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Abstract

This study explores the association between religious affiliation and fertility among both immigrant and native men and women in Sweden. GGS data from 2012/2013 and 2021 are used to examine religion's association with three different dimensions of fertility: the ideal number of children, short-term fertility intentions, and the achieved number of children at age 40. To disentangle the association between religious affiliation and fertility from the association between geographical origin and fertility, this study analyzes how ideal, intended, and achieved fertility vary across religious affiliations within geographical origin groups and across geographical origins within religious affiliations. Results show that Christian and Muslim immigrants who share the same geographical origin often have similar ideal, intended, and achieved fertility. Christians and Muslims often have higher ideal, intended, and achieved fertility than non-religious individuals of the same geographical origin. Within-affiliation differences in ideal, intended, and achieved fertility by geographical origin are generally larger among Christians and Muslims than among non-religious individuals. Whether religion has a greater influence on fertility preferences or fertility behavior varies between origin and affiliation groups. This study shows that religion is an important factor in understanding fertility patterns among both immigrants and natives in Sweden. Results indicate that earlier analyses of the association between religion and fertility among immigrants that do not take immigrants' geographical origin into consideration may be misleading, since such analyses may attribute group differences that are best explained as origin effects to influences from religion.

Keywords: ideal fertility, ideal number of children, fertility intentions, religiosity, Christian, Muslim, non-religious, non-affiliated

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1. Introduction

Large-scale immigration to Western Europe over recent decades has contributed to an increasingly diverse religious landscape in the region. Research from both European and non-European countries has shown that religious affiliation and religiosity can be important determinants of fertility behavior and fertility preferences (Adsera, 2006; Behrman & Erman, 2019; Berghammer, 2012; Hayford & Morgan, 2008; Heaton, 2010; Philipov & Berghammer, 2007; Skirbekk et al., 2015; Westoff & Frejka, 2007; Westoff & Marshall, 2010). Thus, besides conversion/disaffiliation rates and migration patterns, intergroup fertility differentials constitute a third factor that can cause variation in growth rates between religious affiliations (Johnson & Crossing, 2021; Pew Research Center, 2017b). Yet, there is so far little research examining the relationship between religion and fertility among immigrants in Western Europe.

Since changes to society's religious composition can be politically sensitive, interest in the relationship between religion and fertility reaches beyond the community of demographic researchers. There is debate around how perceived high fertility and growth rates among new religious minorities, such as Muslims, may affect national identity and cohesion in historically Christian or secular societies (Bracke & Hernández Aguilar, 2020). It has also been suggested that higher fertility and growth rates among the more religious segments of society can lead to long-term shifts in public opinion towards more conservative positions on issues such as reproductive rights, gender relations, and sexual minority rights (Kaufmann, 2010; Vogl & Freese, 2020).

The aim of this study is to explore how religion relates to fertility among immigrants and natives in Sweden. The study uses data from the Swedish Generations and Gender Surveys (GGS) from 2012/2013 and 2021 to examine group differences in three dimensions of fertility: the ideal number of children, short-term fertility intentions, and the achieved number of children at age 40. Analyses include both men and women.

Earlier research on the association between religion and fertility among immigrants in Western Europe has primarily focused on actual fertility (Blekesaune, 2020; Stonawski et al., 2016; Westoff & Frejka, 2007). The present study analyzes fertility ideals and intentions in addition to fertility behavior. This approach adds a new dimension to the understanding of religion's association with fertility among immigrants since fertility preferences represent childbearing norms to a greater extent than actual fertility.

This study also contributes to the understanding of the relationship between religion and fertility among immigrants in Western Europe by addressing several of the main limitations of earlier research on the topic. First, this study uses data on self-identified religious affiliation whereas earlier research has often relied on comparisons of immigrants from Muslim-majority and Christian-majority countries (Blekesaune, 2020; Stonawski et al., 2016; Westoff & Frejka, 2007). The latter approach can be misleading since the religious affiliations of immigrants from a certain origin country do not necessarily reflect the overall religious composition of that country's population. For example, immigrants may disproportionately belong to groups that make up religious minorities in the origin country in cases where religious conflict or religious discrimination contributed to the migration decision.

Second, earlier studies have primarily focused on fertility differences between Muslims or immigrants from Muslim-majority countries and other groups, such as natives, non-Muslims,

immigrants from Christian-majority countries, or immigrants from countries with a non-Muslim majority (Behrman & Erman, 2019; Blekesaune, 2020; Stonawski et al., 2016; Westoff & Frejka, 2007). The present study explores fertility preferences and behavior among immigrants from a wider set of religious affiliations: non-religious individuals, Christians, Muslims, and Buddhists.

Third, earlier research has not distinguished within religious affiliations by immigrants' geographical origin (Behrman & Erman, 2019; Blekesaune, 2020; Stonawski et al., 2016; Westoff & Frejka, 2007). This approach is problematic since fertility patterns vary greatly by geographical location within religious groups. For example, both Christian- and Muslim-majority countries in Europe have fertility rates below replacement level, whereas most Christian- and Muslim-majority countries in sub-Saharan Africa have fertility rates far above replacement level. Grouping all immigrants with the same religious affiliation together without taking the composition of geographical origins within affiliations into consideration risks obscuring the role of religion in explaining fertility patterns among immigrants. The present study categorizes immigrants into 16 groups that combine geographical origin and religious affiliation (See Table 1). This approach allows for the examination of variation in ideal, intended, and achieved fertility both by religious affiliation within geographical origin groups (i.e. along the rows in Table 1) and by geographical origin within religious affiliations (i.e. along the columns in Table 1).

Table 1. Categories of immigrant respondents analyzed in this study

	Non-religious	**Christian**	**Muslim**	**Buddhist**
Western countries	X	X		
Eastern Europe	X	X	X	
MENA	X	X	X	
Other Asia	X	X	X	X
Sub-Saharan Africa		X	X	
Latin America	X	X		

Note: MENA = Middle East and North Africa

In addition to contributing to the understanding of religion's association with fertility among immigrants, this study also provides insights into the corresponding relationship among natives (defined here as Swedish-born individuals with two Swedish-born parents). Native respondents are divided into three groups: non-religious individuals, individuals identifying with the Church of Sweden, and individuals identifying with a free church. To my knowledge, there is no earlier research on fertility differences between these three groups.

To summarize, this study examines the following four research questions. First, how do fertility ideals, intentions, and behavior vary by religious affiliation within geographical origin groups? Second, how do fertility ideals, intentions, and behavior vary by geographical origin within religious affiliations? Third, how does the association between religious affiliation/geographical origin and fertility vary between the three examined dimensions of fertility, i.e. ideals, intentions, and behavior? To explore the mechanisms involved in the

association between religion and fertility, the study also examines a fourth research question: To what extent can group differences in ideal, intended, and achieved fertility be explained by group differences in religiosity and socioeconomic status?

2. Why religion may affect fertility

There are several reasons to expect religious affiliation and level of religiosity to affect fertility behavior and fertility preferences. An important reason for fertility differences between religious affiliations is that rules and norms on reproductive matters vary between religions and denominations (Goldscheider, 1971; McQuillan, 2004). Some religions directly encourage adherents to have children. For example, the Book of Genesis includes a passage where God instructs Adam and Eve to "be fruitful and multiply", which has been interpreted within Judaism as a pronatalist commandment to Jews in general (Schenker, 2000). Another way through which religious doctrine may positively affect fertility is by prohibiting effective methods of fertility regulation, such as abortion and various forms of contraception (Shapiro, 2014; Srinathan & Reid, 2008). Religious doctrine may also influence fertility patterns more indirectly via teachings on the organization of family life, for example by promoting early marriage and traditional gender roles (Sherkat, 2000).

Yet, it is clear that religious doctrine alone cannot fully explain variation in fertility behavior and fertility preferences across religious affiliations. First, there is variation across affiliations in affiliates' level of religiosity. Religiosity can be understood as strength of religious belief or degree of adherence to religious rules and practices, meaning there is reason to expect that more religious affiliates of pronatalist religions should have stronger pronatalist attitudes and behaviors. Second, the potential for religious doctrine to influence fertility patterns depends on the institutional capacity of the religion in question to enforce its reproduction-related norms on affiliates (McQuillan, 2004). Since religions of immigrant origins are relatively recently established in the destination country, their institutional strength is likely to be weaker at destination than at origin. Third, it has been suggested that minority group status may affect fertility both positively and negatively. Goldscheider's and Uhlenberg's (1969) minority group status hypothesis suggests that members of disadvantaged religious or ethnic minorities may choose to limit childbearing in order to concentrate their resources on achieving upward social mobility. However, marginalization or discrimination may also lead to the strengthening of ethnic and religious identities among minority groups, which could increase the salience of religious doctrine and potentially drive up fertility among religious minorities (McQuillan, 2004). Fourth, fertility differences between religious groups may be caused by factors other than religion which also tend to vary between the groups, for example socioeconomic characteristics (Goldscheider, 1971).

3. Fertility differences by religion and geographical origin

3.1. Fertility behavior

Research on the association between religion and fertility behavior in the 21st century has found that patterns often vary by religious affiliation and level of religiosity. Non-affiliated individuals typically have lower fertility than Christians (Dilmaghani, 2019; Philipov & Berghammer, 2007; Westoff & Frejka, 2007). Regarding fertility differences between Christian

denominations, patterns vary between national contexts (Berghammer, 2012; Dilmaghani, 2019; Heaton, 2010; Heaton & Darkwah, 2011; McGregor & McKee, 2016; Philipov & Berghammer, 2007; Westoff & Marshall, 2010). In many countries, Muslims have higher fertility than other religious groups, including Christians, Buddhists, and non-affiliated individuals (Heaton, 2010; Heaton & Darkwah, 2011; Morgan et al., 2002; Skirbekk et al., 2015; Stonawski et al., 2016; Westoff & Frejka, 2007). Within the groups of Christians and Muslims, individuals who report higher levels of religiosity and more frequent attendance at religious services tend to have higher fertility than individuals who are less religious and attend religious services less frequently (Baudin, 2015; Berghammer, 2012; Burkimsher, 2019; Hatun & Warner, 2022; Philipov & Berghammer, 2007; Schellekens & Atrash, 2018; Westoff & Frejka, 2007; Westoff & Marshall, 2010). In contrast to affiliation with an Abrahamic religion, Buddhist affiliation does not seem to be associated with higher fertility than among non-affiliated individuals (Skirbekk et al., 2015).

Research on the relationship between religion and fertility among immigrants in Western Europe has focused primarily on differences between Muslims and other groups. It has been shown that immigrants from Muslim-majority countries tend to have higher fertility compared to natives (Westoff & Frejka, 2007), immigrants from countries with a non-Muslim majority (Stonawski et al., 2016), and immigrants from Christian-majority countries (Blekesaune, 2020).

Research has also shown that fertility behavior among immigrants in Western Europe varies considerably by immigrants' geographical origin (Andersson, 2004; González-Ferrer et al., 2017; Guarin Rojas et al., 2018; Mussino & Strozza, 2012; Tønnessen, 2020; Wilson, 2020). In Sweden, both parity-specific transition rates and the achieved number of children at age 40 has been shown to vary by immigrants' geographical origin. Andersson (2004) studied differences in parity-specific transition rates among immigrants in Sweden from a large set of national and regional origins and found that first and third birth transition rates were elevated among immigrant women from Turkey, Arab-majority Middle Eastern countries, and sub-Saharan Africa. Second and third birth transition rates were depressed among immigrant women from Iran and Eastern Europe, whereas immigrants from Western countries were relatively similar to native Swedes. Immigrants' transition rates were especially elevated in the years shortly after immigration. A report from Statistics Sweden (2014) compared the mean number of children at age 40 for native women and immigrant women of different origins born in 1970-1974. Immigrant women born in non-European countries with a low score on the Human Development Index (HDI) had the highest mean number of children at 2.6, compared to 1.9 among native women. Women born in non-Nordic and non-EU European countries had on average 2.0 children. Women born in other Nordic countries and non-European countries with a high or medium HDI score had a mean number of children very close to the native level. Women born in non-Nordic EU countries had the lowest mean number of children at 1.5.

3.2. Fertility ideals

There is reason to distinguish between two types of fertility ideals: personal and general ideals. Most surveys that include a question on the ideal number of children ask either about the number of children the respondent would ideally like to have him- or herself (the personal ideal) or about the respondent's perception of the ideal number of children for a family in general (the general ideal). It has been shown that individuals' personal and general ideals may

differ (Philipov & Bernardi, 2012; Testa, 2012). Within the EU27, about one third of respondents report different personal and general ideals (Testa, 2012). Whereas there is greater variation in responses on personal than on general fertility ideals (Philipov & Bernardi, 2012), the mean personal and general ideals tend to be relatively close (Testa, 2012). Although personal and general fertility ideals are related measures, the different response patterns mean that there is reason to treat them as conceptually separate. While the personal ideal can be considered equivalent to desired fertility, the general ideal can be interpreted as reflecting the respondent's perception of the social norm on the number of children in a family (Thomson, 2015). This study analyzes general ideals, meaning earlier research on general ideals is more relevant than research on personal ideals. However, since there is a lack of research on general fertility ideals both among immigrants in Western Europe and within non-Western and non-European origin countries, this section also discusses findings on personal fertility ideals and fertility desires.

