

Measuring the World Muslim Population

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ABSTRACT:

This paper describes and evaluates estimates of the world Muslim population developed by researchers at Boston University's Institute for the Study of Culture, Religion and World Affairs. Boston University's World Religion Database (WRD) contains statistics on Muslim affiliation for every country of the world and provides estimates down to the province level for numerous countries. It provides source material, including national censuses, demographic surveys and public opinion surveys, as well as ethnographic 'best estimates'. This paper discusses the documentation on survey types and coverage as well as the methods used to make estimates. This paper shows that despite many practical difficulties, it is possible to make estimates of Muslim populations for most countries of the world today. The data are available to through research libraries in the WRD (www.WorldReligionDatabase.org), launched in October 2008.

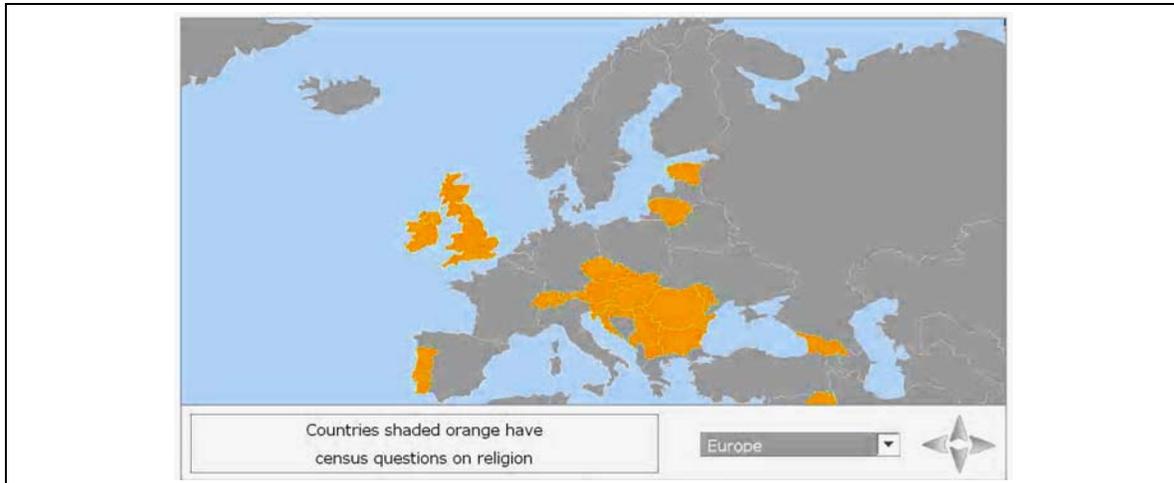
The academic field of religious demography is underdeveloped. Although there are thousands of sources for religious demography, little has been done by scholars in religion, sociology or other disciplines to collect, collate and analyze these. As a consequence, there is much confusion over the status of religion and its adherents around the world. Secondary sources for religious demography, such as Adherents.com, Wikipedia or the CIA Factbook, are woefully inadequate and riddled with errors and contradictions. The World Christian Database (WCD) is the most extensive source, but its focus and methodology have been directed toward measuring Christian adherence.

A new research project that addresses these deficiencies is the International Religious Demography (IRD) project at Boston University's Institute for the Study of Culture, Religion and World Affairs. The IRD's purpose is to collect, collate and analyze primary and secondary source material on religious demography for all major religions in every country of the world and make estimates from these sources readily available and fully transparent to the scholarly community. The IRD project publishes its findings in print and online, offering best estimates based on a methodologically rigorous reconciliation of the various sources' estimates. The data are available to through research libraries in the WRD (www.WorldReligionDatabase.org), launched in October 2008.

A simple solution, or so it would seem, is to rely on census data. The primary drawback for relying on census data, however, 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. 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: United Nations

Given the limited coverage of censuses as well as the limitations mentioned for denominational membership reports, any global or regional religious demographic analysis must consult multiple sources.

METHODOLOGY OF THE WRD

This section provides a general description of the methodology used to create the World Religion Database (WRD), with examples drawn from the IRD's research on Africa. The WRD draws on the only three major sources of religious composition data at the province level: Census data, Demographic and Health Surveys (DHS), and Afrobarometer. Additionally, for some countries, Census data are only available only on a national level for certain years, but these are included in the WRD as well.

To incorporate all the data sets into one data set, we matched province names geographically. In some countries, province boundaries have changed significantly during the past 50 years. For the history of the province name changes, we used information from *Administrative Subdivisions of Countries* published by Gwillim Law and available online (<http://statoids.com>).

