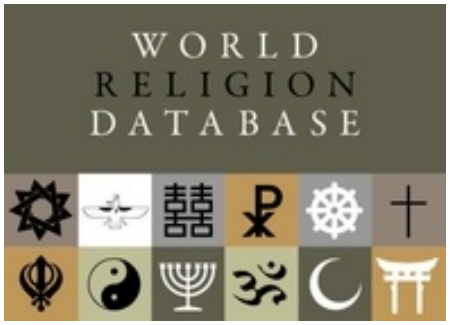


Methodology of the *World Religion Database*

Adapted from Todd M. Johnson and Brian J. Grim, *The World's Religions in Figures: An Introduction to International Religious Demography* (Oxford: Wiley-Blackwell, 2013)

The *World Religion Database* (*WRD*) is a dynamic online publication based on the research of the International Religious Demography Project, under the direction of Dr. Todd M. Johnson and Dr. Brian J. Grim, at Boston University's Institute on Culture, Religion and World Affairs (CURA). The *WRD* collects, collates, and offers analyses of primary and secondary source material on demographic variables for all major religions in every country of the world. The database is unique in that it makes estimates from these sources readily available and fully transparent to the scholarly community. The *WRD* provides adherence data at the provincial level where available from censuses and surveys. It also aims to account for subgroups of each major religion to the maximum extent possible based on best social science and demographic practices.

The right to profess one's choice

This methodology takes as its starting-point the United Nations 1948 Universal Declaration of Human Rights, Article 18: "Everyone has the right to freedom of thought, conscience and religion; this right includes freedom to change his religion or belief, and freedom, either alone or in community with others and in public or private, to manifest his religion or belief in teaching, practice, worship and observance." Since its promulgation, this group of phrases has been incorporated into the state constitutions of a large number of countries across the world. This fundamental right also includes the right to claim the religion of one's choice, and the right to be called a follower of that religion and to be enumerated as such. The section on religious freedom in the constitutions of very many nations uses the exact words of the Universal Declaration, and many countries instruct their census personnel to observe this principle. Public declaration must therefore be taken seriously when endeavoring to survey the extent of religious and non-religious affiliation around the world.

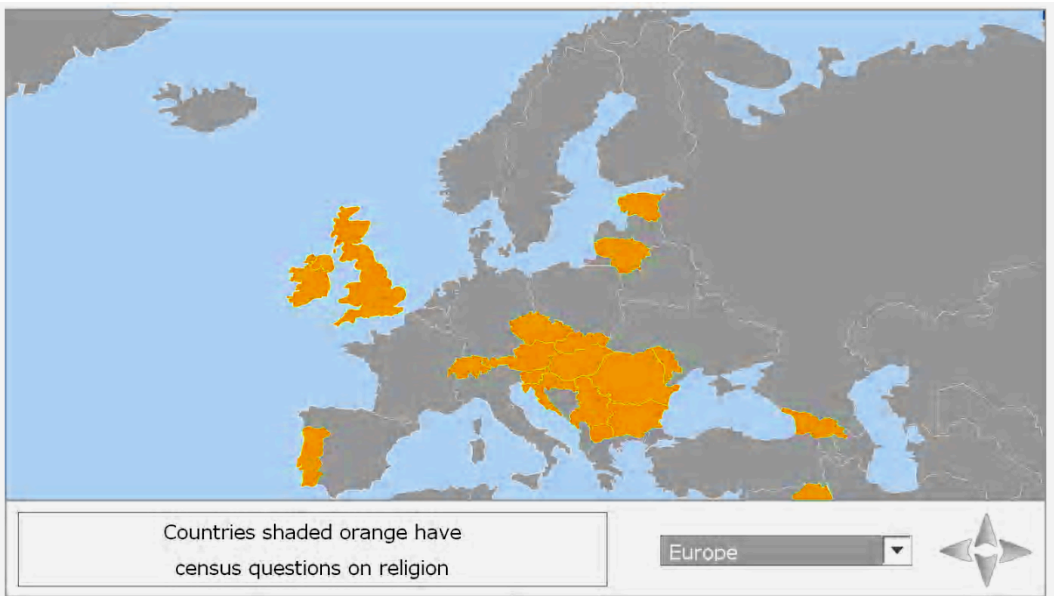
Religious demography

The origins of the field of religious demography lie in the church censuses conducted in most European societies. For many years and in many countries, churches produced the most complete censuses of the population. They achieved this largely by recording baptisms and funerals. These data, however, were seen not as referring to specific religious communities, but rather to the larger homogenous societies. With the decline of national churches in Europe beginning in the nineteenth and twentieth centuries, secular governments began tracking births and deaths, eventually replacing churches as the main bodies collecting detailed information on human populations.

The academic field of religious demography is underdeveloped. Although there are thousands of sources for religious demography neither scholars of religion, sociologists, nor others have done much to collect, collate, and analyze these data. As a consequence, there is much confusion over the status of religion and its adherents around the world. Popular sources for religious demography, such as *Wikipedia* or the *CIA Factbook*, are woefully inadequate and riddled with errors and contradictions.

