2013

POPULATION AND HOUSING CENSUS

THE REPUBLIC OF THE GAMBIA

Gambia Bureau of Statistics

GBOS

FERTILITY ANALYSIS AND EVALUATION

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List of Abbreviations and Acronyms

ASFR	Age-Specific Fertility Rate
CBR	Crude Birth Rate
DHS	Demographic and Health Survey
GBoS	Gambia Bureau of Statistics
GCPFDS	Gambia Contraceptive Prevalence and Fertility Determinants Survey
GFR	General Fertility Rate
GRR	Gross Reproduction Rate
SMAM	Singulate Mean Age at Marriage
TFR	Total Fertility Rate

Concepts and Definitions

Age-Specific Fertility Rate (ASFR): The number of births in a year to mothers of a specific age per woman or per 1,000 women of the same age at mid-year. ASFRs are usually calculated for women in each 5-year age group for ages 15-49 years. They can also be calculated for single years of age, although this is rarely practical in developing countries.

Crude Birth Rate (CBR): The number of infants born in a year per 1,000 persons in a population. It is noteworthy that the whole population i.e. men, children and women outside the reproductive ages are included in the denominator for the calculation of the crude birth rate.

Demographic Transition: This is the transformation of countries from having high birth and death rates to low birth and death rates. Infant and child mortality transition usually but not necessarily always precede fertility transition.

General Fertility Rate (GFR): The yearly number of live births per 1,000 women of childbearing years (usually considered to be between ages 15 and 49). The basic difference between this rate and the crude birth rate is that the denominator of the crude birth rate refers to the total population, whereas the general fertility rate refers only to potential mothers within the female population.

Gross Reproduction Rate (GRR): The number of daughters that would be born to 1,000 women assuming that the prevailing age-specific fertility holds and the women survive through their childbearing years, usually considered to be 15-49 years.

Mean Age at Childbearing: Average age at which a mortality-free ‘cohort’ of women bears their children according to a set of age-specific fertility rates.

Nuptiality: The frequency and characteristics of marriages in a population.

Parity: The number of children previously born alive to a woman.

Singulate Mean Age at Marriage (SMAM): This is an indirect measure of age at first marriage among those who ever marry by some pre-defined age limit. It is computed from the proportion never-married reported in censuses or surveys. The prefix ‘’singulate’’ refers to the computational method of arriving at the mean age at marriage. The SMAM refers to a much longer time period and is a valid tool for assessing medium and long term trends in age at marriage.

Total Fertility Rate (TFR): The average number of children that would be born alive to a group of women during their lifetime if during their childbearing years (usually considered to be between ages 15 and 49) they were to bear children at each age in accord with the prevailing age- specific fertility rates. The TFR is the sum of the rates for each age group, multiplied by 5, which is the width of the age group interval.

Preface

This is Volume 2 of the 2013 Population and Housing Census report. Presented in this report is an analysis of fertility trends and differential across socio- economic groups.

As a major determinant of fertility in The Gambia, trends in marriage across socio-economic groups have been reviewed and discussed.

Time series analysis of adolescent fertility levels and trends is also discussed in this report using the 2013 Census and previous censuses. The analysis of fertility differentials across LGAs, area of residence and educational attainment of women and the trends in fertility and the possible underlying causal factors to the changes in fertility are also discussed.

We thank Mr Sheriff S.T. Sonko for the preparation of this report. We also thank GBoS staff for finalizing the report.

We wish to extend sincere thanks to The Gambia Government for providing funding for the conduct of the census, and the United Nations Population Fund (UNFPA) for their support both technical and financial for the conduct of the 2013 Population and Housing Census.

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Executive Summary

The report is in six chapters. Chapter 1 gives a background of censuses as major data sources for The Gambia followed by a brief discussion on the methodology for the analysis. Chapter 2 discusses the evaluation of the census data for fertility estimation. In Chapter 3, using the indirect techniques (Brass and Arriaga) of fertility estimation, the fertility estimates for The Gambia are discussed in detail. In Chapter 4, nuptiality and related issues, which affect fertility, e.g. age at first marriage, proportions never-married, ever-married are discussed. Chapter 5 looks at historical fertility trends for The Gambia as well as fertility differentials – urban-rural residence, LGA and educational attainment – and concluding remarks are made in Chapter 6.

Although the fertility analysis shows rising ages at first marriage among females from 22.0 years in 2003 to 22.5 years in 2013 and higher proportions of 'never-married' among young women (15-29 years) -- two variables, which are the driving factors of fertility decline in The Gambia since 1990 – this did not translate into a decline in the national total fertility rate (TFR) in 2013. The national TFR increased from 5.4 children per woman in 2003 to 5.9 children per woman in 2013. This TFR, 5.9 children per woman, was the level of fertility when it first declined in 1990 from 6.4 in 1973 and 1983.

The increase in the TFR in 2013 can be attributed to the following. In both 1993 and 2003, fertility declined among all the age groups (15-49 years). However, the analysis of the 2013 Census data suggests a fertility decline of 16.5 per cent only in the 15-19 age groups. By contrast, fertility increased in the 20-44 age groups and there was no change in the 45-49 age groups. The TFR of 5.9 children is the most robust estimate obtained from the 2013 Census data; it should be viewed with caution as it is a product of age misreporting, omissions of children (parity) and underreporting of recent fertility particularly among women aged 20-44 years. The foregoing analysis clearly shows that fertility has been declining in The Gambia since the 1990s.

Rural fertility is higher by more than a child (1.7 children per woman), compared to urban fertility. The Banjul, Kanifing and Brikama LGAs have the lowest TFRs per woman (i.e. 3.4, 4.5 and 5.9 respectively) compared to the other LGAs. The Kuntaur LGA has the highest TFR in the country with 7.3 children per woman.

There is a difference of 2.1 children per woman (TFR 6.4 versus 4.3 per woman) between women with no education and women with primary education on one hand compared to women with secondary education and over on the other hand. This finding is consistent with the 2013 DHS fertility analysis of educational attainment.

CHAPTER 1: OVERVIEW OF FERTILITY

1.1 Background

Traditionally, population censuses have been the main source of demographic data for planning and administration in The Gambia. Although The Gambia has a long history of census taking since 1881, data on fertility and mortality were first collected in the 1973 Population and Housing Census[1]. In both the 1973 and 1983 censuses, fertility had been constant with a national TFR of 6.4 children per woman and crude birth rates of 49-50 per 1,000 women.

The Gambia experienced modest declines in TFR of 7.8 and 6.3 per cent in 1990 and 1993 respectively. The TFR further declined significantly by 1 child i.e. from 6.4 children per woman in 1973 and 1983 to 5.4 children per woman in 2003. This decline is above the conventional 10 per cent threshold beyond which demographers consider the course of fertility decline as irreversible (Caldwell et al; 1992). Thus, like most Sub-Saharan African countries, The Gambia is currently witnessing a demographic transition.

1.2 Methodology

The indirect techniques of fertility estimation will be used for the analysis of the 2013 Census data. The indirect techniques of fertility and mortality estimation were developed in the sixties. For more discussion on the indirect techniques of fertility and mortality estimation (see for example, Brass et al, 1968; United Nations, 1967; United Nations, 1983).

The Brass P/F ratio method obtains estimates of fertility from children-ever-born data by comparing average parities with the average number of children obtained from a synthetic cohort by cumulating age specific fertility rates i.e. comparing the most reliable features of the two data sets. For changing fertility, Brass introduced a synthetic cohort method called the P/F ratio for a hypothetical inter-censal cohort in which two censuses ten years apart can be used for the estimation. The P/F ratio for a hypothetical inter-censal cohort and the Arriaga technique (1983), which uses two to three censuses, will be used, as in the 1993 and 2003, for the fertility estimation of the 2013 Census.

[1] This was the first Census after the attainment of political independence in 1965

CHAPTER 2: EVALUATION OF THE DATA

2.1 Children Ever Born

Similar to the previous four Censuses – 1973 to 2003 – fertility data in the 2013 Census were collected on children ever born and births in the past year from all women aged 12 years and above. However, as is the norm, the fertility analysis is usually restricted to women aged 15-49 years.

There are three types of errors which affect the data quality of children ever born. These are:
(1) the omissions of children, particularly by older women in the ages 40-44 and 45-49 years;
(2) the inclusion of stillbirths or late foetal deaths among live-born children; and
(3) error in recorded children ever born introduced in the “not stated” category.