Each type of data required slightly different adjustments in order to get incorporated into the common database of the WRD.

Census

National census data were acquired in from the U.S. Census Bureau headquarters (Suitland, Maryland) in June 2008 and from the archives of the World Christian Database (Boston, Massachusetts) in July 2007. Pages from the original booklet publications were photographed using digital cameras, archived as jpg files and then manually entered into computer spreadsheets. Data on religion by province were culled and province names were matched by geography with current province boundaries.

National census data are the best starting point for estimation of religious composition because they cover the entire the population and are conducted on a regular basis. However, because censuses are conducted by governments, political and social concerns affect and bias the data at times. For example, the 1956 Census for Zimbabwe was racially organized and missing “Africans”: "Owing to considerable practical difficulties, mainly an insufficient supply of persons qualified to undertake a satisfactory enumeration and the limited time available to prepare for the Census, no attempt was made to include the total African population in the 1956 enumeration." (p. 1, Census of Population 1956, Federation of Rhodesia and Nyasaland). Censuses for South Africa in 1951, 1956, and 1960 also counted races separately.

Demographic and Health Surveys

The Demographic and Health Surveys (DHS) program has collected nationally representative data that focus mostly on health issues in over 75 countries. Funding sources vary for each country, but include the United States Agency for International Development, other government agencies, United Nations Fund for Population Activities. Macro International provides technical Surveys reach as far back as the 1980s and have continued to be conducted up to the present day. The surveys that include religion data have been incorporated into the WRD. After being granted permission to access the data, survey data in the form of SPSS files were downloaded from the DHS website (www.measuredhs.com).

DHS surveys generally include at least 7,000 households and are often repeated at multiple time points. Some DHS surveys include women only. In other surveys, separate files for men and women are available. The men sampled are often a subset of the women sampled (from the same household), so in order to combine the men and women into one data set reflecting the overall population of the country as a whole, we made adjustments to the sample weights provided in the data set. After consulting with DHS, we calculated the adjustments to the sample weights using two components: 1) sample sizes and population ratios, and 2) response rates.

Sample Sizes and Population Ratios. The samples were taken by household, with at least one woman per household, and then, for some surveys, a subsample of men was taken (often half or one-third the number of women). When combining the men with the women, the adjusted samples of women to men should have the same ratio of that of women to men in the country's population. We used population estimates from the UN population Division's annual estimates and projection [code 13684], in order to solve for adjustment for population.

$$\frac{DHS_{female}}{DHS_{male}} \times adjustment_{pop} = \frac{population_{female}}{population_{male}}$$

Where DHS_{male} is the DHS male sample size,

DHS_{female} is the DHS female sample size,

$population_{male}$ is the size of the male population in the country,

$population_{female}$ is the size of the female population in the country, and

$adjustment_{pop}$ is the weight to reduce the female sample size so that it is proportionate to the male.

Solving for adjustment (population), we calculate the female adjustment for population by:

$$adjustment_{pop, females} = \left(\frac{population_{female}}{population_{male}} \right) \times \left(\frac{DHS_{male}}{DHS_{female}} \right)$$

We calculate the male adjustment for population by (the inverse of that of the females):

$$adjustment_{pop, males} = \left(\frac{population_{male}}{population_{female}} \right) \times \left(\frac{DHS_{female}}{DHS_{male}} \right)$$

Response Rates. From correspondence with DHS, we found that DHS sample weights were calculated by region and by response rate. We took their suggestion that we adjust men by the inverse of the men's response rate, and that we adjust women by the inverse of the women's response rate. These were found in Appendix A or B in the Final Reports (pdf files mostly available online).

$$adjustment_{response} = \frac{1}{response}$$

where response is the response rate of the females in the population. We use the same for the males.

For example, in Kenya 2003, the women's overall response rate is 90.5% and the men's is 96.3%, so we adjust the women's weights by 1/.905 and the men's weights by 1/.963.

Using these two components, we calculate the final adjustments to the female sample by:

$$finaladjustment_{women} = adjustment_{pop, females} \times adjustment_{response} = \left(\frac{population_{female}}{population_{male}} \right) \times \left(\frac{DHS_{male}}{DHS_{female}} \right) \times \frac{1}{response}$$

We calculate the final adjustment to the male sample by:

$$finaladjustment_{men} = adjustment_{pop, males} \times adjustment_{response} = \left(\frac{population_{male}}{population_{female}} \right) \times \left(\frac{DHS_{female}}{DHS_{male}} \right) \times \frac{1}{response_{male}}$$

After the process of combining data on men and women (described below), cross-tabulations of religion by province were taken and copied into spreadsheets, where province and religion names were matched.

