

Trends and Correlates of Nonmarital Fertility in Kenya: Evidence from the 2008–2022 Demographic and Health Surveys

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Abstract

Nonmarital fertility is an increasingly important feature of fertility change in Sub-Saharan Africa. In Kenya, urbanization and expanded female education are reshaping fertility patterns. Despite this, however, evidence on the trends and correlates of nonmarital fertility remains limited. This study addresses this gap. The analysis draws on a pooled sample of 26,345 never-married women aged 15–49 from the 2008–09, 2014, and 2022 Kenya Demographic and Health Surveys. Descriptive statistics were used to examine prevalence and trends, while logistic regression identified key correlates. The results indicate that nonmarital fertility increased from 29.9% in 2008–09 to 35.7% in 2022, representing a rise of 5.8 percentage points. The increase was more pronounced among urban women, those with primary or higher education, and residents of Nairobi, Eastern, and Central regions. In contrast, declines were observed among Muslim women and those in Nyanza and Northeastern regions. Nonmarital fertility was significantly associated with age, cohabitation, education, household wealth, employment status, unmet need for family planning, religion, place of residence, region, and survey period. In conclusion, nonmarital fertility in Kenya is rising amid delayed marriage and unequal access to reproductive health services. Policy responses should expand youth-friendly contraception, strengthen girls' education, and target structural inequalities—especially among adolescents and unmarried women in high-prevalence and informal urban settings—while supporting context-specific interventions and further research on employment and regional disparities.

Keywords: *nonmarital, fertility, trends, correlates, Kenya.*

1. Introduction

Nonmarital fertility—childbearing outside legally or socially recognized marriage—has become an increasingly important dimension of fertility change globally. In Kenya, where statutory, customary, and religious marriage systems coexist alongside a growing prevalence of informal unions, nonmarital childbearing includes births to never-married women as well as those in non-formalized relationships. Historically, marriage regulated sexual relations and legitimized childbearing. However, this linkage is weakening, consistent with broader global trends (Bongaarts & Casterline, 2022).

Across sub-Saharan Africa (SSA), recent evidence points to a gradual decoupling of marriage and childbearing (Shapiro & Gebreselassie, 2014; Bongaarts, 2015; Xu

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et al., 2013). In Kenya, total fertility declined from 6.7 children per woman in 1989 to 3.4 in 2022, while the proportion of births occurring outside marriage has increased, particularly among adolescents and young women (KNBS & ICF, 2023). These changes reflect broader social transformations, including rising female education, rapid urbanization, and shifting aspirations regarding marriage and family formation (United Nations, 2013; MacQuarrie, 2014; Xu et al., 2013; Bongaarts, 2015; Clark, 2017; Smith-Greenaway, 2016; Kebede et al., 2021). Together, they have altered the sequencing of life-course events—especially sexual debut, union formation, and first birth—thereby increasing exposure to nonmarital childbearing.

The postponement of marriage has lengthened the interval between sexual debut and first union, increasing the risk of nonmarital fertility in a context where premarital sexual activity is common (Bongaarts, 2015; Xu et al., 2013; Clark et al., 2017; Nyarko & Potter, 2021). Although contraceptive use among sexually active unmarried women is relatively high, unintended pregnancies remain substantial, reflecting inconsistent use and barriers to access (KNBS & ICF, 2023).

There are also marked spatial and socio-economic differences. Urban areas like Nairobi have lower fertility (2.6) and delayed marriage, while rural areas show higher fertility (3.9) and stronger marriage norms (KNBS & ICF, 2023). Adolescent childbearing remains significant, with 15% of girls aged 15–19 ever pregnant and wide county variation, reflecting underlying inequalities in geography, education, and socio-economic status.

The consequences of nonmarital fertility in Kenya are substantial and multidimensional. At the individual level, unmarried mothers—especially adolescents—often experience stigma, social exclusion, and disrupted educational trajectories, despite policy efforts such as school re-entry guidelines (Lloyd & Mensch, 2008; Blanc & Owour, 2019; Beguy et al., 2017; Odimegwu et al., 2017). These disadvantages frequently translate into reduced economic opportunities over the life course (Blanc & Owour, 2019; Clack et al., 2010). At the household level, nonmarital births contribute to the formation of female-headed households, which are currently estimated at about 34%; a structure often associated with heightened economic vulnerability (KNBS & ICF, 2023).

For children, the implications are equally significant. Evidence from Kenya indicates that children born outside marriage are more likely to experience disadvantages in health, nutrition, and access to essential services (Gage, 1997, 1998; Clark & Hamplova, 2013; Beguy et al., 2017). While overall progress has been made—for instance, 88% of births now occur in health facilities—inequalities persist, particularly among vulnerable populations (KNBS & ICF, 2023). Children born into economically constrained, single-parent households

may face heightened risks of poor health outcomes, undernutrition, and limited access to early childhood development opportunities (Smith-Greenaway, 2016; Cuesta et al., 2018; Wilcox, 2024).

Empirical literature consistently identifies age as a key determinant of nonmarital fertility (Alawode, 2014; Palamuleni & Adebowale, 2014; Nyarko & Potter, 2017; Alowade, 2019; Musau et al., 2012). Older unmarried women are significantly more likely to have experienced a nonmarital birth compared to younger women, largely due to cumulative exposure to sexual activity and longer duration at risk (Clark et al., 2010; Nyarko & Potter, 2017; Alowade, 2019; Marteleto et al., 2008). Another important demographic factor is union status, particularly cohabitation. Across many SSA settings, cohabiting women exhibit substantially higher levels of nonmarital fertility compared to their non-cohabiting counterparts (Mokomane, 2013; Clark *et al.*, 2010, Nyarko & Potter, 2021).