Prior to the *WRD*, the *World Christian Database* (www.worldchristiandatabase.org) was the most extensive source for data on world religions but its focus and methodology have been directed toward measuring Christian adherence and the thousands of different Christian subgroups throughout the world. Unlike Christianity, where churches produce annual membership reports, such as the Catholic Church's *Annuario Pontificio* (Pontifical Yearbook), no such centrally produced and vetted global statistics are available for Muslims, Hindus, Buddhists, or most other religionists. To develop a world religion database, it would seem that a simple solution is to rely on census data. Bust censuses have at least three significant limitations. The primary drawback for relying on census data is that approximately half of recent country censuses did not include a question on religious affiliation. Taking, for example, the specific case of the European Union, only 14 of the 27 recent EU country censuses included a religious affiliation question that they reported to the United Nations statistical office. Figure 1 shows a map of the countries in broader Europe that have religion on their census.

Figure 1. Countries in broader Europe with census questions on religious affiliation

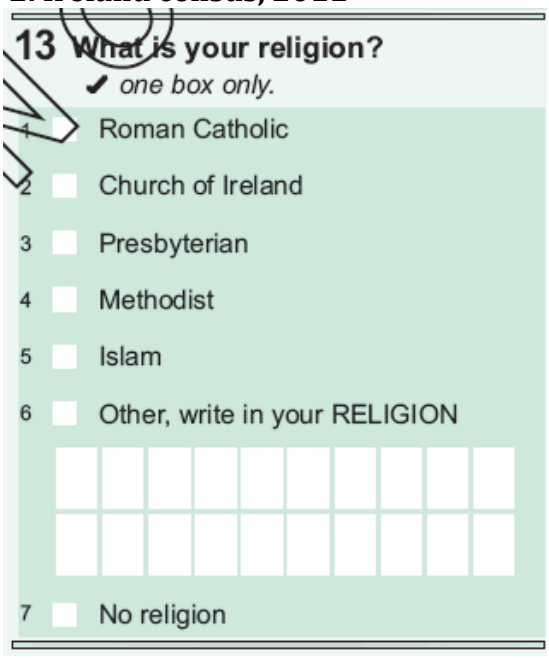


Source: U.N. Statistical Division.

Second, censuses sometimes force people to select their religion from among a set list of religions. This can result in high-end estimates, where everyone picks a religion regardless of whether they actually practice the religion. It also has the potential to miss religions that are considered illegal or that are not recognized by the government, such as

the Baha'i faith in Egypt, or even allow for people to indicate that they are an atheist, as is illegal in Indonesia. Figure 2 shows the 2011 census of Ireland, which instructed respondents to choose from a set list.

Figure 2. Ireland census, 2011



Related to this, the third problem researchers must be aware of is that censuses are not free from political and social bias and controversy. For example, in 2008, Nigerian officials removed the religious affiliation question from the census questionnaire in response to violent and deadly social protests. The tension was that in this country nearly equally divided between Muslims and Christians, various constituencies felt that the census results would be biased and would show that one or the other religion predominated.

Given the limitations of censuses, including incomplete and irregular global coverage, potential political bias swaying the findings and the absences of many religious groups from censuses, any religious demographic analysis must consult multiple sources. The initial source of the *World Religion Database* is the *World Christian Database*, which has unsurpassed data on global Christianity, the world's largest religion. As mentioned already, there are no global statistics available from religious sources for religions other than Christianity. Therefore, the *WRD* focuses on initially gathering and subsequently adjusting the *World Christian Database* numbers based on the three major social scientific sources of religious affiliation data: census data, Demographic and Health Surveys (DHS), and population survey data.

Sources

Leaders in all religions are concerned about membership, but many do not keep

direct records. In Muslim contexts, for example, the number of mosques or imams might be known, but not the number of worshipers. Instead, analysis of Muslim demographics must rely on secular data, particularly government statistics on population. If a country is 99% Muslim, such as Mauritania, then all statistics collected by the government on the total population apply directly to the religious community. These would include information such as birth and death rates, literacy rates, and health statistics. Thus, much is known about trends among Muslims where they are in the majority. Unfortunately, there are many significant countries where Muslims are a minority. One example is India, one of the largest Muslim countries in the world, where Muslims make up less than 15% of the population.

Since the twelfth century the governments of the world have also been collecting information on religious populations. A question related to religion is now asked in the official national population censuses of over 120 countries. Britain, which produced the world's first national census of religious affiliation (the Compton Census in 1676), and later a religion question in the national census of 1851 (though none thereafter), reintroduced the question in its 2000 census as the best way to get firm data on each and every non-Christian minority. In contrast, politicians in Russia drew the opposite conclusion and decided that a religion question would be too sensitive in the new census. Nonetheless they are retaining equally sensitive questions related to language and ethnicity. In Indonesia, where there has been a religion question in the census for decades, until recently there was no way for Sikhs to register their faith, so they were simply counted as Hindus. In Nigeria, a religion question could help to settle competing claims by Christians and Muslims that they are in the majority, but successive governments have seen the issue as too controversial. These examples highlight the difficulty that governments face in counting religionists within their borders.