In Europe and the US, the mean general ideal family size tends to be in the range from slightly below 2 to slightly above 2.5 (Goldstein et al., 2003; Hagewen & Morgan, 2005; Philipov & Bernardi, 2012; Sobotka & Beaujouan, 2014a; Testa, 2012). The share of respondents who report an ideal of 2 children often exceeds 50 % whereas the combined share who report an ideal of either 2 or 3 children often ranges between 60 and 90 % (Philipov & Bernardi, 2012; Sobotka & Beaujouan, 2014a; Testa, 2012). In eight surveys conducted in Sweden between 1982 and 2011, the mean general ideal number of children was measured at 2.38-2.65 (Sobotka & Beaujouan, 2014b).[1] Gender differences in general ideal fertility are very small both in Sweden and the EU27 at large (Testa, 2012). Throughout the EU27, general ideals are relatively similar across age groups, with no clear age trend that is consistent across countries (Testa, 2012).

In both Western and Eastern Europe, Christians tend to have a higher general ideal number of children than non-affiliated individuals (Adsera, 2006; Philipov & Berghammer, 2007). In both Western and Eastern Europe, the general ideal number of children is also positively associated with religiosity (Adsera, 2006; Philipov & Berghammer, 2007). Behrman and Erman (2019) find the mean general ideal number of children to be about 3 among Muslims and about 2.5 among non-Muslims in France. A large part of this difference can be explained by higher religiosity among Muslims, whereas differences in educational attainment between Muslims and non-Muslims do not contribute to explaining group differences in general ideals (Behrman & Erman, 2019).

In the Netherlands, the mean general ideal number of children is higher among individuals of Moroccan immigrant origin than among natives, whereas individuals of Turkish or Caribbean immigrant origin tend to have general ideals that are relatively similar to those of natives (De Valk, 2013). Mussino and Ortensi (2018) studied personal ideals among immigrants in Italy and found that most immigrant origin groups have a mean personal ideal number of children that is lower than the mean personal ideal number of children in the immigrants' respective origin countries. Such differences may reflect either adaptation to the destination country or selection into migration. The tendency for immigrants in Italy to report lower

[1] The eight surveys listed by Sobotka and Beaujouan (2014b) were the European Values Studies from 1982, 1990, and 1999, the International Social Study Program survey from 1994, the World Values Survey from 1996, and the Eurobarometers from 2001, 2006, and 2011.

personal ideals than the mean personal ideal in the origin country is especially pronounced among immigrants from countries with mean personal ideals above 4.

The mean general ideal number of children is between 2.3 and 2.6 in Japan, South Korea, and Taiwan but 1.8 in mainland China (Kan et al., 2019). Similarly, the mean personal ideal number of children is between 2 and 3 in many East, South, and South East Asian countries (Chen & Yip, 2017; DHS Program, 2023a, 2023b), but less than 2 in Hong Kong and mainland China (Chen & Yip, 2017; Ding & Hesketh, 2006). There are also countries in South and Central Asia where the mean personal ideal number of children is considerably higher, such as Afghanistan (about 6) and Pakistan (about 4) (DHS Program, 2023a, 2023b). Within the Middle East and North Africa region, the national-level mean personal ideal number of children varies between slightly below 3 to slightly above 4 (Ambrosetti et al., 2019; DHS Program, 2023a, 2023b; Krafft et al., 2021). Within sub-Saharan Africa, the mean personal ideal number of children varies considerably between countries, with mean ideals exceeding 5 in many West, Central, and East African countries, whereas other countries, especially in Southern Africa, display considerably lower mean ideals (DHS Program, 2023a, 2023b). Within Latin America, the national-level mean personal ideal number of children varies between slightly above 2 and about 3.5 (DHS Program, 2023a, 2023b).

Similar to general fertility ideals, personal ideal fertility and fertility desires have been shown to vary by religious affiliation. Xie and Zhou (2022) found that Christians and Muslims in China have significantly higher desired fertility than non-religious individuals, whereas differences in desired fertility between Buddhists and non-religious individuals were small and non-significant. In Kenya, the personal ideal number of children is much higher among Muslims than among Christians, as seen in the 2014 Demographic and Health Survey (DHS) where 71 % of Muslim respondents but only 15% of Christian respondents reported a personal ideal of 6 or more children, while 11 % of Muslims and 47% of Christians reported a personal ideal of 3 or less (Muhoza, 2022). In contrast, the personal ideals of Muslim and Christian respondents to the 2014/2015 Rwandan DHS were relatively similar (Muhoza, 2022).

3.3. Short-term fertility intentions

Earlier research on the relationship between religion and short-term fertility intentions has found that non-affiliated individuals are less likely than Christians to state a positive short-term fertility intention in both Western and Eastern Europe (Buber-Ennser & Berghammer, 2021). There is also a positive association between religiosity and the propensity to state a positive short-term fertility intention within Europe (Buber-Ennser & Berghammer, 2021; Dantis et al., 2023).

There is little research on short-term fertility intentions in non-European countries and among immigrants and children of immigrants in Europe. Carlsson (2018) studied short-term fertility intentions among immigrants in Sweden using data from the 2012/2013 GGS. He found that immigrants of Eastern European, Middle Eastern and North African (MENA), and non-European origin other than MENA were more likely than natives to state a positive short-term fertility intention. Immigrants of Western origin did not differ significantly from natives in the propensity to state a positive short-term fertility intention. Differences between immigrants and natives were more pronounced among men than among women. In Italy, Mussino et al. (2021) found the propensity to state a “definitely yes” short-term fertility intention to be highest among

immigrants from Africa and lowest among immigrants from Western Europe and "other advanced economies", with natives and immigrants from Latin America, Eastern Europe, and Asia in-between the other groups. Analyzing European Social Survey data from 22 countries, Alderotti et al. (2022) found that immigrants in Europe are somewhat more likely than natives to state a "definitely yes" short-term fertility intention.

In Estonia, the short-term fertility intentions to proceed to first, second, and third birth among the Russian-speaking minority are more similar to patterns in Russia than to patterns among the Estonian-speaking majority. Indicators of integration, such as proficiency in Estonian, residence in areas with a large Estonian-speaking majority, and having an Estonian-speaking partner are associated with reductions in the gap between Russian- and Estonian-speakers (Puur et al., 2019). The ethnic composition of the couple has also been found to matter for women's fertility intentions in Italy, where immigrant women with an Italian-born partner are less likely than immigrant women with an immigrant partner but more likely than Italian-born women with an Italian-born partner to state a "definitely yes" intention (García-Pereiro et al., 2023).

4. Religion in Sweden

From an international perspective, Sweden is a highly secularized society. In the 2017-2020 round of the World Values Survey, 27 % of Swedish respondents identified as a religious person and 34 % stated that they believe in God, the lowest and second lowest figures respectively among all surveyed countries outside East and South East Asia (World Values Survey, 2022). Yet, the majority of the Swedish population are members of a religious association. By far, the religious association with the highest number of members is the Lutheran former state church, the Church of Sweden. For many centuries, the Church of Sweden was the only permitted religious denomination and almost all Swedish citizens were automatically members of the church (Willander, 2019). The Church of Sweden was separated from the Swedish state in 2000 but retains a special legal status as the country's "folk church". Over 95 % of Sweden's population were still members of the Church of Sweden in 1972 but the share has decreased dramatically in recent decades and reached 54 % in 2021 (Church of Sweden, 2022). This shift can be explained by both disaffiliation and large-scale immigration to Sweden from countries with non-Lutheran religious traditions.

Since about one third of the Swedish population identify as religious and believe in God (World Values Survey, 2022) but more than half of the population are members of the Church of Sweden (Church of Sweden, 2022), it is clear that a large share of the members of the Church of Sweden are nominal members who may not necessarily believe in or adhere to church teachings. An important explanation for why non-believers retain their membership in the Church of Sweden is that the historic and current special status of the church means that it functions as a symbol of national identity in addition to being a religious organization.

Among the minority religious groups in Sweden, the Protestant revivalist free church movement stands out in being of non-immigrant origin. The Swedish free church movement grew in strength during the 19th century as religious freedom was gradually introduced. In 2020, the largest free churches were the Swedish Pentecostal movement and the Uniting Church in Sweden (a union of Baptists, Methodists, and the former Mission Covenant Church of Sweden),

both of which have 1.1 % of the Swedish population as members or regular participants (Swedish Agency for Support to Faith Communities, 2022). It is important to note that about half of free church members are also members of the Church of Sweden (Willander, 2019).

Affiliates with non-Protestant religions in Sweden are primarily immigrants arriving since the 1960s or descendants of such immigrants. The immigrant-origin religious affiliations with the highest number of members or regular participants are Islam (majority Sunni but with a significant Shia minority), Orthodox Christianity, and Catholicism, with 2.4, 1.4, and 1.2 % of the Swedish population respectively. No other religious group reaches 1 % of the population (Swedish Agency for Support to Faith Communities, 2022). It should be noted that official statistics on the number of members and regular participants in religious associations do not necessarily reflect the number of individuals who identify with the religious denomination, since individuals may identify with a certain religious group without being member of a formal association or taking part in activities organized by the association.

The degree of religiosity varies considerably between religions and denominations. Low attendance rates and low frequency of prayer among members of the Church of Sweden compared to other religious groups indicate that members of the Church of Sweden tend to be less religious than members of minority religions. According to surveys conducted in 2007-2016, about 35 % of respondents affiliated with the Church of Sweden had attended religious services during the last 12 months, which was about half of the attendance rate among members of minority churches but similar to the attendance rate among Muslims (Willander, 2019). According to the same surveys, about two thirds of members of Christian minority churches and about half of Muslims prayed to God every week whereas the corresponding figure for members of the Church of Sweden was about 15 % (Willander, 2019).

5. Research design

5.1. Data

This study uses data from the Swedish Generations and Gender Surveys from 2012/2013 and 2021 (hereafter referred to as the GGS2012 and GGS2021). For the GGS2012, data were collected via telephone interviews, population registers, and a postal questionnaire. The overall response rate for the GGS2012 was 53.8 % from a nationally representative sample of 18,000 individuals in ages 17-79, resulting in 9,688 respondents (Thomson et al., 2015). However, only 70.5 % of the total respondents answered the postal questionnaire, which included the question on the respondent's religious affiliation. Since religious affiliation is one of the key variables in this study, only respondents who answered the postal questionnaire are included in the following analyses. Data collection for the GGS2021 took place via a self-administered questionnaire that could be filled in either on paper or online. The response rate was 27.0 %, resulting in 8,082 respondents from a nationally representative sample of 29,969 individuals in ages 17-59 (Löfgren, 2021). For both the GGS2012 and GGS2021, the response rate was lower among immigrants than among natives (Franzén, 2014; Löfgren, 2021).

5.2. Dependent variables

This study examines the relationship between religious affiliation/geographical origin and three different fertility outcomes: the ideal number of children, the short-term fertility intention,

and the achieved number of children at age 40. For the analyses of short-term fertility intentions and the achieved number of children at age 40, data from the GGS2012 and GGS2021 are combined. The analysis of the ideal number of children is based only on GGS2021 data, since the GGS2012 did not include a question on the respondent's ideal number of children.

The ideal number of children is measured through the following question: "Generally speaking, what do you think is the ideal number of children for a family?", thus representing the respondent's general rather than personal ideal number of children. Responses could only be provided as single integers. The sample size for the analysis of the ideal number of children is 3,006 (1,586 women and 1,420 men). The age range of included men and women is 17-49 years.

35.7 % of GGS2021 respondents in the relevant age range are excluded from the analysis because they responded "no opinion" to the question on their ideal number of children. A further 0.9 % of respondents are excluded because they did not provide a valid response. Very high levels of item non-response is a well-known and recurrent problem with the survey question on the general ideal number of children, although the non-response rate in the Swedish GGS2021 was unusually high (Testa, 2012). The propensity to choose the "no opinion" option varied between origin/religion categories, with most immigrant groups being less likely than natives to answer "no opinion". The propensity to answer "no opinion" was positively associated with age, higher among respondents at parity 4 or above compared to other parities, higher among unpartnered than among partnered respondents, and lower among respondents with medium-level educational attainment compared to both lower- and higher-educated respondents.

