = q_x \left(1 - \frac{n_x}{2}\right) l_x$

Column (5) in the table gives estimates of first marriages out of 100,000 born alive which is the radix of Nuptiality Table. These are represented by symbol v'_xvlx which is given by the formula:

$v'_x = l'_x - d'_x - l'_{x+1}$

The next column N'x gives first marriages at each age x and at later ages and is given by

$$\sum_{x=15}^{50+} v'_x$$

Column (7) provides percentage of N'x out of corresponding single survivors l'_x.

Column (8) in the table gives stationary population at different ages. The corresponding symbol for this column is L'_x which stands for the person-years lived by single persons between ages x and (x+1). This is given by the following formula:

$L'_x = \frac{1}{2}(l'_{x+}\, l'_{x+1}) + \frac{1}{4}(\, d'_{x+1} + v'_{x+1} - d'_{x-1} - v'_{x-1}\,)$

Column (9) gives the values of T'_x which represents the number of person years-lived by single persons at age x and at all later ages and is given by

$$\sum L_x$$

The last column (10) gives the estimates of expected years of single life remaining at start of age x. The column provides expected average years to marriage considering the effect of death. The symbol corresponding to this estimate is $^{\circ}e_{l_x}$ which is given by the formula

$^{\circ}e_{l_x} = \frac{T_x}{l'_x}$

In the nuptiality table age 15 is considered as minimum for males as well as females keeping in view the distribution of population by marital status. On the same basis the maximum age for males and females has been taken as 50 years and above.

ASMR = $\frac{nM_x}{nP_x}$ *1000

Where

nM_x= number of marriages in a year between ages x and x + n

nP_x = number of persons in the age group (x, x + n)

Crude Marriage Rate (CMR)

The CMR is calculated by the following formula:

CMR= $\frac{M}{P}$ *1000 Where M is number of marriages persons and P is the total population

The General Marriage Rate (GMR) is the measure of the marriages per one thousand of the marriageable age population.

GMR= $\frac{M}{P_{15+}}$ *1000

Where M is number of married persons and P_{15+} is total population at age 15 and above

The Mean Age at First Birth is defined as the average length of single life expressed in years among those who experienced childbearing before age 50.

Step 1: Calculation of the person years lived in a childless state, denoted by A where

A= 15 + $\sum_{x=15-19}^{45-49} S_x * 5$ Where S_x = Proportional childless in the age group x

Step 2: Estimation of the proportion of the remaining childless at age 50, denoted by B where

B= $\frac{(S_{45-49} + S_{50-54})}{2}$

If the proportion women childless in age group 50-54 is not available, then B= S_{45-49}

Step 3: Estimation of the proportional childless by age 50, denoted by C, i.e. C=1-B

Step 4: Calculation of the number of person-years lived by proportion childless, denoted by D, i.e. D=50*B

Step 5: Calculation of Mean age at first birth= $\frac{(A-D)}{C}$

Singulate Mean Age at Marriage (SMAM) is defined as the average length of single life expressed in years among those who marry before age 50. The Singulate Mean Age at Marriage is calculated from data on the proportion never married by age and sex by using the following formula:

Step 1: Calculation of the person years lived in a single state, denoted by A

A= 15 + $\sum_{x=15-19}^{45-49} S_x * 5$ Where S_x = Proportion single in the age group x

Step 2: Estimation of the proportion of the remaining single at age 50, denoted by B

B= $\frac{(S_{45-49} + S_{50-54})}{2}$

If the proportion single in age group 50-54 is not available, then B= S_{45-49}

Step 3: Estimation of the proportion ever married by age 50, denoted by C i.e. C=1-B

Step 4: Calculation of the number of person-years lived by proportion not married, denoted by D, i.e. D=50*B

Step 5: Calculation of SMAM= $\frac{(A-D)}{C}$

Age Specific Fertility Rate is calculated as number of births in a year to mothers of a specific age per woman (or per 1000 women) of the same age at midyear. ASFR is usually calculated for women in each 5-year age group for ages 15-49 years.

ASFRa = (Ba/Ea) x1000

Where:

Ba = number of births to women in age group a in a given year or reference period; and

Ea =number of person-years of exposure in age group a during the specified reference period

Crude Birth Rate (CBR): The CBR is defined as the number of births in a year divided by the mid-year population, multiplied by 1000. While all other indices are derived by using births of women in childbearing age, the indicator on CBR includes all births in the population including from women outside the reproductive age group 15 – 49.

$$\frac{B}{P}x1000$$

Where **B** is births in a year, **P** is the total population or mid-year population. The CBR is a general indicator of fertility in a population or country or a particular area.

Child Woman Ratio (CWR) is the number of children under five years of age per 1,000 women in the population (15-49 age).

CWR= $= \frac{C}{W}$*1000

General Fertility Rate (GFR) is defined as the number of live births per 1,000 women aged 15-49 years in a population per year represented as:

$$\frac{B}{P_{f15-49}} x\ 1000$$

Where **B** is the number of births in a year and P_{f15-49} is the number of women aged 15 to 49 years.

Gross Reproduction Rate (GRR) is the measure analogous to the total fertility rate, but it refers only to female births. Thus, it is derived as the same manner of TFR but uses a set of Age-Specific Fertility Rates calculated based on female births only.

The GRR is exactly like TFR, except that it counts only daughters and literally measures "reproduction"– a woman reproducing herself in the next generation by having a daughter. The GRR is estimated by multiplying the TFR by the percentage of female at birth. The GRR, like TFR, assumes that the hypothetical cohort of women pass from birth through their reproductive life without experiencing mortality. This assumption is satisfactory when one wants to compare levels of fertility and/or gross reproduction across populations and over time. But, for a more realistic assessment of the reproductive potential of a population, considering mortality, one needs to calculate the Net Reproduction Rate (NRR). The NRR is obtained by multiplying the ASFR by the Survivorship rate of corresponding age 12 group from the women life table and summing up all this values. When NRR equals 1, then each generation of women is exactly reproducing itself. When it is larger than 1, the next generation will have more women. When it is smaller than 1, the next generation will have less women.

GRR = TFR x Proportion of Births that are female

Total Fertility Rate (TFR)

TFR is the average number of children that would be born to a woman by the time she ended her childbearing if she were to pass through all her childbearing years conforming to the age-specific fertility rates of a given year. TFR is the sum of the age-specific fertility rate (ASFR) for women aged 15-49, in 5-year age intervals.

TFR is calculated as 5*∑ASFRs where there are 5-year age groups or ∑ASFRs per singe year 15 to 49

Parity Progression Ratio (PPR) is the probability of having another child given that the mother has reached certain parity. PPRs are usually represented as a0, a1, a2 and so on. The term a0 is a measure of infertility. Women progressing to higher parities usually have high fertility rates. Zero parity women are those with no live births and single parity refers to those women who have one child and so on. PPR can be calculated by using the following formula:

$$a_x = \frac{Women\ with\ at\ least\ \ x+1\ children\ ever\ born}{Women\ with\ at\ least\ \ x\ children\ ever\ born}$$