

Projections of religiosity for Spain

Marcin Stonawski , Vegard Skirbekk¹, Samir KC, Anne Goujon

¹ International Institute for Applied Systems Analysis, Schlossplatz 2, 2361 Laxenburg, Austria. Corresponding author: Vegard Skirbekk, skirbekk@iiasa.ac.at, tel. 002236807 378

Introduction

In spite of the generally large interest in current and future religious change and its impact on demography, little scientific research has been conducted on these topics. A limited amount of scholarly research has been carried out on the topic of religious projections by denominations (Barrett et al. 2001, Goujon et al. 2007, Johnson and Grim 2008, Statistics Canada 2005, Skirbekk et al. 2010). This is one of the first studies to focus on demographic projections of religiosity.

The degree of religiosity cuts across religions and more religious subgroups of the population were found to have higher fertility regardless of their affiliation in many settings e.g. in France (Regnier-Loillier and Prioux 2008) and in the USA (Skirbekk et al. 2010). Religiosity (measured as intensity of belief or practice of adherents of different faiths) has been found to be a powerful determinant of family formation patterns, such as timing and outcome of marriage and fertility, although it interrelates with socio-economic, cultural and political contexts (Lehrer 2004; Philipov and Berghammer 2007; McQuillan 2004). Deeply religious individuals often argue that their current family beliefs and behaviour are primarily the outcomes of their religion's teachings (Borooah 2004; McQuillan 2004). This religion induced variation in fertility cuts across religious groups and has in some studies been shown to have a greater impact on demographic behaviour than type of religious affiliation (Finns 1991; Jampaklay 2008; Philipov and Berghammer 2007). Moreover, even if changes in religious affiliation may be small, changes in religious intensity could be far greater, one example being the growth in the proportion "belonging without believing" (Marchisio and Pisati 1999).

Spain is an interesting country for the study of religion and religiosity in Europe for several reasons. It was influenced by the Franco regime that saw the installation of Roman Catholicism as the only religion to have legal status and at the time of the Spanish transition to democracy after Franco's death, the number of non-*Catholics* was less than 1 percent (Solsten and Meditz 1990). The return of democracy in Spain was accompanied by a rapid increase in secularization rates among the youth, and a rapid decline in fertility that saw the total fertility rate (TFR) decline from 2.8 in 1975 to 2.1 in 1981 and to 1.2 in 1998 (Goujon and K.C. 2009). The third component influencing the religious composition and intensity in Spain is that since the mid-1970s Spain reversed its role as an emigration country and became increasingly a receiving country, first as transit country for migrants heading to the Northern countries (especially to France and Germany) at the end of the 1980s and since the end of the 1990s one of the most important destination countries in Europe for

foreign migrants from all over the world mostly from North Africa and South America and recently from the rest of Africa, Asia and Europe.

Method

We carry out multistate population projections by religion and religiosity for Spain in the period 2010-2050. First we estimate the base population, for the year 2005, by age, sex, religion and religious intensity. We identify the size and composition of migration flows by denomination and religiosity. Differentials in childbearing patterns by religion and degree of religiosity are then calculated. We also take into account age- and sex-specific religious (denomination and religiosity) conversion rates. We further assume that the child's religion and religiosity assumed is identical to that of mother's until the age of 15, so that the fertility differentials affect the variation in the religious (both denomination and intensity) composition of the next generation.

We assume that there are no mortality differentials by religion (as we believe there is not enough evidence to assume a causal relation between religion and mortality, for a discussion see (Goujon, Skirbekk et al. 2007)). Several scenarios, based on combining different assumptions for fertility and migration, covering wider uncertainty range of the demographic future are constructed.

The Spanish population disaggregated by age, sex, religion, and degree of religiosity was projected till 2050 according to these scenarios. The results are then analyzed for the sensitivity in the future structure of the population to the different assumptions on fertility and migration of future Spanish population.

Definition of religiosity

Religiosity has been measured in surveys by a range of different questions, including Religious Attendance, Religious Practice and Self-Assessed Religiosity (see f. ex. Billiet 2003, Skirbekk et al. 2010). The problem of most of these measures is that they may be suited to compare religiosity within one religion, but may fail to compare religiosity between denominations, as different religions give different weight to the importance of religious attendance and religious practice. In order to increase comparability we choose to focus primarily on self-assessed religiosity.

We use a dichotomous definition of religiosity, where religious groups are either "moderate" or "highly" religious. For the resident Spanish population, we use estimates from the European Social Survey where self assessed religiosity is the basis.

Baseline estimates

The structure of Spanish population by age, sex, religious denomination and intensity in 2005 is estimated using information from various sources. Data on religion affiliation is not available in the census (IRFR 2008). Thus, in our approach we use data from surveys and municipal registers. In order to estimate the share of the main religious groups: Roman *Catholics*, Unaffiliated and Others by age and sex, we use microdata from the survey Barometro Autonomico 2005 done by The Centro de Investigaciones Sociologicas (CIS) (only these three groups are stated in the survey question). Their data gives 78.20% *Catholics*, 18.21% Unaffiliated “*Nones*”, while the “*Other’s*” are redistributed into three groups *Muslims*, *Hindu/Buddhists* and *Protestants and Others*.