Data in the *WRD* comes from four main sources:

1. The World Christian Database (Brill)

The most detailed estimates for Christians are found in the *World Christian Database* where membership figures have been gathered from every Christian denomination and added together to produce estimates for the numbers of Christians in every country of the world. These estimates are put into the context of surveys and censuses to determine whether they might offer a better assessment of Christian affiliation. See example below on the Coptic Church in Egypt. In many cases where census and survey questions are limited, the denominational figures offer more detail on the Christian community. In countries where Christians are in the majority, census and survey data provide a "ceiling" for total percentage of Christians revealing the fact that Christian membership figures include double affiliation—where Christians are counted more than once by two or more denominations.

2. Censuses in which a religious question is asked

In the twentieth century, approximately half the world's countries asked a question related to religion in their official national population censuses. Since 1990, however, this number has been declining as developing countries have dropped the question, deeming it too expensive (in many countries each question in a census costs well over 1 million U.S.

dollars), uninteresting, or controversial. As a result, some countries that historically included a religion question have not included the question in their censuses since 1990. National censuses are the best starting point for the identification of religious adherents, because they generally cover the entire population.

3. Censuses in which an ethnicity or language question is asked

In the absence of a question on religion, another helpful piece of information from a census is ethnicity or language. This is especially true when a particular ethnic group can be equated with a particular religion. For example, over 99% of Somalis are Muslim, so the number of Somalis in, say, Sweden is an indication of a part of the Muslim community there. Similarly, a question that asks for country of birth can use useful. If the answer is "Nepal" there is a significant chance that the individual or community is Hindu. In each of these cases the assumption is made (if there is no further information) that the religion of the transplanted ethnic or linguistic community is the same as that in the home country.

4. Surveys and polls

In the absence of census data on religion, large-scale demographic surveys, such as the MEASURE (Monitoring and Evaluation to Assess and Use Results) Demographic and Health Surveys (DHS), often include a question about the respondent's religious affiliation. In some instances, demographic surveys by groups such as UNICEF (United Nations Children's Fund) include a religious affiliation question. Demographic surveys, though less comprehensive than a national census, have several advantages over other types of general population surveys and polls. Demographic and Health Surveys (DHS) are highly regarded by demographers and social scientists, and provide valuable nationally representative data on religion. Surveys can also be commissioned in light of a dearth of data on a particular subject and results can be used to search for correlations between different variables.

Choice of best data available

Religious demography must attempt to be comprehensive. In certain countries where no hard statistical data or reliable surveys are available, researchers have to rely on the informed estimates of experts in the area and subject. Researchers make no detailed attempt at a critique of each nation's censuses and polls or each church's statistical operations. After examining what is available, researchers then select the best data available until such time as better data come into existence. In addition, there are a number of areas of religious life where it is impossible to obtain accurate statistics, usually because of state opposition to particular tradition(s). Thus it will probably never be possible to get exact numbers of atheists in Indonesia or Baha'i in Iran. Where such information is necessary, reasonable and somewhat conservative estimates are made.

Reconciling discrepancies in survey data

There are post-survey strategies that help general population surveys better reflect the actual composition of a particular country. For instance, if in a survey of 1,000 people, 60% were women and 40% were men, but we know that women and men are each 50% of the country's total population based on a recent census, then each woman's response on the general population survey would be weighted down by a factor of 500/600 and each

man's response would be weighted up by a factor of 500/400. Such adjustments are called weighting.

Other adjustments made to general population surveys may require taking into account that are meant to be representative of only adult populations. Therefore their results require adjustments, particularly if some religious groups have more children than others in the same country. This requires either a complete roster of members of each household or some other way to estimate of the number of children living in the household with the adults. When a complete roster is unavailable, most estimates of religious affiliation of children assume that they have the same religion as their one of their parents (usually assumed by demographers to be the religion of the mother). Differences in fertility rates between religious groups are particularly useful in estimating religious differentials among children. This is because demographic projections carry forward children born to women. It may introduce some bias to the degree that the father's religion is more likely to be the religion of the children than the mother.

Example: Coptic Church in Egypt

At times the results from government censuses and information from religious communities can be strikingly different. For example, in Egypt, where the vast majority of the population is Muslim, government censuses taken every 10 years have shown consistently for the past 100 years that a declining share of the population declare themselves as or profess to be Christians. In the most recent census, some 5% identified as Christian. However, church estimates point to a percentage figure three times larger (15%). This discrepancy may be due to overestimates by the churches or attributed, at least in part, to social pressure on some Christians to record themselves as Muslims. Further, according to news reports, some Egyptian Christians have complained that they are listed on official identity cards as Muslims. It also might be that church reports include Egyptian Christians working as expatriates outside of Egypt, while the census does not, or that the churches simply overestimate their numbers.

