# RELIGION AND REPRODUCTIVE BEHAVIOR IN SUB-SAHARAN AFRICA

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# Religion and Reproductive Behavior
# in Sub-Saharan Africa

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# Preface

The Demographic and Health Surveys (DHS) Program is one of the principal sources of international data on fertility, family planning, maternal and child health, nutrition, mortality, environmental health, HIV/AIDS, malaria, and provision of health services.

One of the objectives of The DHS Program is to analyze DHS data and provide findings that will be useful to policymakers and program managers in low- and middle-income countries. DHS Analytical Studies serve this objective by providing in-depth research on a wide range of topics, typically including several countries and applying multivariate statistical tools and models. These reports are also intended to illustrate research methods and applications of DHS data that may build the capacity of other researchers.

The topics in the DHS Analytical Studies series are selected by The DHS Program in consultation with the U.S. Agency for International Development.

It is hoped that the DHS Analytical Studies will be useful to researchers, policymakers, and survey specialists, particularly those engaged in work in low- and middle-income countries.


Sunita Kishor

Director, The DHS Program

# Abstract

This paper reports an analysis of how religion may influence reproductive behavior in 28 countries of sub-Saharan Africa. In comparisons between Muslim and non-Muslim populations (including Catholics and other Christians as well as those with traditional religious beliefs), Muslim populations typically show higher fertility accompanied by preference for larger families, less use of contraception, earlier age at marriage, and greater prevalence of polygyny. The main objective of the study was to determine whether the pattern of higher Muslim fertility remains when important social and economic covariates are taken into account. These factors include education, wealth, rural-urban residence, exposure to mass media, child mortality, and measures of gender equality. The multivariate analyses reported here do not support the expectation that these socioeconomic covariates are responsible for the fertility-related differences between Muslim and non-Muslim women, although in some instances they reduce the magnitude of existing differences between groups.

# Executive Summary

This paper reports an analysis of the association of reproductive behavior with religion in 28 countries of sub-Saharan Africa. Although various traditional belief systems exist in some of these countries, the dominant religions are Christianity and Islam. Data from The Demographic and Health Survey Program shows no specific differences between Catholic and other Christian denominations in reproductive behavior. Muslim populations, however, typically show higher fertility, a preference for larger families, less use of contraception, earlier age at marriage, and greater prevalence of polygyny. Detailed analyses compare Muslim with non-Muslim women.

The main objective of this study was to determine whether the observed pattern of higher Muslim fertility, associated with differences in marital behavior, reproductive preferences, and family planning, would persist when important social and economic covariates were taken into account. These covariates include education, wealth, rural-urban residence, exposure to mass media, child mortality, and measures of gender equality. Multivariate analyses did not support the expectation that these socio-economic covariates would be responsible for the fertility-related differences between Muslims and non-Muslims, although in some instances they operated to reduce the magnitude of these differences.

There is also the possibility that unobserved covariates, particularly those connected with the status of women, are not well-measured with DHS data. Moreover, the only information on religion available from the DHS survey is based entirely on women's answers to the question: "What is your religion?"

# 1.  Introduction

Research on the effects of religion on reproductive behavior has had a long history in the social sciences. Most of that research has so far concentrated on developed countries, though in recent years, the focus has included developing countries (Jones 2006; Morgan et al. 2002; Roudi-Fahimi 2004; Boonstra 2001; Akafuah 2008; Dharmalingam 2004; Knodel et al. 1999; Karim 1997; Immerman and Ronald 2003; Skirbekk et al. 2015). Most recently, sub-Saharan Africa has gained attention (Heaton 2011; Johnson-Hanks 2006; Kahle 2013). The most relevant publication to result from this research to date is Tim Heaton's 2011 article: "Does Religion Influence Fertility in Developing Countries?" It is based on data for 30 countries, including 17 in sub-Saharan Africa. His study documents little difference in fertility between Catholics and Protestants in that part of the world, but he finds substantially higher fertility among Muslims. His analysis concludes that the country's level of development and various social characteristics do not fully account for this fertility among Muslims. In the following analysis, more recent and extensive data show similar findings.

# 2.  Population Composition

The composition of religions in the sub-Saharan African countries included in this report is summarized in Table 1. In many of the countries of West and Central Africa, Muslims are the largest religious subgroup; they comprise almost the entire populations of Mali, Niger, and Senegal. The remaining two large populations are Catholics and a variety of other Christian denominations, all of which are grouped in this paper as "Other Christians."

In Eastern and Southern Africa, women classified in this paper as "Other Christians" predominate, with Catholics as the next largest group, while Muslims are a minority, typically 10 percent to 30 percent of the population. In Ethiopia, 47 percent of the population identifies itself as Orthodox Christian.

# 3.  Sources of Data

The 29 countries in Table 1 comprise those in sub-Saharan Africa where Demographic and Health Surveys were conducted over the past ten years (2004 to 2014). Religious identification is based on the answer to a single question "What is your religion?" Various categories of answers were pre-coded in the interview questionnaire based on local knowledge in each country.

No other information on the subject of religion was obtained. It is particularly unfortunate that there is no information on religiosity which would be an important component of the general topic. The available data on religion are limited. Our groupings of religion, particularly in the Other Christian category, are crude in that they do not differentiate various denominations but such a grouping is necessary to permit inter-country comparisons.

**Table 1. Percentage of women age 15-49 in sub-Saharan Africa, by religion**

| | | Catholic | Other Christian | Muslim | Traditional/ Animist | Other[2] | None |
|---|---|---|---|---|---|---|---|
| **West and Central Africa** | | | | | | | |
| Benin | 2012 | 33 | 25 | 22 | 13 | 2 | 5 |
| Burkina Faso | 2010 | 23 | 7 | 62 | 7 | — | 1 |
| Cameroon | 2011 | 37 | 36 | 20 | 3 | 1 | 2 |
| Chad | 2004 | 22 | 17 | 57 | 1 | — | 2 |
| Congo B | 2011-12 | 31 | 27 | 1 | 10 | 25 | 6 |
| Congo DR | 2013-14 | 30 | 64 | 1 | 1 | 2 | 1 |
| Cote d'Ivoire | 2012 | 19 | 26 | 40 | 2 | 1 | 11 |
| Gabon | 2012 | 42 | 46 | 6 | 1 | — | 5 |
| Ghana | 2008 | 12 | 65 | 15 | 4 | — | 3 |
| Guinea[1] | 2012 | — | 9 | 87 | — | — | 4 |
| Liberia[1] | 2013 | — | 86 | 11 | 1 | — | 2 |
| Mali[1] | 2012-13 | — | 4 | 92 | 1 | 1 | 2 |
| Niger[1] | 2006 | — | 1 | 99 | — | — | 1 |
| Nigeria | 2013 | 11 | 36 | 52 | 1 | — | — |
| Senegal[1] | 2010-11 | — | 4 | 95 | 1 | — | — |
| Sierra Leone[1] | 2013 | — | 21 | 78 | — | — | 1 |
| | | | | | | | |
| **Eastern and Southern Africa** | | | | | | | |
| Burundi | 2010 | 62 | 34 | 2 | — | 1 | 1 |
| Ethiopia | 2011 | 1 | 22 | 28 | 1 | 47 | — |
| Kenya | 2008-09 | 22 | 68 | 7 | — | 1 | 2 |
| Lesotho | 2009 | 43 | 55 | — | — | 1 | 1 |
| Madagascar | 2008-09 | 36 | 36 | 1 | 2 | 6 | 20 |
| Malawi | 2010 | 21 | 65 | 13 | — | — | 1 |
| Mozambique | 2011 | 29 | 42 | 18 | — | 2 | 9 |
| Namibia | 2013 | 20 | 70 | — | — | 9 | 1 |
| Rwanda | 2010 | 43 | 54 | 1 | — | 1 | 1 |
| Swaziland | 2006-07 | 5 | 73 | — | 18 | — | 4 |
| Uganda | 2011 | 41 | 45 | 13 | — | 1 | — |
| Zambia | 2007 | 20 | 78 | 1 | — | 1 | — |
| Zimbabwe | 2010-11 | 8 | 84 | 1 | 1 | — | 6 |

[1] These countries do not distinguish between Catholic and Other Christian religions.

[2] In Ethiopia, this is the rate for Orthodox Christian women.

# 4.    Fertility

Figures 1a and 1b show total fertility rates (TFRs) for the three major religious categories of two geographic regions of sub-Saharan Africa: (1) West and Central Africa and (2) East and Southern Africa. The calculation of the TFRs for religions in each country requires large samples of women to attain reliable denominators of women in each of the seven five-year age categories. Thus only the categories of Catholics, Other Christians, and Muslims can be used for calculations of the TFR.

There is little difference between West and Central Africa in the TFRs (Figure 1a) for Catholics and Other Christians, while the Muslim fertility rates are typically, although not universally, higher. In the countries of East and Southern Africa (Figure 1b), the fertility rates for Catholics and Other Christians are also similar, while Muslim fertility is higher, except in Uganda.

The fertility estimates shown in Table 2 differ from the TFRs in Table 1 (though they highly correlate at 0.97 across these African countries) in that they are based on currently married women rather than on all women and are simple averages of the number of births in the past five years, uncontrolled for age. This fertility measure does not require the large samples needed for the calculation of the TFR and therefore can include other religions in addition to the three major groups. Estimates of fertility for women who say they have no religion tend to be on the high side, which is quite the opposite of the pattern in more developed countries. There is no obvious explanation for this difference, although these women are less educated than women with specific religious affiliations. The calculations are also based on small numbers of women.

Considering the similar fertility of Catholic and Other Christians, and the generally higher fertility of Muslims in comparison, the focus of the following analyses is confined to Muslim and non-Muslim comparisons. This allows women with traditional beliefs or no religious affiliation to be included in further analysis. The difference in the TFR between these two groups is summarized in Figure 2 for sub-Saharan countries with Muslim populations. Countries with small numbers of Muslims–Congo Brazzaville, Democratic Republic of the Congo, Burundi, Madagascar, Rwanda, Zambia, and Zimbabwe–are excluded from further analysis. The higher fertility for Muslims is the predominant pattern, but there are several exceptions. For example, in Chad the reverse pattern is seen, although the data is 10 years old.[1] Also, in Mali in 2012-13, the TFR for Muslims (92 percent of the population) was 6.5, lower than that for non-Muslims at 7.2.[2]

Recent trends in the TFR for Muslims and non-Muslims are shown in Figure 3. The most common pattern is for the fertility rates of both populations to move more or less in the same direction. There are exceptions to this pattern, however, in Chad, Ghana, and Malawi, where Muslim fertility seems to be rising in contrast with the rates for non-Muslims. In Niger and Senegal where Muslims comprise almost the entire population, the trends are in opposite directions, with a uniform decline in Senegal and a recent increase in Niger to a TFR of 7.6 from 7.1 five years earlier.