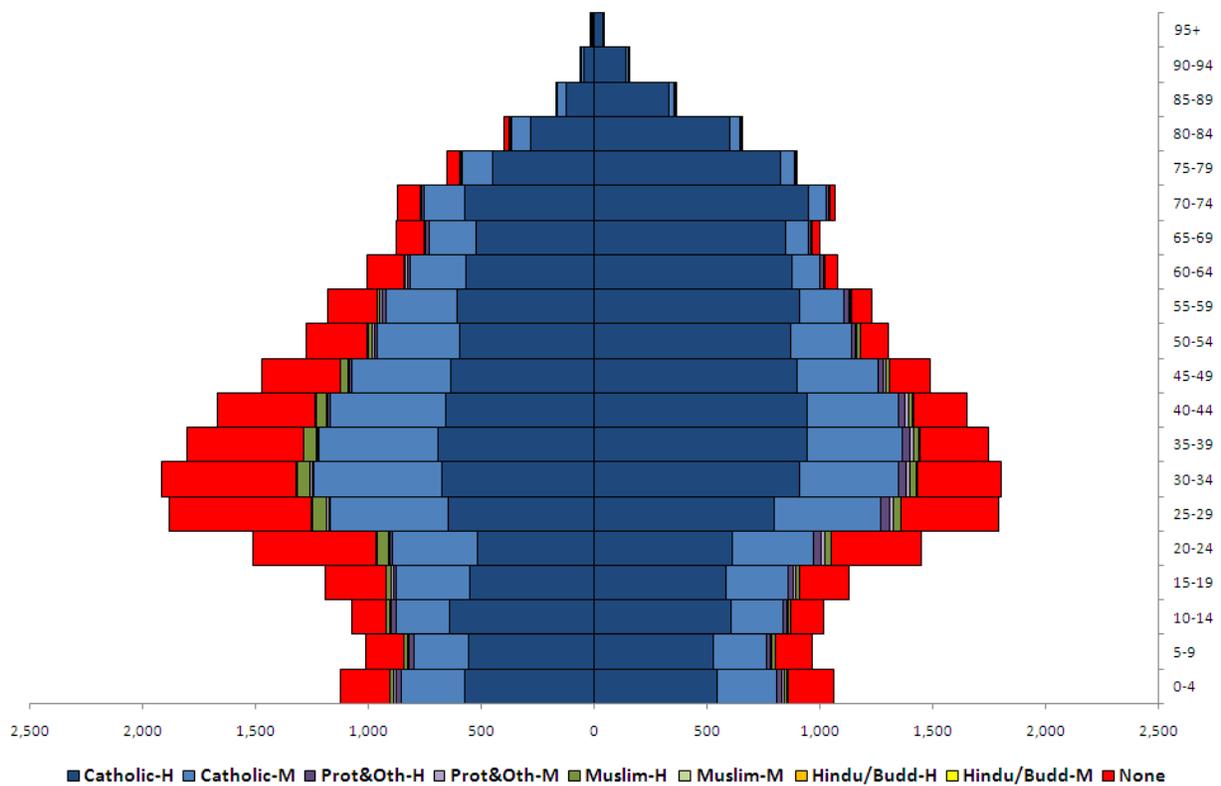
The substantial increase in the share of *Muslims* and *Hindu/Buddhists* is a recent phenomenon driven mainly by migration flows. We use official migrants’ statistics by country of birth (from statistical office INE) in order to estimate shares of religious groups that are mainly the result of relatively recent migration. For instance, the growth of Muslims began in the early 1990s when the size of this group was estimated at just 2350 people (Peach and Glebe 1995).

In 2005, there were 4.8 million immigrants in Spain – 11.1 percent of the total population (World Bank 2006), with Moroccans forming the largest single group. Our approach relies on the assumption that migrants are randomly picked from population of country of origin and that they have the same structure by religious denomination as in the sending country. Information on the percentage of religious denominations by country was collected from the following sources: the CIA World Factbook 2010, ARDA religion database 2010 and World Religion Database 2010. Based on this approach we find that there are 1.60% *Muslims* and 0.4% *Hindus and Buddhists*. The share of *Protestant and Others* were estimated to be about 1.94% (e.g. according to Johnson and Ross (2009) there are 130 thousand Evangelicals and 120 thousand of Protestants in Spain in 2010).

For each religious denomination two intensity levels are created: Highly Religious and Moderately Religious. The distinction between the two groups are based on self-assessed religiosity estimated by age, sex and religious denomination using data from European Social Surveys 2002-2008 (IV waves) [11-scale question: *Regardless of whether you belong to a particular religion, how religious would you say you are?*, recoded: 5-10 “Highly Religious”, 0-4 “Moderately Religious”]. Religious intensity for migrants is assumed to be the same as in country of origin. Data on religious intensity comes from the Gallup WorldView survey [2-scale question (Yes/No): *Is religion an important part of your life?*].

The baseline structure of the Spanish population is given in Figure 1a by religion and religiosity, and by population shares of three religiosity groups in Figure 1b. Figure 1a shows that the older age groups are dominated by the highly religious *Catholics*, those with no religion have a younger age structure and minority religions tend to be still younger. Figure 1b also shows that the highly religious tend to be older (regardless of denomination), that women are more religious than men and the youngest age groups are somewhat more religious (which follows from the higher fertility of the more religious and a high degree of intergenerational transmissions).

Figure 1a. Structure by age, sex and religious denomination and intensity in Spain in 2005²



² Labels used in graphs: Denomination-H stands for Denomination-Highly Religious; Denomination-M means Denomination-Moderately Religious

For transition rates by religiosity, we have information on attendance at ages 11-12 and religious attendance at the age when interviewed (we do not have information on past-self-assessed religiosity). We use attendance of religious services at least once a month as the cut off point for being highly religious, as this overlaps with the average religiosity scale 5-10 in the ESS I-IV-average. Our estimates are given in Tables 1a and 1b, where transitions between religious intensity groups of *Catholic* and *Protestants* as well as secularization rates for these groups are taken into account. Transitions between other groups are not taken into account due to data availability.

Tables 1a. and 1b. Transition rates

a) males

Religious Group		Current				
		Catholic-H	Catholic-M	Prot&Oth-H	Prot&Oth-M	None
Former	Catholic-H	0.65	0.12	0.00	0.00	0.23
	Catholic-M	0.04	0.69	0.00	0.00	0.27
	Prot&Oth-H	0.00	0.00	0.64	0.11	0.25
	Prot&Oth-M	0.00	0.00	0.04	0.67	0.30