Such a lack of clarity is compounded by media reports and even Egyptian government announcements repeatedly claiming that Christians make up 10% or more of the country's approximately 80 million people, despite the fact that the census repeatedly reports only 5%. The highest share of Christians found in an Egyptian census was in 1927 (8.3%). Figures for Egyptian Christians declined in each subsequent census, with Christians making up 5.7% of the Egyptian population in 1996. The report from the most recent census, conducted in 2006, does not, however, provide data on religious affiliation, but a sample of the 2006 census data is available through the Integrated Public Use Microdata Series, International (IPUMS). The sample the same Christian share (about 5%) as the latest Egyptian Demographic and Health Survey, with a sample size of 16,527 women ages 15 to 49.

Of course, as noted by Pew Forum demographer Conrad Hackett, "it is possible that Christians in Egypt have been undercounted in censuses and demographic surveys."[1] According to the Pew Forum's analysis of Global Restrictions on Religion,[2] Egypt has very high government restrictions on religion as well as high social hostilities involving religion. Hackett goes on to observe that "these factors may lead some Christians, particularly converts from Islam, to be cautious about revealing their identity."
Regardless of the actual number, it is very likely that Christians are declining as a proportion of Egypt's population, even if their absolute numbers are not falling. On the one hand, Christian fertility in Egypt has been lower than Muslim fertility. On the other, is possible that Christians have left the country, though a 2012 study by the Pew Forum on the religious affiliation of migrants around the world has not found evidence of an especially large Egyptian Christian diaspora.[3]

Example: Hindus in the United States
The greatest strength of the *WRD* lies in its use of multiple sources of information to reach best estimates for a country's religious composition. For instance, when estimating the number of Hindus in the United States—where the census does not ask religious affiliation—the *WRD* takes into account survey evidence, such as the Pew Forum's 2007 *US Religious Landscape Survey*. The survey interviewed more than 35,000 American adults and found that approximately 0.4% of respondents indicated being Hindu. The *WRD* estimates a slightly larger number (0.47%, or 1.4 million people in 2010), which takes into account children and other sources of information, such as immigrant data found in another recent Pew Forum study.[4] The study found that outside of South Asia, the United States has by far the largest number of Hindu immigrants—1.3 million first-generation (foreign-born) Hindus. Since not all Hindus in the United States are foreign born, this justifies a slightly larger number than revealed by Pew's 2007 survey.[5]

International Religious Demography Data Quality Index
Amassing any large collection of data for tracking religious demographics poses two practical challenges. First, no data source includes every country in the world, which means researchers must use multiple sources to cover the entire globe. Second, the ways religion is categorized in different data sources that are available are often incompatible, and some reconciliation is required to make them suitable to be combined. For instance, some general population surveys might only estimate religious affiliation for the country's adult population, requiring inferences to be made about the religious affiliation of children. Other surveys may only have data on

[1] Pew Research Center, "Ask the Expert," May 11, 2011, http://pewresearch.org/pubs/1770/ask-the-expert-pew-research-center#christians-egypt.
[2] Pew Research Center Religion & Public Life Project, *Global Restrictions on Religion*, December 17, 2009, shttp://www.pewforum.org/Government/Global-Restrictions-on-Religion.aspx.
[3] See Pew Research Center Religion & Public Life Project, "Faith on the Move: The Religious Affiliation of International Migrants," March 8, 2012, http://www.pewforum.org/2012/03/08/religious-migration-exec/.
[4] Pew Forum on Religion and Public Life, *Faith on the Move: The Religious Affiliation of International Migrants*. March 8, 2012. See http://pewresearch.org/pubs/2214/religion-religious-migrants-christians-muslims-jews.
[5] The Pew Forum's *Religious Landscape Survey* estimated that more than 80% of Hindus in the United States are foreign-born.

women, requiring inferences to be made about men. Still others may miss certain parts of a country or be representative only of the primary urban centers. In order to assess the relative quality of common census and general population survey sources of religious demographic data, Brian J. Grim and Becky Hsu created an International Religious Demography Data Quality Index (DDQI). The index score indicates the degree to which the information given by each source represents a country's religious composition accurately, ranging between 0 (not reliable) and 100 (highly reliable). Each census and general population survey data source was scored on the basis of four components: geographic representation (how well the survey covers all regions of the country), response rate (how many people who were randomly chosen to participate in the survey completed the survey), sampling quality (how well the people interviewed are likely to be representative of the overall population), and questionnaire design (how well the questions measure the item of interest). In addition, two components not included in the index but that are necessary for making population projections using the cohort-component method are (1) age structure by religion in five-year cohorts (0–4, 5–9, 10–14, and upwards), and (2) age-specific fertility rates (number of children born to women in different groups). Individual scores for each component were combined into one overall score that reflected how reliable each data source was for estimates of a specific country's religious composition (see table below for an example using data from Kenya.) Also indicated is whether the information for making population projections was also available in the data source.