For example, when blanks or dashes are used by the enumerators to indicate zero parity for childless women and these are then included in the “not stated” category.

In order to minimize the omissions of children, questions on retrospective fertility are usually asked in the following three parts:

1) Of the children ever born alive to you, how many are living in this household?
2) Of the children ever born alive to you, how many are living elsewhere?
3) Of the children ever born alive to you, how many have died?

The inclusion of stillbirths or late foetal deaths among live-born children is difficult to assess. According to the UN (1983), the possible upward effect of this error on average parity is not significant. For errors in recorded children ever born introduced in the “not stated” category, El Badry (see U N, 1983) has developed a method to for correcting this type of error. If the “not stated” category is less than 5 per cent, they can either be ignored or added to the denominator since their inclusion or exclusion will not affect the estimates. The parity “not stated” for the 2013 Census data was less than 5 per cent. Thus, the El Badry correction factor is not used and the “not stated” category is ignored.

If the data quality is good and there are no omissions, average parities should increase rapidly as age increases. Table 2.1(a) below shows estimates of reported average parities (children ever born) of women 15-49 years. It can be observed that the parities from Table 2.1(a) increase with age, thus suggesting that the data are of reasonably good quality.

Another way of detecting errors in the reported average parities is to use Coale-Demeny and Brass empirical formulae to compare the results with the average parity for women 45-49 or P7. If the average parity for women 45-49 is lower than that estimated from the empirical formulae, then this can be an indication that there was under-reporting or omissions of children for women 45-49 years.

Using the data from Table 2.1 (a) below, the Coale-Demeny empirical formula is as follows:
$\mathbf{(P_3)^2/P_2}$

$= (2.307)^2/1.052 = 5.059$

Using the Brass empirical formula yields the following result:
$\mathbf{(P_2)(P_4/P_3)^4}$

$= (1.052)(3.645/2.307)^4 = 6.556$

Table 2. 1 (a): Reported average parities by age of women, 2013 Census

Age Group	Index	Average Parity
15-19	1	0.201
20-24	2	1.052
25-29	3	2.307
30-34	4	3.645
35-39	5	4.62
40-44	6	5.277
45-49	7	5.54

Source: 2013 Population and Housing Census

The P7 or reported average parity for women 45-49 from Table 2.1(a) above is 5.540. The estimates from the Coale-Demeny formula is lower compared to the parity for women aged 45-49 years, which means there were no under-reporting or omissions of children by older women. However, the estimates from Brass formula indicate that there were under-reporting of children. The Brass formula provides a more robust estimate.

The first-ever Demographic and Health Survey (DHS) and the 2013 Census were conducted in the same year, the average parities from the two data sources are compared to get better insights into the extent of under-enumeration of children in the 2013 census.

Table 2. 1(b): Reported mean parity by age of woman, 2013 Gambia DHS and the 2013 Census

	Children Ever-Born		
Age of woman	**2013 GDHS (a)**	**2013 Census (b)**	**Difference (b) – (a)**
15-19	0.17	0.20	0.031
20-24	1.02	1.05	0.032
25-29	2.40	2.31	-0.093
30-34	3.69	3.65	-0.045
35-39	5.18	4.62	-0.560
40-44	5.88	5.28	-0.603
45-49	6.19	5.54	-0.650
Total	**2.53**	**2.39**	**-0.140**

Source: 2013 Gambia DHS and 2013 Population and Housing Census

Table 2.1 (b) above further confirms the results obtained using the Brass empirical formula. The 2013 census parities have been under-enumerated for ages 25-34 years. As expected, the under-enumeration is more pronounced in the older ages of 35-49 years.

2.2 Age-Sex Data

Census data from most Sub-Saharan African countries are affected by age misreporting. This is because most people, particularly women, do not know their ages, thus, resulting in distortions in the age structure of the population. Since P/F ratios are sensitive to age misreporting, it is worthwhile to assess the quality of the age-sex data and make adjustments before undertaking any meaningful fertility analysis.

The UN made rigorous analyses of the age and sex reporting in 1952 and 1955 and recommended an age-sex accuracy index for use in assessing the quality of the age-sex data from censuses and surveys. Table 2.2 below shows the age-sex accuracy index for the 1993, 2003 and 2013 censuses.

Table 2. 2: Summary of indices measuring the accuracy of age data, 1993, 2003 and 2013 Censuses

Index	Reported age 1993 Census	Reported age 2003 Census	Reported age 2013 Census
Sex ratio score	15.5	9.4	7.5
Male age ratio score	10.6	8.8	9.2
Female age ratio score	22.4	15.9	13.2
Accuracy Index*	**79.4**	**52.9**	**44.9**

Source: 1993-2013 Population and Housing Censuses

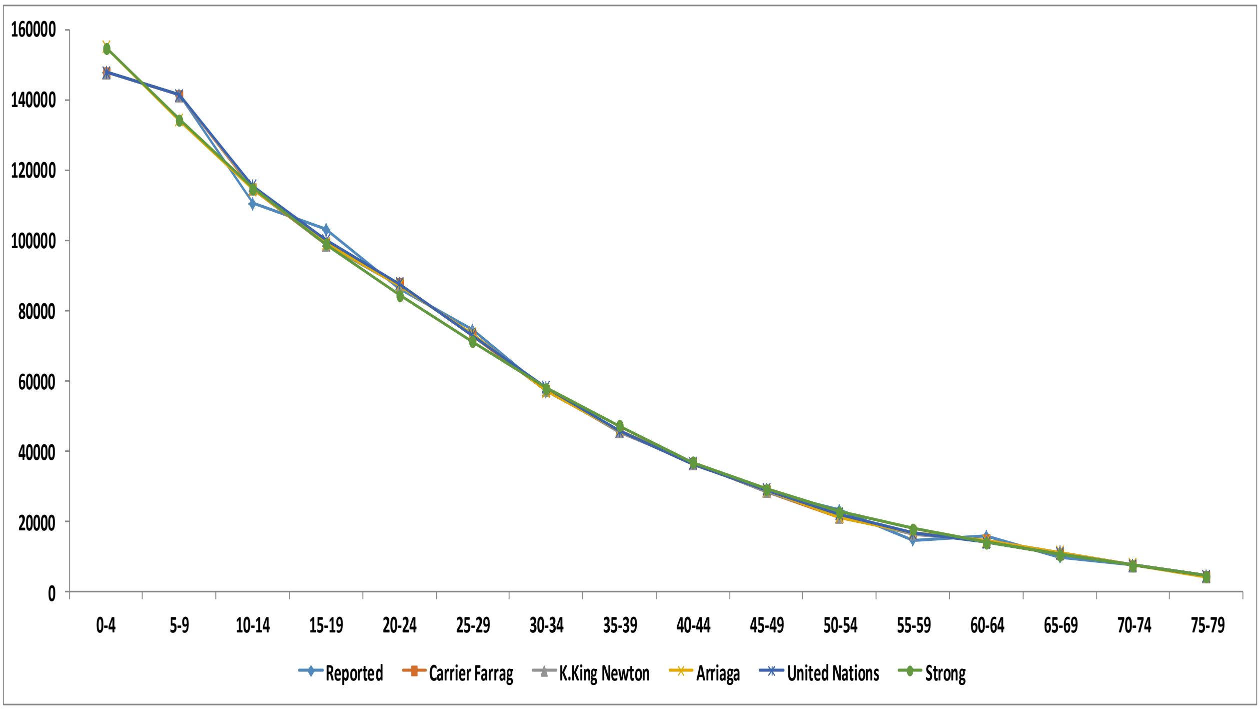
Note:* The accuracy index is the sum of the male and female age ratio scores plus three times the sex ratio score, all calculated using data for ages 10-14 through 65-69

The UN defines the values of the index as follows:

< 20 Accurate
20-40 Inaccurate
>40 highly inaccurate

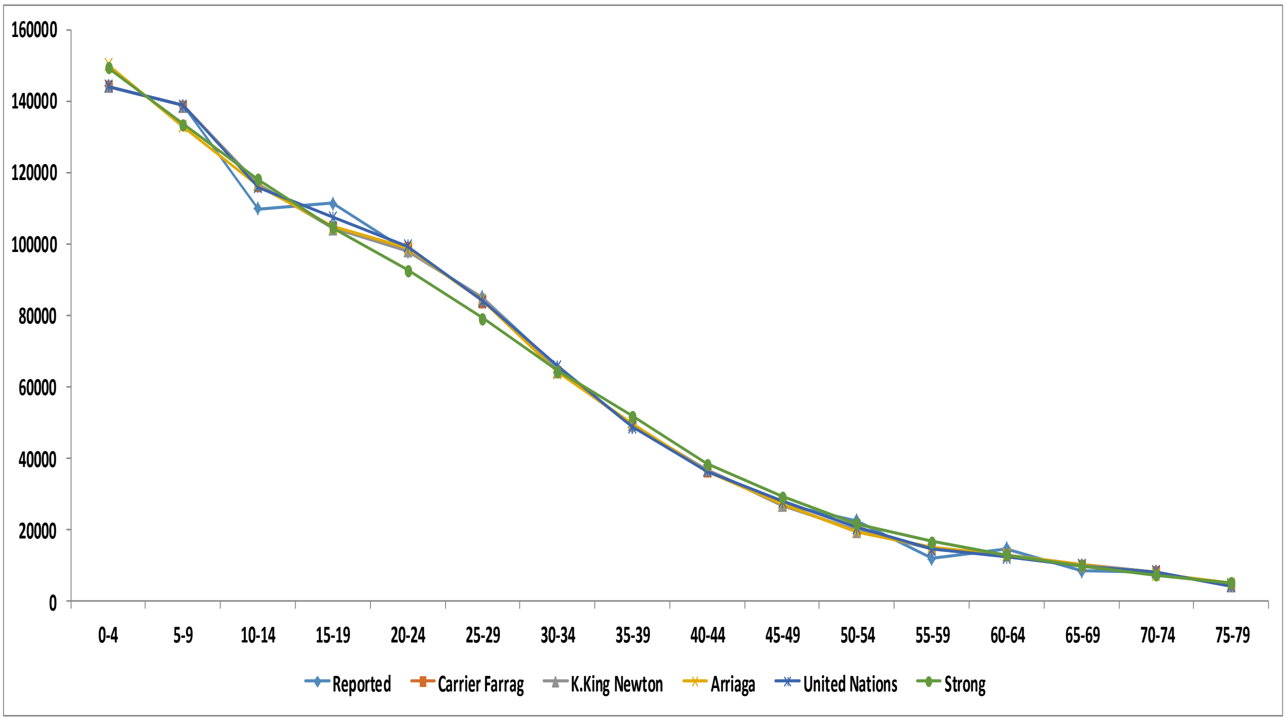
According to the UN definition of the index values, age and sex reporting in the three censuses is highly inaccurate, although there have been marked improvements in the 2013 Census compared to the 1993 and 2003 Censuses. In general, male age reporting is better than the female (Table 2.2 above). Figures 2.2 (a) and (b) below show reported and smoothed male and female populations using different smoothing methods. The reported age for the male and female population show misreporting. However, age misreporting is more pronounced in the female population (Figures 2.2(a) and (b) below).

Figure 2. 2 (a) Reported and smoothed male population by age-group, 2013 census



Source: 2013 Population and Housing Census

Figure 2. 2 (b) Reported and smoothed female population by age-group, 2013 census



Source: 2013 Population and Housing Census

CHAPTER 3: INDIRECT TECHNIQUES OF FERTILITY ESTIMATION

3.1 The Brass and Arriaga Techniques

A detailed discussion on the P/F ratio method can be found elsewhere. This section only provides brief discussions on the Brass and Arriaga techniques, which gives robust estimates in changing fertility situations. One basic assumption of the Brass' P/F ratio method is the notion of constant fertility and not changed over time. In order to overcome the assumption of constant fertility, Brass (see UN 1983) developed the hypothetical inter- censal cohort method for situations where fertility is changing. The hypothetical inter - censal cohort method uses two censuses 10 years apart and provides robust estimates in situations of changing fertility. The Arriaga technique, which is a variant of the Brass' hypothetical inter - censal cohort method, uses two to three censuses. Both methods (Brass and Arriaga) have been used for the fertility analysis of the 1993 and 2003 Censuses.

3.2 National fertility estimates for The Gambia

Table 3.2(a) below shows estimates of total fertility rates, Brass and Arriaga P/F ratios by age of women. Usually the P/F ratio for the 15-19 age groups is an outlier and ignored in any analysis. This is because the number of births among women aged 15-19 years is comparatively smaller, resulting in implausibly high P/F ratios. In the younger age groups (20-24 and 25-29), both the Brass and Arriaga P/F ratios are comparatively high and decline thereafter. This suggests the under-reporting of current fertility for the younger age groups. The erratic nature of the P/F ratios in the older ages (35-49 age groups) can be attributed to age misreporting whilst the decline in P/F ratios are due to omissions of children ever born. Barring these caveats, the TFR derived from both (Brass and Arriaga) estimates are similar (Table 3.2a below). However, based on the age-specific fertility rates (ASFR), particularly for the adolescents (15-19 years), the Brass method appears to be a more plausible estimate of fertility in The Gambia than the Arriaga method. The reasons for the choice of the Brass estimates are discussed below.

Table 3. 2(a): Estimates of Total Fertility rates and P/F Ratios by age of Women, 2013 Census

Age Group	Index	Brass P/F Ratios	Arriaga P/F Ratios
15-19	1	2.504	2.492
20-24	2	1.96	1.829
25-29	3	1.812	1.698
30-34	4	1.758	1.606
35-39	5	1.671	1.526
40-44	6	1.673	1.507
45-49	7	1.692	1.493
TFR		**5.97**	**5.95**

Notes: Adjustment factors for the Brass method are one-half of P2/F2 + P3/F3 = 1.89
Adjustment factors for the Arriaga method are one-half of P2/F2 + P3/F3 = 1.76
Reference period for both estimates is 2012.90. Two censuses (2003 and 2013) were used to derive both estimates.

Table 3.2(b) below shows the estimates of ASFRs derived from the 2013 census using the Brass and Arriaga methods of indirect technique of fertility estimation and the 2013 DHS estimates using direct fertility estimation from birth history data. First, it can be observed that the Brass estimate of 86 births per 1,000 women aged 15-19 years is more consistent with the DHS estimate (88 per 1,000 women) compared to the Arriaga estimate (79 per 1,000 women). Second, fertility estimates from birth history data (direct estimates) are generally much better and provide robust results compared to fertility estimates from censuses using indirect techniques. Third, births among women aged 15-19 years were 103 per 1,000 women in the 2003 Census fertility estimates. It is inconceivable that the births would decline by 23.3 per cent (i.e. from 103 to 79 births per 1,000 women).

Table 3. 2(B): Estimates of ASFRs per 1,000 Women from the Census and DHS, 2013

Age Group	Brass 2013	DHS 2013	Arriaga 2013
15-19	86	88	79
20-24	234	215	235
25-29	296	271	288
30-34	271	237	270
35-39	191	185	197
40-44	82	99	89
45-49	34	24	31
TFR	**5.9**	**5.6**	**5.9**

Source: 2013 Population and Housing Census

Table 3.2(c) below provides national fertility estimates using the Brass hypothetical inter - censal cohort method. These are the most robust estimates of fertility obtained from the 2013 Census data. The estimates assume that current fertility may have been under-reported by 89 per cent; thus, applying an adjustment factor of 1.89 yields a TFR of 5.9 children per woman. Table 3.2(c) also shows crude birth and general fertility rates of 46.9 and 187.5 per 1,000 population and women respectively, a gross reproduction rate of 2.93 daughters, total estimated births of 75,610 and a mean age at childbearing of 30.08 years.

The national TFR of 5.9 children per woman in 2013 indicates an upward increase from 5.4 children per woman in 2003. It is also higher than the DHS TFR of 5.6 children per woman (see Table 3.2b above). Unlike the 1993 and 2003 fertility result, which showed declines in all ages, the 2013 fertility result showed a decline of 16.5 per cent only among adolescent women (15-19 years). All the other age groups, with the exception of the 45-49 age groups which showed no change, showed increases in fertility (data not shown).