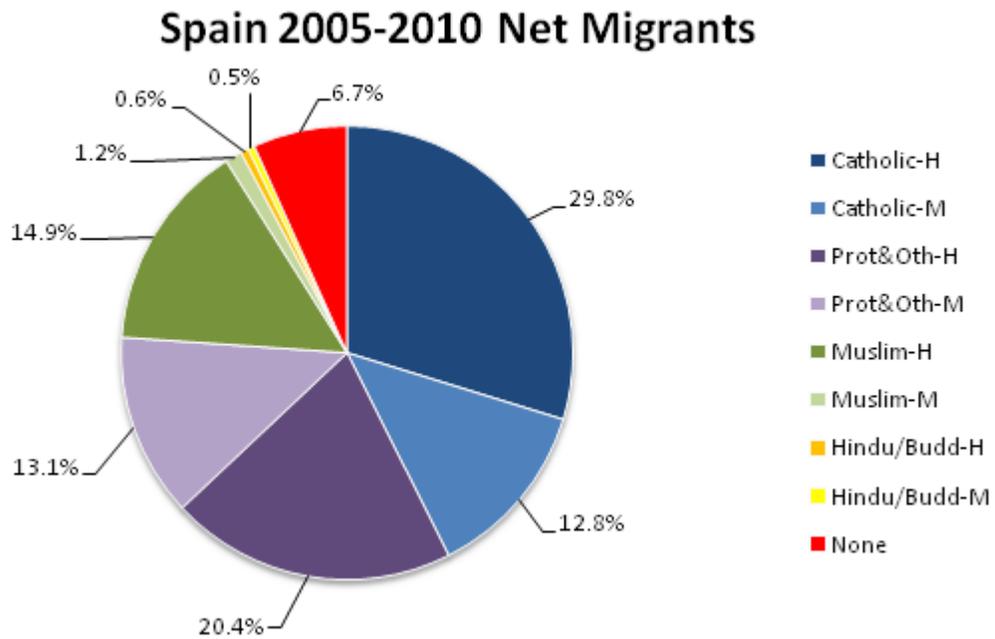
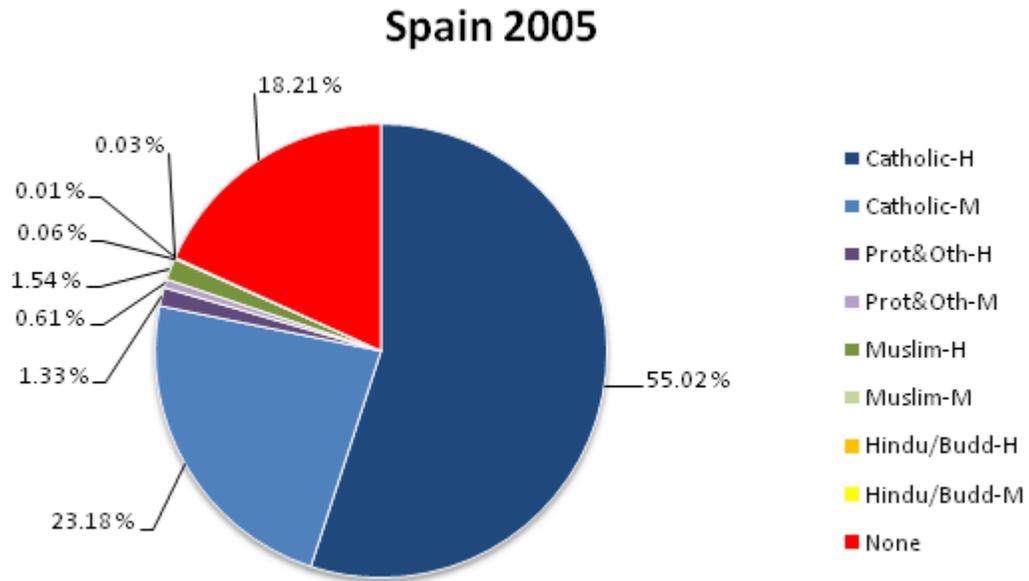
b) females

Religious Group		Current				
		Catholic-H	Catholic-M	Prot&Oth-H	Prot&Oth-M	None
Former	Catholic-H	0.92	0.04	0.00	0.00	0.04
	Catholic-M	0.07	0.65	0.00	0.00	0.28
	Prot&Oth-H	0.00	0.00	0.92	0.04	0.04
	Prot&Oth-M	0.00	0.00	0.07	0.64	0.29

Migration

Migration data is given in figure 2a-b, which shows both the resident distribution of migration and the net migrant flow by religion-religiosity. The religion/intensity distribution of the migrant population flow is based on the country of origin database available at the website of Eurostat, which was combined with our estimates of religion structure in the sending countries.

Figure 2 a-b). Structure of Spanish and migrant population by religious denomination and religiosity



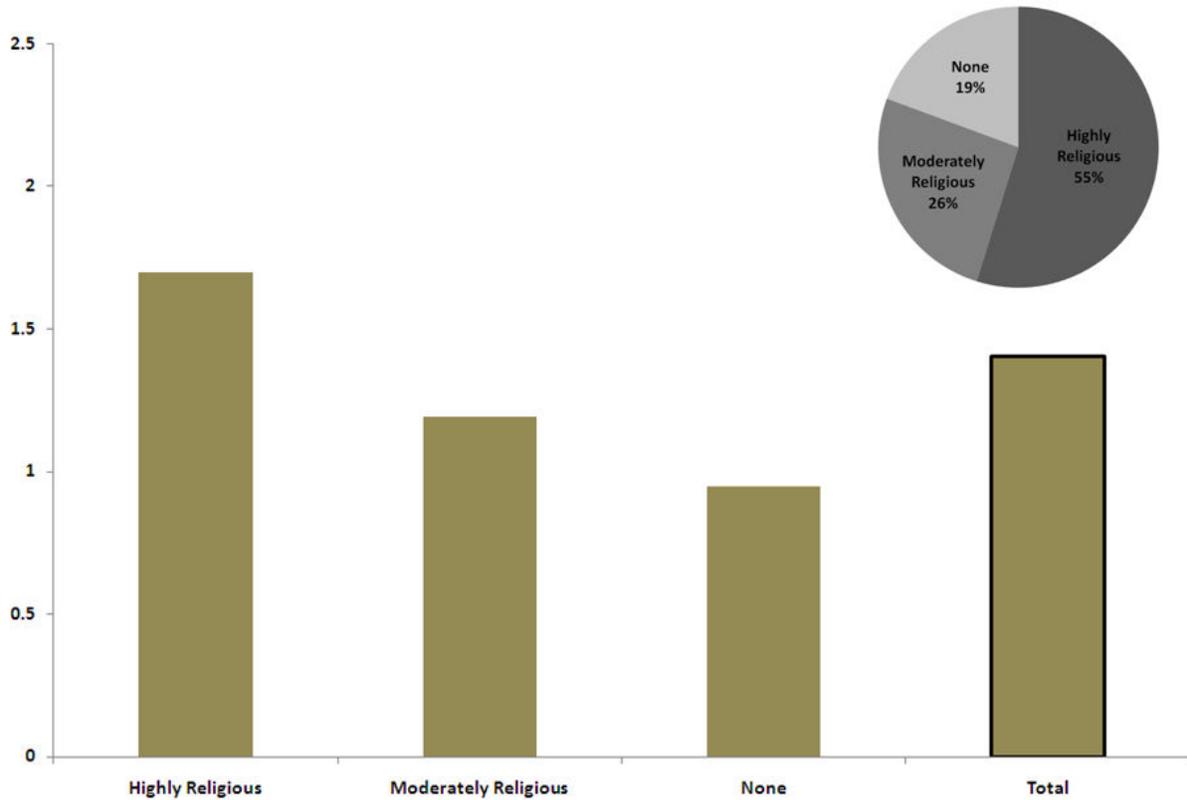
Immigration is very strong also in comparison with other European countries and as a result Spain has one of the highest percentages of foreign population compared to other European Union countries. The net migration flow in and out of Spain amounted to 698 548 persons in 2006 with 840 844 immigrants (95% foreign born) and 142 296 emigrants (84% foreign born) making Spain one of the countries with highest net migration rate as well as net migration size. Among the immigrants, in 2006, Europeans represented 43% of foreign born population, mostly from Romania (38%), United Kingdom (12%), and Bulgaria (6%) but also from Portugal, Italy, Poland and Germany with 5% each. Immigrants from America represented 39% in 2006 and originated from a large number of countries such as Bolivia (25%), Colombia (11%) and Brazil (10%). Other migrants came from North and Sub-Saharan Africa (15%), of which 67% came from Morocco and 6% from Senegal.