International Religious Demography Data Quality Index

Country: Kenya							
Source		***Kenya census 1999***	***DHS 2003***	***DHS 1998***	***Afroba-rometer 2003***	***DHS 1993***	***GAP 2005***
Geographic representation	% provinces covered	100	100	100	88	88	63
	% provinces with at least 100 cases	100	100	100	1	100	25
	Score	100	100	100	44	94	44
Response	Response rate	98	96	86	60	82	37
	Score	98	96	86	60	82	37
Sampling	Valid sample size	28,485,803	11,773	11,288	2,398	9,876	1,000
	Margin of error	0.0%	0.9%	0.9%	2.0%	1.0%	3.2%
	Male and female	1	1	1	1	0	1
	Score	100	100	100	99	49	98
Questionnaire design	Number of religious categories	30	5	5	25	5	10

	Multiple languages	1	1	1	1	1	1
	Score	100	58	58	92	58	67
Overall score		**99**	**89**	**86**	**74**	**71**	**61**
Five-year age structure data		**Yes**	**Yes**	**Yes**	**No**	**Limited**	**No**
Fertility data		**Yes**	**Yes**	**Yes**	**No**	**Limited**	**No**

DHS: Demographic and Health Survey; **GAP**: Pew Global Attitudes Project. **% provinces covered**: number of provinces surveyed divided by total number of provinces; **response rate:** percentage of those who participate out of those chosen randomly for the survey; **margin of error:** a number that quantifies uncertainty about the survey results (here, M = 1/SQRT(N). N refers to the valid sample size); **male and female:** whether both are represented in the data (1 = female and male both represented, 0 = only one sex represented); **number of religious categories:** number of religious categories given to respondents (for example, if the survey asks "Are you Muslim, Christian, or Other?" the value is 3); **multiple languages:** whether more than one language was offered for the survey respondents (1 = multiple languages available, 0 = only one language available).

Source: Brian J. Grim and Becky Hsu, "Measuring the Size of the Global Muslim Population," *Interdisciplinary Journal of Research on Religion* 7:2 (2011).

Totals and rounding

All columns of absolute numbers in tables always add up exactly to the totals and subtotals shown. However, as with all large statistical tables, a column of percentages may not always add up to exactly the total or subtotal indicated, due to rounding. Although in most cases throughout this survey component percentages in fact add up exactly to their respective totals, in a small number of cases this is not so because of the rounding feature. As an example, a total may be: 0.13%+0.13%+0.13%%=0.39%; when each is rounded to only one place of decimals, the figures become 0.1%+0.1%+0.1%=0.4%, which introduces a small discrepancy.

Dates of statistics

It is important, in changing situations, to know the exact date (year, perhaps also month and sometimes day) to which particular statistics apply. This methodology compares government statistics of religion with statistics from religious communities themselves; but in doing so, it must be remembered that a government census (or a public-opinion poll) is almost always taken on a single, known day; whereas, by contrast, religious statistics are compiled over a lengthy period that may amount to 3, 4, 5, 6 or even 7 years from the local grass-roots counting of heads to final compilation of totals by a large denomination or church. Denominational totals published in 2010 therefore probably refer to the situation in 2002, 2001 or even 2000.

Dynamics of change in religious populations

The question of how and why the number of religious adherents changes over time is critical to the study of international religious demography. It is more complex than simply "counting heads" via births and deaths—a well-established area in quantitative sociological studies—but in addition involves the multifaceted areas of religious

conversion and migration. The migration of religious people is only in the past few years become a more researched area of demographic study, and issues surrounding religious conversion continue to be under-represented in the field. Data on religion from a wide range of sources—including from the religious communities themselves, as well as governments and scholars—must be employed to understand the total scope of religious affiliation. Given data on a particular religion from two separate points in time, the question can be raised, "What are the dynamics by which the number of adherents changes over time?" The dynamics of change in religious affiliation can be reduced to three sets of empirical population data that together enable enumeration of the increase or decrease in adherents over time. To measure overall change, these three sets can be defined as follows: (1) births minus deaths; (2) converts to minus converts from; and (3) immigrants minus emigrants.[6] The first variable in each of these three sets (births, converts to, immigrants) measures increase, whereas the second (deaths, converts from, emigrants) measures decrease. All future (and current) projections of religious affiliation, within any subset of the global population (normally a country or region), will account for these dynamics, and the changes themselves are dependent on these dynamics.

Births

The primary mechanism of global religious demographic change is (live) births. Children are almost always counted as having the religion of their parents (as is the law in Norway, for example). In simple terms, if populations that are predominantly Muslim, for example, have more children on average than those that are predominantly Christian or Hindu, then over time (all other things being equal) Muslims will become an increasingly larger percentage of that population. This means that the relative size of a religious population has a close statistical relationship to birthrates.

Deaths

Even as births increase their memberships, religious communities experience constant loss through the deaths of members. Though this often includes tragic, unanticipated deaths of younger members, it most frequently affects the elderly members. Thus, changes in health care and technology can positively impact religious communities if members live longer.

Births minus deaths/total fertility rate

The change over time in any given population is most simply expressed as the number of births into the community minus the number of deaths out of it. Many religious communities around the world experience little else in the dynamics of their growth or decline. Detailed projections rely on a number of estimated measures, including life expectancy, population age structures, and the total fertility rate. This means that any attempt to understand the dynamics of religious affiliation must be based firmly on demographic projections of births and deaths.