Table 3. 2(C): Fertility Estimates Based on P/F Ratio Method for a Hypothetical Inter-Censal Cohort, The Gambia, and 2003-2013

Age Group of women	Reported Period Fertility 2003	Reported Period Fertility 2013	Average 2003/2013	Average Parity 2003	Average Parity 2013	Parity for Hypothetical Cohort P	Parity Equivalents 2003/2013 F	Corrected Age Specific Fertility Rates 2003/2013	P/Ratios	Adjusted Age Specific Fertility Rates 2003/2013
15-19	0.0374	0.0384	0.0379	0.190	0.201	0.201	0.080	0.0457	2.504	0.0864
20-24	0.1231	0.1259	0.1245	1.107	1.052	1.052	0.537	0.1237	1.960	0.2338
25-29	0.1521	0.1611	0.1566	2.487	2.307	2.318	1.279	0.1567	1.812	0.2963
30-34	0.1343	0.1551	0.1447	3.884	3.645	3.590	2.043	0.1436	1.758	0.2714
35-39	0.0950	0.1171	0.1060	4.873	4.620	4.451	2.664	0.1008	1.671	0.1906
40-44	0.0420	0.0542	0.0481	5.482	5.277	4.983	2.978	0.0431	1.673	0.0815
45-49	0.0246	0.0225	0.0236	5.609	5.540	5.371	3.174	0.0181	1.692	0.0341
TFR	**3.04**	**3.37**	**3.21**					**3.16**		**5.97**

Source: 1993 and 2003 Population and Housing Censuses

Notes: (1) Parity equivalents have been obtained using Brass multipliers

(2) Adjustment factor is one-half of $P_2/F_2 + P_3/F_3 = 1.89$

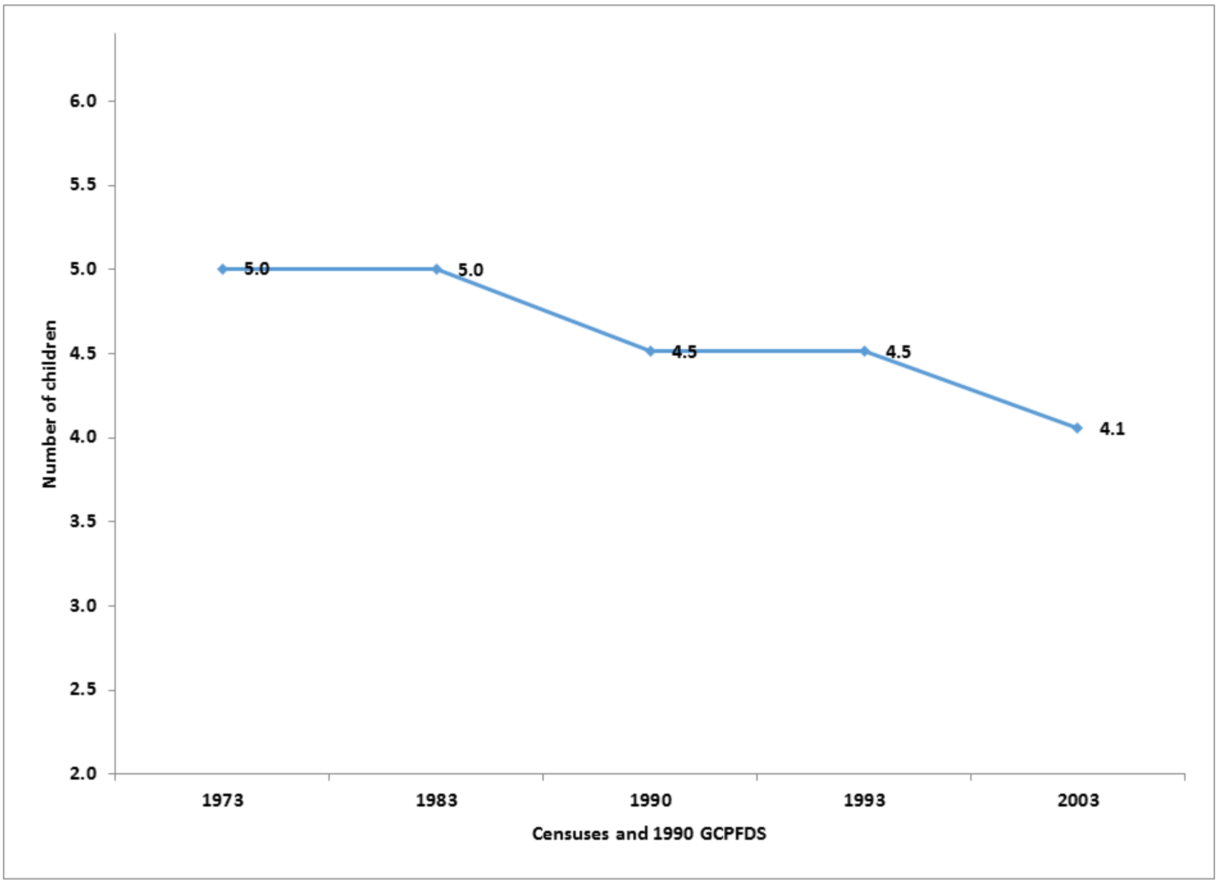
(3) Fertility estimates are as follows:

Total Fertility Rate (TFR) = 5.9 per woman
Crude Birth Rate (CBR) = 46.9 per 1,000 population
General Fertility Rate (GFR) =187.5 per 1,000 women
Gross Reproduction Rate (GRR) (with sex ratio at birth = 1.04) =2.93
Total Estimated births in 2013 = 75,610
Mean age at childbearing (m) =30.08 years
Reference period =2012.90

Given the quality of the fertility data in terms of age misreporting and omissions of children ever born (parity) coupled with the underreporting of current fertility, the estimated TFR should be viewed within the context of these limitations. Thus, the increases in fertility among women aged 20-44 years can solely be explained by the data quality of the 2013 Census. All the earlier censuses (i.e. 1993 and 2003); including the 1990 GCPFDS and the 2013 DHS suggest that The Gambia is on the path of sustained fertility declines.

Figure 3.2 below shows age-specific cumulated fertility rates for women aged 15-34 years for the 1973-2003 Censuses and the 1990 GCPFDS. Clearly, Figure 3.2 further confirms that fertility has been declining among young women (15-34 years) in The Gambia from 1990; including the 1993 and 2003 Censuses.

Figure 3. 2: Cumulated Age-Specific Fertility Rates for Women aged 15-34 years, 1973-2003 Censuses and 1990 GCPFDS



Source: 1973-2003 Population and Housing Censuses and 1990 GCPFD

CHAPTER 4: NUPTIALITY

Nuptiality refers to the frequency and characteristics of marriages in a population. The age at first marriage and the proportions that enter into unions are the most important determinants of fertility. Thus, increases or decreases in fertility can often be explained by these two variables. In populations where marriages are early and universal, fertility levels will increase since women have a longer exposure to reproductive life. By contrast, in populations with rising ages at marriage and higher proportions of ‘never-married’, fertility will decrease.

This chapter discusses the proportion of the ‘never-married’ among women and the age at first marriage. These two variables are the driving factors for fertility change in The Gambia since the 1990s.

4.1 Proportion “Never-married”

Table 4.1 below shows the percentage distribution of women aged 15-49 years by current marital status in the 2003 and 2013 Censuses. Comparing 2013 to 2003, the proportion of women married by age has consistently declined among all age groups. With the exception of the 15-19 years age group, the proportion ‘never-married’ has increased by age in 2013 compared to 2003. The ‘never-married’ category is highest (80.0 per cent) among the 15-19 year age-group for both the 2003 and 2013 censuses. Overall, the ‘never-married’ category marginally increased from 32.0 per cent in 2003 to about 34 per cent in 2013.

Table 4. 1: Percentage distribution of women 15-49 years by marital status, 2003 and 2013

Age	Never married		Married		Divorced		Separated		Widowed		Total		Number of women	
group	2003	2013	2003	2013	2003	2013	2003	2013	2003	2013	2003	2013	2003	2013
15-19	80.0	80.0	20.0	19.0	0.2	0.2	0.1	0.1	0.1	0.1	100.0	100.0	80,610	110,671
20-24	41.0	44.0	58.0	55.0	1.4	1.2	0.3	0.3	0.3	0.3	100.0	100.0	70,171	97,166
25-29	16.0	19.0	80.0	77.0	2.2	2.2	0.4	0.4	0.8	0.7	100.0	100.0	61,431	84,531
30-34	7.0	9.0	88.0	86.0	2.8	3.0	0.6	0.6	1.5	1.4	100.0	100.0	44,884	64,862
35-39	4.0	5.0	91.0	89.0	2.5	3.1	0.5	0.7	2.3	2.4	100.0	100.0	35,416	48,413
40-44	2.0	3.0	90.0	88.0	2.8	3.4	0.7	0.8	4.4	4.9	100.0	100.0	28,210	36,307
45-49	2.0	2.3	87.0	85.0	2.9	3.4	0.7	1.0	7.1	8.3	100.0	100.0	18,219	26,802
Total	**32.0**	**33.5**	**65.0**	**63.0**	**1.8**	**1.9**	**0.4**	**0.4**	**1.4**	**1.5**	**100.0**	**100.0**	**338,941**	**468,752**

Source: 2003 and 2013 Population and Housing Censuses. Row totals may not add up to 100 due to rounding

4.2 Age at first marriage

Data on age at first marriage are not usually collected in censuses. Hajnal (1965) proposed an indirect method of computing mean age at first marriage using census or survey data from the proportions of females never-married. The index from this indirect method is called the singulate mean age at marriage (SMAM). According to Hajnal, the SMAM is an estimate of the mean age at first marriage among those who ever-married by some predefined age limit.