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[1] An earlier study of the differences in fertility of Muslim and non-Muslim populations of West Africa (Johnson-Hanks 2006) showed a generally similar picture compared with fewer and earlier surveys. The more recent data reviewed here do not support her conclusions about the differences in fertility related to whether Muslims are a minority or a majority of the population.

[2] Muslim fertility in Mali is higher than that of the Other Christian group as shown in Figure 1a but lower than for the larger category of non-Muslims shown in Figure 2. This is because of the higher fertility for Animists and women in other Traditional religions. Also, the three heavily Muslim regions in the north of Mali were not included in the most recent survey for reasons of security (Westoff, Bietsch, and Mariko 2014).

Research on the association of religion with reproductive behavior typically considers both formal belief systems as well as differences in the social and economic composition of the members of various religions (Voas 2007). Some religions may carry particular views, for example, on the practice of contraception and abortion, and on marriage and the family. In the present study, the comparisons of Muslims and non-Muslims is so limiting that the focus will be on the connections with different covariates of this dichotomy such as education, wealth, child mortality, and polygyny (Regenerus and Smith 2005; Watkins and Warriner 2003). There is no belief system in Islam that forbids contraception (Boonstra 2001; Karim 1997; Weeks 1988; Roudi-Fahmi 2004), though some local religious leaders may believe otherwise, while the non-Muslim category is so broad as to preclude singling out specific denominations.

**Figure 1a. Total fertility rates for West and Central Africa, by religion***

**Benin 2012** — 4.4, 5.1, 5.1
**Burkina Faso 2010** — 5.4, 5.5, 6.1
**Burundi 2010** — 6.2, 6.6, 6.2
**Cameroon 2011** — 4.8, 4.6, 6.0
**Chad 2004** — 6.8, 7.0, 6.0

**Guinea 2012**** — 4.4, 5.2
**Congo B 2011** — 4.4, 5.3, 7.1
**Congo DR 2013-14** — 6.1, 6.7, 7.2
**Cote d' Ivoire 2012** — 4.1, 4.6, 5.0
**Gabon 2012** — 3.9, 4.0, 5.0
**Ghana 2008** — 3.8, 3.7, 5.4

**Liberia 2013**** — 4.6, 5.1
**Mali 2013**** — 7.1, 5.9
**Niger 2012***** — 7.6
**Nigeria 2013** — 4.6, 4.4, 6.5
**Senegal 2010**** — 3.8, 5.0
**Sierra Leone 2013**** — 4.1, 5.1

Legend: Catholic | Other Christian | Muslim
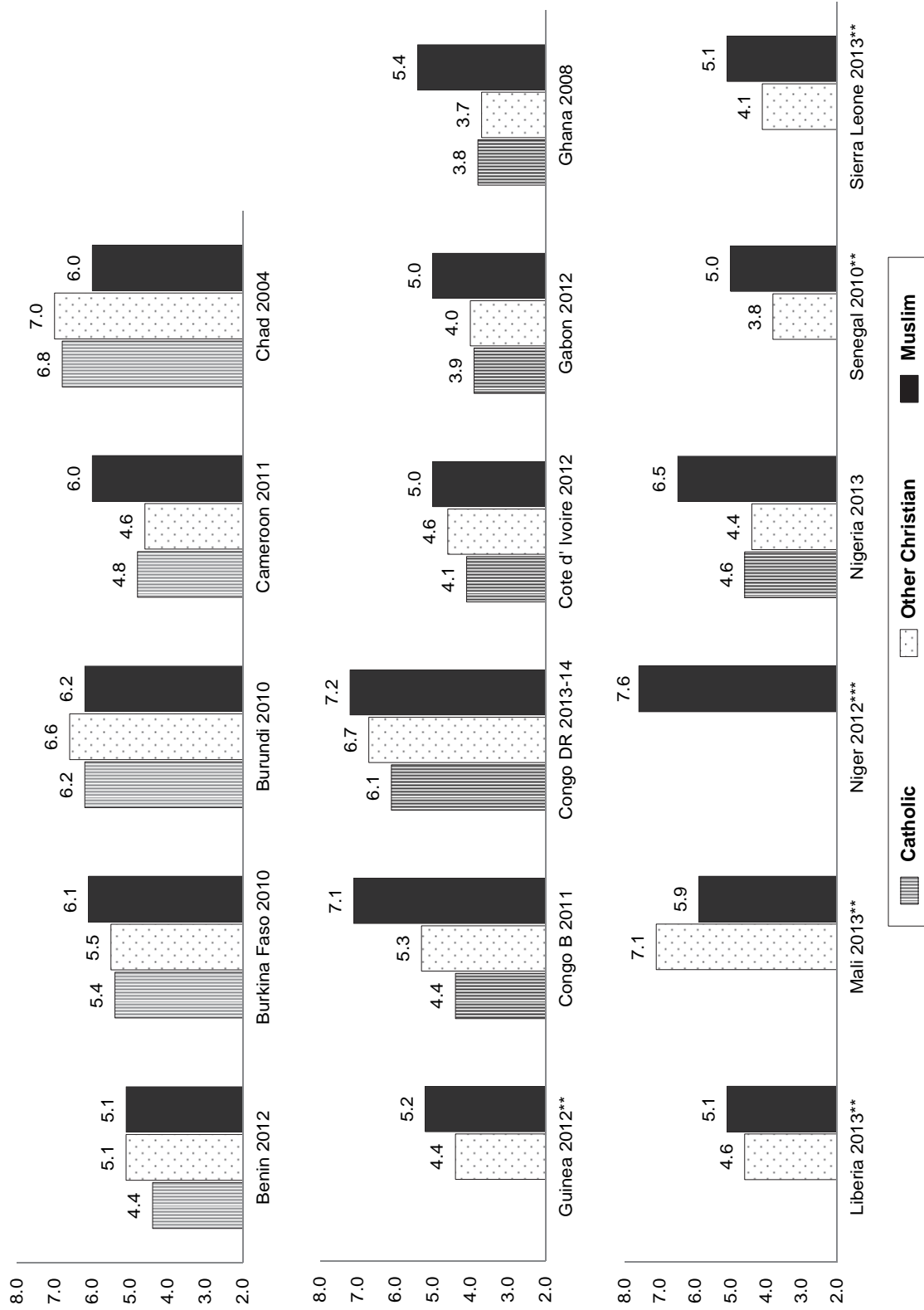
\* Based on three years prior to the survey     \*\* Does not distinguish between Catholics and Other Christians
\*\*\* Did not ask religion in 2012 but in 2006 Muslims were 98 percent of the population

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**Figure 1b. Total fertility rates for East and Southern Africa, by religion**



Legend: Catholic | Other Christian | Muslim
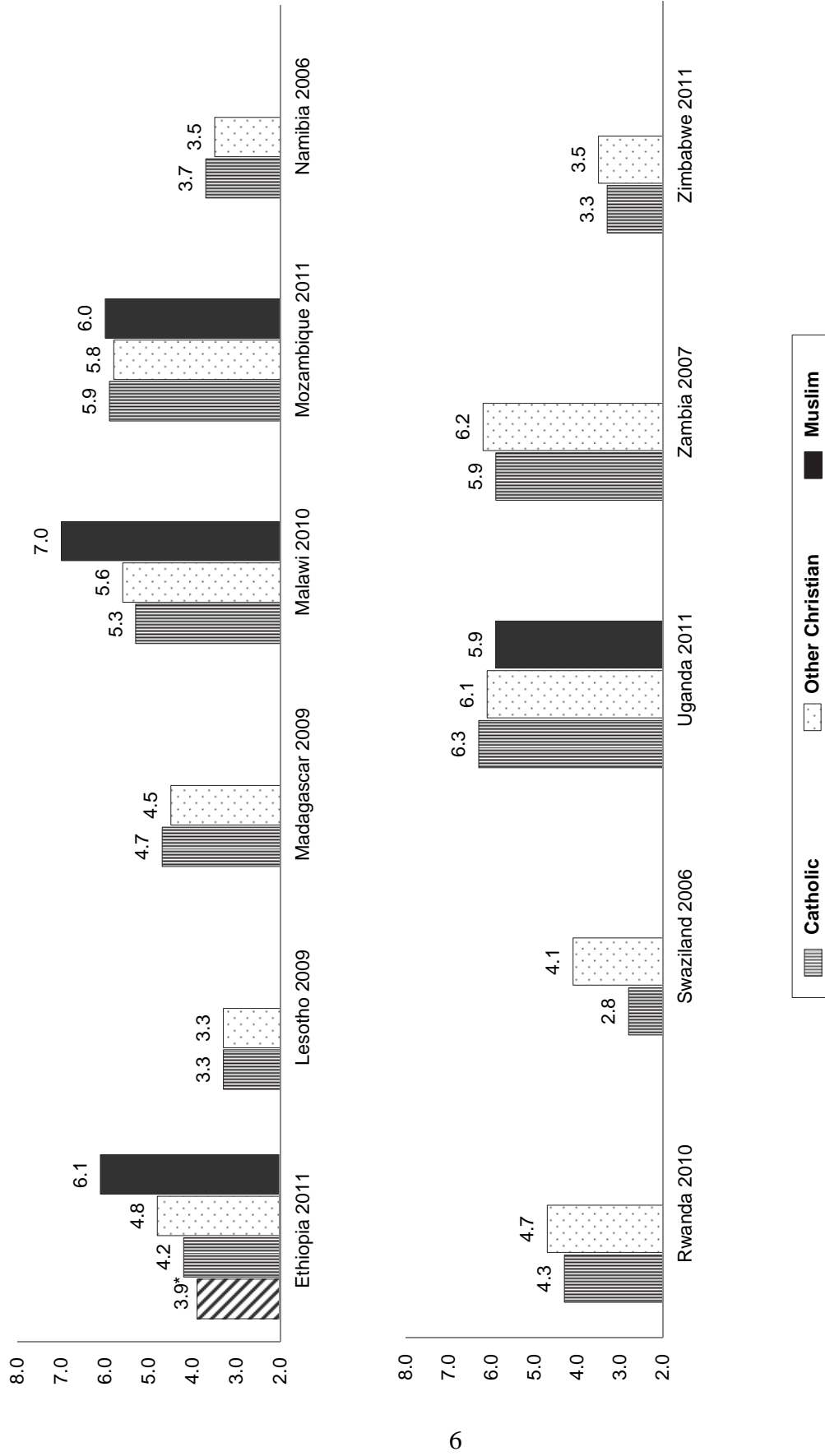
* In Ethiopia, this is the TFR for Orthodox Christian women