Socioeconomic factors also play a central role in shaping nonmarital fertility. Education is one of the most consistently documented protective correlates (Oluwatobi, 2019; Nyako & Potter, 2021; Alawode, 2021). Women with higher levels of education are generally less likely to experience nonmarital childbearing (Nyako & Potter, 2021; Alawode, 2021; Bongaarts et al., 2017). This relationship operates through multiple pathways, including delayed sexual initiation and marriage, increased access to reproductive health information, and higher opportunity costs associated with early childbearing. Nevertheless, some studies suggest that the protective effect of education may vary across contexts and age groups, particularly among adolescents (Neal et al., 2018).

Similarly, household wealth is inversely associated with nonmarital fertility. Women from poorer households are more likely to experience premarital births, reflecting constraints in access to contraception, limited educational opportunities, and engagement in transactional sexual relationships (Singh et al., 2010; Nyarko & Potter, 2021; Alawode, 2021). Poverty may also reduce the feasibility of formal marriage due to the costs associated with bridewealth and wedding ceremonies, thereby increasing the likelihood of childbearing outside marriage.

The role of employment is more nuanced. While employment can enhance women's autonomy and reduce fertility risks, certain forms of economic vulnerability – particularly informal or unstable employment – have been linked to higher levels of nonmarital fertility (Mokomane, 2013; Grant & Hallman, 2008; Nyarko & Potter, 2021; Jensen, 2019). In such contexts, economic insecurity may increase dependence on informal partnerships or survival strategies that elevate the risk of unintended pregnancies.

Regional and residential contexts play a critical but complex role in shaping nonmarital fertility in SSA. At the broad regional level, variation reflects differences in cultural norms, economic conditions, and institutional contexts. Nonmarital fertility is generally higher in Southern and parts of Eastern Africa – such as South Africa and Namibia – where marriage is less universal and cohabitation more widely accepted; and lower in much of West Africa – including Nigeria and Senegal – where norms more strongly favour marriage before childbearing (Moultrie & Timaeus, 2003; Garenne, 2004; Clark & Hamplová, 2013).

Within countries, the influence of place of residence yields mixed findings. Many studies associate rural residence with higher nonmarital fertility, often due to lower educational attainment, limited access to reproductive health services, and stronger adherence to traditional norms (Magadi & Agwanda, 2009; Xu et al., 2013; Nyarko & Potter, 2021; Ezeh et al., 2010; Beguy et al., 2017). However, urban areas are increasingly experiencing rising levels, driven by delayed marriage, greater anonymity, and shifting social norms (Bongaarts & Casterline, 2013). This highlights the context-dependent nature of the urban-rural relationship.

Cultural and normative factors remain central to these patterns. Although marriage is still highly valued, there is growing evidence of delayed union formation and declining rates of formal marriage across the region (Mokomane, 2013; Posel et al., 2011; Sennott et al., 2013; Poulin et al., 2021). In some contexts, childbearing outside marriage is becoming less stigmatized, particularly where it affirms fertility or enhances social status, while the weakening of practices such as bridewealth has further contributed to the decoupling of marriage and childbearing (Posel et al., 2011). Religion also shapes reproductive behaviour by influencing norms around sexuality, contraception, and marriage, though its effects are often mediated by socioeconomic contexts (Yeatman & Trinitapoli, 2008).

At the proximate level, contraceptive use remains a key determinant. Low uptake and high unmet need for family planning continue to drive unintended pregnancies among unmarried women, constrained by barriers such as limited access, cost, stigma, and the lack of youth-friendly services (Sedgh et al., 2014; Bankole & Malarcher, 2010). Even where awareness is high, social and cultural constraints often limit consistent use.

Overall, nonmarital fertility in SSA is shaped by an interplay of regional, residential, cultural, and structural factors; with economic inequalities further reinforcing these patterns, as poorer regions and households tend to experience higher levels of early and nonmarital childbearing (Lloyd & Mensch, 2008).

Despite its growing importance, nonmarital fertility in Kenya remains insufficiently examined in demographic research. Much of the existing literature has focused narrowly on adolescent fertility and premarital sexual behaviour, often neglecting the broader phenomenon of nonmarital childbearing across the full reproductive age spectrum. Moreover, limited attention has been paid to temporal trends and socio-economic inequalities in nonmarital fertility. This gap constrains a comprehensive understanding of the changing family formation processes in Kenya, and limits the evidence base for effective policy design.

This study addresses these gaps by providing a systematic analysis of the prevalence, trends, and differentials in nonmarital fertility in Kenya. Using nationally representative data from the 2008–09, 2014, and 2022 Kenya Demographic and Health Surveys, the study examines how nonmarital childbearing has evolved over time and across key population subgroups, including age, education, residence, and region. It further identifies the socio-demographic and economic determinants associated with nonmarital fertility.

The analysis is guided by the Second Demographic Transition (SDT) framework, which links changes in fertility and family behaviour to broader shifts in values, gender relations, and individual autonomy (Lesthaeghe, 2014, 2020). Although originally developed in Western contexts, the framework offers a useful—albeit contextually nuanced—lens for interpreting emerging patterns in Kenya, including delayed marriage, rising premarital fertility, and the diversification of family forms.

However, the applicability of the SDT framework in SSA remains contested. In the Kenyan context, changes in nonmarital fertility reflect not only ideational shifts but also structural constraints such as poverty, youth unemployment, inequality, and uneven access to reproductive health services. This study, therefore, applies the SDT framework cautiously; recognizing the coexistence of cultural transformation and structural disadvantage. By situating the empirical analysis within this perspective, the study contributes to a more grounded understanding of ongoing changes in fertility and family systems in Kenya, and provides evidence to inform policy and programmatic responses.