The GGS2012 and GGS2021 used identical phrasing for the question on short-term fertility intentions: "Do you plan to have a (another) child within the next three years?" In both survey years, the available response alternatives were "definitely not", "probably not", "probably yes", and "definitely yes". For the analyses of this study, the short-term fertility intention is dichotomized to yes/no. The yes category includes respondents who were not asked about their short-term fertility intention because they had already indicated on a preceding item that they were currently trying to get pregnant. 3 % of respondents who were asked the intention question and otherwise met the inclusion criteria for this study provided an invalid response or responded "don't know" and are therefore excluded from the analyses. Respondents who reported that it was not physically possible to have a child either for themselves or for their partner are also excluded from the analyses. The sample size for the analysis of short-term fertility intentions is 5,209 (2,822 women and 2,387 men). Female respondents are included if 17-44 years. Male respondents are included if 17-59 years but excluded if they have a female partner 45 years or older.

The purpose of analyzing the achieved number of children at age 40 is to provide a measure of actual fertility that is close to the individual's final number of children while maintaining an acceptable number of respondents for all categories of the origin/religion variable. However, it should be noted that since age-specific fertility patterns may differ between origin/religion categories, intergroup differences in the achieved number of children at age 40 may not necessarily correspond to intergroup differences in the final number of children. Differences between the achieved number of children at age 40 and the final number of children are more likely to occur for men than for women. In 2021, 4.6 % of children born in Sweden had a mother 40 years or older at the time of birth whereas 15.4 % of newborn

children had a father 40 years or older at the time of birth (Statistics Sweden, personal communication, 14 November 2022). The sample size for the analysis of the achieved number of children at age 40 is 8,376 (4,518 women and 3,858 men). The age range of included men and women is 40-59 years.

5.3. Main explanatory variable

The main explanatory variable combines the geographical origin and religious affiliation of respondents into 19 categories. There are seven origin groups: natives (defined as Swedish-born individuals with two Swedish-born parents), and immigrants from Western countries, Eastern Europe, MENA, other Asia, sub-Saharan Africa, and Latin America. Western countries refer to the EU15,[2] the EFTA countries,[3] the United States, Canada, Australia, and New Zealand. Eastern Europe refers to all European former East Bloc countries, except East Germany, including the former Soviet states in the Caucasus but not those in Central Asia. MENA origin includes Turkey. Other Asia includes Afghanistan and a very small number of respondents from Pacific islands other than Australia and New Zealand. Natives are divided into three religious affiliation categories: non-religious, Church of Sweden, and free church. Immigrants from Western countries and Latin America are divided into two affiliations: non-religious and Christian. Immigrants from Eastern Europe and MENA are divided into three affiliations: non-religious, Christian, and Muslim. Immigrants from other Asian countries are divided into four affiliations: non-religious, Christian, Muslim, and Buddhist. Immigrants from sub-Saharan Africa are divided into Christians and Muslims. Table 2 lists the 16 immigrant categories together with the most common origin countries within each category.

5.4. Other independent variables and analytical approach

The ideal number of children and the achieved number of children at age 40 are analyzed using Poisson regression, whereas the propensity to state a positive (as opposed to a negative) short-term fertility intention is analyzed using binary logistic regression. Model 1 for the analysis of the ideal number of children controls for age at interview and gender. Model 1 for the analysis of the achieved number of children at age 40 controls for age at interview, gender, and survey year (a dummy variable indicating whether the respondent answered the GGS2012 or the GGS2021). Model 1 for the analysis of short-term fertility intentions controls for age at interview, gender, survey year, parity (0 children, 1 child, 2 or more children), and partnership status (partnered, unpartnered, missing information).

[2] EU15 = Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, (Sweden), and the United Kingdom

[3] EFTA = Iceland, Liechtenstein, Norway, and Switzerland

Table 2. Most common origin countries for each immigrant origin/religion category

Orign	Religion	n	Most common origin countries within category
Western countries	Non-religious	295	Finland (20 %), Germany (17 %), UK (10 %)
	Christian	318	Finland (41 %), Germany (14 %)
Eastern Europe	Non-religious	129	Bosnia & Herz. (18 %), Poland (18 %), Russia (12 %)
	Christian	198	Poland (22 %), Romania (15 %), Yugoslavia (12 %)
	Muslim	71	Bosnia & Herz. (42 %), Yugoslavia (42 %)
MENA	Non-religious	75	Iran (61 %), Turkey (16 %), Iraq (12 %)
	Christian	55	Iraq (38 %), Syria (31 %), Turkey (13 %)
	Muslim	119	Iraq (30 %), Syria (25 %), Turkey (18 %), Iran (12 %)
Other Asia	Non-religious	64	China (38 %), Vietnam (13 %), India (11 %)
	Christian	30	Philippines (40 %), Afghanistan (10 %), Vietnam (10 %)
	Muslim	26	Afghanistan (54 %), Pakistan (23 %), Uzbekistan (12 %)
	Buddhist	52	Thailand (73 %)
Sub-Sah. Africa	Christian	45	Eritrea (31 %), Ethiopia (16 %)
	Muslim	41	Somalia (39 %), Eritrea (15 %), Gambia (12 %)
Latin America	Non-religious	39	Chile (31 %), Argentina (10 %), Brazil (10 %)
	Christian	42	Chile (24 %), Brazil (19 %), Colombia (14 %)

Note: The "Number of respondents" and "Most common origin countries within category" columns are calculated based on respondents who are included in the sample for the analysis of at least one of the three dependent variables, i.e. the ideal number of children, short-term fertility intentions, and the achieved number of children at age 40.

For the analyses of all three dependent variables, Model 2 adds frequency of attendance at religious services, which is treated as an indicator of religiosity. Respondents in both the GGS2012 and GGS2021 were asked "How regularly do you attend religious services? Do not count weddings, baptisms, funerals, or such services". The response alternatives were "several times every week", "about once every week", "1-3 times every month", "1-3 times every three months", "less than once every three months", and "never". For the analyses of this study, frequency of attendance was dichotomized into "1-3 times every three months or less often" and "1-3 times every month or more often". Previous studies on the relationship between frequency of attendance at religious services and fertility have used a similar monthly vs. less than monthly dichotomization (Berghammer, 2010; Buber-Ennser & Berghammer, 2021; Philipov & Berghammer, 2007).

For the analysis of ideal fertility, Model 2 also adds self-rated religiosity. Respondents were asked "Regardless of whether you belong to a particular religion, how religious would you say you are?" and could provide their response on a scale from 0 to 10, where 0 indicated "not at all religious" and 10 indicated "very religious". The self-rated religiosity item was only included in the GGS2021 and can therefore only be used for the analysis of ideal fertility. Religiosity is a multidimensional concept (Billiet, 2002). It has been shown that the relationship between religiosity and fertility varies depending on the measure of religiosity used (Philipov & Berghammer, 2007). Thus, including both attendance and self-rated religiosity in the analysis

of ideal fertility may capture more aspects of religiosity compared to using the frequency-of-attendance measure alone.

To examine whether group differences in ideal, intended, and achieved fertility can be explained by differences in socioeconomic characteristics, Model 3 adds educational attainment (9 years or less of schooling, upper secondary, post-secondary, missing information) for all three fertility outcomes. For the analyses of fertility ideals and short-term fertility intentions, Model 3 also adds employment status (employed, student, other, missing information). GGS2012 respondents on parental leave are coded as employed if they had the opportunity to resume their work after the end of the leave period, whereas GGS2021 respondents on parental leave are coded as employed if they worked directly before the leave period started.

Descriptive statistics on the distribution of the independent variables within the three samples (i.e. for the analyses of ideal, intended, and achieved fertility) are provided in Appendix tables 1-3.

For the main analyses, men and women are analyzed jointly. Separate models for men and women are shown in Appendix figures 1-3. For these gender-stratified models, origin/religion categories with fewer than 5 respondents are omitted.

For the analyses of the ideal and achieved number of children, regression results are presented as average adjusted predictions of the count, i.e. the ideal or achieved number of children. For the analysis of short-term fertility intentions, regression results are presented as average adjusted predictions of the probability to state a positive intention. Only results for the independent variable of main interest, i.e. the combination of geographical origin and religious affiliation, are shown. For the full results from the regression models, see Appendix tables 4-6.

To facilitate interpretation of whether or not group differences are statistically significant, 84 % confidence intervals are used instead of the conventional 95 % intervals. Whether or not 95 % confidence intervals of two group estimates overlap is often used for assessing if the difference between the estimates is statistically significant at the conventional 5 % significance level. However, this method is overly conservative for cases where the confidence intervals of two group estimates overlap slightly. A solution is to instead use 84 % confidence intervals. If the estimates of the compared groups have similar standard errors, 84 % confidence intervals provide the interval width for which the overlap/non-overlap boundary indicates non-significance/significance at the 5 % significance level (Goldstein & Healy, 1995; Payton et al., 2003). To check the validity of this approach, additional regression models (not shown) were run for each geographical origin group and each religious affiliation separately, where the statistical significance of intragroup differences were evaluated using an in-group reference category and the conventional 0.05 p-value threshold. In almost all cases, conclusions about statistically significant and non-significant differences within origin and affiliation groups were the same as in the main analyses where the 84 % confidence intervals are used.

6. Results

6.1. Ideal number of children

Figure 1 shows that the ideal number of children varies considerably between origin/religion groups. Among natives, both members of the Church of Sweden and free church members tend to have higher ideals than non-religious individuals. In Model 1, the predicted

ideal is 2.2 for non-religious individuals, 2.3 for Church of Sweden members, and 2.6 for free church members. The differences between the three native groups are statistically significant. Given earlier findings that free church members tend to be more religious than members of the Church of Sweden and that religiosity is positively associated with fertility, the elevated ideals among free church members are in line with expectations. Controlling for frequency of attendance at religious services and self-rated religiosity in Model 2 explains a large part of the differences in the ideal number of children between native free church members and the other two native groups.

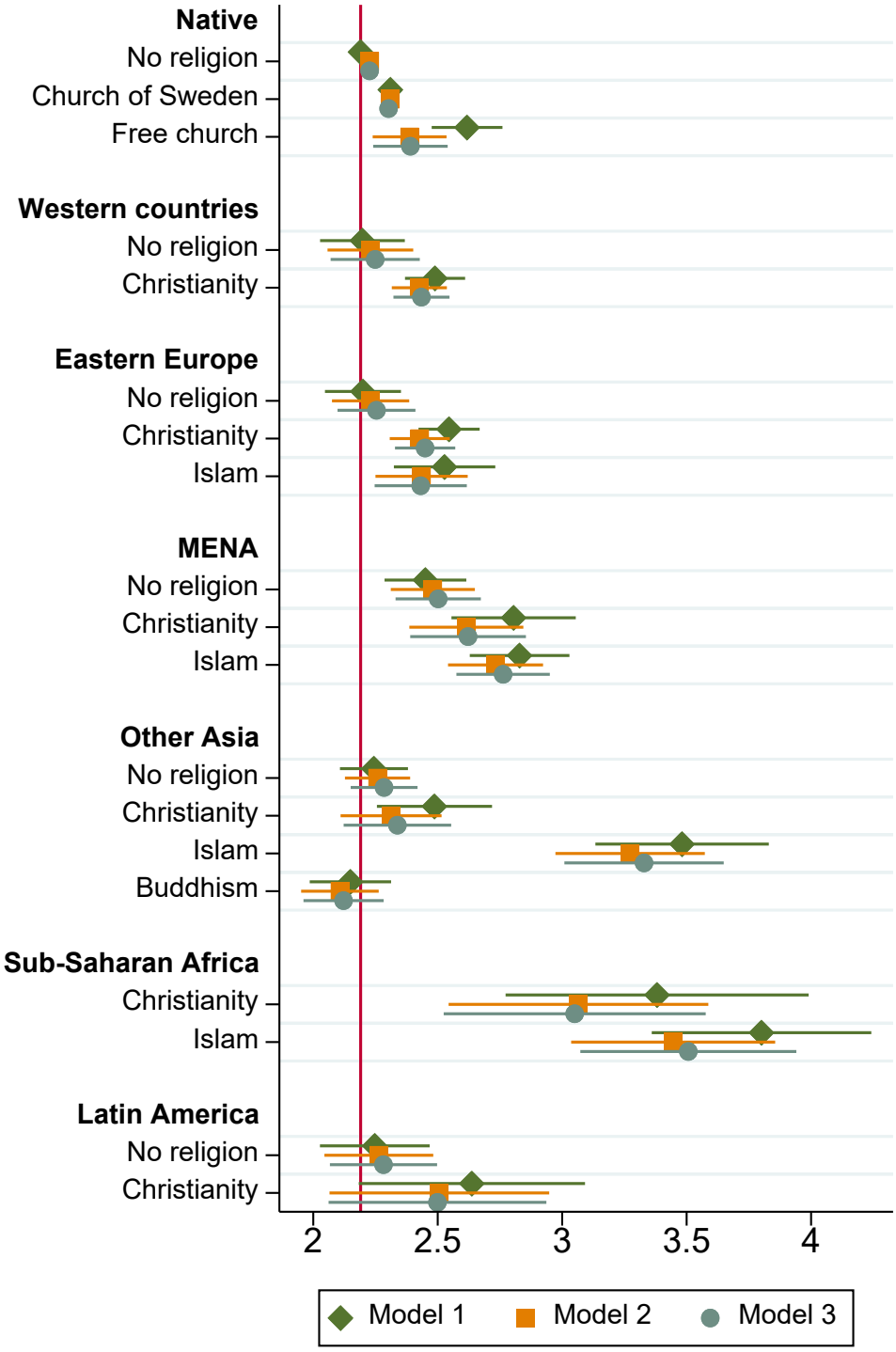
For the immigrant origin groups, there are few significant within-origin differences in the predicted ideal number of children between religious affiliations. Within all origin groups where non-religious individuals are included, they have a lower predicted ideal number of children than both Christians and (when applicable) Muslims. However, the only three significant within-origin differences in Model 1 are (1) between non-religious individuals and Christians of Eastern European origin, (2) between non-religious individuals and Muslims of MENA origin, and (3) between Muslims of other Asian origin and all other affiliations of other Asian origin. Somewhat unexpectedly given earlier research, Christians and Muslims have very similar predicted ideals within both the Eastern European and MENA origin groups.