**Table 2. Mean number of births in past five years to currently married women, by religion**

|  |  | Catholic | Other Christian | Muslim | Other[2] | None | Total |
|---|---|---|---|---|---|---|---|
| Benin | 2012 | 1.03 | 1.04 | 1.08 | 1.14 | 1.07 | 1.15 |
| Burkina Faso | 2010 | 1.06 | 1.16 | 1.10 | 1.14 | 1.29 | 1.17 |
| Burundi | 2010 | 1.33 | 1.38 | 1.38 | — | 1.19 | 1.34 |
| Cameroon | 2011 | 1.00 | 1.00 | 1.20 | 1.20 | 1.09 | 1.06 |
| Chad | 2004 | 1.28 | 1.30 | 1.17 | 1.38 | 1.36 | 1.22 |
| Congo B | 2011 | 0.92 | 1.02 | 1.17 | 1.06 | 1.00 | 1.01 |
| Congo DR | 2013 | 1.26 | 1.35 | 1.39 | 1.29 | 1.35 | 1.33 |
| Cote d'Ivoire | 2012 | 0.99 | 0.89 | 1.02 | 1.12 | 1.19 | 1.01 |
| Ethiopia | 2011 | 0.89 | 1.08 | 1.24 | 0.90 | — | 1.07 |
| Gabon | 2012 | 0.79 | — | 1.00 | 0.75 | 1.05 | 0.83 |
| Ghana | 2008 | 0.85 | 0.55 | 1.09 | 1.13 | 1.06 | 0.90 |
| Guinea[1] | 2012 | — | 0.89 | 0.99 | — | 0.90 | 0.98 |
| Lesotho | 2009 | 0.74 | 0.72 | — | — | 0.84 | 0.73 |
| Liberia[1] | 2013 | — | 0.89 | 0.97 | 0.99 | 1.20 | 0.91 |
| Madagascar | 2009 | 0.88 | 0.87 | 0.67 | 0.94 | 1.03 | 0.91 |
| Malawi | 2010 | 1.08 | 1.10 | 1.16 | — | 1.23 | 1.10 |
| Mali[1] | 2012-13 | — | 1.18 | 1.14 | 1.28 | 1.26 | 1.15 |
| Mozambique | 2011 | 1.07 | 1.08 | 1.00 | 1.06 | 0.75 | 1.06 |
| Namibia | 2013 | 0.81 | 0.72 | — | 0.65 | 1.06 | 0.73 |
| Niger[1] | 2006 | — | 0.89 | 1.22 | — | 1.40 | 1.22 |
| Nigeria | 2013 | 1.05 | 1.00 | 1.15 | 1.01 | — | 1.10 |
| Rwanda | 2010 | 1.09 | 1.17 | 1.07 | — | 1.36 | 1.13 |
| Senegal[1] | 2010 | — | 0.90 | 1.05 | 1.23 | — | 1.05 |
| Sierra Leone[1] | 2013 | — | 0.91 | 0.98 | — | — | 0.97 |
| Swaziland | 2006 | 0.54 | 0.67 | — | 0.49 | 0.80 | 0.80 |
| Uganda | 2011 | 1.30 | — | 1.25 | — | — | 1.29 |
| Zambia | 2007 | 1.19 | 1.25 | — | — | — | 1.24 |
| Zimbabwe | 2011 | 0.67 | 0.86 | — | 0.95 | — | 0.84 |

[1] These countries do not distinguish between Catholic and Other Christian religions.

[2] In Ethiopia, "Other" refers to Orthodox Christianity. Otherwise it refers to traditional or animist religions.

# Figure 2. Recent total fertility rates for Muslim and non-Muslim women in sub-Saharan Africa*



Legend: ■ Muslims   ▨ Non-Muslims
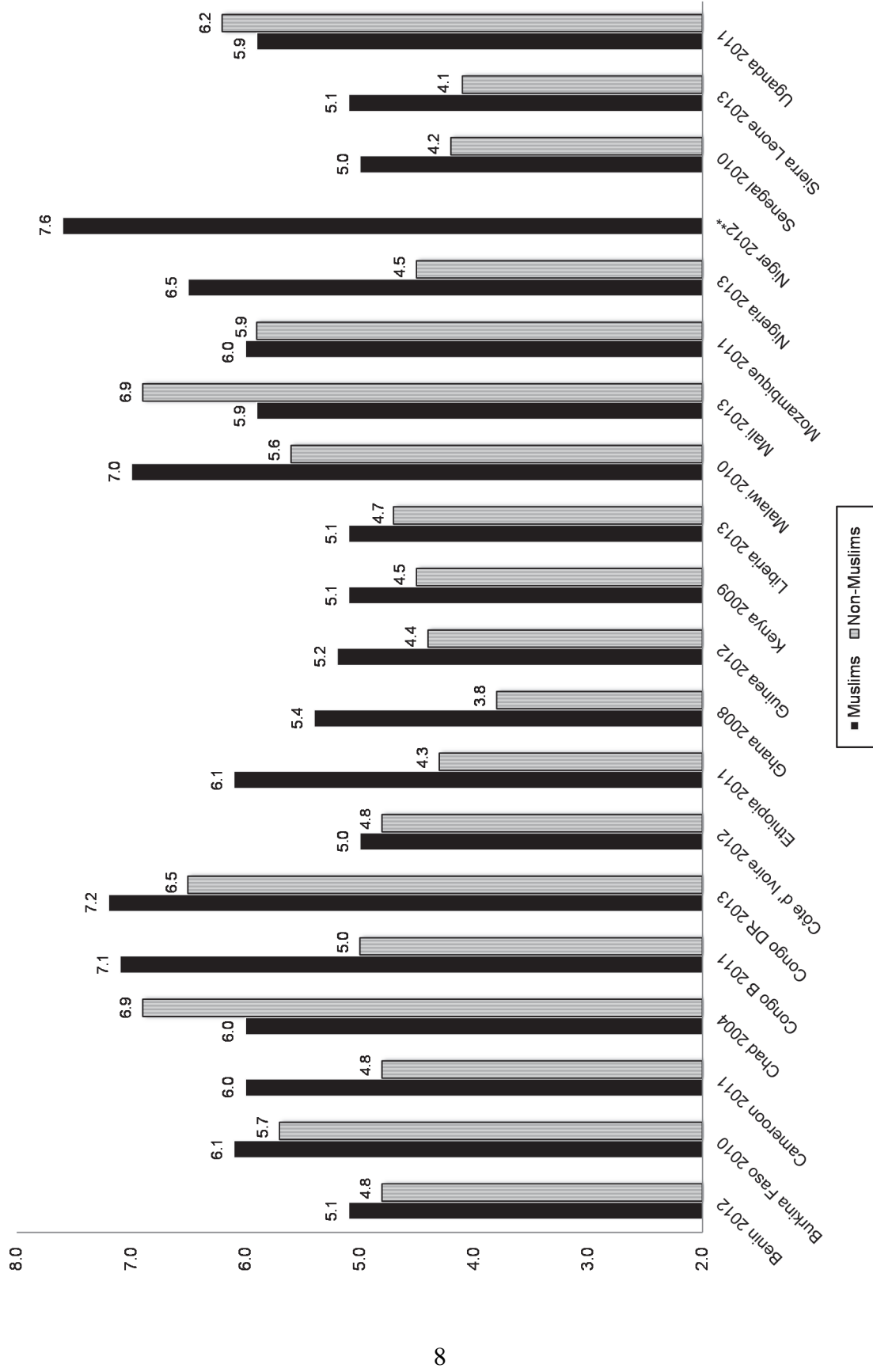
* Based on three years prior to survey
** Did not ask religion in 2012, but in 2006 Muslims were 98% of the population

**Figure 3. Recent trends in total fertility rates for Muslim and non-Muslim women***
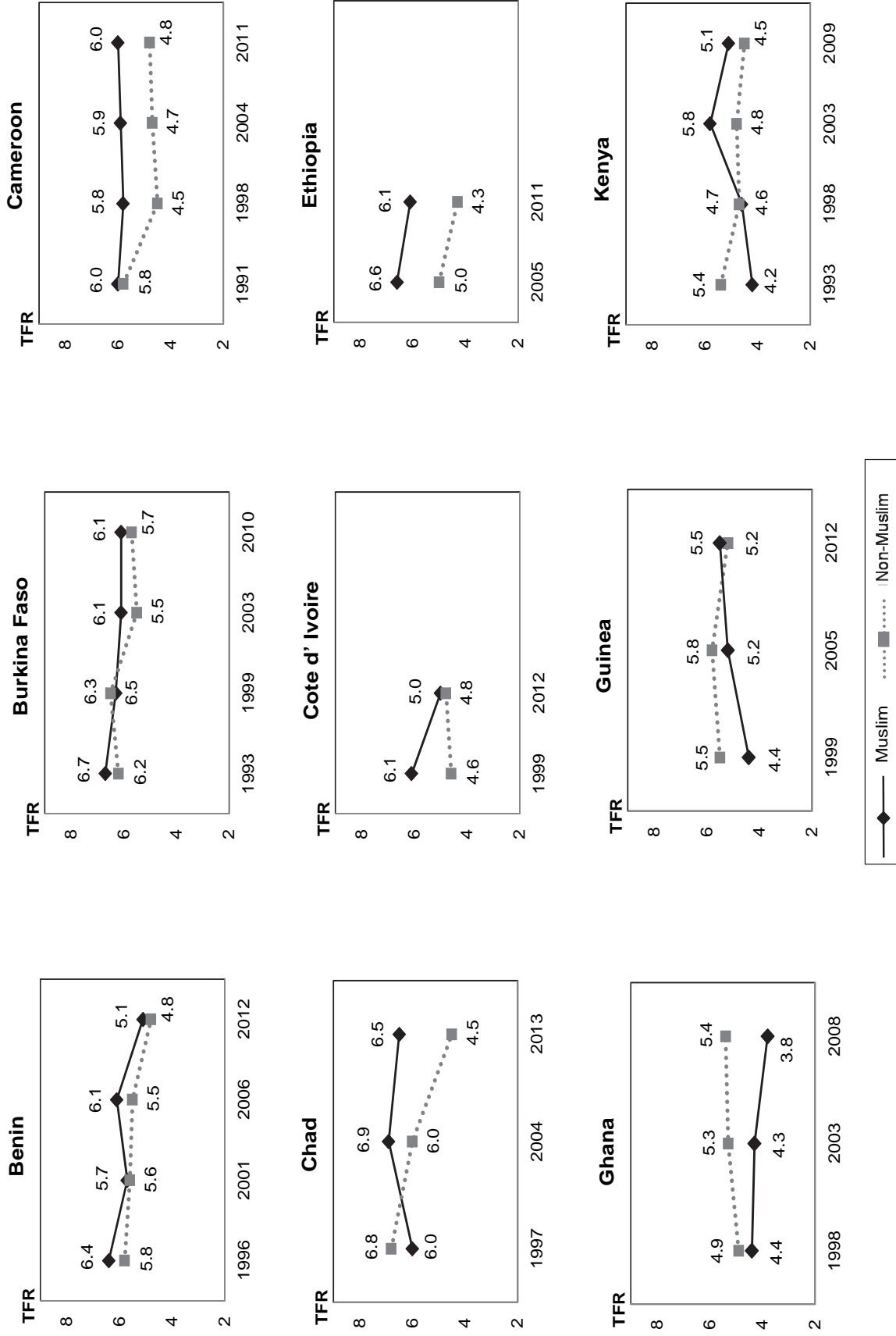