The rest of the paper is divided into five sections. The theoretical framework is presented in section two. Section three reviews the relevant literature, while section four focuses on the methodology. Section five contains the results and discussion, while section six concludes the study.

2. Methodology

2.1 Source of Data

This study uses data from the 2008–09, 2014, and 2022 Kenya Demographic and Health Surveys (KDHS), conducted by the Kenya National Bureau of Statistics in

collaboration with partners under the Demographic and Health Surveys Program. These nationally representative surveys provide reliable data for monitoring key demographic and health indicators; and include detailed birth histories of women aged 15–49, along with their socio-demographic characteristics.

Given their scope and methodological rigor, the datasets are well suited for analysing trends and correlates of nonmarital fertility. However, their cross-sectional design limits causal inference; therefore, this study focuses on associations rather than causal relationships.

2.2 KDHS Design

The Kenya Demographic and Health Survey (KDHS) is a nationally representative, cross-sectional household survey on population, health, and nutrition conducted by the Kenya National Bureau of Statistics in collaboration with partners. It employs a two-stage stratified cluster sampling design. In the first stage, enumeration areas (clusters) are selected from the national sampling frame, stratified by region and urban–rural residence. In the second stage, households are systematically sampled within selected clusters. All women aged 15–49 in sampled households are interviewed using standardized questionnaires covering fertility, family planning, maternal and child health, and socioeconomic characteristics (KNBS et al., 2010, 2015; KNBS & ICF, 2023).

Sampling weights are applied to ensure national and regional representativeness and to adjust for unequal selection probabilities and non-response. The 2008–09 KDHS interviewed 8,444 women and 3,465 men from 9,059 households in 400 clusters. The 2014 survey covered 31,079 women and 12,819 men from 36,430 households in 1,612 clusters; while the 2022 KDHS included 32,156 women and 14,453 men from 39,911 households in 1,691 clusters. Detailed information on the survey design, sampling procedures, and data quality is available in the respective country reports (KNBS et al., 2010, 2015; KNBS & ICF, 2023).

For this study, a weighted sample of 26,345 never-married women was drawn from the three surveys, comprising 2,984, 10,584, and 12,777 respondents from the 2008–09, 2014, and 2022 KDHSs, respectively. The analysis includes women aged 15–49 who reported never having been married at the time of the surveys, and excludes those formerly married (separated, divorced, or widowed). Any childbearing among these women is therefore classified as nonmarital, as it occurred outside a formal or customary union, consistent with previous studies (Alawode, 2021; Nyarko & Potter, 2021; Ikamari, 2024).

2.3 Study Variables

In this study, nonmarital fertility is operationalized as childbearing among women who were never married at the time of the survey. This definition does not capture

births that occurred before marriage among currently married or formerly married women; as such it represents a conservative estimate of overall nonmarital fertility. Never-married women who reported having had a child are classified as having experienced nonmarital fertility (coded 1), while those who reported no births are classified as not having experienced it (coded 0). This operationalization is consistent with approaches used in previous studies (Nyarko & Potter, 2021; Alawode, 2021).

The explanatory variables were selected based on existing literature on nonmarital fertility in developing countries, particularly in SSA. These include age (15–24, 25–34, 35–49), cohabitation status (not cohabiting, cohabiting), education (no education, primary, secondary, higher), unmet need for family planning (yes, no), household wealth (poor, middle, rich), current work status (not working, working), place of residence (rural, urban), religion (Catholic, Protestant, Muslim, other), region of residence (Nairobi, Central, Coast, Eastern, Rift Valley, Nyanza, Western, and North Eastern), and survey period (2008–09, 2014, 2022).

2.4 Methods of Data Analysis

Data analysis employed both descriptive and inferential techniques, including frequencies, percentages, cross-tabulations, chi-square tests, and logistic regression. Frequencies and percentages described the study population, while bivariate analysis examined the prevalence and differentials of nonmarital fertility by presenting percentage distributions of never-married women aged 15–49 across selected explanatory variables and nonmarital fertility status. Statistical significance was assessed at the 95% confidence level ($p \leq 0.05$).

Given that the dependent variable is binary – indicating the presence or absence of nonmarital fertility – logistic regression was used to examine the effects of the independent variables (Hosmer, 2013). Because logit coefficients are not directly interpretable, they were exponentiated and presented as odds ratios (ORs) with corresponding 95% confidence intervals. In this study, multivariate logistic regression equation is expressed as: $Z = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k + e$; where Z is the log odds of experiencing nonmarital birth; β_1 , β_2 and β_k are the estimated coefficients (log of odds) associated with each explanatory variable; X_1 , X_2 and X_k represent the study explanatory variables, and (e) is the error term. In this framework, exponentiated coefficients (adjusted odds ratios (AORs)) indicate the likelihood of a nonmarried woman experiencing a nonmarital birth relative to a reference category (AOR = 1.00); values above 1.00 indicate higher odds, while values below 1.00 indicate lower odds. Statistical significance was assessed at the 5% level.

Bivariate logistic regression analysis was conducted to obtain unadjusted odds ratios (OR), with each variable assessed independently. These results provide an initial overview, but are not the main basis for interpretation. A multivariate logistic regression model was then estimated, including all variables

simultaneously, to produce adjusted odds ratios (aOR). These adjusted estimates form the core analysis as they account for confounding, and provide a clearer picture of the relationships between explanatory variables and nonmarital fertility.