For most groups of non-religious individuals, of both native and immigrant origin, the predicted ideal number of children is very similar at 2.2. The only non-religious group that differs significantly from any of the other non-religious groups is non-religious individuals of MENA origin, for whom the predicted ideal of 2.5 is significantly higher than the predicted ideal among non-religious natives. The predicted ideal of 2.1 among Buddhists of other Asian origin is close to the predicted ideal of most non-affiliated groups. In Model 1, most Christian groups of immigrant origin have predicted ideals in the 2.5-2.8 range, i.e. relatively similar to native free church members. Christians of sub-Saharan African origin stand out with a predicted ideal of 3.4. The ideals of Christian immigrants of sub-Saharan African origin are significantly higher than the ideals of all other Christian groups except Christians of MENA and Latin American origin. Among Muslims, the predicted ideal number of children in Model 1 is significantly higher within the sub-Saharan African origin group (3.8) and other Asian origin group (3.5) than within the Eastern European origin group (2.5) and MENA origin group (2.8).

For all Christian and Muslim groups, controlling for frequency of attendance at religious services and self-rated religiosity in Model 2 explains part of the difference in the predicted ideal number of children compared to the non-religious groups. Differences in estimates with and without the religiosity controls are especially pronounced for native free church members, Christians of MENA, other Asian, and sub-Saharan African origin, and Muslims of other Asian and sub-Saharan African origin. Additional models (not shown) that only included one of the two religiosity indicators instead of both show that self-rated religiosity explains a larger part of the differences in predicted ideals between religious affiliations than frequency of attendance at religious services. Controlling for educational attainment and employment status in Model 3 has very little impact on the estimated predicted ideal number of children for any group.

Stratifying the sample by gender shows important differences between men and women (see Appendix figures 1a and 1b). Within several origin groups, differences by religious affiliation in the ideal number of children exist primarily among women. Within the Western,

Figure 1. Ideal number of children by geographical origin and religious affiliation, Poisson regression, average adjusted predictions



Note: Model 1 controls for age and gender. Model 2 adds frequency of attendance at religious services and self-rated religiosity to Model 1. Model 3 adds educational attainment and employment status to Model 2. 84 % confidence intervals. n = 3,006

Source: Swedish Generations and Gender Survey from 2021

Eastern European, and MENA origin groups, the predicted ideal number of children is significantly lower among non-religious women than among Christian and/or Muslim women from the same origin group. Among men from the same three origin groups (i.e. Western, Eastern European, and MENA), the predicted ideal number of children is relatively similar across religious affiliations. The Latin American origin group follows a similar pattern, with a larger difference in the ideal number of children between non-religious individuals and Christians among women than among men, although differences between the two Latin American groups are not statistically significant either among men or women.

6.2. Short-term fertility intentions

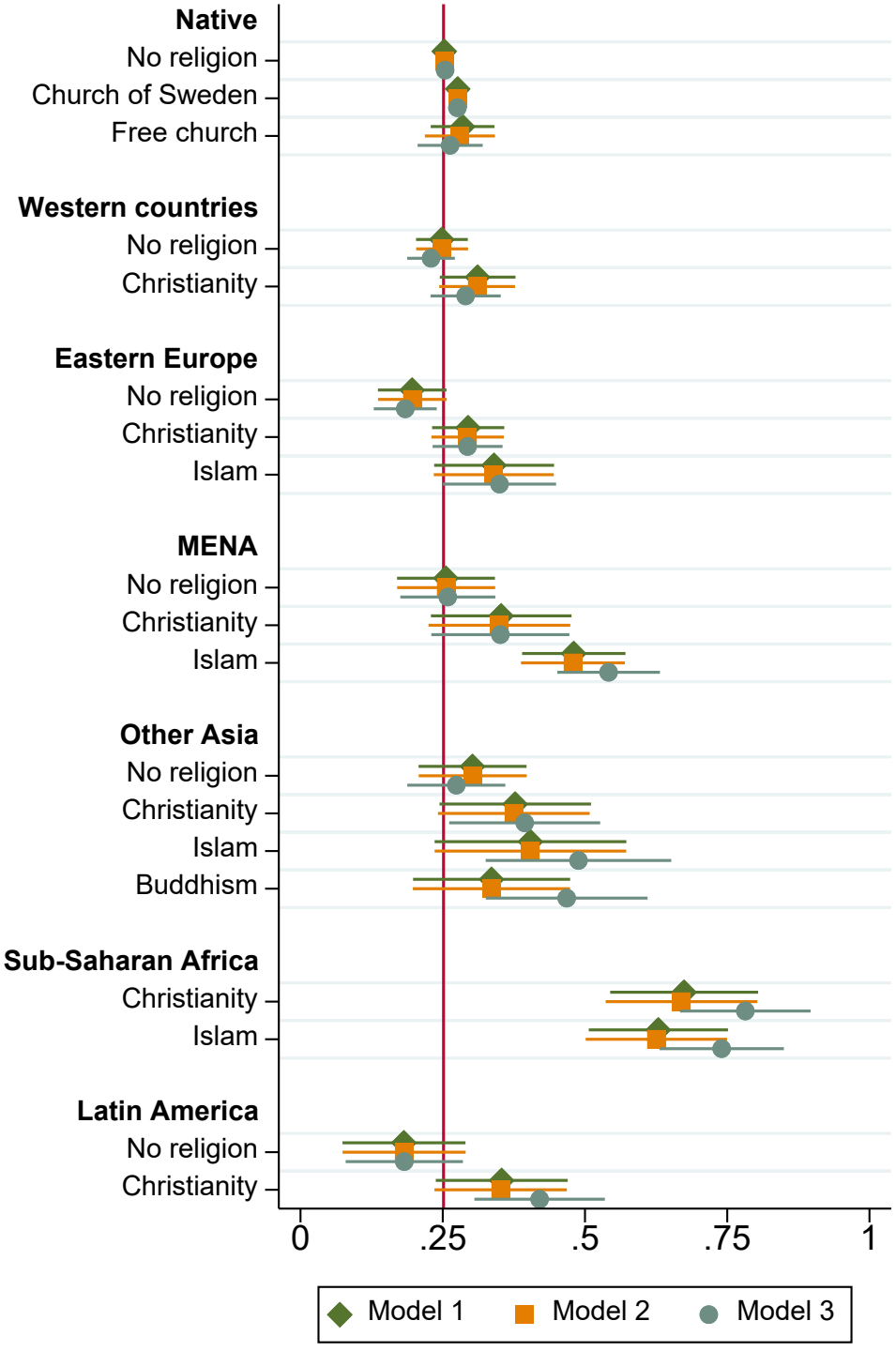
Figure 2 shows how the propensity to state a positive short-term fertility intention varies among the origin/religion categories. Contrary to the ideal number of children, there are no clear differences between affiliations among natives. In Model 1, the predicted probability of stating a positive intention is between 25 and 28 % for all three native groups.

Within all immigrant origin groups where non-religious individuals are included, they have a lower propensity to state a positive fertility intention than both Christians and (when applicable) Muslims. However, these within-origin differences are in most cases not statistically significant. The only within-origin difference that is statistically significant is the higher propensity to state a positive intention among Muslims of MENA origin compared to non-religious individuals of MENA origin. Within the Eastern European, other Asian, and sub-Saharan African origin groups, the propensity to state a positive fertility intention is similar for Christians and Muslims. Within the MENA origin group, the predicted probability to state a positive intention is higher among Muslims than among Christians, although this difference is not statistically significant. The predicted probability of stating a positive short-term fertility intention among Buddhists of other Asian origin is relatively close to the corresponding probabilities of other religious groups of other Asian origin. Buddhists are more likely than non-religious individuals of all origins to state a positive short-term fertility intention, although none of these differences are statistically significant.

For non-religious individuals, the predicted probability of stating a positive fertility intention varies between 18 and 30 % in Model 1. None of the non-religious origin groups differ significantly from any of the other non-religious groups. Compared to Christians and Muslims, differences between origin groups are smaller among non-religious individuals. Among Christians, immigrants of sub-Saharan African origin stand out from the other origin groups with a 67 % predicted probability of stating a positive short-term fertility intention in Model 1. This is statistically significantly higher than all other Christian origin groups, for whom the predicted probabilities range between 29 and 38 %. A similar pattern can be observed among Muslims, where immigrants of sub-Saharan African origin again stand out from other origin groups, although not as clearly as among Christians. The predicted probability of stating a positive short-term fertility intention is 63 % for Muslims of sub-Saharan African origin in Model 1 but ranges between 34 and 48 % for the other Muslim origin groups. The only statistically significant difference between Muslim groups is that between Muslims of sub-Saharan African origin and Muslims of Eastern European origin.

Controlling for frequency of attendance at religious services in Model 2 has very little effect on the predicted probabilities of stating a positive short-term fertility intention. Adding

Figure 2. Probability of stating a positive short-term fertility intention (as opposed to stating a negative intention) by geographical origin and religious affiliation, logistic regression, average adjusted predictions



Note: Model 1 controls for age, gender, survey year, parity, and partnership status. Model 2 adds frequency of attendance at religious services to Model 1. Model 3 adds educational attainment and employment status to Model 2. 84 % confidence intervals. n = 5,209

Source: Swedish Generations and Gender Surveys from 2012/2013 and 2021

controls for educational attainment and employment status in Model 3 increases the predicted probabilities of stating a positive short-term fertility intention for several of the non-European religious groups, including Christians of sub-Saharan African and Latin American origin, Muslims of MENA, other Asian, and sub-Saharan African origin, and Buddhists of other Asian origin. The reason for this pattern is that the propensity to state a positive short-term fertility intention among individuals who does not have post-secondary education and/or are not employed is higher within these groups than for the general sample.