Fertility

The estimations of fertility differentials are based on results from the 1999 Spanish Fertility Survey (INE) and municipal registration of births and population by nationality and age of mother (INE, available data from the period 1996-2008). Fertility for *Muslims* is assumed to be equal to the level calculated for population of Moroccans, Algerians and Pakistanis, which constitute about 84% of estimated *Muslim* population. For *Hindu/Buddhists* we take fertility of females from India, Nepal, Thailand and Vietnam.

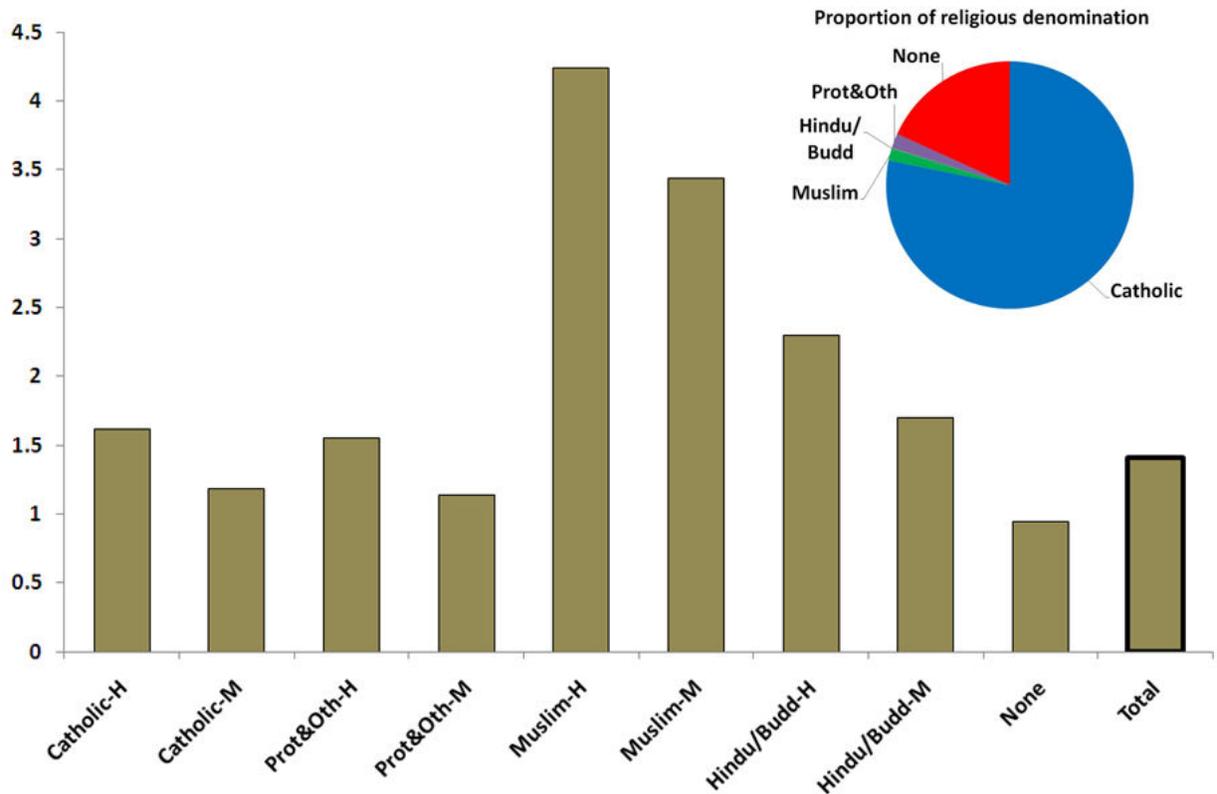
Relative differences in fertility by intensity are based on results of average children ever born for females 40-49 from survey European Social Survey Round 3 (ESS 2006). It was possible only for *Catholics* (and for the overall population), because for all other groups the sample size was too small for estimation. In order to get a large enough sample, the relative fertility differences for *Muslims* is approximated from *Muslim* respondents for all nations participating in the survey (23 European countries) as they constitute about 3% of total sample of ESS countries. For all other religious groups (*Hindu/Buddhists* and *Protestant and Others*) we assume (due to a lack of other data) that the difference between Highly and Moderately Religious is similar as to the total population of Spain. The TFR estimates by religious intensity are given in Figure 3. The fertility of the highest religious groups equals 1.7 children, the moderates 1.2 and for those with no religion about 0.9 children, which supports the notion that the more religious groups have more children.

Figure 3. TFR by religious intensity in Spain in 2005-2010



The high fertility of the *Muslim* population is likely to partly reflect that most *Muslims* in Spain are recent migrants in to Spain (see fig. 4). Many of these migrants come for marriage reasons (which can inflate fertility) and many come from countries with relatively high fertility. Over time, with a longer duration of stay and increased integration, the fertility of this groups is likely to at least partially converge to the levels of the rest of the population (which would be in line with empirical findings from Germany, the UK and Canada: Bélanger and Malenfant 2005, Coleman and Dubuc 2010, Schmid and Kohls 2009).

Figure 4. TFR by religious denomination and intensity in Spain in 2005-2010



Scenarios

In order to investigate the impact of fertility differentials and migration, we project five different scenarios. The main hypothesis behind the five scenarios is that fertility differentials are assumed to be greater if high migration levels should continue. High migration could imply that many migrants from high fertility regions would increase the fertility of religious minorities and delay integration. Table 1 gives presents and overview of the scenarios:

FsMs: Fertility differentials are stable and constant from starting year levels; Migration size and composition is stable; Transition rates are stable

FgMg: Fertility differentials are gradually converging to the levels 100% convergence in 2050 , Migration gradually phased down (decreases by 50% of present levels by 2050); Transition rates are stable

FrMr: Fertility differentials are rapidly converging (100% convergence in 2030); Migration rapidly phases down (decreases by 50% of present levels by 2050); Transition rates are stable

FsMz: Fertility differentials are stable; Migration is zero; Transition rates are stable

FeMz: No Fertility differentials for the whole projection period; Migration is zero for the whole projection period; Transition rates are stable

We do not have any different scenario on conversion, as the present emphasis is only on migration and fertility.

Table 1. Scenario overview

Fertility Differentials	Migration			
	<i>Stable – Migration Constant structure</i>	<i>Gradually Phased down (Decreases by 50% by 2050)</i>	<i>Rapidly Phased Down (Decreases by 90% by 2050)</i>	<i>Zero</i>
<i>Stable – Fertility Differentials Constant</i>	FsMs			FsMz
<i>Gradually Converging (100% by 2050)</i>		FgMg		
<i>Rapidly Converging (100% by 2030)</i>			FrMr	
<i>No Differentials, Fertility Equal for all groups</i>				FeMz

Regarding the fertility gradually converging (100% by 2050) scenario (*FgMg*), we include figures which show the gradual convergence of the age-specific fertility rates (ASFRs) from observed 2005-2010 data to the universal ASFRs in 2045-2050. Examples are given for the *Muslim-Highly religious*,

the *Hindu/Buddhist*-Highly religious (both which are assumed to experience a fertility decline over the period) while for those with no religion a gradual increase in ASFRs over the period is shown.