Cross-tabulation analyses and chi-square tests were conducted separately for each survey round, and for the pooled 2008–2022 sample. All analyses applied DHS sampling weights (v005/1,000,000); and used Stata survey commands (svyset and svy) to account for the complex survey design. However, logistic regression was performed only on the pooled sample.

Prior to multivariate analysis, multicollinearity was assessed using Stata's `estat vif` command. The mean Variance Inflation Factor (VIF) values were below 5, indicating no serious multicollinearity. As a result, all explanatory variables were retained in the final model.

2.5 Ethical Considerations

Ethical approval was not required for this study because the three datasets used—which are drawn from the global DHS program—are publicly available. Hence, ethical considerations during data collection were the responsibility of the institutions that commissioned, funded, and managed the surveys. The surveys were approved by the DHS Program, ICF, the Kenya National Bureau of Statistics (KNBS), the Ministry of Health (MOH), and partner institutions, in line with U.S. Department of Health and Human Services regulations for the protection of human subjects, and the Kenya Data Protection Act (2019). The datasets used in this study are available at <https://dhsprogram.com/data/available-datasets.cfm>.

3. Results

3.1 Profile of the Study Population

Table 1 summarizes the socio-demographic characteristics of the sample of 26,345 women aged 15–49 years. The mean age was 22.4 years (95% CI: 22.3–22.5), with a median of 20 years. Most respondents (73%) were aged 15–24, while about 9% were aged 35–49.

Most women (84%) had never cohabited, though cohabitation rose from 11.7% in 2008–09 to 18.3% in 2022. Nearly all women reported no unmet need for family planning, with little change over time. Educational attainment improved, with increases in secondary and higher education and declines in primary and no education: for example, higher education rose from 9.5% to 21.7% between 2008–09 and 2022.

Half of the women were from rich households, 70% identified as Protestant or other Christian, and 59% resided in rural areas. Rural residence declined from 72.2% to 56.6% over the study period, alongside a rise in urban residence. About 26% of the respondents were consistently from the Rift Valley region.

Table 1: Sociodemographic Characteristics of the Study Sample

Characteristic	Survey Period			
	2008-9	2014	2022	2008/9-2022
Current age				
15-24	76.4	73.4	71.6	72.9
25-34	14.5	17.0	18.9	17.6
35-49	9.1	9.6	9.5	9.5
Cohabiting Status				
Not Cohabiting	88.3	85.0	81.7	83.8
Cohabiting	11.7	15.0	18.3	16.2
Unmet need				
No	97.5	93.6	98.0	97.5
Yes	2.5	6.4	2.0	2.5
Education				
None	3.1	2.5	1.7	2.2
Primary	54.0	41.5	25.7	35.2
Secondary	33.5	42.3	51.0	45.5
Higher	9.5	13.6	21.7	17.1
Household wealth status				
Poor	30.2	29.1	30.9	30.1
Middle	19.7	20.9	18.8	19.7
Rich	50.1	49.8	50.3	50.1
Current work Status				
Working	38.5	19.1	63.1	30.0
Notworking	61.5	80.9	36.9	70.0
Religion				
Catholic	23.3	22.3	20.1	21.4
Protestant	69.3	71.0	69.3	70.0
Muslim	5.7	5.7	6.2	6.0
Others	1.7	1.0	4.4	2.6
Type of place of residence				
Urban	27.8	41.7	43.4	41.0
Rural	72.2	58.3	56.6	59.0
Region of residence				
Nairobi	10.9	13.5	14.8	13.9
Central	11.1	13.2	14.3	13.5
Coast	6.4	9.3	8.3	8.5
Eastern	15.3	12.1	12.6	12.7
Nyanza	16.3	10.7	11.0	11.5
Rift Valley	27.8	25.8	26.3	26.3
Western	10.8	13.9	10.4	11.9
North Eastern	1.6	1.5	2.2	1.8
Weighted number of cases [N]	2,984	10,584	12,777	26,345

3.2 Prevalence and Trends in Nonmarital Fertility

Table 2 presents the prevalence of nonmarital fertility by explanatory variables for each survey, and the pooled 2008–2022 data.

Table 2: Nonmarital Fertility Levels According to the Study Variables, Kenya, 2008–2022