**(Continued...)**

**Figure 3. – Continued**



Figure 3. – Continued
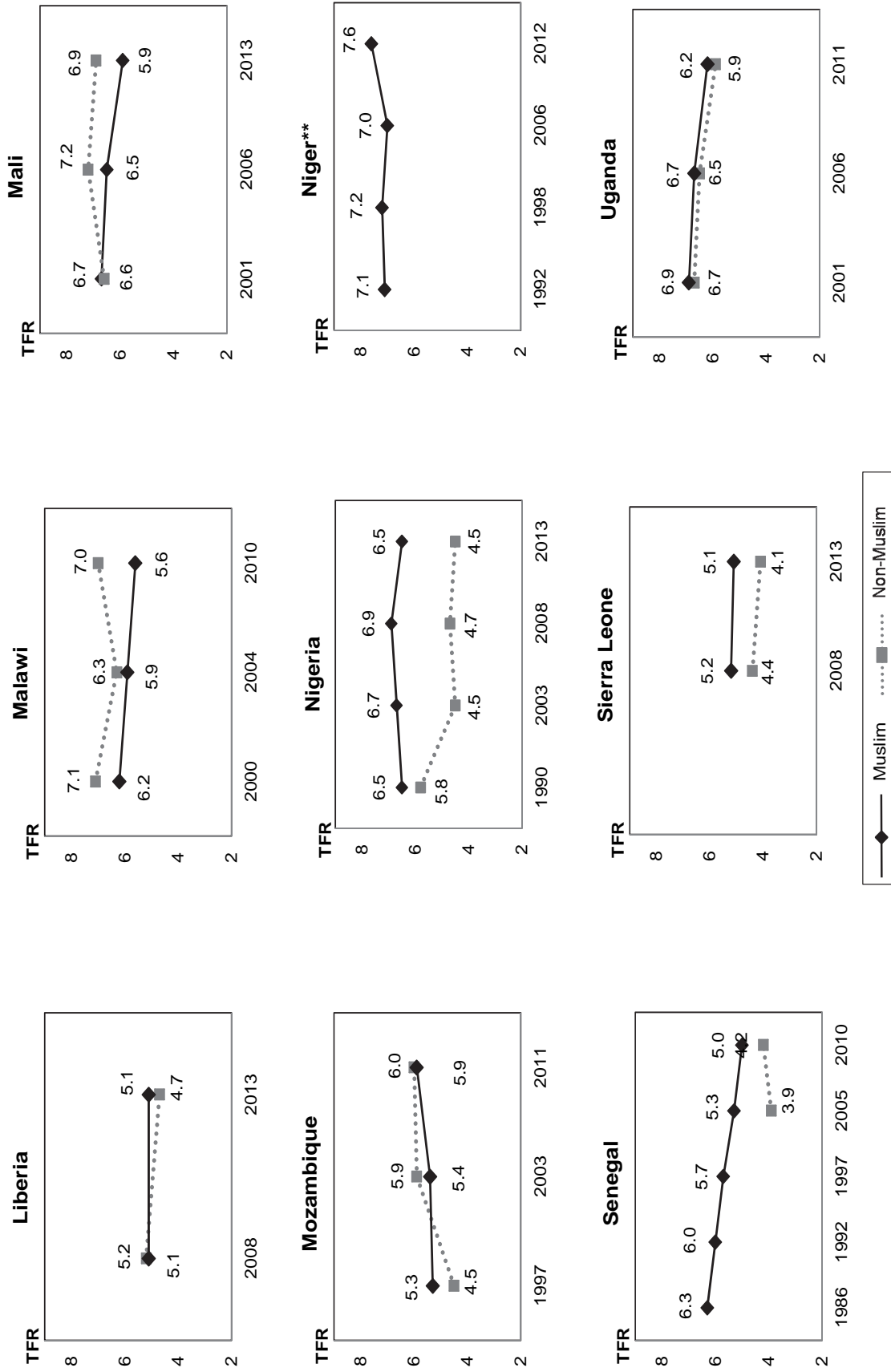
*Based on three years prior to the survey    **Did not ask religion in 2012, but in 2006 Muslims were 98 percent of the population

Legend: Muslim    Non-Muslim

Mali, Malawi, Liberia, Niger**, Nigeria, Mozambique, Uganda, Sierra Leone, Senegal

# 5. Analysis

The primary objective of the following analysis is to determine whether the tendency for Muslim women in sub-Saharan Africa to have higher fertility than non-Muslim women (Figure 2) reflects differences in age at marriage, number of children desired, contraceptive use, and child mortality. We explore the socioeconomic covariates of these antecedents of fertility to see whether they account for the Muslim – non-Muslim differences. Proportions and rates presented in this study are weighted to account for sampling probability and nonresponse. Regression analyses are unweighted.

## 5.1    Nuptiality

An important factor in the higher fertility of Muslim women compared with non-Muslim women is that more Muslim women are currently married, and further, they have married at an earlier age. In the Arab world, a significant reason for the decline in fertility is changes in nuptiality (Rashad 2000 and 2005). In the 17 countries of sub-Saharan Africa (Table 3), every country has higher proportions of Muslims who are currently married. An early age at first marriage is characteristic for Muslims, with the exception of Mozambique. The average proportions of women married in the other countries are 72 percent for Muslims and 64 percent for non-Muslims. The median age at first marriage is slightly more than one year earlier for Muslim women (17.7) than for non-Muslim women (19.0). In Nigeria, the difference is 5.5 years.

Polygyny is also more common for Muslims, affecting an average of 35 percent of Muslim women compared with 22 percent of non-Muslim women. According to Islamic law, a man may have more than one wife, although in many countries, for example in Turkey and Tunisia, it is forbidden by law. Moreover, the practice of polygyny has declined in recent years.

Two background factors usually associated with both nuptiality and fertility are education and urban-rural residence. Their relationship is explored in Table 4. In 15 of the 17 countries, the percentages of Muslim women with no schooling are higher than for non-Muslim women. The two exceptions are Mali and Uganda. In Kenya, there is a large difference—44 percent of Muslim women compared with only 6 percent of non-Muslim women have no schooling. Muslims in Kenya are concentrated in the two least developed regions—the Northeast and the Coastal regions. In the Northeast, 97 percent of the population is Muslim and in the Coastal region it is 39 percent; these percentages compare with only 7 percent nationally. The mean number of years of schooling, again with the exception of Mali and Uganda, is lower for Muslim women. Nigeria shows a particularly large difference in education between the two categories, with an average of 9.2 years of schooling for non-Muslim women and 3.2 years for Muslim women.

The differences between the two religious groups in the proportions living in cities are mixed; in about half of the countries more Muslims are likely to live in rural areas, and in the other half, more live in urban settings.

A survival analysis of age at first marriage (including cohabitation) with these and several other variables is shown using Cox proportional hazard models for each country in Table 5. Survival analysis is ideal for examining age at first marriage as it allows all women to contribute information, including those who have not yet married or who may never marry. The hazard ratios showing the association of the Muslim – non-Muslim distinction with age at marriage are mostly greater than 1 and significant, indicating a higher likelihood of marriage for Muslims in the presence of the other covariates (residence, education, and age). In Ethiopia and Ghana, the coefficients for religion are less than 1, though neither is statistically significant. The urban-rural variable shows city residence is associated with a lower likelihood of marriage more consistently than religion, but with roughly the same influence. Years of schooling are strongly associated

with later age at marriage without exception. As urbanization and education increase in the future, we can expect to see a rise in the age at first marriage, and if levels of education and urban residence become more similar among religious groups, we may see the differences in age at marriage between Muslims and non-Muslims lessen.

