

# Age-specific fertility patterns by religion around the world

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## *Abstract*

The current study presents new data on age-specific fertility by religion from a new global database we have built up on religion and fertility for 137 countries. We find significant differences in childbearing between Christians, Muslims, and the Religiously Unaffiliated. There are differences in terms of the timing of fertility of each group and also in terms of fertility outcomes. There are different patterns of variation between these groups in various regions of the world. We identify unique patterns of age-specific fertility, showing different patterns in different geographic areas of the world. Patterns that emerge at the global level do not hold true in all regions of the world. The differential patterns of childbearing are important for several reasons. They are an important component of regional population trends, they affect future religious compositions as well as regional and fertility levels. The religion-specific age-trajectories of fertility also affect global population growth.

## **1. Introduction**

How do age-specific fertility patterns differ by regions? Are there commonalities in Christian fertility patterns? Do Muslims tend to have children earlier? Is it correct that individuals without religion generally have low fertility? Which religions have more variation in terms of fertility across countries and which are more stable? This study aims to answer these type of questions and to address some the circumstances for why such differences exist.

We investigate (1) to which extent there are patterns in fertility religion-specific both globally and across regions; (2) how pronounced fertility differentials by religion are and to which extent they go in the same direction, i.e. whether Muslims tend to have higher fertility rate compared to Christians and how much this differential varies across countries; and (3) whether fertility differentials by religion get more pronounced in countries dominated by a single religious group or in religiously mixed settings.

Although there is considerable interest in the topic, there has so far there has not been a study describing, using the best available evidence, age-specific fertility trends by religion across the world. There is a need to understand religious differences in fertility to be able to infer whether there are differences in religions' fertility across and within countries. Until now, there has not been a database that includes nationally representative data on fertility by religion covering the whole world. This study presents the outcome of a relatively large effort to gather data on religion by most nations in the world. We analyze global variation in age-specific fertility by religion using a new unique global database that allows us to do analyses for 137 countries based on censuses, surveys and registers from countries from the entire world.

We study how age-specific fertility patterns by religion vary across countries. We focus on the two largest religious groups in the world, Christianity and Islam, as well as those without a religious affiliation. Together, these three groups cover 71% of the world's population. We restrict our study to these three groups as they are represented in significant numbers in most world regions – allowing us to compare differentials both by world region, but also globally. This allows us to study to which extent there are religious differences in childbearing trajectories across the world, and in which regions such religious differences are more emphasized.

## **2. Why understanding the relevance of religion to fertility is important**

Religion is an important marker of personal identity. Individuals across the world often see their religious convictions as one of the most central markers of identity (Borooah 2004; Castells 2011). Religious affiliation influence demographic behavior and population trends – and has done so for a long stretch of time (Westoff and Jones 1979; Johnson and Grim 2010).

At the same time, religious populations characterized by low education and income, high morbidity and mortality, low levels of urbanization and formal employment tend to have higher fertility (White et al. 2008; Guo et al. 2012; White et al. 2008; Matysiak and Vignoli 2008). Further, as some religions

are larger in size in regions that are anyway characterized by high fertility, such as South, East and West Africa, the religions dominant in these world regions will have higher fertility globally (United Nations Population Division 2013).

Religion remains an important differentiating characteristic, particularly as significant shares of populations in many nations have seen their religious numbers decline. For instance, as societies tend to face less variation in mortality and the type of disease burden they face, with less uncertainty regarding survivorship and health of children (Murray et al. 2012; Wilson 2011), they may differ in other factors related to thought-systems and faith. Societies have generally grown richer, better educated, with greater labour market opportunities and better institutions in recent years, which may affect fertility (Acemoglu et al. 2008; Przeworski et al. 2000; Skirbekk and KC 2012), which may imply that other fertility determining factors can become more important as societies become more similar. Even with identical socio-economic characteristics, religious effects on fertility has been identified (McQuillan 2004; Philipov and Berghammer 2007; Lehrer 1996).

Increasingly important determinants of childbearing include belief structures, political views, faith and value-orientations (Kaufmann, Goujon, and Skirbekk 2012; Goujon, Malenfant, and Skirbekk 2013). but also individual traits and personality characteristics (Blekesaune and Skirbekk 2012; Jokela 2012) may have become more important for recent born generations. Religion can represent one such factor – which could be growing in importance, as other factors tend to converge.

This can have important implications. Variation in fertility will affect regional population compositions and geographic distributions of populations in the coming years. It will affect global population growth. Several of the nations that have very low fertility in the world tend to be very secular (including the Czech, urban China, Japan, Ukraine), while high fertility nations tend to have small secular shares (Johnson and Grim 2010; United Nations Population Division 2013).

Differentials in reproductive behavior of religious groups are increasingly coming into focus, partly as there is a growing focus on religion for several reasons, for instance with peace dialogues becoming more important and partly as many societies become more religiously diverse, such as in Australia, New Zealand, North America and Europe because of the growth in immigration and differences in the age composition - with some groups having larger shares in reproductive ages.

### **3. Data and methods for assessing religion-specific fertility**

In this study we're looking at major world religions – Christianity, Islam and persons with no affiliation. We estimate TFR and age-specific fertility patterns for religious groups at the level of UN regions and next we look at fertility differentials<sup>1</sup>.

To study fertility patterns by religion we turned our attention to available censuses and survey data. Not all censuses include a question on religious affiliation of the population and in other countries census data proved difficult to access. Therefore, we either used representative surveys such as

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<sup>1</sup> Age-specific fertility rates for regions were computed as weighted average.

Gender and Generation Survey, DHS, Americas Barometer, MICS-3 and other national surveys (for example JGSS for Japan). In some countries specialized surveys or registers of migrants enabled us to estimate fertility of religious groups dominated by immigrants. Further, focused investigations, such as surveys of Muslims in certain European countries, helped us improve our estimates. Estimating fertility of the Religiously Unaffiliated persons proved to be more challenging as they tend to be little represented in less secularized countries.

In some countries, ASFRs and TFRs could be computed directly from survey data, administrative records or census data if they included information on births during the last year. In other countries, fertility is estimated using indirect estimation techniques. For the cases where we only had information on children ever-born to women we used P/F ratios to estimate ASFRs (Arriaga 1983).

However, some religious groups tend to be little represented in surveys and consequently, we could not estimate fertility for small groups at all or in other cases the results we obtained were sometimes not satisfactory. A typical example are Muslims in Western and Northern European countries, who are usually of migrant origin, and even large-scale surveys don't capture these populations in big enough number to estimate stable and reliable ASFRs in all age groups. As a result, we applied quadratic splines to model some distorted fertility patterns in order to improve our estimates.

#### **4. Findings**

We estimate global TFR of Christians, Muslims and the Unaffiliated.

... (the results, which are conducted as a formal report for PEW forum, are completed, but may only be shared from March 2014 – ahead of the EPC).

We will compare differences in religion-specific fertility in countries dominated by a single religious group and in religiously mixed countries.

#### **5. Discussion**

The relationship between religious faith and fertility is subject to considerable academic and public interest. Identifying the descriptive relationship between religion and fertility can be important. It will, due to the strong intergenerational transmission of religion from parents to children, have strong effects on fertility outcomes.

Our approach reveals a high level of religious specific fertility heterogeneity within regions and increases our knowledge on the association between religion and fertility across cultural and geographic world regions.

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