Characteristic	Level of nonmarital fertility among women in each category [%; 95% CI]			Change [in percentage points] between 2008-9 and 2022 [- decreased, + increased]
	2008-9	2014	2022	
Current age	P = 0.000	P = 0.000	P = 0.000	P = 0.000
15-24	15.4 [13.4 - 16.9]	16.7 [15.9 -17.5]	17.9 [17.2 -18.7]	17.2 [16.6 - 17.7]
24-34	68.4 [64.0 - 72.8]	67.1 [65.0 - 68.3]	74.0 [72.2 - 75.7]	70.8 [69.5 - 72.1]
35-49	90.1 [86.5 - 93.7]	85.0 [82.8 - 88.9]	93.2 [91.8 - 94.6]	89.5 [88.3 - 90.7]
Cohabiting Status	P = 0.000	P = 0.000	P = 0.000	P = 0.000
Not Cohabiting	22.0 [20.4 - 23.6]	21.9 [20.7 - 23.2]	23.5 [22.7 - 24.3]	22.9 [22.3 - 23.5]
Cohabiting	87.7 [86.3 - 92.8]	91.5 [89.5 - 93.5]	90.2 [88.9 - 91.4]	90.4 [89.4 - 91.4]
Unmet need	P = 0.000	P = 0.000	P = 0.000	P = 0.000
No	27.5 [25.9 - 29.2]	30.6 [29.3 - 31.9]	34.9 [34.2 - 35.8]	32.9 [32.3 - 33.6]
Yes	64.8 [57.9 - 71.6]	64.8 [57.9 - 71.6]	68.6 [62.9 - 74.3]	67.9 [64.4 - 71.5]
Education	P = 0.000	P = 0.000	P = 0.000	P = 0.000
None	44.1 [33.6 - 54.3]	63.4 [55.1 - 71.6]	50.6 [43.8 - 57.4]	53.1 [48.4 - 57.8]
Primary	33.1 [30.7 - 35.3]	40.0 [37.8 - 42.1]	46.2 [44.5 - 47.9]	41.3 [40.1 - 42.5]
Secondary	25.5 [22.8 - 28.3]	25.6 [23.7 - 27.4]	30.0 [28.9 - 31.1]	28.6 [27.7 - 29.5]
Higher	22.8 [17.3 - 27.1]	24.4 [21.2 - 27.6]	35.5 [33.7 - 37.3]	32.5 [30.9 - 33.9]
Household wealth status	P = 0.843	P = 0.001	P = 0.000	P = 0.368
Poor	29.9 [26.7 - 32.7]	34.5 [32.1 - 36.9]	33.5 [32.1 - 34.9]	33.2 [32.0 - 34.4]
Middle	29.1 [25.3 - 32.7]	32.9 [30.1 - 35.8]	33.9 [32.1 - 35.8]	33.0 [31.6 - 34.5]
Rich	30.4 [27.9 - 32.6]	30.7 [28.9 - 30.7]	37.7 [36.5 - 38.8]	34.9 [34.0 - 35.8]
Work Status	P = 0.000	P = 0.000	P = 0.000	P = 0.000
Not working	17.4 [15.7 - 19.2]	19.3 [17.9 - 20.7]	21.9 [21.0 - 22.8]	20.7 [19.9 - 21.4]
Working	49.4 [46.5 - 52.3]	51.3 [49.1 - 53.5]	59.2 [57.8 - 60.6]	55.7 [54.6 - 56.8]

Religion	P = 0.000	P = 0.000	P = 0.000	P = 0.000	P = 0.000	P = 0.000	
Catholic	26.3 [23.1 - 29.7]	35.2 [32.3 - 38.1]	36.7 [34.8 - 38.6]	34.7 [33.3 - 36.1]	34.7 [33.3 - 36.1]	34.7 [33.3 - 36.1]	+10.4
Protestants	31.1 [28.9 - 32.9]	32.4 [30.9 - 33.9]	37.2 [36.2 - 38.2]	35.1 [34.3 - 35.9]	35.1 [34.3 - 35.9]	35.1 [34.3 - 35.9]	+6.1
Muslim	18.0 [12.1 - 23.6]	16.3 [11.9 - 20.8]	12.6 [10.3 - 14.9]	14.2 [12.2 - 16.1]	14.2 [12.2 - 16.1]	14.2 [12.2 - 16.1]	-5.4
Others	75.5 [63.9 - 88.9]	43.8 [28.9 - 58.6]	40.2 [36.2 - 44.3]	43.2 [39.4 - 46.9]	43.2 [39.4 - 46.9]	43.2 [39.4 - 46.9]	-35.3
Rural-Urban residence	P=0.055	P=0.175	P=0.000	P=0.072	P=0.072	P=0.072	
Urban	27.3 [24.9 - 30.4]	32.4 [30.4 - 34.5]	37.5 [36.2 - 38.8]	35.3 [34.3 - 36.3]	35.3 [34.3 - 36.3]	35.3 [34.3 - 36.3]	+15.6
Rural	30.9 [28.8 - 32.8]	32.2 [30.5 - 33.9]	34.3 [33.2 - 35.4]	33.2 [32.3 - 34.0]	33.2 [32.3 - 34.0]	33.2 [32.3 - 34.0]	+3.4
Region	P = 0.000	P = 0.000	P = 0.000	P = 0.000	P = 0.000	P = 0.000	
Nairobi	22.5 [17.9 - 27.1]	34.9 [31.4 - 38.5]	43.1 [40.8 - 45.3]	38.9 [37.1 - 40.6]	38.9 [37.1 - 40.6]	38.9 [37.1 - 40.6]	+20.6
Central	35.3 [30.1 - 40.5]	35.5 [31.8 - 39.2]	44.8 [42.5 - 47.1]	41.5 [39.5 - 43.3]	41.5 [39.5 - 43.3]	41.5 [39.5 - 43.3]	+9.5
Coast	22.5 [16.5 - 28.5]	22.4 [18.5 - 26.2]	25.7 [23.1 - 28.1]	24.5 [22.4 - 26.5]	24.5 [22.4 - 26.5]	24.5 [22.4 - 26.5]	+3.2
Eastern	26.7 [22.4 - 30.6]	21.1 [17.8 - 24.3]	37.5 [35.1 - 39.8]	31.9 [30.2 - 33.7]	31.9 [30.2 - 33.7]	31.9 [30.2 - 33.7]	+10.8
Nyanza	37.2 [32.5 - 41.1]	23.9 [20.3 - 27.6]	32.0 [29.6 - 34.5]	31.2 [29.4 - 33.1]	31.2 [29.4 - 33.1]	31.2 [29.4 - 33.1]	-5.2
Rift Valley	36.0 [32.9 - 39.4]	37.4 [34.8 - 40.1]	37.4 [34.8 - 40.1]	37.3 [36.1 - 38.6]	37.3 [36.1 - 38.6]	37.3 [36.1 - 38.6]	+1.4
Western	17.0 [12.9 - 21.1]	41.7 [38.1 - 45.3]	23.4 [21.1 - 26.6]	28.1 [26.3 - 29.9]	28.1 [26.3 - 29.9]	28.1 [26.3 - 29.9]	+6.4
North Eastern	10.6 [9.3 - 18.7]	6.3 [1.1 - 11.9]	7.6 [4.4 - 10.7]	7.5 [4.9 - 10.2]	7.5 [4.9 - 10.2]	7.5 [4.9 - 10.2]	-3.0
Overall Prevalence	29.9 [28.3 - 31.5]	31.6 [30.9 - 32.7]	35.7 [34.8 - 36.5]	33.5 [32.9 - 34.1]	33.5 [32.9 - 34.1]	33.5 [32.9 - 34.1]	+5.8
Weighted number of cases [N]	2,984	10,584	12,777	26,345	26,345	26,345	