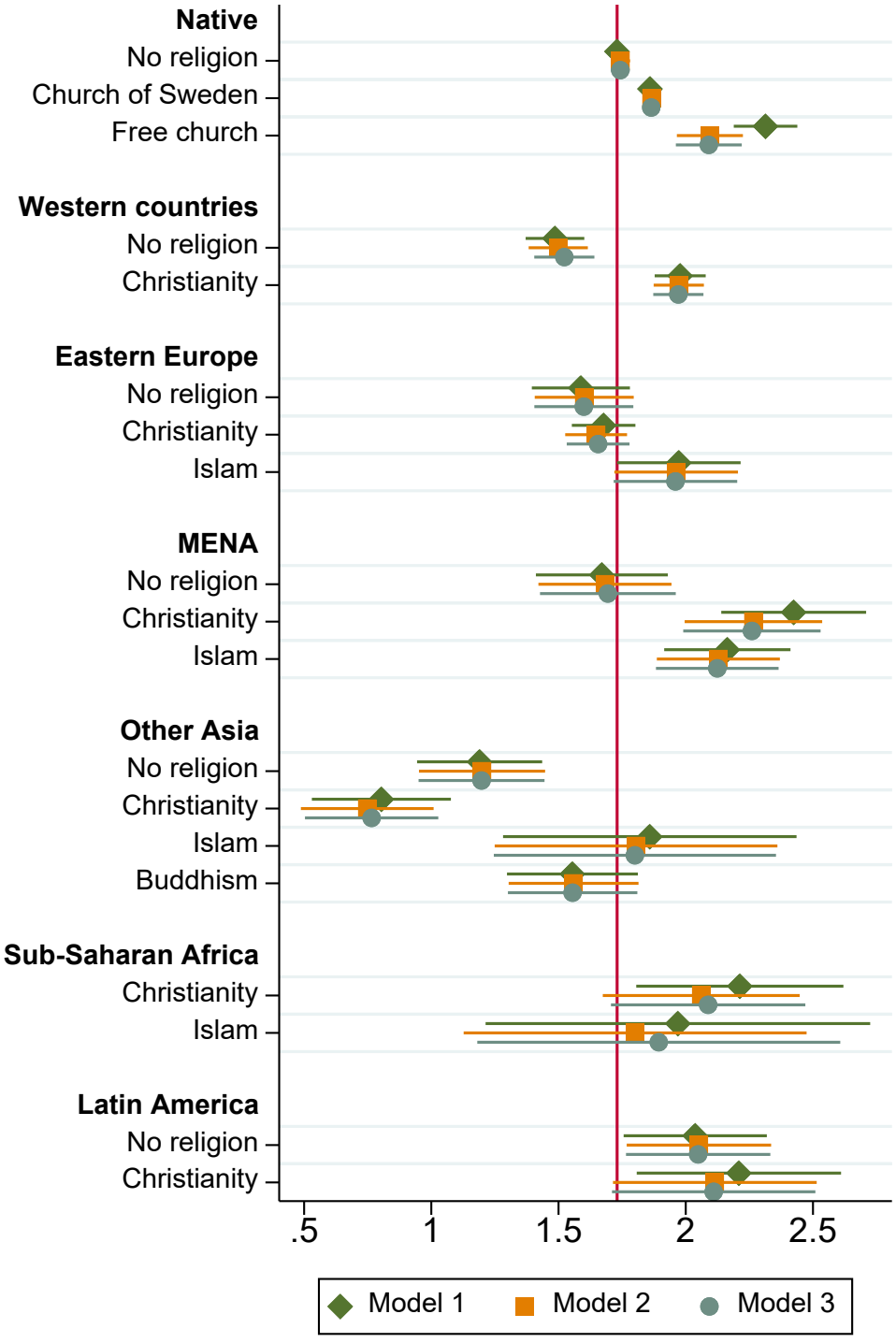
The gender-stratified models displayed in Appendix figures 2a and 2b show that group differences in the propensity to state a positive short-term fertility intention are in most cases similar for men and women. However, there are some exceptions. First, whereas male native free church members are less likely than the other male native groups to state a positive short-term fertility intention, the opposite holds for female native free church members, who are more likely than the other native groups to state a positive short-term fertility intention. Second, Christian women of MENA origin are significantly less likely than Muslim women of MENA origin to state a positive short-term fertility intention, whereas Christian and Muslim men of MENA origin have a similar propensity to state a positive short-term fertility intention. Third, among Muslims of other Asian origin, the propensity to state a positive short-term fertility intention is much higher among men than among women. However, the number of respondents within this origin/religion category is small, meaning the gender-stratified results should be interpreted with caution.

6.3. Achieved number of children at age 40

Figure 3 shows how the achieved number of children at age 40 varies between origin/religion categories. Among natives, non-religious individuals have a lower predicted number of children (1.7 in Model 1) than both members of the Church of Sweden (1.9) and free church members (2.3). All intergroup differences between the three native categories are statistically significant. Part of the difference between free church members and the other native groups can be explained by controlling for frequency of attendance at religious services.

A similar pattern where non-religious individuals have a significantly lower predicted number of children at age 40 than Christians is observed among immigrants of Western origin (1.5 vs. 2.0 in Model 1). Among immigrants of Eastern European origin, the predicted number of children at age 40 in Model 1 is relatively similar for non-religious individuals (1.6) and Christians (1.7), whereas it is higher among Muslims (2.0). However, differences between religious affiliations within the Eastern European origin group are not statistically significant. Within the MENA origin group, the predicted number of children at age 40 in Model 1 is 1.7 among non-religious individuals, 2.4 among Christians, and 2.2 among Muslims. The difference between non-religious individuals and Christians of MENA origin is statistically significant. Patterns are less clear for the other Asia origin group, among whom the predicted number of children at age 40 in Model 1 is 1.9 among Muslims and 1.6 among Buddhists but very low among non-religious individuals (1.2) and especially Christians (0.8). Both Muslims and Buddhists of other Asian origin have a significantly higher predicted number of children at age 40 than Christians of other Asian origin. Within the sub-Saharan African and Latin American origin groups, differences between religious groups in the predicted number of children at age 40 are relatively small and not statistically significant: 2.2 for Christians and 2.0

Figure 3. Achieved number of children at age 40 by geographical origin and religious affiliation, Poisson regression, average adjusted predictions



Note: Model 1 controls for age and gender. Model 2 adds frequency of attendance at religious services to Model 1. Model 3 adds educational attainment to Model 2. 84 % confidence intervals. n = 8,376
Source: Swedish Generations and Gender Surveys from 2012/2013 and 2021

for Muslims of sub-Saharan African origin, 2.0 for non-religious individuals and 2.2 for Christians of Latin American origin.

There is considerable variation in the achieved number of children at age 40 by geographical origin among Christians. Especially the depressed fertility among Christians of other Asian origin stand out from the other Christian origin groups. However, Christians of Eastern European origin also have a considerably lower predicted number of children at age 40 than all other Christian groups of both native and immigrant origin except Christians of other Asian origin. The differences between Christians of Eastern European origin on the one hand and Christians of Western and MENA origin as well as both native Christian groups on the other are statistically significant. There is also considerable variation in the predicted number of children at age 40 among non-religious individuals. Similar to the pattern among Christians, non-religious individuals of other Asian origin stand out from other non-religious origin groups with relatively low fertility. Non-religious individuals of other Asian and Western origin have a significantly lower predicted number of children at age 40 than non-religious individuals of native and Latin American origin. Among Muslims, differences between geographical origin groups in the predicted number of children at age 40 are smaller than among non-religious individuals and Christians, with predictions for all Muslim origin groups ranging between 1.9 and 2.2.

Controlling for frequency of attendance at religious services in Model 2 explains part of the difference in the predicted number of children at age 40 between non-religious individuals and Christians of MENA origin. Controlling for frequency of attendance at religious services also reduces the predicted number of children at age 40 for Christians and Muslims of sub-Saharan African origin. Controlling for educational attainment in Model 3 has very little effect on estimated group differences in the predicted number of children at age 40. The only exception is Muslims of sub-Saharan African origin, for whom the predicted number of children at age 40 increases somewhat when controlling for educational attainment.

Stratifying the sample by gender shows that the main patterns described above hold for both men and women (see Appendix figures 3a and 3b). However, it should be noted that the elevated achieved number of children at age 40 observed among Muslims of Eastern European origin compared to non-religious individuals and Christians of the same origin exists only among women, whereas the predicted achieved number of children at age 40 is similar across affiliations among men of Eastern European origin.

7. Discussion

7.1. Fertility differences between and within religious affiliations

To disentangle the association between religious affiliation and fertility from the association between geographical origin and fertility, research questions 1 and 2 asked whether ideal, intended, and achieved fertility tend to vary by religious affiliation within geographical origin groups and by geographical origin within religious affiliations.

Results show that non-affiliated individuals often tend to have lower fertility preferences and behavior than Christians from the same geographical origin and, when applicable, also lower preferences and behavior than Muslims from the same geographical origin. This finding is in line with earlier research showing that non-religious individuals tend to have lower fertility

than Christians and Muslims. Compared to Christians and Muslims, the fertility preferences and behaviors of non-religious individuals are relatively similar across geographical origin groups. Thus, non-religious groups of both native and different immigrant origins consistently have relatively low fertility preferences and behavior. The similarity across geographical origins among non-religious individuals is more evident for fertility ideals and intentions than for achieved fertility, indicating a relatively high degree of uniformity in fertility norms among non-religious individuals of different origins coupled with variation between origin groups in the propensity to realize fertility preferences.

In most cases, there are no clear differences in ideal, intended, and achieved fertility between Christian and Muslim immigrants who share the same geographical origin. This finding is not in line with earlier research which has showed that Muslims often have higher fertility than Christians within specific countries or regions (Heaton, 2010; Heaton & Darkwah, 2011; Morgan et al., 2002; Skirbekk et al., 2015; Stonawski et al., 2016; Westoff & Frejka, 2007). One clear exception to the general within-origin similarity between Christians and Muslims is the other Asian origin group, among whom Muslims have a significantly higher ideal and achieved number of children than Christians. However, it should be noted that Muslims and Christians within the other Asian origin group tend to originate from different parts of Asia (primarily Central and South Asia for Muslims, primarily South East Asia for Christians), meaning they do not in fact share the same geographical origin in most cases.

Compared to non-religious individuals, there is greater variation across origin groups in ideal, intended, and achieved fertility among Christians and Muslims. In most cases, there is greater similarity between Christians and Muslims within the Eastern European, MENA, and sub-Saharan African origin groups than between Christians of different geographical origin and between Muslims of different geographical origin. Thus, geographical origin seems to be more important than religious affiliation for understanding fertility preferences and behavior among Christian and Muslim immigrants in Sweden. This finding suggest that earlier analyses of the association between religion and fertility among immigrants that do not consider immigrants' geographical origins are missing a very important factor in the understanding of immigrant fertility. Such analyses may even be considered misleading, if group differences that are best explained by geographical origin are attributed to religious affiliation.

7.2. Differences in religion's effect across dimensions of fertility

Research question 3 asked whether the relationship between origin/religion and fertility varies between the three examined dimensions of fertility, i.e. ideal, intended, and achieved fertility. Results differ between groups. Among natives, there are clear differences between religious affiliations regarding ideal and achieved fertility, while affiliations do not differ substantially in the propensity to state a positive fertility intention. Among immigrants of Western origin, between-affiliation differences are larger for achieved fertility than for ideal and intended fertility. For Christians and Muslims of sub-Saharan African origin, both ideals and intentions are clearly elevated compared to most other groups, whereas neither of the two groups stand out when it comes to achieved fertility. These findings suggest that not only fertility preferences and actual fertility but also the propensity to realize fertility preferences vary by religious affiliation and geographical origin. Earlier research has shown that the propensity to realize a positive short-term fertility intention varies by immigrants' geographical

origin in Sweden and Norway (Carlsson, 2023). Future research should explore the mechanisms through which religion may influence the realization of fertility preferences among immigrants.

Whereas the ideals of Christians and Muslims of sub-Saharan African origin and Muslims of other Asian origin (who are often from Afghanistan) are elevated compared to other groups, it should be noted that the ideals of these immigrant groups are still lower than the mean ideals at origin (i.e. sub-Saharan Africa and Afghanistan). This result is in line with Mussino and Ortensi's (2018) finding that immigrants from countries with very high fertility ideals tend to report considerably lower ideals in the destination country. Such differences in the ideal number of children between migrants and the population at origin may reflect either immigrants' adaptation to the destination society or selection into migration.

7.3. Religiosity and SES as potential mechanisms in religion's association with fertility

This study examined two potential mechanisms in the relationship between religious affiliation and fertility: group differences in religiosity and socioeconomic characteristics. First, group differences in fertility preferences and behavior can to some extent be explained by differences in religiosity. For the analysis of ideal fertility, it was possible to control for two indicators of religiosity: frequency of attendance at religious services and self-rated religiosity. Controlling for these two indicators of religiosity partly explained the higher ideal number of children among Christians and Muslims compared to non-religious individuals and Buddhists. For the analyses of short-term fertility intentions and achieved number of children at age 40, it was only possible to control for frequency of attendance at religious services. This variable played a small role in explaining differences between religious groups in the achieved number of children at age 40 and did not contribute at all to explaining intergroup differences in the propensity to state a positive short-term fertility intention.

Religiosity is a multidimensional concept (Billiet, 2002). While it is possible that religiosity is not an important factor in understanding differences between religious groups in short-term fertility intentions and the achieved number of children at age 40, it is also possible that frequency of attendance at religious services does not fully capture the aspects of religiosity that may influence fertility intentions and behavior. This study's analysis of the ideal number of children showed that self-rated religiosity explained a larger part of group differences in the general ideal number of children than did frequency of attendance at religious services. Adsera (2006) found that the association between frequency of attendance at religious services and the general ideal number of children is weaker in Sweden than in other Western countries, suggesting that frequency of attendance is relatively ill-suited for capturing religiosity's influence on fertility in the Swedish context.

Moreover, religions and denominations differ in traditions surrounding attendance at religious services, meaning the frequency-of-attendance variable's relevance as an indicator of religiosity varies across religions. For example, surveys conducted in Sweden in 2007-2016 showed that a similar share of Church of Sweden members and Muslims had attended religious services at least once during the last year (Willander, 2019). However, according to the same surveys, about half of Muslims prayed to God every week whereas the corresponding share among individuals identifying with the Church of Sweden was about 15 % (Willander, 2019). It is possible that alternative measures of religiosity which were unavailable in the Swedish

GGS data, such as frequency of prayer, importance of God, influence of religion in daily life, etc., would have better suited to the purposes of this study.