Afrobarometer

For countries in Africa, we also used the Afrobarometer (www.afrobarometer.org), a research project providing national public attitude surveys about democracy, markets and civil society. Afrobarometer surveys were done by scholars studying Africa with funding from the National Science Foundation, the Swedish International Development Cooperation Agency, the United States Agency for International Development (USAID), the Danish Governance Trust Fund at the World Bank, the Calouste Gulbenkian Foundation, Michigan State University, and the Netherlands Ministry of Foreign Affairs.

Four rounds of surveys were conducted between 1999 and 2008, covering 20 countries. SPSS files were downloaded from the International Data Resource Center (IDRC) of the Inter-University Consortium for Political and Social Research at the University of Michigan. Then, cross-tabulations of religion by province were taken and copied into spreadsheets, where province and religion names were matched.

Looking at the EU in particular

Table 1 provides, as an example, an overview of the IRD's work to systematize the collection of multiple primary sources of adherent statistics from (a) the recent censuses for the 14 countries that have a religious affiliation question, (b) reputable cross-national general population surveys such as the European Social Survey, and (c) other country-specific surveys.

The information in Table 1 demonstrates several benefits of using multiple sources. For example, it is not possible to estimate of the number of Muslims in the European Union based on the CIA-WFB because it currently provides clear measures for only 9 of the 27 European Union countries.¹ The estimated number of Muslims in the European Union in Table 1 is 9,103,800, or 1.9 percent of the population, which is lower than the figure if current CIA-WFB estimates are used in conjunction with survey estimates, which would place the number at approximately 12.5 million, or 2.6 percent. Both of these numbers are lower than figures presented in Philip Jenkins' recent book on religion in Europe (2007), which used older CIA-WFB figures than those posted in July 2007, reinforcing the fact that the lack of visible sources for the CIA-WFB is problematic.

¹ The CIA-WFB provides no specific estimate for the number of Muslims in most EU countries, including Belgium, the Czech Republic, the Republic of Cyprus, Estonia, Finland, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Poland, Portugal, Romania, Slovakia, Spain and Sweden, or U.K. breakdowns.