Overall, 33.5% (95% CI: 32.9–34.0) of the women had experienced a nonmarital birth. This proportion increased from 29.2% in 2008–09 to 35.7% in 2022 (Figure 1). Differences are statistically significant across most variables, except in place of residence and household wealth, which are not consistently significant. Household wealth is significant in 2014 and 2022, while residence is significant only in 2022.

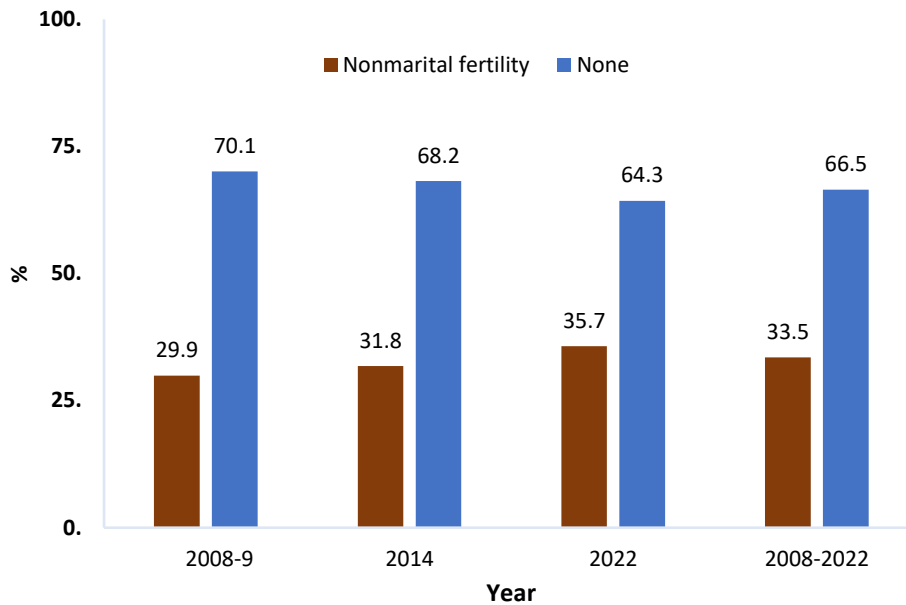


Figure 1: Trends in Nonmarital Fertility in Kenya: 2008-2022

3.3 *Multivariate Analysis Results*

Table 3 presents logistic regression results for the pooled sample of 26,345 women, with adjusted odds ratios (aORs) reported in the final two columns. Although both bivariate and multivariate estimates are shown, this section focuses on statistically significant multivariate results at the 95% confidence level.

The findings indicate that most explanatory variables remain significantly associated with nonmarital fertility after adjustment, though odd ratios generally decline—except for place of residence, whose association becomes stronger. The likelihood of nonmarital fertility rises sharply with age: women aged 20–34 are about nine times more likely, and those aged 35–49 are about 23 times more likely, to have experienced it compared with women aged 15–24. Cohabitation is also strongly associated, with cohabiting women roughly 16 times more likely to have experienced nonmarital fertility than those who have never cohabited. Additionally, women with an unmet need for family planning have higher odds (aOR = 1.60).

Table 3: Unadjusted and Adjusted Multivariate Logistic Regression Results on Nonmarital Fertility, Kenya: Pooled 2008–2022 KDHS Data

Explanatory variables	Unadjusted Model		Adjusted Model	
	OR	95% CI for OR	AOR	95% CI for AOR
Current age				
15-24 [Ref Cat.]	1.00		1.00	
25-34	11.72***	10.90 – 12.61	9.08***	8.25 – 9.99
35-49	41.29***	36.13 – 47.19	23.03***	19.80 – 26.79
Cohabiting Status				
Never Cohabited [Ref Cat.]	1.00		1.00	
Cohabiting	30.20***	27.22 – 33.51	16.28***	14.44 – 18.35
Unmet need				
No [Ref Cat.]	1.00		1.00	
Yes	4.42***	3.74 – 5.21	1.60***	1.26 – 2.04
Education				
None [Ref Cat.]	1.00	0.62	1.00	
Primary	0.62***	0.52 – 0.73	0.93	0.69 – 1.24
Secondary	0.35***	0.29 – 0.41	0.74*	0.56 – 0.99
Higher	0.43***	0.36 – 0.52	0.36***	0.26 – 0.48
Household wealth status				
Poor [Ref Cat.]	1.00		1.00	
Middle	1.03	0.95 – 1.10	0.94	0.84 – 1.04
Rich	1.04	0.98 – 1.11	0.80***	0.72 – 0.90
Current work Status				
Not Working [Ref Cat.]	1.00		1.00	
Working	4.84***	4.54 – 5.14	2.16***	1.99 – 2.34
Religion				
Catholic [Ref Cat.]	1.00		1.00	
Protestant	1.07	1.00 – 1.14	1.05	0.91 – 1.21
Muslim	0.32***	0.27 – 0.37	0.43***	0.34 – 0.54
Others	1.56***	1.33 – 1.83	1.33*	1.07 – 1.66
Type of place of residence				
Urban [Ref Cat.]	1.00		1.00	
Rural	0.95	0.91 – 1.00	1.15*	1.00 – 1.23
Region of residence				
Nairobi [Ref Cat.]	1.00		1.00	
Central	1.10*	1.00 – 1.21	1.05	0.91 – 1.21
Coast	0.54***	0.48 – 0.60	0.73**	0.61 – 0.86
Eastern	0.71***	0.64 – 0.79	0.95	0.82 – 1.11
Nyanza	0.72***	0.65 – 0.79	1.41***	1.21 – 1.64
Rift Valley	0.97	0.89 – 1.05	1.35***	1.18 – 1.53
Western	0.76***	0.68 – 0.84	0.99	0.84 – 1.16
North Eastern	0.12***	0.08 – 0.18	0.28***	0.17 – 0.48
Survey				
2008-9 [Ref Cat.]	1.00		1.00	
2014	1.09*	1.00 – 1.19	1.26***	1.11 – 1.42
2022	1.30***	1.19 – 1.42	1.38***	1.22 – 1.56
Model Chi-square		130053.844***		
df		23		
-2 Log likelihood		20539.08		
Nagelkerke R Square		0.542		
Model Constant		-1.998		
SE		0.171		