Assuming all first marriages have taken place by age 49, the SMAM at first marriage is expressed as:

$$SMAM = \sum_{x=15}^{49} [P_x - \{50P_{45-54})\}/(1- P_{45-54})$$

Where P_x is the proportion never-married at age x.

Table 4.2(a) shows rising ages at first marriages among both males and females since the 1993 census. While the increase in age at first marriage is generally higher among males, it is faster among females. For example, the SMAM for males declined by 1.3 per cent between the 2003 and 2013 censuses; by contrast, the SMAM for females increased by 2.3 per cent during the same period. The age gap at marriage among spouses has decreased from 9.6 years in 1993 to 8.0 years. This is mainly due to the rising ages at first marriages among females (Table 4.2a below).

Table 4. 2 (a): Singulate Mean Age at Marriage by sex, 1983-2013 Censuses

Census Year	Male	Female	Male-Female Age Gap (in years)
1983	N/A	18.2	N/A
1993	29.2	19.6	9.6
2003	30.9	22.0	8.9
2013	30.5	22.5	8.0
Difference in years (2013-2003)	-0.4	0.5	
% change 2003-2013	-1.3	2.3	

Source: 1983-2013 Population and Housing Censuses
Note: N/A = Not Available

For a better understanding of the factors of fertility change in The Gambia, the SMAM is cross classified with the age-specific (15-19, 20-24 and 25-29) proportions of ever-married women. Table 4.2(b) below shows that there is an association between the SMAM and the proportions ever-married. For example, when the SMAM was 18.2 years in 1983, the proportions ever-married were highest for women aged 15-19 years (0.551), 20-24 years (0.851) and 25-29 years (0.943). The national TFR (6.4 children per woman) was also at its highest during this period. However, as the SMAM increased in the subsequent census years of 1993, 2003 and 2013, the proportions ever-married also decreased resulting in declines in the TFR in 1993 and 2003. This is what is expected in situations of declining fertility; particulary in countries such as The Gambia were over 90 per cent of births occur within marriages (Pacque-Margolis, Sara et al;
1993:48).

Table 4. 2 (b): Female Singulate Mean Age at Marriage (SMAM) and Age-Specific Proportions Ever-Married, 1983-2013 Censuses

Census Year	SMAM	Age Groups 15-19	20-24	25-29	TFR
1983	18.2	0.551	0.851	0.943	6.4
1993	19.6	0.388	0.748	0.909	6.0
2003	22.0	0.204	0.595	0.838	5.4
2013	22.5	0.198	0.563	0.807	5.9

Source: 1983-2013 Population and Housing Censuses

CHAPTER 5: FERTILITY DIFFERENTIALS

Fertility differentials provide useful insights into the population dynamics including the changing fertility situations within a country. In this chapter, national trends in total fertility rates over the inter-censal periods 1973-2013; including the 1990 Gambia Contraceptive Prevalence and Fertility Determinants Survey (GCPFDS), the urban-rural differentials in fertility, differentials by Local Government Areas and fertility differentials by educational attainment of women are analyzed and discussed.

5.1 Trends in total fertility rates

Table 5.1 and Figure 5.1below show historical data on national fertility trends from the 1973-2013 Censuses. The TFR had been high and constant at 6.4 per woman both in 1973 and1983. However, data from the 1990 GCPFDS and the 1993 Census indicated that fertility declined from 6.4 children per woman respectively in 1973 and 1983 to 5.9 and 6.0 children per woman in 1990 and 1993 respectively. The 2003 Census results suggest that fertility declined significantly, by 11 per cent, from 6.0 children per woman in 1993 to 5.4 children per woman in 2003 with most of the declines in the younger age groups of 15-19 and 20-24 years, 38 and 18 per cent declines respectively. Comparatively, the 2013 Census results suggest a 9.3 per cent increase in the TFR; i.e. from 5.4 in 2003 to 5.9 in 2013. The decline in fertility in 2013, 16.5 per cent, only occurred in the 15-19 age groups, whilst the 20-44 age groups showed increases in fertility (Table 5.1 below).

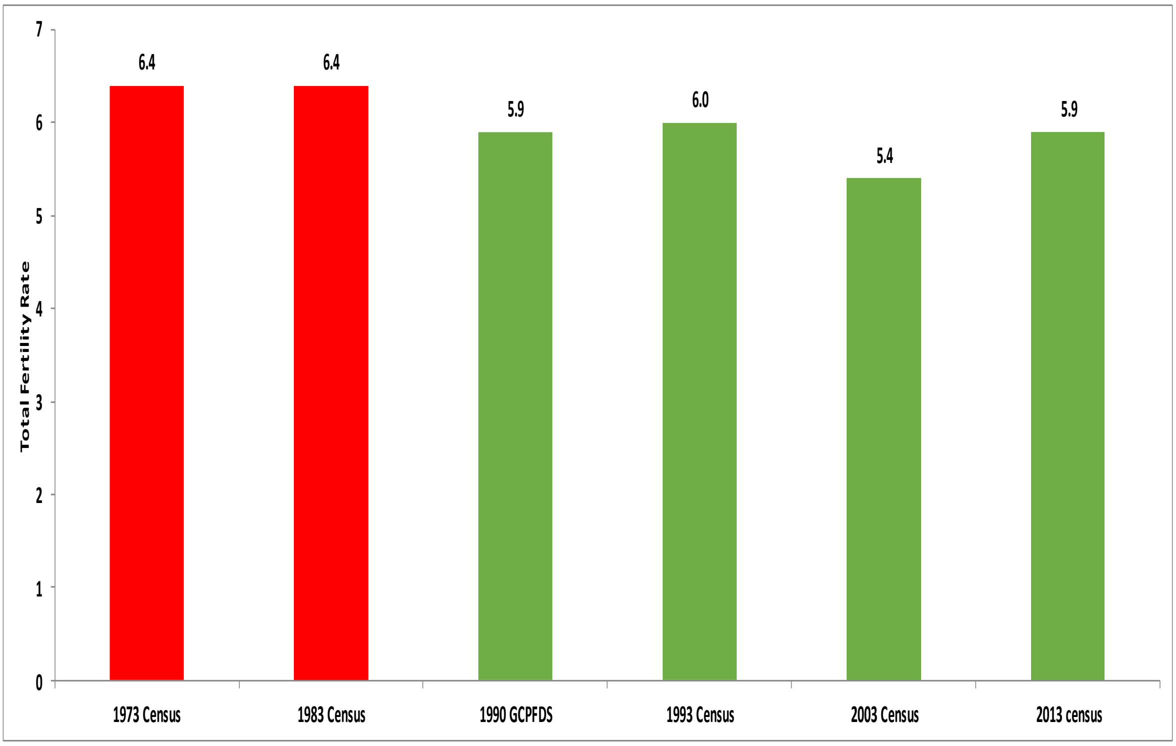
Table 5. 1: Age-Specific fertility rates per 1,000 women and total fertility rates, 1973-2013

Age Group	1973 Census	1983 Census	1990 [1] GCPFDS	1993 Census	2003 Census	2013 Census
15-19	199	200	167	167	103	86
20-24	302	293	270	272	223	234
25-29	288	285	238	276	261	296
30-34	212	222	228	221	224	271
35-39	164	161	130	159	156	191
40-44	74	77	78*	75	70	82
45-49	41	40		38	34	34
TFR	**6.4**	**6.4**	**5.9**	**6.0**	**5.4**	**5.9**
% change	--	no change	-7.8	-6.3	-11	9.3