**Table 3. Marriage indicators for Muslim and non-Muslim women in sub-Saharan African countries**

| | | Percentage currently married | | Percentage polygynous[1] | | Median age at first marriage | |
|---|---|---|---|---|---|---|---|
| | | Muslim | Non-Muslim | Muslim | Non-Muslim | Muslim | Non-Muslim |
| Benin | 2012 | 75 | 69 | 44 | 35 | 19.2 | 20.0 |
| Burkina Faso | 2010 | 82 | 75 | 46 | 36 | 17.6 | 18.3 |
| Cameroon | 2011 | 77 | 60 | 42 | 22 | 15.8 | 19.2 |
| Chad | 2004 | 77 | 76 | 40 | 37 | 15.4 | 16.8 |
| Cote d'Ivoire | 2012 | 69 | 59 | 35 | 23 | 18.8 | 20.4 |
| Ethiopia | 2011 | 69 | 59 | 16 | 7 | 16.4 | 16.6 |
| Ghana | 2008 | 64 | 57 | 33 | 16 | 19.6 | 19.8 |
| Guinea | 2012 | 74 | 71 | 50 | 33 | 17.0 | 17.3 |
| Kenya | 2009 | 65 | 58 | 22 | 13 | 18.7 | 20.1 |
| Liberia | 2013 | 65 | 57 | 33 | 11 | 18.3 | 18.9 |
| Malawi | 2010 | 71 | 67 | 21 | 13 | 17.2 | 17.9 |
| Mali | 2012-13 | 85 | 82 | 36 | 28 | 18.0 | 18.3 |
| Mozambique | 2011 | 72 | 67 | 20 | 21 | 18.9 | 18.8 |
| Nigeria | 2013 | 83 | 59 | 44 | 17 | 15.9 | 21.4 |
| Senegal | 2010 | 67 | 49 | 35 | 19 | 19.2 | 22.6 |
| Sierra Leone | 2013 | 69 | 54 | 39 | 24 | 17.7 | 19.0 |
| Uganda | 2011 | 63 | 62 | 42 | 26 | 17.2 | 18.0 |
| | | | | | | | |
| All countries | | 72 | 64 | 35 | 22 | 17.7 | 19.0 |

[1] Based on currently married women

**Table 4. Education and urban residence comparisons of Muslim and non-Muslim women age 15-49 in sub-Saharan Africa**

| | | Percentage with no schooling | | Mean years of schooling | | Percentage urban | |
|---|---|---|---|---|---|---|---|
| | | Muslim | Non-Muslim | Muslim | Non-Muslim | Muslim | Non-Muslim |
| Benin | 2012 | 70 | 57 | 2.2 | 3.3 | 47 | 46 |
| Burkina Faso | 2010 | 79 | 66 | 1.4 | 2.4 | 26 | 29 |
| Cameroon | 2011 | 49 | 13 | 2.8 | 7.1 | 42 | 57 |
| Chad | 2004 | 90 | 54 | 0.5 | 2.1 | 23 | 19 |
| Cote d'Ivoire | 2012 | 71 | 42 | 2.2 | 4.2 | 62 | 44 |
| Ethiopia | 2011 | 61 | 48 | 2.0 | 3.3 | 15 | 28 |
| Ghana | 2008 | 68 | 60 | 2.5 | 7.0 | 58 | 47 |
| Guinea | 2012 | 68 | 60 | 2.5 | 2.8 | 39 | 20 |

**(Continued...)**

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**Table 4. – *Continued***

| | | Percentage no schooling | | Mean years of schooling | | Percentage urban | |
|---|---|---|---|---|---|---|---|
| | | Muslim | Non-Muslim | Muslim | Non-Muslim | Muslim | Non-Muslim |
| Kenya | 2009 | 44 | 6 | 4.4 | 8.1 | 46 | 24 |
| Liberia | 2013 | 55 | 33 | 2.9 | 4.8 | 54 | 62 |
| Malawi | 2010 | 28 | 14 | 4.1 | 5.5 | 17 | 19 |
| Mali | 2012-13 | 76 | 78 | 1.9 | 1.6 | 26 | 12 |
| Mozambique | 2011 | 42 | 30 | 2.7 | 4.0 | 32 | 35 |
| Nigeria | 2013 | 65 | 9 | 3.2 | 9.2 | 33 | 52 |
| Senegal | 2010 | 59 | 36 | 2.8 | 5.3 | 49 | 62 |
| Sierra Leone | 2013 | 61 | 39 | 3.0 | 5.6 | 32 | 49 |
| Uganda | 2011 | 11 | 14 | 6.2 | 5.7 | 32 | 18 |
| | | | | | | | |
| All countries | | 59 | 39 | 2.8 | 4.8 | 37 | 37 |

**Table 5. Hazard ratios from Cox proportional hazard models for factors associated with age at first marriage. Hazard ratios are significantly different from 1, at the .05 level, unless indicated by parentheses.**

| | Benin | Burkina Faso | Cameroon | Chad | Cote d'Ivoire | Ethiopia | Ghana | Guinea | Kenya |
|---|---|---|---|---|---|---|---|---|---|
| | 2012 | 2010 | 2011 | 2004 | 2012 | 2011 | 2008 | 2012 | 2009 |
| Muslim | 1.110 | 1.219 | 1.538 | 1.154 | 1.361 | (0.967) | (0.994) | (1.070) | (1.032) |
| Rural | 1.171 | 1.372 | 1.119 | (0.923) | 1.538 | 1.310 | 1.377 | 1.432 | 1.341 |
| Years of schooling | 0.910 | 0.900 | 0.898 | 0.923 | 0.926 | 0.907 | 0.930 | 0.905 | 0.916 |
| Age | 0.987 | 0.997 | 1.006 | 1.012 | 1.007 | 1.022 | 1.020 | 1.003 | (1.002) |
| | | | | | | | | | |
| Number of women | 16,599 | 17,073 | 15,404 | 6,068 | 10,039 | 16,503 | 4,890 | 9,135 | 8,443 |

| | Liberia | Malawi | Mali | Mozambique | Nigeria | Senegal | Sierra Leone | Uganda |
|---|---|---|---|---|---|---|---|---|
| | 2013 | 2010 | 2012-13 | 2011 | 2013 | 2010 | 2013 | 2011 |
| Muslim | 1.163 | 1.061 | 1.160 | (1.042) | 1.800 | 1.463 | 1.134 | 1.285 |
| Rural | 1.171 | 1.155 | 1.245 | 1.239 | 1.291 | 1.461 | 1.272 | 1.245 |
| Years of schooling | 0.939 | 0.920 | 0.924 | 0.938 | 0.912 | 0.891 | 0.911 | 0.921 |
| Age | 1.012 | 0.995 | 0.972 | 0.977 | 1.005 | 1.003 | 1.004 | 1.007 |
| | | | | | | | | |
| Number of women | 9,218 | 22,987 | 10,424 | 13,745 | 38,802 | 15,686 | 16,593 | 8,670 |

Note: ( ) Not significant at the .05 level

## *5.2 Number of Children Desired*

Another important determinant of fertility is the desired number of children. The number desired is measured here by the number considered ideal[3] and by the intent to cease childbearing. These two measures of reproductive preference are presented for Muslim and non-Muslim women in Table 6. The mean number of children desired by Muslim women is higher in every country except in Mali in 2012-13. A similar pattern is evident for the proportion of (married) women who want no more children, which is lower for Muslims in all countries studied except Guinea.

Several multivariate analyses are presented in connection with reproductive preferences to determine whether the difference between Muslim and non-Muslim women can be explained by interrelations among other covariates. In addition to education, urban-rural residence, polygyny and an age control, we included the number of living children, the number of child deaths, wealth, exposure to radio and television, and two indices intended to assess attitudes toward the status of women (which partner makes various decisions in the home and attitude toward husbands' beating of wives, both coded with a positive direction indicating the more egalitarian position).

The multivariate regression results in Table 7 indicate that even with all of these controls, Muslim women still have a desire for larger families in all 17 countries. This positive relationship is maintained at statistically significant levels for 15 of the countries. Other variables that relate directly to the number of children desired in this multivariate analysis include actual number of children (which would be expected), later age at marriage, and number of child deaths. The latter association strengthens the implication that a reduction in child mortality will ultimately lead to a decline in fertility. Education and wealth are also universally connected with a desire for fewer children (with the exception of Chad). Urban residence is for the most part related to wanting fewer children, although there is less consistency. With few exceptions, polygyny is associated with a desire for more children. Exposure to radio and television shows some evidence of relating to a desire for fewer children, although there are numerous exceptions. And finally, the measures of gender equality also tend to indicate a preference for smaller families. This latter association with the two gender equality measures, which is above the association with the Muslim – non-Muslim difference is not in accord with another study of four Asian countries. That study concluded that the general pronatalist attitudes of Muslim women "cannot be accounted for by any general tendency of Muslim women to have less autonomy than non-Muslim women" (Morgan et al. 2002). A simple comparison of the averages of these two measures for Muslim and non-Muslim women in 16 countries in our analysis indicates consistently more egalitarian attitudes on the "decision" measure for non-Muslim women but less difference on the "beating" indicator (not shown).

The unstandardized partial regression coefficients for the Muslim – non-Muslim variable, which include the effects of all of the same listed covariates, indicate its importance for the desired number of children across all of the countries (at the bottom of Table 7). This comparison shows the strongest associations for Kenya, Ethiopia, Nigeria, and Chad.

These results are for currently married women, most of whom already have children which, of course, can be expected to influence the number of children desired. A clearer picture can be seen by confining the analysis to young women under age 20. The mean number of children desired by young Muslim women is greater in 14 of the 17 countries, averaging 5.1 compared with 4.4 desired by non-Muslim teenagers. A multivariate regression analysis with a reduced number of covariates relevant for younger women is shown in Table 8. This analysis again shows a direct, statistically significant effect of being Muslim in most of the

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[3] Non-numeric responses such as "It's up to God" have been assigned a value one standard deviation above the average number desired by those responding with a number.

countries. Education is strongly inversely related to the number of children desired, and viewing television also shows a negative impact. Rural residence generally shows a positive effect. The statistical importance of the religion variable across countries (the unstandardized partial regression coefficient) indicates the strongest associations for mostly the same countries (Kenya, Ethiopia, Ghana, Nigeria, and Chad), as noted for Table 7.

The other measure of reproductive preferences included in this analysis is the proportion of married women who say they want no more children. In all countries except Guinea, non-Muslim women are more inclined to want to cease childbearing (Table 6).

An additional multivariate logistic regression looks at whether women want more children or no more children, with a control for the number of existing children (Table 9). Also included are the covariates seen before. Significant odds ratios for the Muslim – non-Muslim variable are evident in most of the countries showing lower proportions of Muslims wanting no more children. The countries with the strongest association are the same as listed above in connection with the desired number of children (plus Cameroon). Other covariates of intention to terminate childbearing, besides the obvious connections with age and number of children, are years of schooling, child deaths, and one of the measures of gender equality. These variables indicate that the intention to have no more children increases with education and with a greater participation of women in making various decisions in the household.