Figure 5a. Age specific fertility pattern for the Highly religious *Muslim* group 2005-2050

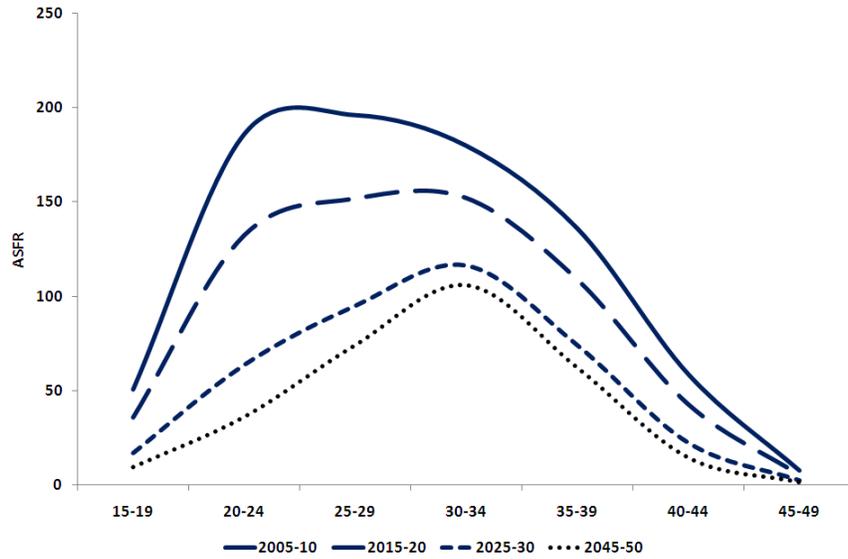


Figure 5b. Age specific fertility pattern for the Highly religious *Hindu/Buddhist* group 2005-2050

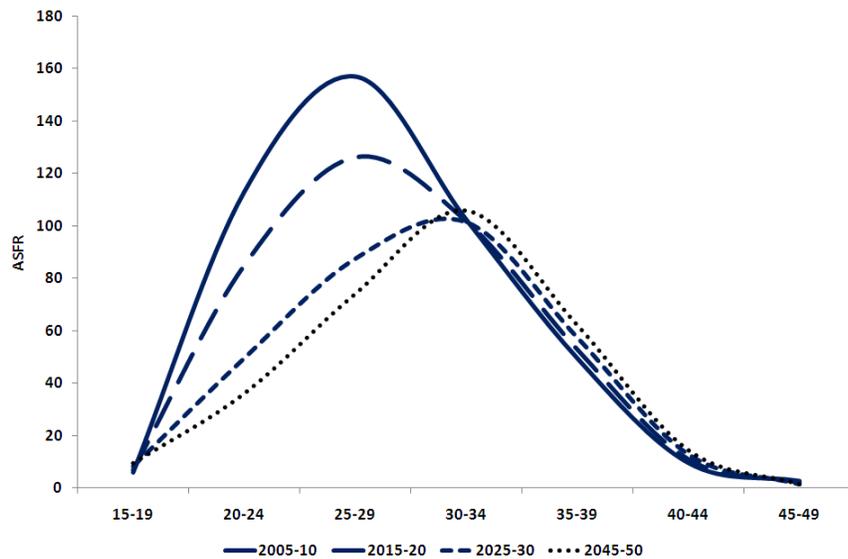
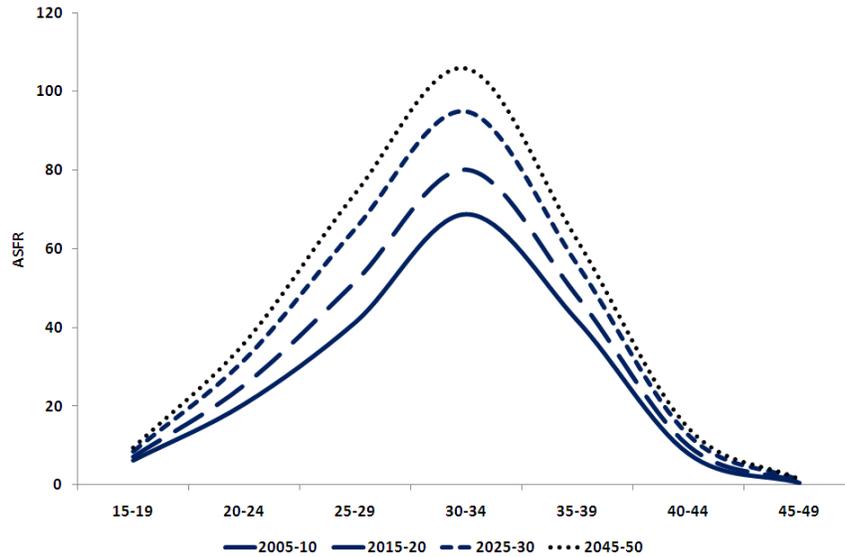


Figure 5c. Age specific fertility pattern for the No religion group 2005-2050



Projection results and discussion

The present research investigates the future of religiosity for the Spanish population. First, we estimate the age-sex distribution of the base population by religious denomination and intensity. Then we take into account fertility differentials between individuals of different groups and assume that religiosity and denomination is transmitted from mothers to children. Migration is also included in our analysis, where religion and religiosity are approximated based on the country of origin.

Our findings are presented in Figures 6 a-i) which show the changes the proportion of the Spanish population by religious groups 2005-2050. Figures 7 a-c) gives the projections by three religiosity groups. Both fertility and migration tend to lead to an increase in the share of the highly religious. The more religious tend to have higher fertility, regardless of their affiliation, and immigrants tend to be more religious than the native populations.

Although fertility differentials and immigration may raise the share of the more religious, there are important mechanisms that are likely to lead to a less religious population. Those without religion have a younger age structure. Population momentum implies that they will gradually grow due to cohort replacement, where the more senior highly religious die out. Furthermore, religious switching gives a substantial net growth in the population share without religion, as secularization

is far more common than switching between religious groups or from no religion to a religious group.

If fertility differentials and migration would continue as of today, the share of those who are highly religious will first decline from a level of 58% in 2005 to 54% in 2035, and from then onwards, in spite of losses through conversion, would rise to more than 55% in 2050. On the other extreme, if all groups have the same fertility, there would be a continued decline in the share of highly religious people in Spain to 47% in 2050. The other scenarios resulted in intermediate outcomes.

The moderately religious are likely to decrease in all scenarios, following losses due an older age structure, high levels of secularization and comparatively low fertility. The share of moderately religious is estimated to fall from 24% to 21%-22% towards the end of the projection period.