Table 1. Religious Affiliation Estimates for Current EU Countries

Current EU Countries				Self-identified Christians in the EU					Other Groups Besides	
Population *	Year	Source	Total	Catholic	Orthodox	Protestant	Others	'Nones' †	Muslims	
Austria	8,199,783	2005	68.9	63.9	0.8	3.0	1.2	28.6	1.51	
		2001	81.1	73.5	2.2	4.7	0.6	14.3	4.20	
Belgium	10,392,226	2005	41.2	39.9	0.2	0.6	0.5	54.6	3.28	
		1999	58.8	56.8	0.3	0.6	1.1	37.2	1.85	
Bulgaria	7,322,858	2001	83.8	0.6	82.7	0.5	0.0	3.9	12.20	
		1999	58.6	0.2	57.7	0.6	0.1	30.4	10.96	
Cyprus (Rep. of)	788,457	2001	98.1	2.1	95.0	0.0	1.0	0.4	0.61	
		1998	100.0	1.5	98.5	0.0	0.0	0.0	0.00	
Czech Republic	10,228,744	2005	27.1	24.1	0.3	2.4	0.3	72.6	0.00	
		2001	28.8	26.5	0.0	1.3	0.9	68.2	0.00	
Denmark	5,468,120	2005	60.9	1.2	0.1	58.7	1.0	37.2	1.22	
		1999	87.5	0.8	0.0	86.3	0.4	10.9	0.49	
Estonia	1,315,912	2000	23.5	0.4	10.7	11.1	1.3	76.1	0.10	
		1999	23.9	0.4	10.0	13.5	0.0	75.2	0.07	
Finland	5,238,460	2003	75.7	0.2	1.1	72.7	1.8	24.1	0.20	
		2000	87.2	0.1	1.1	85.1	0.8	12.7	0.02	
France	61,083,916	2003	43.2	40.5	0.3	1.4	1.0	51.4	4.61	
		1990	58.8	57.5	0.0	1.3	0.0	38.8	1.01	
Germany	82,400,996	2005	57.9	28.0	0.9	27.2	1.8	38.8	2.74	
		1999	82.1	38.1	0.9	41.3	1.8	14.1	2.57	
		1999	32.3	3.7	0.2	27.0	1.4	66.5	0.10	
Greece	10,706,290	2005	88.8	1.1	87.3	0.3	0.1	9.2	1.79	
		1999	94.9	1.5	93.4	0.0	0.0	4.2	0.00	
Hungary	9,956,108	2003	62.7	45.1	0.2	16.3	1.0	36.9	0.00	
		2000	75.7	55.7	0.2	19.6	0.2	24.1	0.00	
Ireland	4,109,086	2005	87.6	84.5	0.0	2.6	0.5	12.2	0.00	
		2002	93.4	88.4	0.3	0.7	4.1	5.6	0.49	
Italy	58,147,733	2005	81.2	80.4	0.1	0.1	0.5	18.4	0.07	
		1999	81.6	81.2	0.0	0.3	0.1	18.3	0.00	
Latvia	2,259,810	1999	57.5	19.3	17.2	16.6	4.4	40.9	0.09	
		1998	61.8	21.4	13.9	24.3	2.2	36.1	0.10	
Lithuania	3,575,439	2001	85.0	79.0	4.1	0.8	1.1	14.9	0.08	
		1999	79.9	74.8	2.8	2.3	0.0	19.3	0.00	
Luxembourg	480,222	2005	66.3	49.3	0.6	0.7	15.6	31.0	1.55	
		1999	69.1	66.0	0.5	0.2	2.4	29.3	0.74	
Malta	401,880	1999	98.5	97.6	0.0	0.8	0.1	1.5	0.00	
		1991	97.1	97.1	0.0	0.8	-0.8	2.5	0.00	
Netherlands	16,570,613	2005	45.0	23.2	0.2	18.3	3.3	52.8	1.49	
		2003	50.2	30.4	0.0	32.9	-13.1	40.7	5.70	
Poland	38,518,241	2005	92.2	90.8	0.8	0.2	0.4	7.8	0.06	
		1999	95.3	94.0	0.3	0.4	0.5	4.4	0.05	
Portugal	10,642,836	2005	86.9	84.4	0.0	0.3	2.2	12.8	0.00	
		2001	86.7	84.5	0.2	0.6	1.4	13.0	0.14	
Romania	22,276,056	2002	99.1	5.6	87.0	3.5	3.0	0.2	0.31	
		1999	95.5	7.4	84.8	2.0	1.4	3.4	0.00	
Slovakia	5,447,502	2001	83.9	73.0	0.9	9.0	0.9	15.9	0.00	
		1999	76.3	63.8	0.9	11.3	0.2	23.2	0.00	
Slovenia	2,009,245	2005	68.6	65.1	1.5	1.8	0.2	30.4	0.91	
		2002	61.1	57.8	2.3	0.8	0.1	36.4	2.42	
Spain	40,448,191	2006	74.2	71.4	0	0.4	2.4	25.7	0.00	
		2005	72.3	70.3	0.5	0.5	1.0	25.6	1.47	
Sweden	9,031,088	2005	30.6	1.0	0.5	27.8	1.3	68.0	0.77	
		1998	70.4	1.0	0.0	69.4	0.0	28.5	0.00	
United Kingdom	60,776,238	2005	45.6	10.6	0.2	24.2	10.6	48.9	3.70	
		2001	71.6	NA				23.2	2.70	
England/Wales	53,800,906	"	"	71.6	NA			22.5	2.80	
Scotland	5,233,104	"	"	65.1	15.9		42.4	6.8	0.80	
N. Ireland	1,742,228	"	"	85.9	40.3		39.5	6.1	*	
Total EU	487,796,050		Calculations (described below)	332,583,783	214,059,595	38,140,458.5	64,485,229	15,898,500	142,457,902	9,103,800
	100.0%			68.2%	43.9%	7.8%	13.2%	3.3%	29.2%	1.9%

‡ Total calculations in columns 5-10 based on census percentages, when available; otherwise, most recent survey is used.
† 'Nones' include those who did not specify a religion as well as atheists.