**Table 6. Measures of reproductive preferences for Muslim and non-Muslim women in sub-Saharan Africa**

|  |  | Mean number of children desired[1] | | Percentage wanting no more children[2] | |
| --- | --- | --- | --- | --- | --- |
|  |  | Muslim | Non-Muslim | Muslim | Non-Muslim |
| Benin | 2012 | 5.1 | 4.4 | 22 | 29 |
| Burkina Faso | 2010 | 5.7 | 5.4 | 21 | 28 |
| Cameroon | 2011 | 7.1 | 5.3 | 19 | 29 |
| Chad | 2004 | 9.7 | 8.6 | 6 | 12 |
| Cote d'Ivoire | 2012 | 5.7 | 5.2 | 19 | 21 |
| Ethiopia | 2011 | 5.5 | 4.4 | 31 | 40 |
| Ghana | 2008 | 5.6 | 4.1 | 21 | 40 |
| Guinea | 2012 | 6.1 | 5.5 | 21 | 14 |
| Kenya | 2009 | 5.6 | 3.7 | 26 | 58 |
| Liberia | 2013 | 5.6 | 4.9 | 27 | 30 |
| Malawi | 2010 | 4.4 | 4.0 | 41 | 48 |
| Mali | 2012-13 | 5.9 | 6.1 | 21 | 24 |
| Mozambique | 2011 | 5.3 | 4.7 | 21 | 30 |
| Nigeria | 2013 | 8.1 | 5.2 | 11 | 31 |
| Senegal | 2010 | 5.8 | 4.9 | 21 | 28 |
| Sierra Leone | 2013 | 5.2 | 4.4 | 25 | 30 |
| Uganda | 2011 | 5.0 | 4.9 | 38 | 43 |
|  |  |  |  |  |  |
| All countries |  | 6.0 | 5.0 | 23 | 32 |

[1] Non-numeric responses such as: "It's up to God" have been assigned a value one standard deviation above the average number desired by those responding with a number.

[2] Based on currently married women

**Table 7. Multivariate regression of factors associated with the number of children desired by currently married women (standardized partial regression coefficients). Coefficients are significantly different from 0, at the .05 level, unless indicated by parentheses.**

| | Benin | Burkina Faso | Cameroon | Chad | Cote d'Ivoire | Ethiopia | Ghana | Guinea | Kenya |
|---|---|---|---|---|---|---|---|---|---|
| | 2012 | 2010 | 2011 | 2004 | 2012 | 2011 | 2008 | 2012 | 2009 |
| Muslim | .066 | .043 | .100 | .168 | .040 | .200 | .218 | .079 | .233 |
| Number of children | .261 | .291 | .120 | .175 | .239 | .214 | .160 | .157 | .171 |
| Age | -.056 | -.093 | .113 | .042 | (.004) | (.010) | .068 | (.008) | .034 |
| Rural | .023 | .035 | (-.015) | .132 | .060 | -.107 | (-.018) | (-.013) | -.041 |
| Age at marriage | (-.009) | -.040 | -.045 | (-.009) | -.028 | .020 | -.026 | -.028 | (-.014) |
| Years of schooling | -.065 | -.107 | -.156 | -.149 | -.130 | -.055 | -.127 | -.112 | -.237 |
| Wealth[1] | -.161 | -.154 | -.155 | .100 | -.035 | -.137 | -.210 | -.134 | -.100 |
| Listens to radio | -.018 | .023 | -.025 | -.050 | -.021 | (-.006) | -.031 | .051 | -.090 |
| Watch television | (-.016) | -.043 | -.026 | (-.006) | -.040 | -.047 | (.034) | -.081 | (-.016) |
| Polygynous | .046 | (.007) | .018 | (-.003) | .034 | .050 | (.015) | .032 | .046 |
| Number of child deaths | .114 | .184 | .073 | .103 | .107 | .102 | .152 | .144 | (.020) |
| Decision making[2] | -.043 | -.038 | -.046 | NA | (-.001) | -.067 | (.005) | (.003) | -.049 |
| Beating[3] | .018 | (-.008) | -.033 | NA | -.071 | -.063 | -.090 | (-.005) | (-.010) |
| Muslim unstandardized | .356 | .179 | .692 | 1.21 | .182 | 1.45 | 1.29 | .583 | 1.50 |
| Number married women | 11,200 | 13,226 | 8,940 | 4,380 | 6,107 | 9,659 | 2,809 | 6,710 | 4,656 |
| R² | .170 | .296 | .253 | .154 | .185 | .213 | .328 | .170 | .366 |

**(Continued...)**

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**Table 7. – Continued**

| | Liberia | Malawi | Mali | Mozambique | Nigeria | Senegal | Sierra Leone | Uganda |
|---|---|---|---|---|---|---|---|---|
| | 2013 | 2010 | 2012-13 | 2011 | 2013 | 2010 | 2013 | 2011 |
| Muslim | .048 | .039 | (.003) | .068 | .214 | .025 | .058 | (.019) |
| Number of children | .231 | .294 | .173 | .271 | .210 | .054 | .268 | .182 |
| Age | .102 | .111 | (.011) | .086 | -.019 | .073 | .034 | .029 |
| Rural | (-.021) | .049 | .033 | .050 | .012 | .085 | .073 | .073 |
| Age at marriage | (-.025) | -.027 | (-.009) | -.026 | -.046 | -.052 | -.025 | (.013) |
| Years of schooling | -.056 | -.110 | -.071 | -.108 | -.117 | -.129 | -.068 | -.233 |
| Wealth[1] | -.138 | -.030 | -.057 | -.134 | -.122 | -.031 | -.070 | -.076 |
| Listens to radio | -.035 | (-.006) | -.024 | .036 | -.016 | (-.014) | (-.011) | -.056 |
| Watch television | (.004) | -.029 | -.046 | -.062 | -.022 | (-.018) | -.018 | .106 |
| Polygynous | .032 | (.008) | (.014) | (.012) | .014 | -.032 | .032 | .063 |
| Number of child deaths | .105 | .092 | .094 | .131 | .135 | .014 | .173 | .108 |
| Decision making[2] | (-.004) | (-.004) | -.028 | -.044 | -.067 | (-.005) | .019 | .035 |
| Beating[3] | -.051 | -.030 | -.059 | -.026 | -.032 | (-.077) | -.045 | -.024 |
| | | | | | | | | |
| Muslim unstandardized | .368 | .199 | (.025) | .421 | 1.35 | .327 | .331 | (.125) |
| Number married women | 5,805 | 15,064 | 8,723 | 7,837 | 26,163 | 10,754 | 10,702 | 4,998 |
| R² | .186 | .253 | .102 | .304 | .358 | .089 | .218 | .224 |

Note: ( ) Not significant at the .05 level
[1] Wealth index as calculated by the DHS, a composite measure of household's cumulative living standard (http://dhsprogram.com/topics/Wealth-Index.cfm)
[2] Who makes various decisions in the home, coded with a positive direction indicating a more egalitarian position
[3] Attitudes towards husbands' beating of wives, coded with a positive direction indicating a more egalitarian position

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**Table 8. Multivariate regression of factors associated with the number of children desired by women under age 20 (standardized partial regression coefficients). Coefficients are significantly different from 0, at the .05 level, unless indicated by parentheses.**

| | Benin | Burkina Faso | Cameroon | Chad | Cote d'Ivoire | Ethiopia | Ghana | Guinea | Kenya |
|---|---|---|---|---|---|---|---|---|---|
| | 2012 | 2010 | 2011 | 2004 | 2012 | 2011 | 2008 | 2012 | 2009 |
| Muslim | .082 | .049 | .147 | .139 | .053 | .248 | .168 | .115 | .328 |
| Rural | .113 | .110 | .016 | .083 | .141 | (-.015) | .130 | .050 | .061 |
| Years of education | -.196 | -.274 | -.306 | -.131 | -.240 | -.162 | -.197 | -.189 | -.249 |
| Listens to radio | .046 | .013 | (.003) | (-.029) | (-.018) | -.050 | (-.050) | (.022) | -.042 |
| Watch television | -.059 | -.072 | -.103 | -.093 | (-.043) | -.073 | -.077 | -.193 | -.094 |
| Muslim unstandardized | .339 | .180 | .870 | .988 | .208 | 1.39 | .707 | .719 | 1.90 |
| Number of women | 2,922 | 3,338 | 3,587 | 1,450 | 1,967 | 3,802 | 1,033 | 1,988 | 1,767 |
| R² | .082 | .151 | .208 | .096 | .127 | .137 | .142 | .121 | .291 |

| | Liberia | Malawi | Mali | Mozambique | Nigeria | Senegal | Sierra Leone | Uganda |
|---|---|---|---|---|---|---|---|---|
| | 2013 | 2010 | 2012-13 | 2011 | 2013 | 2010 | 2013 | 2011 |
| Muslim | .080 | .044 | (-.014) | .080 | .251 | .042 | .067 | (.023) |
| Rural | .102 | .097 | .097 | .124 | .057 | .136 | .179 | .145 |
| Years of education | (-.038) | -.098 | -.138 | -.149 | -.222 | -.208 | -.131 | -.289 |
| Listens to radio | (-.036) | (.011) | -.050 | .049 | -.026 | (-.019) | (-.045) | -.076 |
| Watch television | -.065 | -.040 | (-.017) | -.108 | -.045 | -.045 | -.035 | (.019) |
| Muslim unstandardized | .491 | .189 | (-.120) | .446 | 1.35 | .447 | .226 | (.113) |
| Number of women | 1,915 | 5,040 | 1,918 | 3,065 | 7,902 | 3,604 | 4,051 | 1,394 |
| R² | .032 | .033 | .053 | .110 | 1.35 | .106 | .089 | .139 |