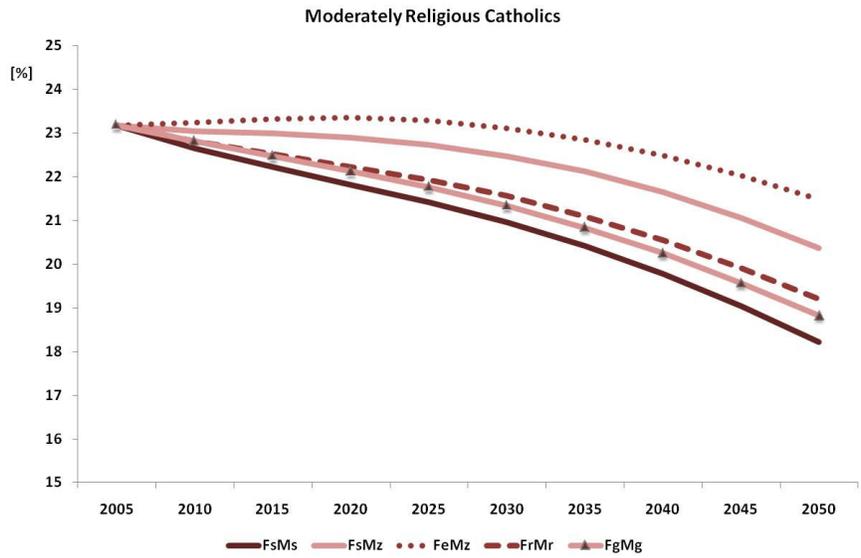
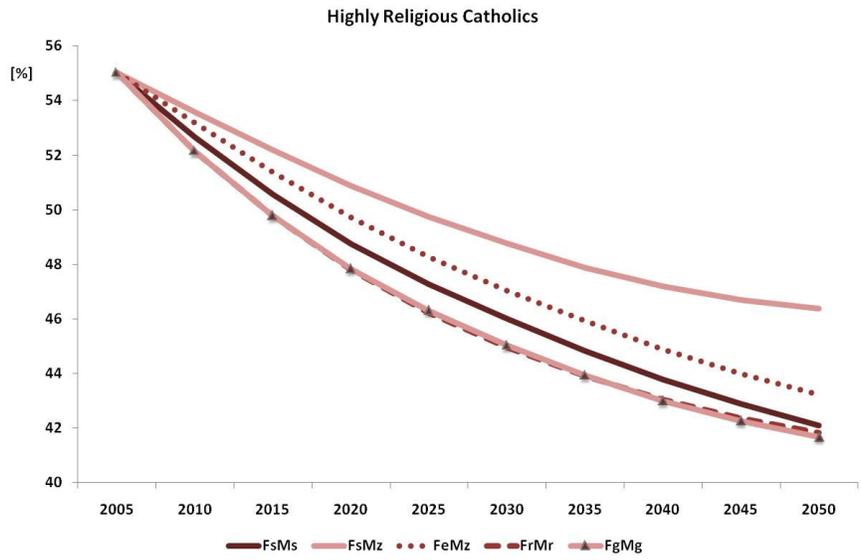
Roman *Catholics* will remain the majority over the projection period although their share would diminish from 78% to 60%-67% depending on the scenario. Migration is especially detrimental to Roman *Catholics* whose share in the migrant population has been declining. Opposite to the *Protestant* group who is benefitting from the migration and who could see its share rise to almost 8% by 2050 all parameters remain constant as in the starting year. In 2005, less than 2 percent of the Spanish population was *Muslim*. According to stable scenario, the *Muslim* proportion would increase to 8% in 2050. In case of fertility convergence, the share of *Muslims* would lay between 4.5 and 5.5 % depending on the speed of the fertility decline. The share of other groups such as the *Hindu/Buddhist* would remain very low, below 1 percent over the projection period. The population share without religion is likely to experience a growth in all scenarios, particularly when there is no migration and fertility differentials diminish or disappear. In the case where there is no migration and fertility is equal across all groups, the share of *Nones* increases from 18% to 31% during 2005-2050. However, if current trends of migration and fertility differentials should continue, their share is likely to increase to only 23% by 2050.

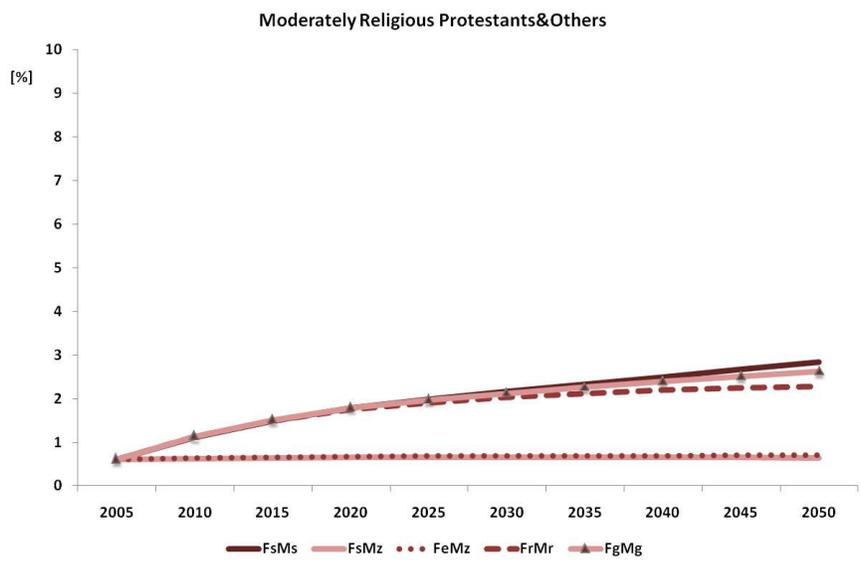
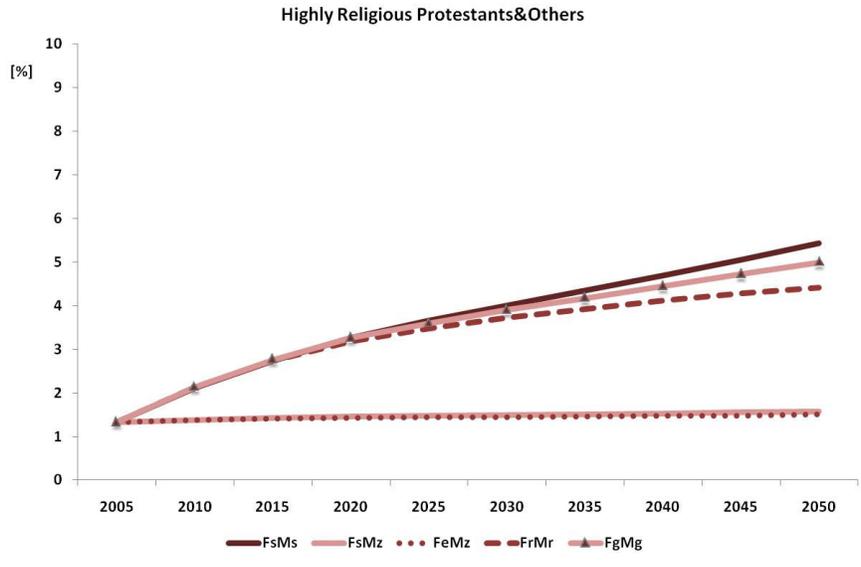
In sum, in the shorter term (until 2020) one is likely to see a continued rise among the religiously moderate and those without religion. The longer term (until 2050) implies a growth among those without religion, a decline among those who are religiously moderate and a stabilization and an eventual growth of the highly religious.