Converts to

[6] On a global scale, immigrants and emigrants are the same; that is, when one immigrates *to* a host country, he is also emigrating *from* a home country. In essence, the difference here is zero.

It is a common observation that individuals (or even whole villages or communities) change allegiance from one religion to another (or to no religion at all). Unfortunately, one of the problems in studying conversion is the paucity of information on it. Reliable data on conversions are hard to obtain for a number of reasons. Although some national censuses ask people about their religion, they do not directly ask whether people have converted to their present faith. A few cross-national surveys do contain questions about religious switching, but even in those surveys it is difficult to assess whether more people leave a religion than enter it. In some countries, legal and social consequences make conversion difficult, and survey respondents might be reluctant to speak honestly about the topic. In particular, Hinduism is for many Hindus (as is Islam for many Muslims) not just a religion but also an ethnic or cultural identity that does not depend on whether a person actively practices the faith. Thus even non-practicing or secular Hindus may still consider themselves, and be viewed by their neighbors, as Hindus.

Converts from

Conversion to a new religion, as mentioned above, also involves conversion from a previous one. Thus, a convert to Islam is, at the same time, a convert from another religion. In the twentieth and twenty-first centuries, the most converts from Christianity were and continue to be found largely among those in the Western world who have decided to be agnostics or atheists.

Converts to minus converts from

The net conversion rate in a population is calculated by subtracting the number of converts from the number of converts to. Conversion to and conversion from will likely continue to play a role in changing religious demographics in the future.

Immigrants

Equally important at the international level is how the movement of people across national borders impacts religious affiliation. Once religious communities are established through immigration they often grow vigorously (for a time) via high birth rates.

Emigrants

In a reversal of nineteenth-century European colonization of Africa, Asia, and parts of the Americas, the late twentieth century witnessed waves of emigration of people from these regions to the Western world. The impact on religious affiliation is significant.

Immigrants minus emigrants

In the twenty-first century, international migration continues to have a significant impact on the religious composition of individual countries. One can try to anticipate the way in which expected immigration and emigration trends will affect a country's population over time. One profound change to be expected is the increase of religious pluralism in most every country of the world. Increasing religious pluralism is not always welcomed and can be seen as a political, cultural, national, or religious threat.

The six dynamics discussed above determine changes in religious demographics. Gains are the result of three positive dynamics: births, conversions to, and immigration.

Losses are the result of three negative dynamics: deaths, conversions from, and emigration. The net change in religious demographics is the result of gains minus losses. The balance of dynamics can be reflected in any proportions (for example, mainly births for gains, mainly conversions from for losses) but can also be represented by pairing the gains and losses by type: births vs. deaths, converts to vs. converts from, and immigrants vs. emigrants. In each case, the net change (either positive or negative) will be the difference between the two. This means that any attempt to understand religious affiliation in the past, present, or future must be firmly based on demographic dynamics. A proper awareness of these dynamics and their significance is thus vital both for undertaking and for interpreting studies of the future of religion.

Measuring growth rates

The rates of growth, increase, decrease or decline of membership in many congregations can readily be measured from their annually reported statistics. This has been done by obtaining the statistics for 2 different years, where possible 5 years apart (to minimize the effects of roll-cleaning and other annual irregularities), usually 2000–2005 and 2005–2010, and working out the average annual growth rate as a percentage. Great care must be taken in such computations to ensure that the statistics used are measuring exactly the same entity (especially geographically) for each of the 2 years concerned. Growth, as percent increase or decrease per year, must be measured by dividing any annual increase by the identical category of total. Thus a church, for example, in a particular country with 500,000 total adherents (including children) in 2005 which grows to 600,000 total adherents (including children) in 2010 shows an increase of 600,000 minus 500,000 = 100,000, which divided by 5 = 20,000 a year, which divided by the mean membership of 550,000 gives an increase rate of 3.64% per year. In practice, the methodology follows a more accurate method by using the 1970 and 1995 figures for each denomination to arrive at exponential annual rates.

There are several different ways of measuring the growth of a religious body. Firstly, one can measure either adults only, or total community including children. Secondly, the growth rate of a church or religious grouping can be measured over a single day, or a month, a year, a decade, or 50 years—and all will yield differing results. This survey is concerned primarily to measure long-term rates. A growth rate measured for a specific religious body over a 2- or 3-year period may not be sustained throughout the decade, which explains differences in rates for the same church obtained at different times.

Projecting religious populations

The starting point of future studies is natural growth of the total population of the country or region of interest, utilizing demographic projections as a baseline. Three major areas beyond natural growth were then utilized to improve the projections. First, birth and death rates vary among religious communities within a particular country. Second, increasing numbers of people are likely to change their religious affiliations in the future. Third, immigration and emigration trends will impact a country's population over time. The highest quality projections for religious communities are built on cohort-component projections—ones that use differential rates for each religion: age-specific fertility rates by

religion, age structure in 5-year age-and-sex cohorts by religion, migration rates by religion, and mortality by religion.