Source: Population and Housing Censuses, 1973-2013 and 1990 GCPFDS
Note: * refers to 40-49 age groups

[1] The GCPFDS was modeled on the DHS approach. Age-specific fertility rates and TFR refer to 0-4 years before the survey

Figure 5. 1: Total fertility rates, 1973-2013 Censuses and 1990 GCPFDS



Source: 1973-2013 Population and Housing Censuses and 1990 GCPFDS

5.2 Urban-Rural

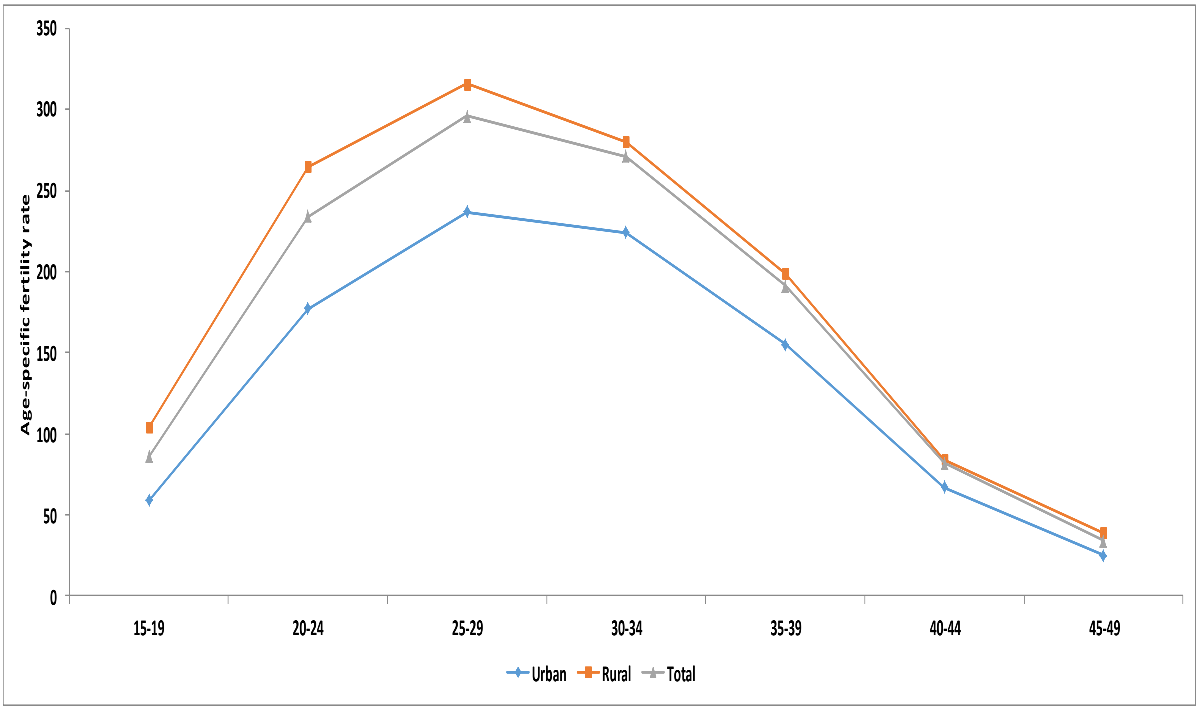
As expected, rural fertility (TFR 6.4) is higher than urban fertility (TFR 4.7). Table 5.2 below shows that urban women start their reproductive life much later than rural women. For example, the age-specific fertility rate for urban women aged 15-19 years is 43.3 per cent lower than rural women. Similarly, the age-specific rate for urban women aged 45-49 years is 35.9 per cent lower than rural women. Both the age-specific fertility rates and the total fertility rate for all women lie midway between the urban and rural fertility (Figure 5.2).

Table 5. 2: Age-Specific Fertility Rates per 1,000 Women and TFR by Urban-Rural and Total, 2013 Census

Age Group	Urban	Rural	Total
15-19	59	104	86
20-24	177	265	234
25-29	237	316	296
30-34	224	280	271
35-39	155	199	191
40-44	67	84	82
45-49	25	39	34
TFR	**4.7**	**6.4**	**5.9**

Source: 2013 Population and Housing Census

Figure 5. 2: Age-Specific Fertility Rates by Urban-Rural and Total, 2013 Census



Source: 2013 Population and Housing Census

5.3 Local Government Areas

Table 5.3 below shows the age-specific fertility rates and TFR by Local Government Area. As expected, the three LGAs – Banjul, Kanifing and Brikama – which constitute the western half of the country and are wholly (Banjul and Kanifing) and predominantly (Brikama) urban areas have the lowest TFRs per woman (i.e.3.4, 4.5 and 5.9 respectively for the three LGAs) compared to the other LGAs.

By contrast, Kuntaur has the highest TFR in the country with 7.3 children per woman, followed by the Kerewan and Janjanbureh LGAs each with TFR of 6.8 children per woman and TFRs of 6.6 and 6.4 children per woman respectively for the Mansakonko and Basse LGAs (Table 5.3 below).

Table 5. 3: Age-specific fertility rates per 1,000 women and TFR by Local Government Areas, 2013 Census

Age group	Banjul	Kanifing	Brikama	Mansakonko	Kerewan	Kuntaur	Janjanbureh	Basse	The Gambia
15-19	46	55	73	109	103	121	120	128	86
20-24	132	164	224	279	279	308	276	281	234
25-29	166	228	298	331	340	363	322	304	296
30-34	149	216	278	297	301	305	286	262	271
35-39	121	146	196	203	215	215	201	184	191
40-44	39	63	85	77	84	107	86	81	82
45-49	22	22	31	34	38	43	45	47	34
TFR	**3.4**	**4.5**	**5.9**	**6.6**	**6.8**	**7.3**	**6.8**	**6.4**	**5.9**

Source: 2013 Population and Housing Census

5.4 Educational Attainment

Several studies have shown the inverse relationship between education and fertility. For example, educated women marry much later and have fewer children than women with no education. However, studies conducted by both Cochrane (1979) and Jain (1981) showed that rudimentary education in least developed societies might initially increase fertility. This means that there is a threshold beyond which education has a negative effect on fertility. According to the United Nations (1987), this threshold is beyond primary education, that is, the level of some secondary education or seven years of education. A study by Martin (1995) using DHS data of 26 countries, (including Sub-Saharan Africa), also found higher education to be consistently associated with lower fertility.

Table 5.4 below shows no difference in the TFRs of women with no education (6.4 children per woman) and women with primary education (6.4 children per woman). This finding from the 2013 Census is consistent with the 2013 Gambia DHS. However, the difference between no education or primary and women with a secondary education or higher is 2.1 births per woman (6.4 versus 4.3).

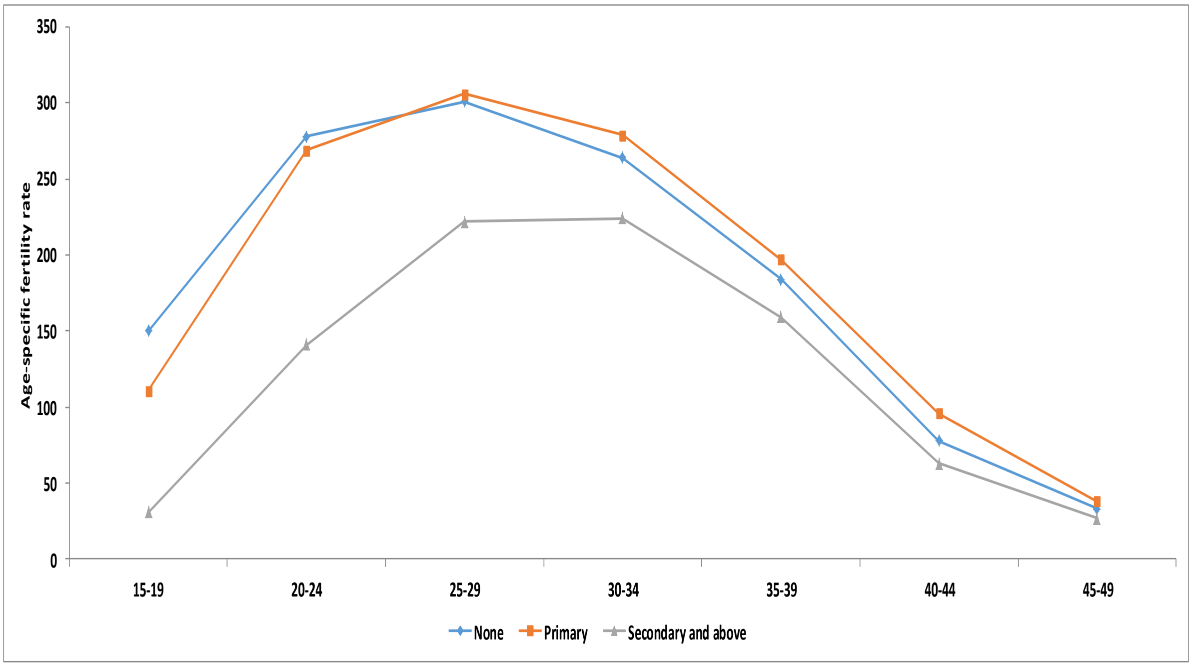
The fertility curves show that in general, women with secondary education and above start their reproductive lives much later than women with no education and those with primary education (Figure 5.4 below).