Note: ( ) Not significant at the .05 level

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**Table 9. Multivariate logistic regression (odds ratios) of factors associated with wanting no more children for currently married women. Coefficients are significantly different from 0, at the .05 level, unless indicated by parentheses.**

| | Benin | Burkina Faso | Cameroon | Chad | Cote d'Ivoire | Ethiopia | Ghana | Guinea | Kenya |
|---|---|---|---|---|---|---|---|---|---|
| | 2012 | 2010 | 2011 | 2004 | 2012 | 2011 | 2008 | 2012 | 2009 |
| Muslim | 0.61 | 0.72 | 0.48 | 0.47 | (0.88) | 0.52 | 0.36 | (1.05) | 0.12 |
| Number of children | 1.50 | 1.57 | 1.72 | 1.37 | 1.58 | 1.41 | 2.12 | 1.65 | 1.86 |
| Age | 1.11 | 1.15 | 1.07 | 1.07 | 1.10 | 1.04 | 1.06 | 1.13 | 1.08 |
| Rural | 0.76 | 0.69 | (0.95) | 0.64 | 0.77 | (0.87) | (0.93) | (0.90) | 1.27 |
| Years of education | 1.04 | 1.04 | (1.02) | 1.06 | 1.05 | 0.98 | 1.05 | (0.84) | 1.07 |
| Wealth[1] | 1.17 | 1.14 | 1.29 | (1.01) | (1.07) | 1.18 | 1.22 | (1.00) | 1.22 |
| Listens to radio | 0.91 | 0.90 | (1.00) | (1.01) | (0.97) | 0.92 | (1.00) | 0.88 | 1.14 |
| Watch television | (1.00) | 1.21 | (0.99) | (1.11) | (1.07) | 1.09 | (1.04) | 1.13 | (0.97) |
| Polygynous | (0.93) | (1.07) | (1.05) | (1.16) | (1.06) | (0.90) | (0.88) | (1.15) | (0.97) |
| Number of child deaths | 1.08 | 1.05 | 1.09 | 1.11 | 1.09 | 1.07 | (1.01) | 1.15 | (0.98) |
| Decision making[2] | 1.03 | 1.10 | 1.04 | NA | (0.95) | 1.04 | (1.05) | 0.94 | 1.09 |
| Beating[3] | (1.03) | 0.95 | (1.01) | NA | 1.08 | 1.03 | 1.07 | 1.13 | (1.04) |
| | | | | | | | | | |
| Married women | 11,200 | 13,226 | 8,940 | 4,382 | 6,107 | 9,659 | 2,809 | 6,710 | 4,508 |
| $R^2$ | .247 | .371 | .317 | .213 | .303 | .179 | .331 | .354 | .338 |

| | Liberia | Malawi | Mali | Mozambique | Nigeria | Senegal | Sierra Leone | Uganda |
|---|---|---|---|---|---|---|---|---|
| | 2013 | 2010 | 2012-13 | 2011 | 2013 | 2010 | 2013 | 2011 |
| Muslim | (0.84) | 0.77 | 0.89 | 0.61 | 0.36 | 0.72 | 0.63 | 0.81 |
| Number of children | 1.69 | 1.76 | 1.44 | 1.53 | 1.47 | 1.68 | 1.75 | 1.65 |
| Age | 1.05 | 1.08 | 1.12 | 1.06 | 1.14 | 1.10 | 1.11 | 1.08 |
| Rural | (1.11) | (0.62) | (0.92) | 0.65 | 0.88 | 0.75 | 0.73 | 0.58 |
| Years of education | (1.01) | 1.03 | (1.01) | 1.02 | 1.02 | 1.05 | (1.01) | 1.03 |
| Wealth[1] | (1.05) | 1.09 | 1.06 | 1.29 | 1.29 | (0.99) | (1.02) | (1.04) |
| Listens to radio | (0.97) | (0.97) | (0.72) | 0.75 | (1.04) | (1.03) | 0.90 | 1.08 |
| Watch television | (1.01) | (1.02) | (1.00) | 1.15 | (1.05) | (1.07) | (0.92) | 0.88 |
| Polygynous | (0.91) | (0.98) | (0.97) | (0.94) | (1.04) | 1.15 | 1.13 | 0.81 |
| Number of child deaths | 1.06 | 1.19 | 1.09 | (1.05) | (1.02) | 1.19 | 1.07 | (1.03) |
| Decision making[2] | (1.00) | (1.02) | 1.13 | 1.06 | 1.18 | 1.05 | 1.07 | (0.96) |
| Beating[3] | (1.03) | (1.06) | (1.02) | (1.02) | (1.01) | 0.98 | 1.04 | (1.01) |
| | | | | | | | | |
| Married women | 5,790 | 15,064 | 8,723 | 7,837 | 26,181 | 10,574 | 10,642 | 4,998 |
| $R^2$ | .252 | .292 | .279 | .226 | .360 | .363 | .321 | .297 |

Note: ( ) Not significant at the .05 level

[1] Wealth index as calculated by the DHS, a composite measure of household's cumulative living standard (http://dhsprogram.com/topics/Wealth-Index.cfm)

[2] Who makes various decisions in the home, coded with a positive direction indicating a more egalitarian position

[3] Attitudes towards husbands' beating of wives, coded with a positive direction indicating a more egalitarian position

## 5.3 *Contraceptive Practice*

In the Muslim world, there is no universal formal opposition to family planning. Two reviews of this subject both concluded that Islam is permissive of family planning (Boonstra 2001) and that Islam is not a barrier to programs aimed at reducing unplanned pregnancies (Roudi-Fahimi 2004). This does not imply that local religious leaders are necessarily in accord with this view.

In most of the 17 countries studied, the percentage of married Muslim women currently using a contraceptive method is lower than for non-Muslim women. Exceptions include Benin, Mali, and Uganda (Table 10). Unmet need for family planning tends to be similar in many countries and does not show a dominant difference by religion. This is probably because Muslims are more likely to desire a birth soon and are classified in the "no demand for contraception" category. The total demand for family planning, defined as the sum of contraceptive prevalence and unmet need, shows lower proportions of Muslim women in every country except for Mali. This exception of Mali is probably related to the exclusion in the 2012-13 DHS of three northern regions for reasons of security; these regions are 99 percent Muslim (Westoff, Bietsch, and Mariko 2014). In the earlier 2006 DHS survey in Mali, the total demand for family planning showed lower proportions among Muslims.

A multivariate analysis of the factors affecting ever use of contraception is shown in Table 11. The "ever use" measure is preferred to current use because of the typically low prevalence in sub-Saharan countries. The odds ratios indicate that being Muslim is associated with lower levels of ever use of contraception controlling for all of the other covariates in all of the countries with the exceptions of Benin and Uganda where there is no difference. Strong associations appear in Cameroon, Chad, Ethiopia, Guinea, Kenya, Malawi, and Nigeria. A higher number of children desired is consistently associated with less contraceptive use. Years of schooling and wealth show consistent positive odds ratios with the use of contraception. Exposure to mass media shows a positive relationship, as does one of the gender measures (which partner makes household decisions). Polygyny is negatively related, and child mortality shows little association with contraceptive use.

We also examined the relationship of religion with the length of birth intervals, which is related to contraceptive use. Muslim women had shorter birth intervals than non-Muslim women in many of the countries (especially in Cameroon, Ethiopia, and Kenya), but in only a few did this connection remain in the multivariate context (not shown).

**Table 10. Measures of family planning for Muslim and non-Muslim currently married women in sub-Saharan Africa**

| | | Percentage currently using contraception | | Percentage with unmet need | | Total demand for family planning | |
|---|---|---|---|---|---|---|---|
| | | Muslim | Non-Muslim | Muslim | Non-Muslim | Muslim | Non-Muslim |
| Benin | 2012 | 14 | 13 | 28 | 34 | 42 | 47 |
| Burkina Faso | 2010 | 15 | 19 | 25 | 24 | 39 | 43 |
| Cameroon | 2011 | 7 | 29 | 24 | 24 | 31 | 52 |
| Chad | 2004 | 1 | 5 | 20 | 22 | 21 | 27 |
| Cote d'Ivoire | 2012 | 14 | 21 | 28 | 27 | 42 | 48 |
| Ethiopia | 2011 | 20 | 33 | 31 | 24 | 50 | 57 |
| Ghana | 2008 | 12 | 26 | 34 | 36 | 47 | 62 |
| Guinea | 2012 | 5 | 12 | 24 | 21 | 29 | 33 |
| Kenya | 2009 | 20 | 48 | 24 | 26 | 43 | 74 |
| Liberia | 2013 | 11 | 22 | 31 | 31 | 42 | 55 |
| Malawi | 2010 | 32 | 48 | 32 | 25 | 64 | 73 |
| Mali | 2012-13 | 10 | 9 | 26 | 23 | 37 | 32 |
| Mozambique | 2011 | 7 | 13 | 23 | 30 | 29 | 43 |
| Nigeria | 2013 | 6 | 29 | 15 | 18 | 21 | 47 |
| Senegal | 2010 | 13 | 27 | 30 | 23 | 43 | 50 |
| Sierra Leone | 2013 | 16 | 21 | 25 | 26 | 41 | 47 |
| Uganda | 2011 | 32 | 30 | 31 | 35 | 63 | 65 |
| | | | | | | | |
| All countries | | 14 | 24 | 26 | 26 | 40 | 50 |

Note: Demand is the sum of the percentage of women using a contraceptive method and the percentage with an unmet need for family planning.

**Table 11. Multivariate logistic regression (odds ratios) of factors associated with ever-use of contraception by currently married women. Coefficients are significantly different from 0, at the .05 level, unless indicated by parentheses.**

| | Benin | Burkina Faso | Cameroon | Chad | Cote d'Ivoire | Ethiopia | Ghana | Guinea | Kenya |
|---|---|---|---|---|---|---|---|---|---|
| | 2012 | 2010 | 2011 | 2004 | 2012 | 2011 | 2008 | 2012 | 2009 |
| Muslim | (1.01) | 0.81 | 0.43 | 0.50 | 0.67 | 0.44 | 0.54 | 0.43 | 0.46 |
| Number of children | 1.04 | 1.24 | 1.19 | 1.10 | 1.20 | 1.14 | 1.26 | 1.22 | 1.15 |
| Number desired | (0.99) | 0.84 | 0.91 | 0.90 | 0.90 | 0.90 | 0.91 | 0.90 | 0.82 |
| Age | 1.02 | 0.99 | 0.99 | (0.99) | 0.98 | 0.97 | 0.96 | (0.99) | 1.02 |
| Age at marriage | (0.99) | 0.98 | (1.00) | (1.03) | 1.01 | 0.97 | (0.99) | (1.02) | 0.98 |
| Urban-rural | (1.01) | 0.66 | 1.24 | 0.73 | (0.97) | 0.77 | (0.98) | (0.87) | 1.24 |
| Years of schooling | 1.06 | 1.11 | 1.23 | 1.21 | 1.08 | 1.04 | 1.10 | 1.05 | 1.15 |
| Wealth[1] | 1.11 | 1.31 | 1.41 | 1.36 | 1.22 | 1.44 | 1.21 | 1.22 | 1.26 |
| Listen to radio | 1.09 | 1.11 | 1.08 | 1.16 | 1.16 | 1.09 | 1.16 | 1.23 | 1.20 |
| Watch television | 1.17 | 1.33 | 1.17 | 1.15 | 1.12 | 1.39 | (1.07) | (1.05) | 1.12 |
| Polygynous | (0.94) | 0.73 | (0.95) | (1.09) | 0.78 | 0.44 | (0.97) | 0.80 | 0.78 |
| Number of child deaths | 1.05 | (1.00) | (1.04) | (1.02) | (0.94) | 0.92 | (1.10) | (1.04) | (0.95) |
| Decision making[2] | (0.98) | 1.05 | 1.07 | NA | 1.15 | 1.09 | 1.07 | 1.07 | 1.10 |
| Beating[3] | (0.98) | (1.00) | (0.97) | NA | (0.98) | 1.07 | (0.99) | 1.18 | (0.98) |
| | | | | | | | | | |
| Number of women | 11,200 | 13,226 | 8,940 | 4,182 | 6,107 | 9,659 | 2,809 | 6,710 | 4,656 |
| R[2] | .033 | .159 | .281 | .255 | .104 | .228 | .112 | .096 | .264 |