Sources
Census Country Censuses
ESS European Social Survey
WVS World Values Survey (European Values Survey edition)
* U.S. Census Bureau International Database 2007 midyear estimate; 2007 UK breakdowns projected from 2001 U.K. census
ISSP International Social Survey Programme
StatNeth Statistics Netherlands
CIS/LB Center for Social Investigations/Latino Barometer

Public opinion surveys present special challenges for putting together an accurate demographic picture of religion in the EU. First, projects such as the European Social Survey only cover 19 of the 27 EU current member countries. Beyond coverage limitations, there are peculiarities associated survey data that need to be specifically examined and evaluated. In Bulgaria, for instance, the estimate for ‘no religious affiliation’ from the 1999 World Values Survey (30.4%) is much higher than from the 2001 census (3.9%). It is unlikely that religious “Nones” (as used here, those who either say they have no religion or decline to specify a religion) decreased by 26.5% in just two years. The large discrepancy is likely due to how the question was presented to respondents in each case. The 2001 census questionnaire offered the six choices shown in Figure 1. The only way a person would be counted as a religious “none” was either to say “none” in the “Other” category, or to offer no response at all (coded ‘99’ below). The census’s approach presumes that most people will choose one of the five specific religions mentioned.

Figure 2. 2001 Bulgarian Census

<p>16. Вероизповедание*</p> <p>1. Източноправославно</p> <p>2. Католическо</p> <p>3. Протестантско</p> <p>4. Мюсюлманско сунитско</p> <p>5. Мюсюлманско шиитско</p> <p>6. Друго <input type="checkbox"/></p> <p>99. Не се самоопределя <input type="checkbox"/></p> <p>(1. Eastern Orthodox, 2. Catholic, 3. Protestant, 4. Sunni Muslim, 5. Shia Muslim, and 6. Other)</p>
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The World Values Survey, on the other hand, did not begin with this presupposition. Instead, it asked a two-part question. The first asked whether respondents belonged to a “religious denomination.” Only those who answered “yes” were asked “which one,” as shown in Figure 3.

Figure 3. 1999 World Values Survey Question (European Values Survey edition)

<p>Do you belong to a religious denomination?</p> <p>1 'Yes'</p> <p>0 'No'</p> <p>-1 'Don't know'</p> <p>-2 'No answer'</p> <p>-3 'Not applicable'</p> <p>-4 'Not asked in survey'</p> <p>-5 'Missing: Unknown'</p>
<p>Religious denomination</p> <p>WVS: Do you belong to a religious denomination? In case you do, answer which one.</p> <p>EVS: Which one?</p>

The WVS approach will result in a lower estimate of those affiliated with religion for several reasons. First, previous research has shown that some people who say that they do not belong to a religious group report later in the same survey that they attend worship services, sometimes regularly. This may mean that they attend without being formally affiliated, or that they did not understand or accurately answer the affiliation question. The WVS does note for the 1999 Bulgarian survey that “There were a couple of questions/concepts that caused problems due to translation. These were: q22, q24a. The term ‘denomination’ - not applicable to Muslims.” The results of the survey, however, seem to indicate that it was not Muslims who had difficulty with the denominational question as much as Christians did. The WVS survey turned up a comparable percentage of Muslims (11.0) with the census (12.2), but there was a large difference between the percentage of Christians in the WVS (58.6) compared with the census (83.8). This 25.2 percentage point difference may account for the huge discrepancy seen in the ‘Nones’ category, where the WVS reports a percentage (30.4), which is more than seven time larger than the census’s figure (3.9).

Table 2. Comparing recent data from the European Social Survey (ESS) with the ‘Best’ Sources

Of the 19 EU countries surveyed:	Religious Self-ID			Across 27 EU Countries (see Table 1)	Religion Most recent and Best Sources
	2004	2002	change		
Gave no religion	34.3%	35.9%	-1.6%	Gave no religion	29.2%
Roman Catholic	41.2%	36.7%	5.4%	Roman Catholic	43.9%
Protestant	13.6%	17.0%	-3.4%	Protestant	13.2%
Eastern Orthodox	6.5%	6.4%	0.1%	Eastern Orthodox	7.8%
Other Christian	2.4%	1.9%	0.5%	Other Christian	3.3%
Islam	1.4%	1.4%	0.0%	Islam	1.9%
Eastern religions	0.3%	0.3%	0.0%	Eastern religions	0.7%
Other religions	0.3%	0.3%	0.0%	Other religions	

Source: European Social Surveys (ESS) (Total N=80,959 across both waves)
 Missing countries: Bulgaria, Cyprus, Estonia, Latvia, Lithuania, Malta, Romania, Slovakia

The paper will then discuss Muslim estimates, comparing the WRD’s best estimate with censuses and surveys.