Unfortunately, this kind of detail is not yet available for many countries (half of censuses do not ask a question about religion). Fortunately, the process of filling in missing data using demographic and smaller scale general population surveys is underway, and as these data become available through the Pew-Templeton Global Religious Futures Project, researchers will have access to these data through the *World Religion Database*, where they will be archived in full, with summary results available at the Pew Forum's website. In the meantime, projections cannot solely rely on the cohort-component method. Instead, they use a hybrid projection method. First, the 2015 religious composition of each country is established as the baseline. Then, utilizing the United Nations medium variant cohort-component projections of populations for five-year periods up to 2050,[7] future religious shares are modestly adjusted from the 2015 baseline. Adjustments are based on analysis of past differential growth rates of religious groups, factoring in historical patterns of religious switching and possible future attenuation of past trends. Finally, these projections take into account how immigrants might alter the future religious composition of country populations.

Pew vs. WRD projections for Christians

The Pew Research Center's Religion & Public Life Project released a report on April 2, 2015, on the future of world religions (http://www.pewforum.org/2015/04/02/religious-projections-2010-2050/), consisting of population projections between 2010 and 2050. A major finding of the report is that by 2050, Christian and Muslim populations will be nearly the same size, 2.9 billion and 2.7 billion, respectively, with no change in the percentage of the world that is Christian (31.4%). While method of the *World Religion Database* is similar to Pew's in many ways, there are some important differences. The *WRD* anticipates a much wider divergence between the Christian and Muslim populations in 2050: 3.4 billion Christians (compared to Pew's 2.9 billion) and 2.7 billion Muslims (similar to Pew).

Pew and the *WRD* use similar methods to track religious adherence worldwide (tracking births, deaths, conversions to religions, conversions from religions, emigration, immigration). Pew does utilize more detailed age/set data by religion where it is available from censuses and surveys. Both reports use census and survey data to arrive at best estimates, but the *WRD* also considers data from religious communities themselves, such as denominational statistics.

There are several reasons for the discrepancy between Pew's and the *WRD*'s numbers of Christians in 2050 (2.9 billion vs. 3.4 billion). The *WRD* taps into knowledge

[7] Data are from United Nations, *World Population Prospects: The 2010 Revision* (Blue Ridge Summit, PA: United Nations Publications, 2012). Note that if as a religious population is near 100% of a country's population, then the United Nations cohort data is applicable to the whole religious population. The challenge is estimating any variation from this in minority populations. If birth or death rates vary dramatically from the majority religious community, then the future share of that minority population can be very different from its present share.

from contacts in every country of the world who inform us on what is happening in non-traditional forms of Christianity, such as house churches and insider movements (where individuals convert to Christianity in secret and/or remain identified with their past religion). Some of the most significant growth of Christianity in the world today, and into the future, is indeed non-traditional and does not easily get picked up in demographic measures such as censuses, surveys, and polls. This is particularly the case in China and India. Pew does not model religious switching in either China (p.20) or India (p.100), citing a lack of reliable data. It is true that official censuses in many countries measure current religion but do not ask about childhood religion and that it is not possible to measure the switching patterns of individuals using census data (p.41). However, in the absence of "official" sources, the *WRD* employs "non-official" sources. On-the-ground contacts in China and India consistently report that Christianity is growing due to conversions, and many of these Christians are organized in "underground" or secret communities.

In addition, respondents to census-takers or other officials in countries with high governmental and/or social restrictions on religion (such as China and India) often do not report their true religious affiliation in order to avoid persecution. As a result, the *WRD*'s percentages of Christians in China and India in 2050 (15.8% and 6.9%, respectively) are higher than those of Pew (5.4% and 2.2%). The *WRD* projects Christians in China and India to number a combined 330 million in 2050, compared to Pew's figure of 108 million.

Pew and the *WRD* use different base population figures (the 2010 and 2012 revisions, respectively, of the United Nations World Population Prospects). Using the 2012 figures rather than those for 2010 adds almost 81 million Christians to Pew's global total. In addition, the *WRD* consistently finds more switching to Christianity in many African and Asian countries, also accounting for the overall difference in estimates for Christians in 2050.

Counting Sunni & Shi'a Muslims

The breakdown of Sunni and Shi'a Muslims in the *WRD* was first undertaken in 2005. It requires utilizing a database of the world's ethno-linguistic people groups, which was first created for the *World Christian Database* and was transferred to the *WRD*. A "peoples" taxonomy must take into account both ethnicity and language. The approach taken in "Ethnosphere" in Part 8 of the *World Christian Encyclopedia* was to match ethnic codes with language codes, which produced over 13,700 distinct ethnolinguistic peoples.[8] Not all combinations of ethnicity and language are possible, but nevertheless every person

[8] The construction of the taxonomy is explained in more detail in David B. Barrett, Todd M. Johnson, Christopher Guidry, and Peter Crossing, *World Christian Trends, AD 30–AD 2200: Interpreting the Annual Christian Megacensus* (Pasadena, CA: William Carey Library Publication, 2003), part 18, "Ethnolinguistics." The ethnic or culture codes are outlined in David B. Barrett, George T. Kurian, and Todd M. Johnson, eds., *World Christian Encyclopedia: A Comparative Survey of Churches and Religions in the Modern World*, vol 2*: Religions, Peoples, Languages, Cities, Topics.* (New York: Oxford University Press, 2001), table 8-1. The languages are listed in *WCE*, Part 9 "Linguametrics" and are derived from David Dalby, David Barrett, and Michael Mann, *The Linguasphere Register of the World's Languages and Speech Communities*, 2 vols (Carmarthenshire, Wales: Linguasphere Press, 1999). All are available online at www.worldchristiandatabase.org.

in the world can be categorized as belonging to an (mutually exclusive) ethnolinguistic people.