This growth of the group with no religion, a decline among the religious moderates and an increase among the highly religious implies a polarization of the country. The religiously moderates may have functioned as “bridge-builders” between those without religion and the highly religious - and the shrinking of this group could potentially be a challenge for social cohesion in society . Religious

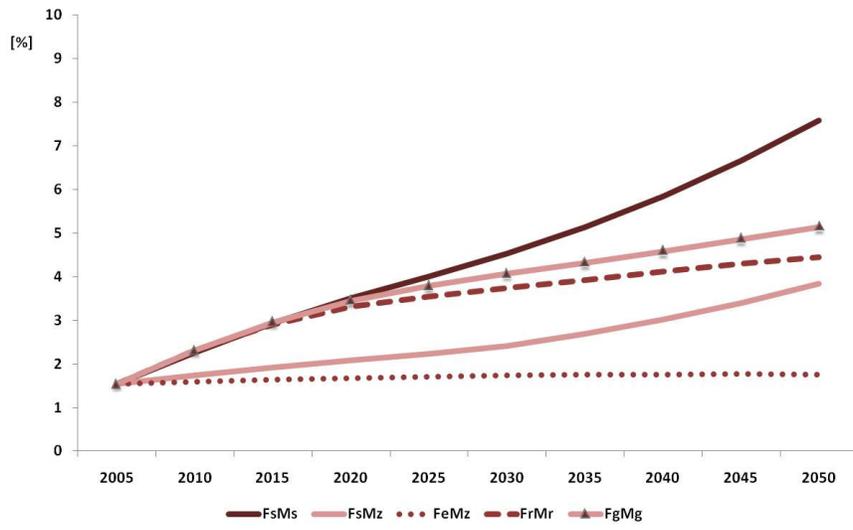
moderation is still not well understood– though moderation of religious society may imply submitting to state control, leaving public spaces like schools to secular societies and values (Buckley 2008). Social cohesion, that is the sense of “supra-identity”, could potentially decrease in more polarized societies and affect willingness to pay for public transfers (Luttmer 2001, Smeeding 2004).