A second potential mechanism in the relationship between religion and fertility which was explored in this study is that differences in fertility preferences and behavior between religious groups may be caused by group differences in socioeconomic characteristics. The results of this study do not support this hypothesis, given very limited changes to estimated group differences in fertility preferences and behavior when controlling for educational attainment and employment status.

Another factor that may to some extent explain group differences in fertility behavior and preferences which was not controlled for in the present study due to data restrictions is the religious affiliation and geographical origin of the respondent's partner. In Finland, individuals with a partner from a different denomination than their own tend to have fewer children than individuals with a partner from the same denomination (Kolk & Saarela, 2023). Similarly, research from the US has shown that certain types of interracial and interethnic pairings tend to have lower fertility than endogamous couples (Fu, 2008; Qian & Lichter, 2021). Since the frequency of interethnic and interfaith partnerships may vary between religious groups, it is possible that this factor could contribute to explaining group differences in fertility behavior and preferences.

7.4. Religious fertility differentials and society's future religious composition

An important reason for interest in the relationship between religion and fertility is the notion that fertility differences between social groups may lead to differential growth rates and thereby to shifts in society's religious composition. Whereas this study shows that fertility preferences and behavior vary between religious groups, it is important to stress that whether or not social groups grow at different speed is also determined by several other factors that are not examined in this study.

First, fertility differences between the groups must be sustained over time. This study does not provide information on longitudinal developments in fertility patterns of the studied groups. Earlier research has shown that the fertility behavior of immigrants to Sweden tends to converge towards native patterns by time since immigration (Andersson, 2004). Thus, group differences in fertility preferences and behavior observed in this study may be influenced by the fact that the share of recent immigrants vary between origin/religion categories. Moreover, children of immigrants (G2) in Sweden tend to have lower fertility than the actual immigrant generation (G1) and often lower fertility than natives (Andersson et al., 2017). Future research should explore whether patterns of fertility change over time within the G1 and between the G1 and G2 differ between religious groups.

Second, the extent to which fertility differences between religious groups translate into differential growth rates depends on the capacity for religious groups to retain its members. It has been shown that the G1 and G2 in Sweden have a similar religious composition and similar level of religiosity (Jonsson et al., 2022), suggesting that the G2 tends to retain their parents' religious affiliation and level of religiosity. Within Western Europe, the share of natives who are disaffiliated from religion increased between 2002 and 2018 while the share among the G1 and G2 was stable during the period (Guveli & Platt, 2023).

Third, another important factor in determining society's religious composition is of course the in- and out-migration rates of the different religious groups (Pew Research Center, 2017a; Skirbekk et al., 2010).

7.5. Limitations

There are some important limitations to this study. First, the GGS2012 and especially the GGS2021 had low response rates, which were even lower among immigrants than among the general population (Franzén, 2014; Löfgren, 2021). It is likely that immigrant survey respondents differ from the general immigrant population in Sweden. There are several reasons why immigrants are more likely to refrain from responding to surveys, including language barriers, a lack of interest in the destination society, a lack of understanding that survey organizers are interested in the experiences and opinions of immigrants, and a lack of familiarity with and trust in the organization(s) behind the survey. All of these possible reasons for survey non-response among immigrants are likely to correlate with poorer integration into the destination society. Since it can be expected that well-integrated immigrants are more likely to adapt to the destination country's fertility regime, a possible over-representation of well-integrated immigrants among GGS respondents could mean that the results of this study underestimate fertility differences between religious groups in Sweden. In addition to the low response rate for the overall GGS2021, the item non-response for the question on the ideal number of children was very high, which may have further reduced the representativeness of remaining respondents.

A second important limitation of the data is that the number of respondents in some of the origin/religion categories is very small, which reduced statistical power. It should be stressed that results for some origin/religion groups should be interpreted with caution. Yet, this study demonstrates that disaggregating religious affiliations by geographical origin can provide new insights into the relationship between religion and fertility among immigrants. Future research would benefit from further disaggregating religious affiliation and geographical origin categories. There is considerable between-country variation in fertility patterns within the origin regions used in this study, not least within the MENA, other Asian, and sub-Saharan African regions. Fertility patterns may also vary considerably between denominations within the same religion, as shown in this study's analysis of native Christians identifying either with the Church of Sweden or with different free churches. Variation in fertility preferences and behavior between Christian denominations or between schools and branches of Islam may also exist among immigrants. To explore heterogeneity within the groups of Christians, Muslims, and other religious affiliations, future research should explore the possibility of using data sources with higher numbers of individuals, such as population registers. Finnish population registers include data on membership in religious organizations which cover almost the full Finnish population. These data have previously been used to study religious differences in various outcomes, including fertility patterns, although without an explicit focus on immigrants (Kolk & Saarela, 2023; Xia et al., 2023).

It is possible that this study's findings on differences between religious groups in fertility preferences and behavior to some extent reflect reverse causality. The importance individuals attach to their cultural heritage and community may increase after having children, thereby leading to higher religiosity and an increased propensity to affiliate with a religion after

childbearing. US data from the 1970s and 1980s showed that having young children is associated with higher levels of religious participation (Stolzenberg et al., 1995). However, more recent data from the Netherlands showed that childbearing does not affect the frequency of church attendance among non-religious individuals and Christians (Berghammer, 2012). It is possible that the direction of causality between fertility and religiosity/religious affiliation may vary between immigrants and natives and between groups of immigrants.

8. Conclusions

This study in many ways constitutes a step forward for the understanding of how religion relates to fertility among immigrants to Western Europe compared to earlier studies (Behrman & Erman, 2019; Blekesaune, 2020; Stonawski et al., 2016; Westoff & Frejka, 2007). This study examines fertility preferences and behavior among Christian, Muslim, Buddhist, and non-religious immigrants whereas earlier research has focused primarily on Muslim immigrants. Using data on self-identified religious affiliation and distinguishing among immigrants both by religious affiliation and geographical origin enabled this study to highlight the considerable heterogeneity within religious affiliations that was masked in earlier studies. The findings that Christians and Muslims who share the same geographical origin tend to have similar fertility preferences and behavior are especially interesting, given earlier research showing that Muslims often have higher fertility than Christians within specific countries or regions (Heaton, 2010; Heaton & Darkwah, 2011; Morgan et al., 2002; Skirbekk et al., 2015; Stonawski et al., 2016; Westoff & Frejka, 2007). Future research should examine whether patterns observed in this study also apply in other immigrant destination countries and among descendants of immigrants.

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Appendix table 1. Descriptive statistics for the sample used for the analysis of ideal fertility

Geographical origin	Religious affiliation	Gender (% female)	Age at interview (mean)	Frequency of attendance at religious services (%)			Religiosity (mean)	n
				1-3 times every three months or less	1-3 times every month or more	Missing information		
Native	Non-religious	45.8	33.6	99.7	0.1	0.2	0.8	1,053
	Church of Sweden	57.5	35.4	97.8	1.8	0.4	2.2	1,403
	Free church	55.2	36.8	37.9	60.3	1.7	6.8	58
Western countries	Non-religious	46.2	35.2	100.0	-	-	1.0	93
	Christian	52.6	39.2	89.5	10.5	-	3.8	57
Eastern Europe	Non-religious	52.5	36.0	100.0	-	-	1.1	40
	Christian	69.5	37.1	79.7	20.3	-	5.2	59
	Muslim	52.9	38.5	88.2	11.8	-	4.8	17
MENA	Non-religious	36.0	38.1	100.0	-	-	1.2	25
	Christian	28.6	36.6	71.4	28.6	-	6.6	14
	Muslim	56.3	37.5	91.7	8.3	-	4.8	48
Other Asia	Non-religious	51.5	33.5	100.0	-	-	1.7	33
	Christian	71.4	33.5	57.1	35.7	7.1	6.3	14
	Muslim	40.0	32.0	86.7	13.3	-	6.7	15
	Buddhist	77.8	38.5	94.4	5.6	-	3.7	18
Sub-Saharan Africa	Christian	70.0	37.0	50.0	50.0	-	7.9	10
	Muslim	53.3	32.9	46.7	53.3	-	7.6	15
Latin America	Non-religious	55.0	37.9	100.0	-	-	1.7	20
	Christian	57.1	39.3	78.6	21.4	-	5.4	14
Full sample		**57.1**	**35.0**	**95.9**	**3.8**	**0.3**	**2.0**	**3,006**

(continued)

Appendix table 1, continued

Geographical origin	Religious affiliation	Educational attainment (%)				Employment status (%)			n
		9 years or less	Upper secondary	Post-secondary	Missing information	Employed	Student	Other	
Native	Non-religious	12.0	31.0	56.8	0.3	75.7	17.8	6.6	1,053
	Church of Sweden	9.5	32.6	57.8	0.1	81.1	15.3	3.6	1,403
	Free church	6.9	27.6	65.5	-	75.9	15.5	8.6	58
Western countries	Non-religious	1.1	15.1	72.0	11.8	81.7	12.9	5.4	93
	Christian	3.5	24.6	63.2	8.8	87.7	3.5	8.8	57
Eastern Europe	Non-religious	2.5	22.5	60.0	15.0	77.5	7.5	15.0	40
	Christian	6.8	16.9	62.7	13.6	74.6	10.2	15.3	59
	Muslim	11.8	64.7	23.5	-	64.7	23.5	11.8	17
MENA	Non-religious	4.0	16.0	72.0	8.0	80.0	16.0	4.0	25
	Christian	7.1	28.6	57.1	7.1	78.6	7.1	14.3	14
	Muslim	18.8	29.2	45.8	6.3	47.9	18.8	33.3	48
Other Asia	Non-religious	9.1	9.1	63.6	18.2	75.8	12.1	12.1	33
	Christian	-	42.9	42.9	14.3	57.1	35.7	7.1	14
	Muslim	26.7	20.0	33.3	20.0	40.0	33.3	26.7	15
	Buddhist	16.7	27.8	50.0	5.6	61.1	16.7	22.2	18
Sub-Saharan Africa	Christian	30.0	40.0	30.0	-	70.0	30.0	-	10
	Muslim	26.7	20.0	20.0	33.3	60.0	40.0	-	15
Latin America	Non-religious	-	20.0	75.0	5.0	75.0	20.0	5.0	20
	Christian	14.3	42.9	42.9	-	78.6	21.4	-	14
Full sample		**10.1**	**30.4**	**57.6**	**1.9**	**77.7**	**16.1**	**6.1**	**3,006**

Appendix table 2. Descriptive statistics for the sample used for the analysis of short-term fertility intentions

Geographical origin	Religious affiliation	Gender (% female)	Age at interview (mean)	Frequency of attendance at religious services (%)			Survey year (% from GGS2021)	n
				1-3 times every three months or less	1-3 times every month or more	Missing information		
Native	Non-religious	47.4	31.7	99.8	0.1	0.2	71.4	1,789
	Church of Sweden	58.9	33.2	97.4	2.3	0.3	56.6	2,655
	Free church	51.0	32.3	39.4	60.6	-	52.9	104
Western countries	Non-religious	48.4	33.0	100.0	-	-	80.3	122
	Christian	54.4	36.1	86.1	13.9	-	67.1	79
Eastern Europe	Non-religious	59.0	34.4	100.0	-	-	75.4	61
	Christian	70.9	34.5	82.3	17.7	-	72.2	79
	Muslim	50.0	32.8	89.5	10.5	-	34.2	38
MENA	Non-religious	42.1	36.9	100.0	-	-	65.8	38
	Christian	44.0	33.6	64.0	36.0	-	52.0	25
	Muslim	39.6	34.5	79.2	20.8	-	72.9	48
Other Asia	Non-religious	57.1	31.8	100.0	-	-	91.4	35
	Christian	72.2	32.8	72.2	22.2	5.6	72.2	18
	Muslim	53.8	33.9	92.3	7.7	-	84.6	13
	Buddhist	94.1	33.6	94.1	5.9	-	58.8	17
Sub-Saharan Africa	Christian	42.9	34.7	42.9	57.1	-	85.7	21
	Muslim	52.2	31.7	52.2	47.8	-	82.6	23
Latin America	Non-religious	50.0	35.5	100.0	-	-	75.0	20
	Christian	50.0	33.5	79.2	16.7	4.2	54.2	24
Full sample		**54.2**	**32.8**	**95.8**	**4.0**	**0.2**	**63.5**	**5,209**

(continued)