Notes: * $p \leq 0.05$, ** $p \leq 0.001$, *** $p \leq 0.000$

Source: Primary Analysis of Pooled 2008–2022 KDHS data

Education shows a clearer protective effect after adjustment, with secondary or higher education reducing the odds of nonmarital fertility by about 64% compared to no education. Household wealth becomes significant in the multivariate model, with women from rich households about 20% less likely to experience nonmarital fertility than those from poor households. Employment is positively associated, with employed women about twice as likely to experience nonmarital fertility.

Religion also matters: Muslim women are 57% less likely than Catholic women to experience nonmarital fertility, while women in other religious groups show higher odds. Residence and region remain important, with rural women 15% more likely than urban women. Compared to Nairobi, women in Coast and North Eastern have lower odds, while those in Nyanza and Rift Valley have higher odds. Finally, nonmarital fertility has increased over time, with 26% higher odds in 2014 and 38% higher in 2022 compared to 2008–09.

4. Discussion

This study examined trends and correlates of nonmarital fertility in Kenya using data from the 2008–09, 2014, and 2022 KDHSs, guided by the Second Demographic Transition framework. It incorporates factors identified in prior research as closely linked to nonmarital fertility in SSA countries, and provides empirical insights into levels, trends, and associated sociodemographic characteristics in Kenya.

The study documents a clear upward trend in nonmarital fertility in Kenya, increasing from 29.9% in 2008–09 to 35.7% in 2022. The rise is consistent with broader regional patterns, and reflects ongoing changes in marriage timing, social norms, and socioeconomic conditions (Clark et al., 2017; Nyarko & Potter, 2021; Alawode, 2021; Kara, 2020). In the Kenyan context, notable increases were observed among urban residents, women with primary and higher education, and those living in Nairobi, Eastern, and Central regions. In contrast, declines were recorded among Muslim women and those of other religious affiliations, as well as among women in Nyanza and North Eastern regions.

The bivariate results show significant differentials in nonmarital fertility across key characteristics; including age, cohabitation status, unmet need for family planning, education, household wealth, employment status, religion, region, and survey period. The multivariate results confirm that nonmarital fertility is shaped by a combination of demographic, socioeconomic, and contextual factors. Age emerges as a particularly strong correlate, with older never-married women significantly more likely to have experienced a nonmarital birth, consistent with previous studies (Palamuleni & Adebawale, 2014; Nyarko & Potter, 2021; Alawode, 2014, 2019). This pattern largely reflects cumulative exposure to sexual

activity and longer durations at risk, but may also indicate a growing desire for motherhood and efforts to avoid childlessness and its associated stigma (Ngubane et al., 2022).

Cohabitation also shows a strong association, highlighting its role as an alternative context for childbearing rather than a causal driver of nonmarital fertility. Similar findings have been reported in other studies (Nyarko & Potter, 2021; Ikamari, 2024). Cohabitation functions as an alternative context for childbearing in Kenya by blurring the boundary between marriage and informal unions. These relationships often resemble marriage – partners live together and engage in regular sexual relations – thereby increasing exposure to pregnancy, although births remain classified as nonmarital. Cohabitation is also frequently a transitional stage to marriage, delayed by economic constraints such as bridewealth and wedding costs, during which childbearing may occur. In addition, these unions tend to be less stable and have weaker institutional support, contributing to inconsistent contraceptive use and a higher risk of unintended pregnancies. Although changing norms associated with the Second Demographic Transition have increased acceptance of cohabitation and nonmarital childbearing, this acceptance remains uneven, and such births continue to be recorded as nonmarital.

Unmet need for family planning is strongly linked to higher nonmarital fertility in Kenya, as it reflects situations where sexually active women who wish to avoid pregnancy are not using effective contraception. Among never-married women, this often results in unintended pregnancies and nonmarital births. Barriers such as limited youth-friendly services, cost, stigma, confidentiality concerns, and restrictive provider attitudes: all contribute to non-use or inconsistent use of contraception. Additionally, gaps in knowledge, limited negotiation power in relationships, and structural inequalities – such as low education – further heighten risk. As a proximate determinant of fertility, unmet need increases the likelihood that sexual activity leads to nonmarital childbearing.