Table 5.4: Age-Specific Fertility Rates per 1,000 Women and TFR by Educational Attainment, 2013 Census

Age Group	None	Primary	Secondary & Above
15-19	150	111	31
20-24	278	269	141
25-29	301	306	222
30-34	264	279	224
35-39	184	197	159
40-44	78	96	63
45-49	33	38	27
TFR	**6.4**	**6.4**	**4.3**

Source: 2013 Population and Housing Census

Figure 5.4: Age-specific fertility rates by educational attainment, 2013 Census



Source: 2013 Population and Housing Census

CHAPTER 6: CONCLUSION

Unlike the 1993 and 2003 Censuses, where fertility declined in all the age-groups, the foregoing estimates of the 2013 Census (Table 5.1 pp. 13) shows a fertility decline of 16.5 per cent only occurred among the 15-19 age-group. Comparatively, fertility increased in the 20-44 age-groups, which accounted for an overall increase by 9.3 per cent i.e. from a TFR of 5.4 children per woman in 2003 to 5.9 children per woman in 2013.

Although the TFR of 5.9 children is the most robust estimate obtained from the 2013 Census data, it should be viewed with caution as a product of age misreporting, omissions of children and underreporting of recent fertility particularly among women aged 20-44 years.

The analysis clearly shows that fertility has been declining in The Gambia since 1990, mainly due to the increased proportion of 'never-married' among young women aged 15-29 years and rising age at first marriage among women from 18.2 years in 1983, 19.6 years in 1993 and to 22.0 and 22.5 years respectively in 2003 and 2013.

The results show that rural fertility is higher, by more than a child (1.7 children per woman), compared to urban fertility (6.4 children per woman versus 4.7 children per woman). The Banjul, Kanifing and Brikama LGAs have the lowest TFRs per woman (i.e. 3.4, 4.5 and 5.9 respectively for Banjul, Kanifing and Brikama) compared to the other LGAs. The Kuntaur LGA has the highest TFR in the country with 7.3 children per woman, followed by the Kerewan and Janjanbureh LGAs each with TFR of 6.8 children per woman and TFRs of 6.6 and 6.4 children per woman respectively for the Mansakonko and Basse LGAs.

While there is no difference between the fertility of women with no education and women with primary education (6.4 children per woman for each), there is a difference of 2.1 children per woman (TFR 6.4 versus 4.3 per woman) between women with no education and women with primary education on one hand compared to women with secondary education and over on the other hand. This finding is consistent with the 2013 DHS fertility analysis of educational attainment.

References

Arriaga, E. E, Johnson, Peter D, and Jamison, Ellen (1994) *Population Analysis with Microcomputers, Volume 1, Presentation of Techniques, Bureau of the Census, USAID and UNFPA*

Arriaga, E.E. (1983) Estimating fertility from Data on Children Ever Born by Age of Mother, International Research Document No. 11 U. S. Bureau of the Census, Washington D.C.

Brass, William (1975) 'Fertility Estimates' in: Methods for Estimating Fertility and Mortality from Limited and Defective Data, Chaple Hill, North Carolina, pp 11-21.

Caldwell, John C, Orubuloye, I O and Caldwell, Pat (1992) 'Fertility Decline in Africa: A New Type of Transition?', in: *Population and Development Review vol. 18 No. 2 pp 211-43*

Cochrane, Susan Hill (1979) Fertility and Education: What Do We Really Know?, Washington, D C, World Bank

GBoS (2007), Fertility decline in The Gambia: Trends and Differentials, Banjul, The Gambia

GBoS and ICF International (2014), The Gambia Demographic and Health Survey 2013, Banjul, The Gambia, and Rockville, Maryland, USA

Hajnal, John (1965), European Marriage Pattern in Perspective, in: D. V. Glass and D. E. C. Everstey (eds.), *Population in History: Essays in Historical Demography*, London, and Edward Arnold

Jain, Anrudh K (1981) 'The Effect of Female Education on Fertility: A Simple Explanation', in: *Demography, vol. 18 No. 4,* Washington: Population Association of America, pp. 577-95

Martin, Teresa Castro (1995) 'Women's Education and Fertility: Results From 26 Demographic and Health Surveys', in: *Studies in Family Planning vol. 26 No. 4* pp.187-202

Pacque-Margolis, Sara, Gueye, Mouhamadou, George, Melville and Thome, Marcio (1993) Gambia Contraceptive Prevalence and Fertility Determinants Survey, Medical and Health Services Directorate, Ministry of Health and Social Werlfare and Human Resources Unit, Ministry of Trade, Industry and Employment, Banjul, The Gambia

United Nations (1983) Manual X: Indirect Techniques for Demographic Estimation, Department of International Economic and Social Affairs, Population Studies, No. 81, New York.

STATISTICAL TABLES

The Gambia

2003 Census

Age Group	Total Number of women	Children Ever Born	Births in the past year
15-19	80,330	15,259	3,007
20-24	69,851	77,320	8,601
25-29	61,179	152,161	9,304
30-34	44,707	173,631	6,002
35-39	35,259	171,811	3,348
40-44	28,109	154,084	1,180
45-49	18,149	101,794	447
Total	**337,584**	**846,060**	**31,889**

2013 Census

Age Group	Total Number of women	Children Ever Born	Births in the past year
15-19	110,751	22,312	4,253
20-24	97,227	102,315	12,240
25-29	84,567	195,127	13,621
30-34	64,881	236,516	10,065
35-39	48,427	223,724	5,670
40-44	36,315	191,620	1,968
45-49	26,804	148,497	604
Total	**468,972**	**1,120,111**	**48,421**

BANJUL

2003 Census

Age Group	Total Number of women	Children Ever Born	Births in the past year
15-19	2,046	228	75
20-24	2,119	1,406	274
25-29	1,632	2,664	260
30-34	1,102	2,814	153
35-39	879	3,159	112
40-44	682	2,671	21
45-49	519	2,186	15
Total	**8,979**	**15,128**	**910**

2013 Census

Age Group	Total Number of women	Children Ever Born	Births in the past year
15-19	1,601	177	40
20-24	1,727	1,122	151
25-29	1,412	2,120	159
30-34	1,151	2,760	121
35-39	815	2,573	68
40-44	643	2,332	25
45-49	526	2,040	9
Total	**7,875**	**13,124**	**573**

KANIFING

2003 Census

Age Group	Total Number of women	Children Ever Born	Births in the past year
15-19	20,320	2,293	600
20-24	20,494	15,971	2,105
25-29	16,230	30,192	2,217
30-34	11,060	32,711	1,410
35-39	8,308	32,520	714
40-44	6,012	27,079	235
45-49	3,987	18,757	76
Total	**86,411**	**159,523**	**7,357**

2013 Census

Age Group	Total Number of women	Children Ever Born	Births in the past year
15-19	23,000	2,428	563
20-24	23,396	15,779	2,226
25-29	19,709	32,073	2,679
30-34	14,397	39,283	1,936
35-39	10,637	38,695	1,040
40-44	7,368	31,210	331
45-49	5,751	26,702	87
Total	**104,258**	**186,170**	**8,862**

BRIKAMA

2003 Census

Age Group	Total Number of women	Children Ever Born	Births in the past year
15-19	22,922	3,401	804
20-24	20,177	21,207	2,631
25-29	17,407	42,670	2,976
30-34	12,503	48,573	1,872
35-39	10,033	48,848	1,045
40-44	7,436	39,808	340
45-49	4,989	27,437	112
Total	**95,467**	**231,944**	**9,780**