Figures 6a-i) Projections of religions and religiosity by scenario

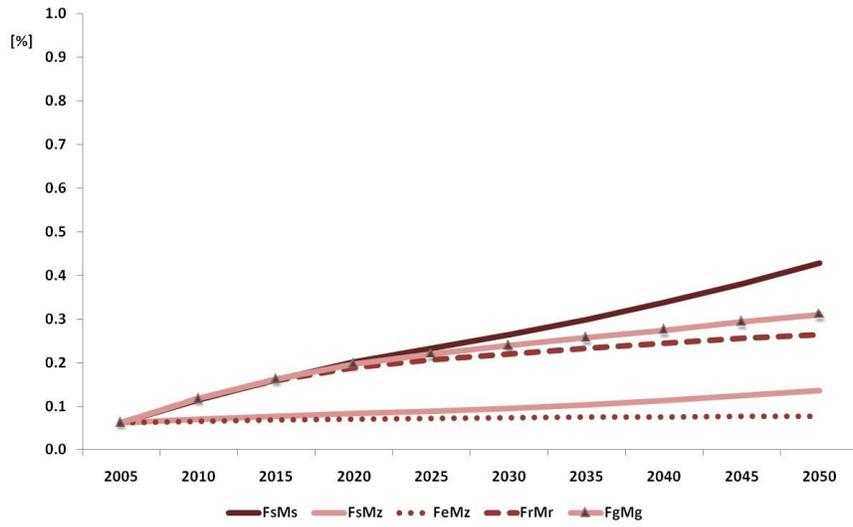




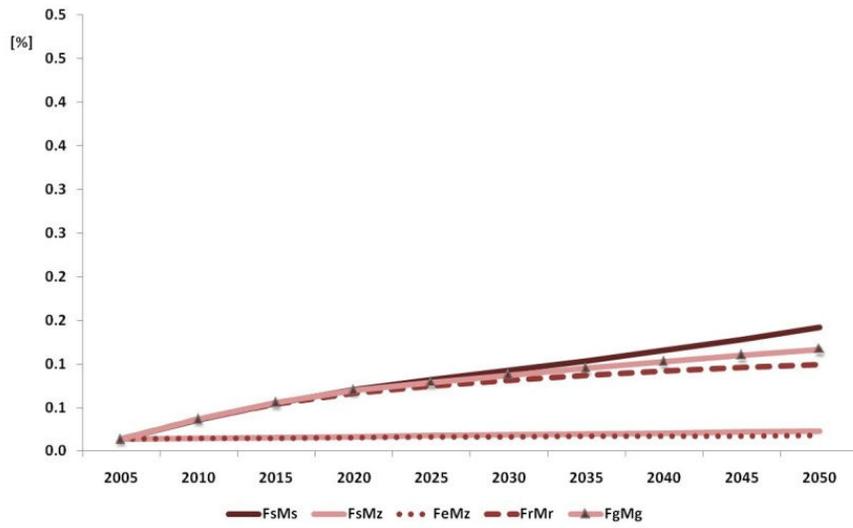
Highly Religious Muslims



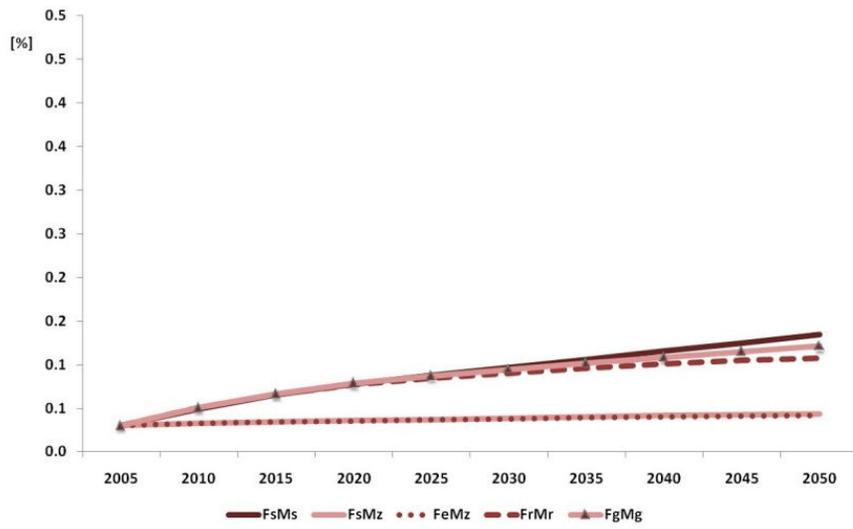
Moderately Religious Muslims



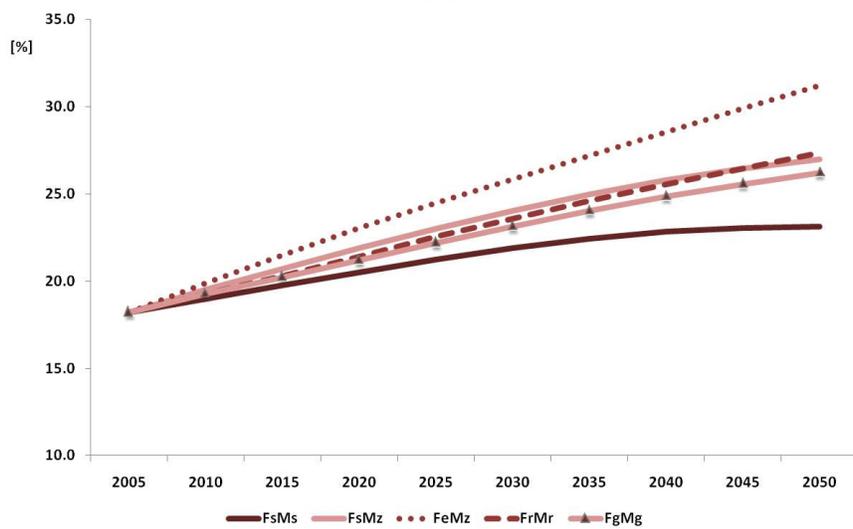
Highly Religious Hindu/Buddhists



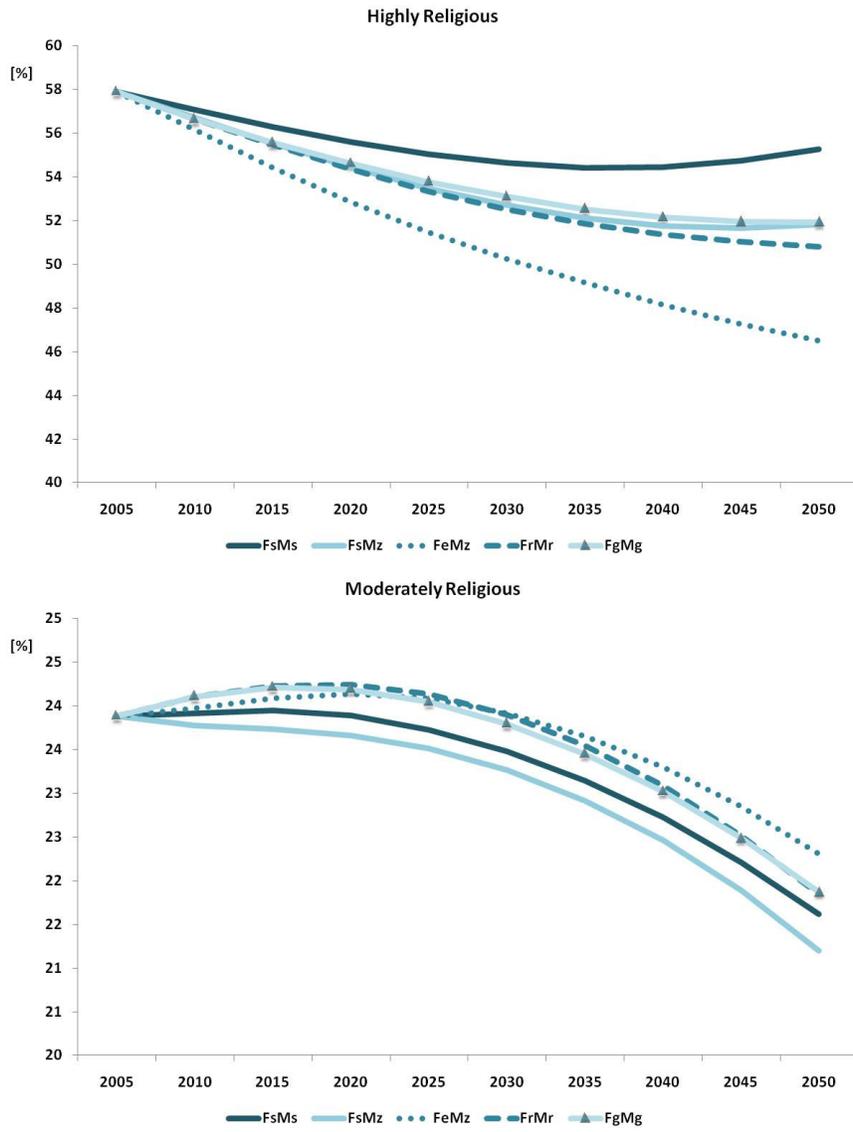
Moderately Religious Hindu/Buddhists

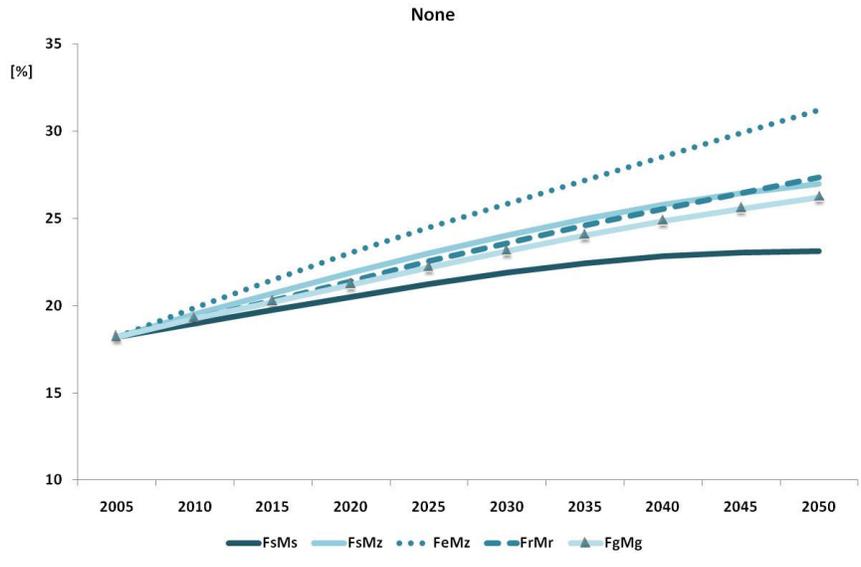


None



Figures 7a-c) Projections of Religious intensity groups by scenario





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