| | Liberia | Malawi | Mali | Mozambique | Nigeria | Senegal | Sierra Leone | Uganda |
|---|---|---|---|---|---|---|---|---|
| | 2013 | 2010 | 2012-13 | 2011 | 2013 | 2010 | 2013 | 2011 |
| Muslim | 0.72 | 0.49 | 0.73 | 0.69 | 0.49 | 0.69 | (0.92) | (1.00) |
| Number of children | 1.27 | 1.64 | 1.24 | 1.34 | 1.31 | 1.31 | 1.27 | 1.25 |
| Number desired | 0.89 | 0.88 | 0.91 | 0.93 | 0.84 | 0.88 | 0.92 | 0.87 |
| Age | 0.95 | 0.96 | 0.97 | 0.96 | 0.98 | (0.99) | 0.98 | (0.99) |
| Age at marriage | 1.02 | (1.00) | 1.02 | (1.01) | (1.01) | (1.00) | (1.01) | 0.97 |
| Urban-rural | 0.87 | 0.78 | 0.67 | 0.83 | 0.79 | 0.60 | 0.59 | 0.80 |
| Years of schooling | 1.08 | 1.12 | 1.08 | 1.13 | 1.08 | 1.13 | 1.06 | 1.14 |
| Wealth[1] | 1.10 | 1.06 | 1.33 | 1.40 | 1.35 | 1.24 | 1.21 | 1.43 |
| Listen to radio | 1.33 | 1.13 | 1.07 | 1.10 | 1.09 | (1.05) | 1.30 | 1.12 |
| Watch television | (1.04) | 1.06 | 1.15 | 1.20 | 1.12 | 1.23 | (0.95) | 0.91 |
| Polygynous | (1.13) | (0.92) | (0.95) | (0.95) | 0.91 | (0.90) | 0.86 | (0.94) |
| Number of child deaths | 1.16 | 1.10 | 1.12 | (1.06) | 0.92 | (1.04) | 1.09 | 0.93 |
| Decision making[2] | 1.13 | 1.04 | 1.15 | 1.14 | 1.19 | 1.04 | 1.10 | (0.96) |
| Beating[3] | 1.04 | 0.95 | 1.03 | (1.05) | (0.97) | (1.01) | 1.06 | (1.01) |
| | | | | | | | | |
| Number of women | 5,790 | 15,064 | 8,723 | 7,837 | 26,163 | 10,574 | 10,642 | 4,998 |
| R[2] | .078 | .110 | .124 | .159 | .269 | .141 | .101 | .166 |

Note: ( ) Not significant at the .05 level

[1] Wealth index as calculated by the DHS, a composite measure of household's cumulative living standard (http://dhsprogram.com/topics/Wealth-Index.cfm)

[2] Who makes various decisions in the home, coded with a positive direction indicating a more egalitarian position

[3] Attitudes towards husbands' beating wives, coded with a positive direction indicating a more egalitarian position

## 5.4    *Child Mortality*

Child mortality rates are declining rapidly in sub-Saharan Africa, but they remain relevant to reproductive behavior. Because this study focuses on covariations with religion, we have examined the possibility of child mortality differences between Muslims and non-Muslims. In only 8 of the 17 countries are there significant differences in child mortality, all with higher rates for Muslims. The greatest difference in child mortality exists in Nigeria where, among women with at least one live birth, 43 percent of Muslim women report having had at least one child death compared with 29 percent of non-Muslims. Other countries with significantly higher child mortality among Muslim women are Cameroon, Ethiopia, Ghana, Guinea, Liberia, and Sierra Leone. In most countries, with the exception of Nigeria, Cameroon, and Ghana, controlling for the number of births, education, and the use of contraception erases any religious difference in child mortality.

# 6.    Conclusions

This study has focused on an analysis of the association of religion and fertility in sub-Saharan Africa. It is based on data from a DHS survey that includes only a single question on religion (respondents are asked if they identify with a particular religion). Because there is little difference in fertility between Catholics and Protestants, but fertility is typically higher for Muslims, the analysis concentrates on Muslim – non-Muslim differences in 17 countries in the region. The primary objective was to determine whether the observed higher fertility among Muslim women in sub-Saharan Africa compared with non-Muslim women reflects differences in age at marriage, number of children desired, contraceptive use, and child mortality as well as their social and economic covariates.

There are strong differences in nuptiality. Higher proportions of Muslim women than non-Muslim women are currently married, and they marry at consistently earlier ages. Polygyny is more common among Muslims. Reproductive preferences, measured by the standard survey question on the ideal number of children desired, and also by the proportion of married women who want no more children, are both strongly related to the Muslim – non-Muslim dichotomy. This association with indicators of higher fertility was subjected to multivariate analyses of existing number of children, rural-urban residence, education, wealth, child mortality, polygyny, mass media exposure, and two measures of gender equality; however, the connections with religion were not eliminated.

A multivariate analysis of the association of contraceptive use with the Muslim – non-Muslim difference yields similar results. Unmet need for family planning shows a mixed picture across countries, but the total demand for family planning estimated (by the sum of modern contraceptive prevalence and unmet need) clearly indicates a greater demand for family planning among non-Muslim women.

The persistent association of the Muslim – non-Muslim effect on these reproductive measures when numerous covariates are controlled may be explained by some aspects of the religion itself or by local religious practices. More likely, the association may result from other unobserved covariates or from inadequate measurement of those included, such as measures of the status of women. If one considers the declines in Muslim fertility in other countries such as Bangladesh or Indonesia, the conclusions of Gavin Jones (2006) seem appropriate—namely, that there is nothing intrinsic to Islam that would suggest in our study the eventual disappearance of the Muslim effect on fertility in sub-Saharan Africa. However, the evidence assembled in our analysis does not suggest a rapid disappearance of the Muslim effect in sub-Saharan Africa.

# References

Boonstra, H. 2001. "Islam, Women and Family Planning: A Primer." *The Guttmacher Report on Public Policy* Dec 4-7.

Goldsheider, C. 2006. "Religion, Family, and Fertility: What Do We Know Historically and Comparatively?" In *Religion and the Decline of Fertility in the Western World,* edited by R. Derosas and F. van Poppel, page 41-57. New York, New York, USA: Springer.

Heaton, T.B. 2011. "Does Religion Influence Fertility in Developing Countries?" *Population Research and Policy Review* 30: 449-65.

Immerman, R.S. 2003. "Religion and Fertility." *The Mankind Quarterly* XLIII.

Johnson-Hanks, J. 2006. "On the Politics and Practice of Muslim Fertility." *Medical Anthropology Quarterly* 20(1).

Jones, G. 2006. "A Demographic Perspective on the Muslim World." *Journal of Population Research* 23(2).

Kahle, H. 2013. *Public Perceptions on Family Planning and Birth Spacing in the Cultural and Religious Context of Senegal: A Case Study in Dakar, Senegal.* Independent Study Project (ISP) Collection, Paper No.1684.

Karim, M.S. 1997. *Reproductive Behavior in Muslim Countries.* DHS Working Papers No.23. Calverton, Maryland, USA: Macro International.

Knodel, J., R.S. Gray, P. Sriwatcharin, and S. Peracca. 1999. "Religion and Reproduction: Muslims in Buddhist Thailand." *Population Studies* 53(2).

Mishra, V. 2004. *Muslim/non-Muslim Differentials in Fertility and Family Planning in India.* Population and Health Series, East-West Center Working Papers No.112. Honolulu, Hawaii, USA: East-West Center.

Morgan, S.P., S. Stash, H.L. Smith, and K.O. Mason. 2002. "Muslim and Non-Muslim Differences in Female Autonomy and Fertility: Evidence from Four Asian Countries." *Population and Development Review* 28(3).

Rashad, H. 2000. "Demographic Transition in Arab Countries: A New Perspective." *Journal of Population Research* 17(1).

Rashad, H., M. Osman, and F. Roudi-Fahimi. 2005. *Marriage in the Arab World.* Washington DC, USA: Population Reference Bureau.

Regenerus, M., and C. Smith. 2005. "Selection Effects in Studies of Religious Influence." *Review of Religious Research* 47(1): 23-50.

Roudi-Fahimi, F. 2004. *Islam and Family Planning.* Washington DC, USA: Population Reference Bureau.

Skirbekk, V., M. Stonawski, S. Fukuda, T. Spoorenberg, C. Hackett, and R. Muttarak. 2015. "Is Buddhism the Low Fertility Religion of Asia?" *Demographic Research* 32(1): 1-28.

Voas, D. 2007. "Does Religion belong in Population Studies?" *Environment and Planning* 39: 1166-80.

Watkins, S., and I. Warriner. 2003. "How Do We Know We Need to Control for Selectivity?" *Demographic Research* 1(Special Collection): 109-41.

Weeks, J.R. 1988. "The Demography of Islamic Nations." *Population Bulletin* 43(4).

Westoff, C.F., K. Bietsch, and S. Mariko. 2014. "Further Analysis of Family Planning in Mali, 2012-13." DHS Further Analysis Reports No. 91. Rockville, Maryland, USA: ICF International.