Appendix table 2, continued

Geographical origin	Religious affiliation	Parity at interview (%)			Partnership status (%)			n
		0 children	1 child	2 or more children	Partnered	Unpartnered	Missing information	
Native	Non-religious	60.4	12.4	27.2	70.2	29.8	-	1,789
	Church of Sweden	45.2	12.3	42.4	75.3	24.6	0.0	2,655
	Free church	50.0	12.5	37.5	71.2	28.8	-	104
Western countries	Non-religious	53.3	20.5	26.2	85.2	14.8	-	122
	Christian	39.2	13.9	46.8	78.5	21.5	-	79
Eastern Europe	Non-religious	57.4	19.7	23.0	75.4	24.6	-	61
	Christian	35.4	24.1	40.5	84.8	15.2	-	79
	Muslim	28.9	7.9	63.2	71.1	28.9	-	38
MENA	Non-religious	52.6	10.5	36.8	84.2	15.8	-	38
	Christian	36.0	12.0	52.0	84.0	16.0	-	25
	Muslim	29.2	18.8	52.1	68.8	31.2	-	48
Other Asia	Non-religious	68.6	8.6	22.9	65.7	34.3	-	35
	Christian	55.6	22.2	22.2	72.2	27.8	-	18
	Muslim	38.5	7.7	53.8	76.9	23.1	-	13
	Buddhist	58.8	11.8	29.4	76.5	23.5	-	17
Sub-Saharan Africa	Christian	52.4	19.0	28.6	61.9	38.1	-	21
	Muslim	56.5	8.7	34.8	69.6	30.4	-	23
Latin America	Non-religious	45.0	20.0	35.0	75.0	25.0	-	20
	Christian	41.7	33.3	25.0	83.3	16.7	-	24
Full sample		**50.6**	**13.0**	**36.4**	**73.8**	**26.2**	**0.0**	**5,209**

(continued)

Appendix table 2, continued

Geographical origin	Religious affiliation	Educational attainment (%)				Employment status (%)				n
		9 years or less	Upper secondary	Post-secondary	Missing information	Employed	Student	Other	Missing information	
Native	Non-religious	12.2	31.4	56.1	0.2	71.7	20.8	7.4	-	1,789
	Church of Sweden	10.4	34.8	54.7	0.1	78.2	16.9	4.9	-	2,655
	Free church	9.6	26.0	64.4	-	67.3	22.1	10.6	-	104
Western countries	Non-religious	3.3	14.8	73.8	8.2	75.4	18.0	6.6	-	122
	Christian	5.1	19.0	68.4	7.6	84.8	7.6	7.6	-	79
Eastern Europe	Non-religious	3.3	21.3	67.2	8.2	75.4	6.6	18.0	-	61
	Christian	6.3	20.3	63.3	10.1	72.2	11.4	16.5	-	79
	Muslim	5.3	57.9	36.8	-	65.8	23.7	10.5	-	38
MENA	Non-religious	5.3	18.4	71.1	5.3	81.6	13.2	5.3	-	38
	Christian	12.0	28.0	56.0	4.0	72.0	20.0	8.0	-	25
	Muslim	27.1	27.1	41.7	4.2	47.9	22.9	29.2	-	48
Other Asia	Non-religious	8.6	11.4	65.7	14.3	71.4	11.4	17.1	-	35
	Christian	5.6	33.3	55.6	5.6	61.1	27.8	11.1	-	18
	Muslim	30.8	15.4	46.2	7.7	46.2	23.1	30.8	-	13
	Buddhist	35.3	29.4	29.4	5.9	58.8	23.5	17.6	-	17
Sub-Saharan Africa	Christian	19.0	23.8	38.1	19.0	57.1	28.6	9.5	4.8	21
	Muslim	34.8	13.0	30.4	21.7	56.5	34.8	8.7	-	23
Latin America	Non-religious	5.0	25.0	65.0	5.0	80.0	15.0	5.0	-	20
	Christian	16.7	29.2	54.2	-	58.3	29.2	12.5	-	24
Full sample		**10.9**	**31.9**	**56.0**	**1.1**	**74.8**	**18.3**	**6.9**	**0.0**	**5,209**

Appendix table 3. Descriptive statistics for the sample used for the analysis of the achieved number of children at age 40

Geographical origin	Religious affiliation	Gender (% female)	Age at interview (mean)	Frequency of attendance at religious services (%)			Survey year (% from GGS2021)	n
				1-3 times every three months or less	1-3 times every month or more	Missing information		
Native	Non-religious	43.9	52.4	99.6	0.2	0.2	57.2	1,766
	Church of Sweden	56.9	55.6	95.8	4.0	0.3	41.9	5,400
	Free church	56.1	55.6	25.0	74.0	1.0	43.9	196
Western countries	Non-religious	47.3	53.3	100.0	-	-	56.5	184
	Christian	64.1	57.4	91.2	8.4	0.4	41.6	262
Eastern Europe	Non-religious	60.3	51.4	100.0	-	-	69.2	78
	Christian	60.3	54.4	82.4	17.6	-	57.3	131
	Muslim	30.6	49.4	91.7	8.3	-	72.2	36
MENA	Non-religious	27.1	50.9	100.0	-	-	64.6	48
	Christian	46.9	50.4	46.9	50.0	3.1	68.8	32
	Muslim	53.3	48.8	84.0	16.0	-	72.0	75
Other Asia	Non-religious	70.8	49.8	100.0	-	-	91.7	24
	Christian	86.7	48.0	40.0	53.3	6.7	86.7	15
	Muslim	41.7	46.3	75.0	25.0	-	83.3	12
	Buddhist	82.8	49.0	96.6	3.4	-	79.3	29
Sub-Saharan Africa	Christian	33.3	49.7	48.1	51.9	-	92.6	27
	Muslim	41.2	50.1	23.5	64.7	11.8	76.5	17
Latin America	Non-religious	47.8	48.2	100.0	-	-	69.6	23
	Christian	71.4	50.3	66.7	33.3	-	76.2	21
Full sample		**53.9**	**54.6**	**93.9**	**5.8**	**0.3**	**47.4**	**8,376**

(continued)

Appendix table 3, continued

Geographical origin	Religious affiliation	Educational attainment (%)				n
		9 years or less	Upper secondary	Post-secondary	Missing information	
Native	Non-religious	8.5	37.7	53.7	0.1	1,766
	Church of Sweden	10.9	43.4	45.7	0.0	5,400
	Free church	5.1	38.8	56.1	-	196
Western countries	Non-religious	4.3	31.5	59.8	4.3	184
	Christian	12.6	37.8	49.6	-	262
Eastern Europe	Non-religious	2.6	32.1	65.4	-	78
	Christian	6.9	33.6	58.0	1.5	131
	Muslim	2.8	75.0	22.2	-	36
MENA	Non-religious	4.2	31.3	62.5	2.1	48
	Christian	18.8	43.8	37.5	-	32
	Muslim	14.7	36.0	49.3	-	75
Other Asia	Non-religious	8.3	8.3	83.3	-	24
	Christian	6.7	46.7	40.0	6.7	15
	Muslim	16.7	41.7	41.7	-	12
	Buddhist	31.0	37.9	31.0	-	29
Sub-Saharan Africa	Christian	7.4	37.0	51.9	3.7	27
	Muslim	29.4	23.5	35.3	11.8	17
Latin America	Non-religious	8.7	47.8	43.5	-	23
	Christian	9.5	28.6	61.9	-	21
Full sample		**10.1**	**41.2**	**48.5**	**0.2**	**8,376**

Appendix table 4. Ideal number of children, Poisson regression, coefficients

	Model 1	Model 2	Model 3
Origin/religion (ref. = Native, non-religious)			
Native, Church of Sweden	.05***	.04**	.03**
Native, Free church	.18***	.07	.07
Western countries, non-religious	.00	.00	.01
Western countries, Christian	.13***	.09*	.09*
Eastern Europe, non-religious	.00	.00	.01
Eastern Europe, Christian	.15***	.09*	.10*
Eastern Europe, Muslim	.14*	.09	.09
MENA, non-religious	.11*	.11*	.12*
MENA, Christian	.25***	.16*	.16*
MENA, Muslim	.26***	.20***	.22***
Other Asia, non-religious	.02	.01	.03
Other Asia, Christian	.13	.04	.05
Other Asia, Muslim	.46***	.38***	.40***
Other Asia, Buddhist	-.02	-.06	-.05
Sub-Saharan Africa, Christian	.43**	.32**	.31*
Sub-Saharan Africa, Muslim	.55***	.44***	.45***
Latin America, non-religious	.03	.02	.02
Latin America, Christian	.19	.12	.12
Frequency of attendance at religious services (ref. = 1-3 times every three months or less)			
1-3 times every month or more		.06	.06
Missing information		.03	.03
Self-rated religiosity		.01***	.01***
Educational attainment (ref. = Post-secondary)			
9 years or less			.02
Upper secondary			.02
Missing information			-.05
Employment status (ref. = Employed)			
Student			-.04*
Other			-.04
Age at interview	.00	.00	-.00
Gender (ref. = Male)			
Female	.03**	.03*	.03**
Pseudo-R^2	0.01	0.01	0.01

Note: n = 3,006. *: p<0.05, **: p<0.01, ***: p<0.001.
Source: Swedish Generations and Gender Survey from 2021

Appendix table 5. Propensity to state a positive short-term fertility intention (as opposed to stating a negative intention), logistic regression, coefficients

	Model 1	Model 2	Model 3
Origin/religion (ref. = Native, non-religious)			
Native, Church of Sweden	.15	.15	.15
Native, Free church	.20	.17	.06
Western countries, non-religious	-.03	-.03	-.18
Western countries, Christian	.36	.36	.25
Eastern Europe, non-religious	-.40	-.40	-.54
Eastern Europe, Christian	.26	.26	.27
Eastern Europe, Muslim	.53	.53	.63
MENA, non-religious	.02	.02	.03
MENA, Christian	.60	.58	.64
MENA, Muslim	1.30***	1.29***	1.76***
Other Asia, non-religious	.31	.31	.14
Other Asia, Christian	.74	.73	.90
Other Asia, Muslim	.89	.89	1.46*
Other Asia, Buddhist	.51	.50	1.34*
Sub-Saharan Africa, Christian	2.33***	2.31***	3.25***
Sub-Saharan Africa, Muslim	2.08***	2.06***	2.96***
Latin America, non-religious	-.51	-.51	-.55
Latin America, Christian	.61	.60	1.06*
Frequency of attendance at religious services (ref. = 1-3 times every three months or less)			
1-3 times every month or more		.05	.13
Missing information		.11	.34
Educational attainment (ref. = Post-secondary)			
9 years or less			-1.74***
Upper secondary			-.62***
Missing information			-.73*
Employment status (ref. = Employed)			
Student			-1.46***
Other			-.30*
Age at interview	.01*	.01*	-.04***
Survey year (ref. = GGS2012)			
GGS2021	-.29***	-.29***	-.33***
Gender (ref. = Male)			
Female	.23**	.23**	.18*
Parity at interview (ref. = Childless)			
1 child	.27**	.27**	.24*
2 or more children	-2.39***	-2.39***	-2.36***

(continued)

Appendix table 5, continued

	Model 1	Model 2	Model 3
Partnership status (ref. = Partnered)			
Unpartnered	-1.60***	-1.60***	-1.43***
Pseudo-R^2	0.18	0.18	0.24

Note: For the employment status and partnership status variables, results for the missing information category are omitted due to the very small number of respondents. n = 5,209. *: p<0.05, **: p<0.01, ***: p<0.001.
Source: Swedish Generations and Gender Surveys from 2012/2013 and 2021