Socioeconomic factors also play an important role. Higher levels of education are associated with reduced odds of nonmarital fertility, while women with no education face significantly higher risks. Similar results have been found elsewhere (Alawode, 2021; Nyarko & Potter, 2021). The negative association between women's education and nonmarital fertility in Kenya reflects several reinforcing factors. Education delays sexual debut, union formation, and childbearing; thereby reducing exposure to risk. It also improves knowledge and consistent use of contraception, lowering unintended pregnancies. In addition, schooling raises aspirations and opportunity costs, encouraging women to postpone childbearing until after achieving educational or economic goals, often within marriage. Education further enhances autonomy and bargaining power in relationships,

enabling better control over reproductive decisions. It is also linked to greater access to reproductive health services, and exposure to norms favouring planned fertility. Overall, education reduces nonmarital fertility by delaying risk, improving contraceptive use, and strengthening women's agency.

Household wealth shows a pattern similar to education, with women from poorer households more likely to experience nonmarital fertility, consistent with prior studies (Alawode, 2019; Palamuleni & Adebowale, 2018). Wealth appears protective by reducing economic vulnerability, improving access to contraception and reproductive health services, and supporting education and norms that favour delayed, planned childbearing. It also raises the opportunity costs of early or nonmarital births. In contrast, poorer women face greater instability and higher exposure to risky relationships; thereby increasing the likelihood of unintended pregnancies, and nonmarital fertility.

Current employment is associated with a higher likelihood of nonmarital fertility, consistent with previous research (Nyarko & Potter, 2021). The mechanisms underlying this association remain unclear. The positive association between employment and nonmarital fertility may reflect selection effects, including the timing of employment relative to childbearing, or the concentration of unmarried mothers in certain forms of work (Jensen, 2019). However, the cross-sectional nature of the data limits further interpretation. Further research is needed to clarify these dynamics, particularly by examining the pathways linking employment status and nonmarital fertility.

Religion is significantly associated with nonmarital fertility. Women affiliated with Islam exhibit a lower likelihood of nonmarital childbearing compared to their Catholic and other Christian counterparts. This contrasts with evidence from Nigeria, where Muslim women show higher risks (Alawode, 2021); and from Ghana, where no significant association was found (Nyarko & Potter, 2021). The lower likelihood among Muslim women may reflect religious norms that discourage premarital sexual activity and promote early marriage, and two-parent family structures (Ngubane et al., 2022; Alawode, 2021).

Place and region of residence remain important correlates of nonmarital fertility. Rural women, as well as those residing in the Nyanza and Rift Valley regions, exhibit higher odds of experiencing nonmarital fertility. In contrast, women in the North Eastern and Coastal regions show lower risks compared to their counterparts in Nairobi. The urban-rural differential appears context-dependent, reflecting the coexistence of delayed marriage and changing norms in urban areas alongside structural constraints and service disparities in rural settings. The elevated risk among rural women and those in Nyanza and Rift Valley may be attributed to a combination of factors, including limited access to family planning

services, lower levels of educational attainment, and fewer employment opportunities. Conversely, the lower odds observed in the North Eastern and Coastal regions may partly reflect the influence of religious composition, as these regions are predominantly Muslim. The relatively higher likelihood in Nairobi may be linked to greater economic independence, increased exposure to diverse cultural influences, and shifting norms surrounding family formation and childbearing outside marriage (Magadi & Agwanda, 2009; Ezeh et al., 2010; Beguy et al., 2017).

Overall, the findings highlight the complex interplay of demographic, socioeconomic, and cultural factors shaping nonmarital fertility in Kenya and its apparent increase over time. Beyond documenting trends and correlates, this study contributes through its use of nationally representative data and rigorous statistical methods. However, the findings should be interpreted with caution. The cross-sectional nature of the KDHS data limits causal inferences: although associations can be identified, establishing the temporal ordering of events (e.g., whether employment preceded or followed a nonmarital birth) remains difficult.

In addition, key variables such as place of residence and household wealth reflect conditions at the time of the survey rather than at the time of pregnancy or childbirth. For instance, a woman who migrated from a rural to an urban area after a nonmarital birth may have that birth misattributed to her current residence. Although the KDHS includes some community-level proxies (e.g., region and urban–rural residence), it lacks detailed contextual measures—such as local norms, service quality, and cultural practices—that may influence nonmarital fertility. The findings may be affected by social desirability bias. Because nonmarital fertility can still carry stigma in some Kenyan communities—especially those with strong religious and cultural norms—some respondents may underreport births or misreport their marital status, potentially leading to an underestimation of the true prevalence. Furthermore, the measure of nonmarital fertility is subject to right-censoring, as younger women have not yet completed their reproductive years, potentially underestimating lifetime nonmarital childbearing. Finally, cross-country comparisons should also be interpreted cautiously due to differences in definitions and measurement of nonmarital fertility.

5. Conclusion and Recommendations

Nonmarital fertility in Kenya is both substantial and increasing, shaped by a complex interplay of demographic, socioeconomic, and contextual factors. Higher risks among socioeconomically disadvantaged groups highlight persistent inequalities in access to education, economic opportunities, and reproductive health services. Policy responses should prioritize expanding equitable access to youth-friendly contraceptive services, strengthening girls' education—particularly retention and completion—and addressing structural inequalities through targeted social and economic interventions. These

interventions should prioritize adolescents and young unmarried women, particularly in urban informal settlements and high-prevalence regions, where unmet need and unintended pregnancy remain concentrated. Region-specific strategies that engage local communities and address contextual drivers are essential. Also, further research is needed to better understand the role of employment and regional disparities in shaping nonmarital fertility.

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