The work of determining the religious break of ethnolinguistic peoples was begun in the 1970s in Africa, where many Christian churches reported the ethnic breakdown of their congregations. Utilizing data gathered by religions and in government censuses, estimates of religious affiliation for all peoples was completed in the mid-1990s and published in *World Christian Encyclopedia*, 2nd edition. These data continue to be updated and published in the *WCD* and *WRD*.

Each distinct ethno-linguistic group in a country is assigned varying shares of the 18 categories of religion. For example, the Japanese in Japan are reported as 56% Mahayana Buddhist, 23% various New religionist, 10% agnostic, 3% atheist, 2% Shinto, and 1% Christian. Each group is traced throughout the world with the assumption that whatever their religious breakdown is in their home country will be the same abroad.[9] This allows researchers to locate Christian people in predominantly non-Christian countries. For example, the *WCD* reports that Pakistan—a majority-Muslim country—is also home to over 2 million Christians. While Christians are found among Muslim-majority people groups (for example, Punjabi at 4% Christian), they are also present in the country as ex-pats, such as French (76% Christian) and British (84% Christian).

Breaking down the global Muslim population into Sunnis and Shi'as involved estimating a second level of Muslim tradition for every people group. That is, instead of Muslim peoples being designated as simply "M" (Muslim) in the ethno-linguistic people database, instead every Muslim people was designed "SM" (Sunni Muslim) or "HM" (Shi'a Muslim). Historically, Sunni Muslims have always been the majority, so most groups were labeled as such unless it was known otherwise if they were Shi'a. Most Muslim peoples in Iraq and Iran, for example, were coded as Shi'a. Using the ethno-linguistic database also enabled researches to track the migration of Shi'a Muslims from their historical homes elsewhere. For instance, wherever Persian Muslims show up in the world, there is, therefore, likely also Shi'a Muslims.

Sources for these data are varied and include censuses, surveys, government reports, anthropological monographs, linguistic surveys, religious studies monographs, and many other documents. In addition, on-the-ground informants were queried in most countries.

Ethnicity

The database's ethnicity table is based on the work of Dr. David B. Barrett, published in the first edition of the *World Christian Encyclopedia* (1981) as "Part 4, Culture, Peoples of the world: An Ethnolinguistic Classification". In the absence then of any newer or better classification, Barrett's identified ethnicities have all been retained without any attempt to

[9] There is a limitation with this initial assumption (unless otherwise determined), especially in terms of religiously persecuted people. For example, many of the people groups who have left the Middle East (majority-Muslim countries) are more Christian. For example, Iraqis in Iraq are 98% Muslim (essentially 0% Christian), whereas in the United States, where many refugees have fled to, Iraqis are 82% Muslim (and 16% Christian).

re-classify groups that in a new system may well be merged or separated or renamed (and some archaic terms thus remain in the notes which may help explain particular divisions). Importantly for the many organizations employing the code in their own systems, this also allows the unique underlying code itself to be retained, except that it is now displayed without the original first and third characters. A handful of cover terms have also been altered to reflect these changes.

The Ethnicity name (formerly labeled in the database as 'Culture') is given for each ethno-linguistic people group and together with the newly formatted ethnic code, provides a quick tool for scanning and sorting peoples of similar ethnicity without necessarily needing to refer to the code's meaning.

The first letter of the code can be used to summarize the world's 13,800 ethno-linguistic peoples into just 13 "Ethnic regions". The following digit then identifies 72 ethnic types or ethno-cultural families, and then the lower-case letter completes the identity of the original 392 Ethnicities.

Ethno-linguistic people groups

A problem for social science research is the lack of available survey and polling data in non-Western countries. While the United States and many European countries have a long history of engaging in this kind of research, many—often more underdeveloped—countries can be difficult to access and/or speak languages difficult for Western researchers. The *WCD*'s method directly addresses this methodological challenge through its additional taxonomy of the world's ethnic groups, which are paired with religious statistics.

A "peoples" taxonomy must take into account both ethnicity and language. The approach taken in "Ethnosphere" in Part 8 of the *World Christian Encyclopedia* was to match ethnic codes with language codes, which produced over 13,700 distinct ethnolinguistic peoples.[10] Not all combinations of ethnicity and language are possible, but nevertheless every person in the world can be categorized as belonging to an (mutually exclusive) ethnolinguistic people. For example, there are ethnic Kazaks who speak Kazak as their mother tongue and ethnic Kazaks who speak Russian as their mother tongue. These are two separate ethnolinguistic peoples.

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