2013 Census

Age Group	Total Number of women	Children Ever Born	Births in the past year
15-19	41,049	6,213	1,301
20-24	36,899	34,023	4,534
25-29	31,244	67,457	5,068
30-34	24,399	85,986	4,009
35-39	18,190	82,218	2,294
40-44	12,750	65,666	783
45-49	9,376	50,876	219
Total	**173,907**	**392,439**	**18,208**

MANSAKONKO

2003 Census

Age Group	Total Number of women	Children Ever Born	Births in the past year
15-19	4,002	889	219
20-24	3,209	4,588	569
25-29	2,755	8,532	556
30-34	2,167	10,013	359
35-39	1,935	10,923	231
40-44	1,804	11,423	99
45-49	1,105	7,010	26
Total	**16,977**	**53,378**	**2,059**

2013 Census

Age Group	Total Number of women	Children Ever Born	Births in the past year
15-19	4,989	1,386	266
20-24	3,488	4,754	547
25-29	3,017	8,492	580
30-34	2,593	11,575	495
35-39	1,953	11,158	266
40-44	1,704	10,744	80
45-49	1,328	8,688	39
Total	**19,072**	**56,797**	**2,273**

KEREWAN

2003 Census

Age Group	Total Number of women	Children Ever Born	Births in the past year
15-19	10,146	2,140	470
20-24	7,854	10,244	1,208
25-29	7,179	20,936	1,290
30-34	5,549	25,355	884
35-39	4,352	24,949	491
40-44	3,972	24,863	185
45-49	2,453	15,736	67
Total	**41,505**	**124,223**	**4,595**

2013 Census

Age Group	Total Number of women	Children Ever Born	Births in the past year
15-19	13,149	2,918	654
20-24	10,165	13,005	1,674
25-29	8,780	25,198	1,795
30-34	7,053	31,363	1,295
35-39	5,480	30,989	786
40-44	4,383	28,098	259
45-49	3,303	22,141	95
Total	**52,313**	**153,712**	**6,558**

KUNTAUR

2003 Census

Age Group	Total Number of women	Children Ever Born	Births in the past year
15-19	4,562	1,417	199
20-24	3,332	5,208	460
25-29	3,309	10,134	528
30-34	2,563	11,855	344
35-39	2,099	11,513	198
40-44	1,720	10,587	89
45-49	1,074	6,540	32
Total	**18,659**	**57,254**	**1,850**

2013 Census

Age Group	Total Number of women	Children Ever Born	Births in the past year
15-19	5,616	2,012	259
20-24	4,404	7,356	617
25-29	4,185	13,157	700
30-34	3,163	14,783	448
35-39	2,271	12,624	241
40-44	1,903	11,540	106
45-49	1,300	8,018	27
Total	**22,842**	**69,490**	**2,398**

JANJANBUREH

2003 Census

Age Group	Total Number of women	Children Ever Born	Births in the past year
15-19	5,897	1,756	253
20-24	4,611	7,004	586
25-29	4,466	13,657	634
30-34	3,510	15,925	452
35-39	2,773	14,836	265
40-44	2,404	14,477	104
45-49	1,433	8,761	46
Total	**25,094**	**76,416**	**2,340**

2013 Census

Age Group	Total Number of women	Children Ever Born	Births in the past year
15-19	7,673	2,475	431
20-24	5,659	8,392	827
25-29	5,244	15,333	924
30-34	4,127	17,626	642
35-39	3,008	15,636	341
40-44	2,556	14,883	132
45-49	1,761	10,513	46
Total	**30,028**	**84,858**	**3,343**

BASSE

2003 Census

Age Group	Total Number of women	Children Ever Born	Births in the past year
15-19	10,435	3,145	387
20-24	8,055	11,692	768
25-29	8,201	23,376	843
30-34	6,253	26,385	528
35-39	4,880	25,063	292
40-44	4,079	23,176	107
45-49	2,589	15,367	73
Total	**44,492**	**128,204**	**2,998**

2013 Census

Age Group	Total Number of women	Children Ever Born	Births in the past year
15-19	13,674	4,703	739
20-24	11,489	17,884	1,664
25-29	10,976	31,297	1,716
30-34	7,998	33,140	1,119
35-39	6,073	29,831	634
40-44	5,008	27,147	252
45-49	3,459	19,519	82
Total	**58,677**	**163,521**	**6,206**

URBAN

2003 Census

Age Group	Total Number of women	Children Ever Born	Births in the past year
15-19	43,122	5,615	1,328
20-24	40,376	34,885	4,451
25-29	32,865	68,244	4,742
30-34	22,744	75,348	3,013
35-39	17,609	75,371	1,611
40-44	13,037	63,263	526
45-49	8,698	43,561	183
Total	**178,451**	**366,287**	**15,854**

2013 Census

Age Group	Total Number of women	Children Ever Born	Births in the past year
15-19	53,138	7,126	1,533
20-24	50,878	40,297	5,565
25-29	42,677	78,877	6,240
30-34	32,102	98,016	4,675
35-39	23,500	94,173	2,555
40-44	16,779	77,834	865
45-49	12,789	63,430	236
Total	**231,863**	**459,753**	**21,669**

RURAL

2003 Census

Age Group	Total Number of women	Children Ever Born	Births in the past year
15-19	37,208	9,654	1,679
20-24	29,475	42,435	4,150
25-29	28,314	83,917	4,562
30-34	21,963	98,283	2,989
35-39	17,650	96,440	1,737
40-44	15,072	90,821	654
45-49	9,451	58,233	264
Total	**159,133**	**479,783**	**16,035**

2013 Census

Age Group	Total Number of women	Children Ever Born	Births in the past year
15-19	57,613	15,186	2,720
20-24	46,349	62,018	6,675
25-29	41,890	116,250	7,381
30-34	32,779	138,500	5,390
35-39	24,927	129,551	3,115
40-44	19,536	113,786	1,103
45-49	14,015	85,067	368
Total	**237,109**	**660,358**	**26,752**

NONE

2003 Census

Age Group	Total Number of women	Children Ever Born	Births in the past year
15-19	33,759	11,800	2,155
20-24	39,504	56,185	5,691
25-29	40,234	112,683	6,339
30-34	32,430	135,956	4,303
35-39	27,955	143,430	2,630
40-44	23,333	132,768	993
45-49	15,248	88,106	377
Total	**212,463**	**680,928**	**22,488**

2013 Census

Age Group	Total Number of women	Children Ever Born	Births in the past year
15-19	28,423	12,667	2,154
20-24	34,645	56,116	5,529
25-29	41,130	118,166	7,077
30-34	37,969	155,791	6,006
35-39	31,159	155,859	3,678
40-44	26,230	146,404	1,354
45-49	20,989	121,757	462
Total	**220,545**	**766,760**	**26,260**

PRIMARY

2003 Census

Age Group	Total Number of women	Children Ever Born	Births in the past year
15-19	7,238	1,557	392
20-24	7,070	8,758	1,118
25-29	6,457	16,900	1,197
30-34	3,874	15,015	643
35-39	2,242	10,704	270
40-44	1,339	7,438	65
45-49	781	4,489	20
Total	**29,001**	**64,861**	**3,705**

2013 Census

Age Group	Total Number of women	Children Ever Born	Births in the past year
15-19	14,984	4,107	929
20-24	11,274	16,162	2,058
25-29	10,494	28,313	2,083
30-34	8,556	34,164	1,592
35-39	6,228	30,382	852
40-44	3,593	19,866	308
45-49	2,034	11,335	73
Total	**57,163**	**144,329**	**7,895**

SECONDARY AND ABOVE

2003 Census

Age Group	Total Number of women	Children Ever Born	Births in the past year
15-19	34,429	1,511	402
20-24	21,805	11,053	1,678
25-29	13,370	20,132	1,653
30-34	7,635	19,956	1,000
35-39	4,446	15,153	419
40-44	2,937	11,510	107
45-49	1,821	7,535	42
Total	**86,443**	**86,850**	**5,301**

2013 Census

Age Group	Total Number of women	Children Ever Born	Births in the past year
15-19	67,071	5,405	1,149
20-24	50,969	29,511	4,585
25-29	32,548	47,607	4,394
30-34	18,023	45,270	2,414
35-39	10,839	36,508	1,111
40-44	6,323	24,449	292
45-49	3,677	14,791	67
Total	**189,450**	**203,541**	**14,012**