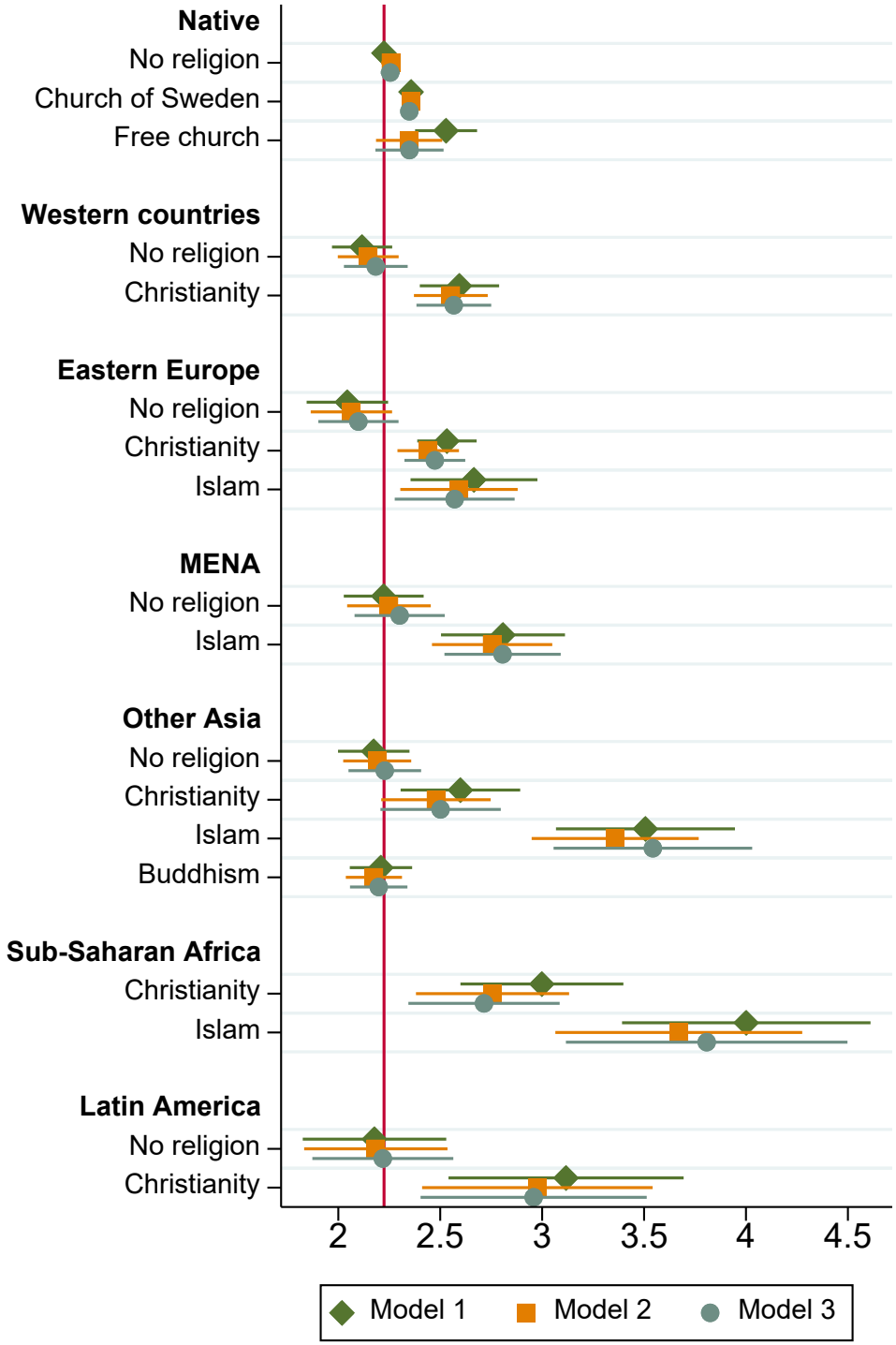
Appendix table 6. Achieved number of children at age 40, Poisson regression, coefficients

	Model 1	Model 2	Model 3
Origin/religion (ref. = Native, non-religious)			
Native, Church of Sweden	.07***	.07***	.07***
Native, Free church	.29***	.18***	.18***
Western countries, non-religious	-.15**	-.15**	-.13*
Western countries, Christian	.13**	.12**	.12**
Eastern Europe, non-religious	-.09	-.09	-.09
Eastern Europe, Christian	-.03	-.06	-.05
Eastern Europe, Muslim	.13	.12	.12
MENA, non-religious	-.04	-.04	-.03
MENA, Christian	.34***	.26**	.26**
MENA, Muslim	.22**	.20*	.20*
Other Asia, non-religious	-.37*	-.37*	-.38*
Other Asia, Christian	-.77**	-.85**	-.82**
Other Asia, Muslim	.07	.03	.03
Other Asia, Buddhist	-.11	-.11	-.11
Sub-Saharan Africa, Christian	.25	.17	.18
Sub-Saharan Africa, Muslim	.13	.03	.08
Latin America, non-religious	.16	.16	.16
Latin America, Christian	.24	.19	.19
Frequency of attendance at religious services (ref. = 1-3 times every three months or less)			
1-3 times every month or more		.14***	.15***
Missing information		.02	.01
Educational attainment (ref. = Post-secondary)			
9 years or less			.00
Upper secondary			.00
Missing information			-.52
Age at interview	.00***	.00***	.00***
Survey year (ref. = GGS2012)			
GGS2021	-.05***	-.05**	-.05**
Gender (ref. = Male)			
Female	.12***	.12***	.12***
Pseudo-R^2	0.01	0.01	0.01

Note: n = 8,376. *: p<0.05, **: p<0.01, ***: p<0.001.

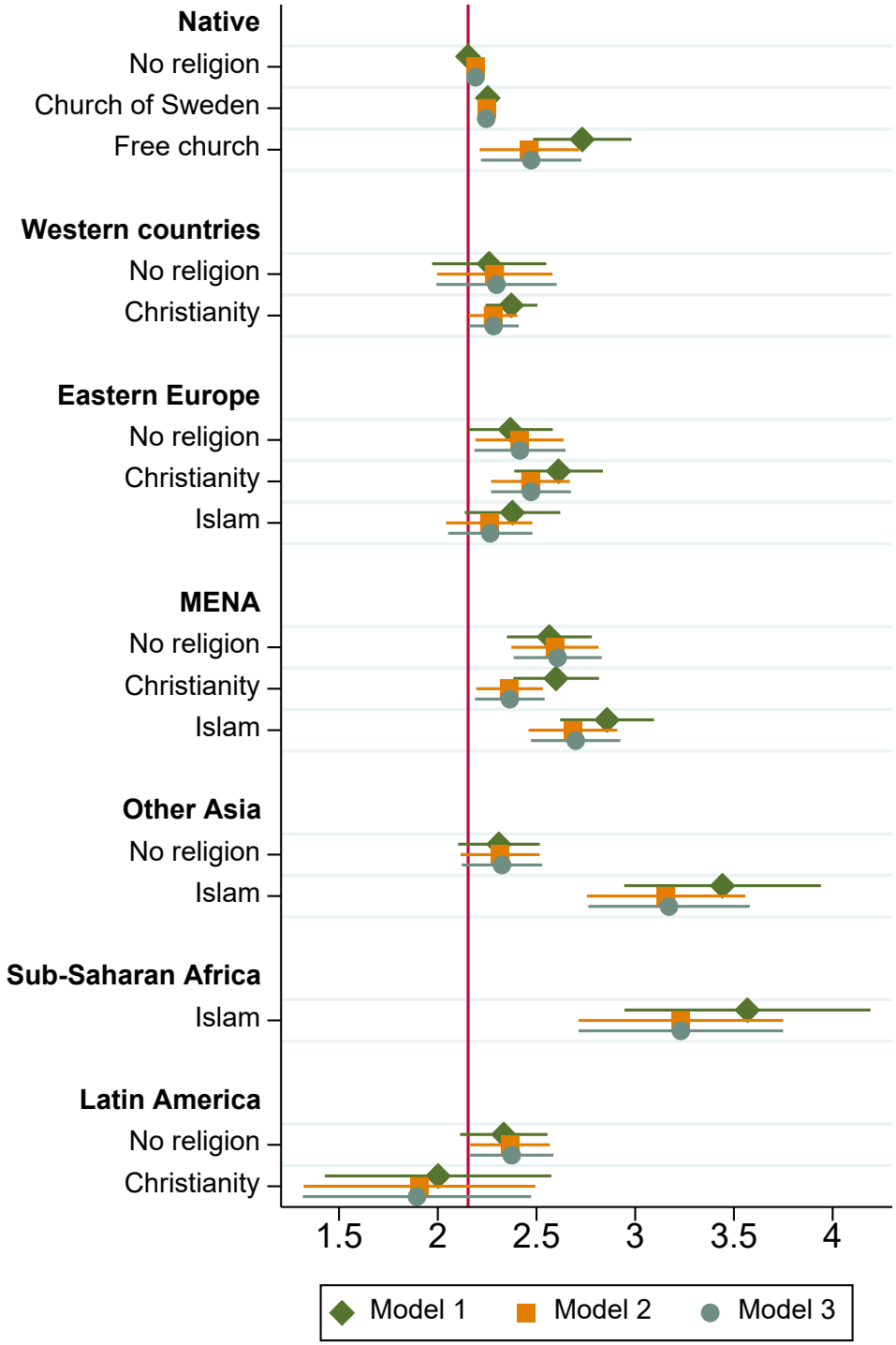
Source: Swedish Generations and Gender Surveys from 2012/2013 and 2021

Appendix figure 1a. Ideal number of children by geographical origin and religious affiliation, Poisson regression, average adjusted predictions (women)



Note: Model 1 controls for age. Model 2 adds frequency of attendance at religious services to Model 1. Model 3 adds educational attainment to Model 2. Christians of MENA origin are omitted because the number of respondents in the category was lower than 5. 84 % confidence intervals. n = 1,582
Source: Swedish Generations and Gender Survey from 2021

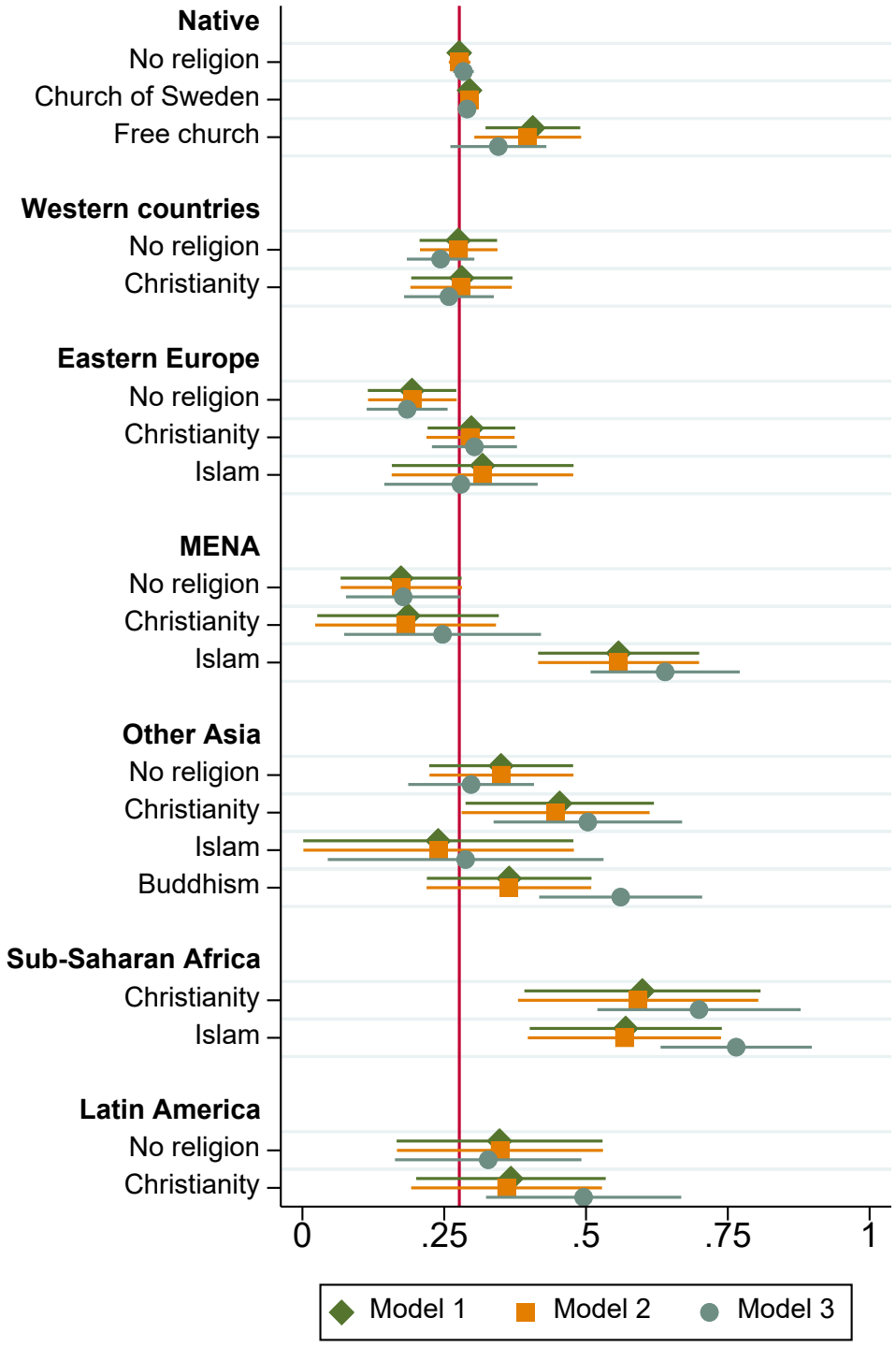
Appendix figure 1b. Ideal number of children by geographical origin and religious affiliation, Poisson regression, average adjusted predictions (men)



Note: Model 1 controls for age. Model 2 adds frequency of attendance at religious services to Model 1. Model 3 adds educational attainment to Model 2. Christians and Buddhists of other Asian origin and Christians of sub-Saharan African origin are omitted because the number of respondents in the category was lower than 5. 84 % confidence intervals. n = 1,409

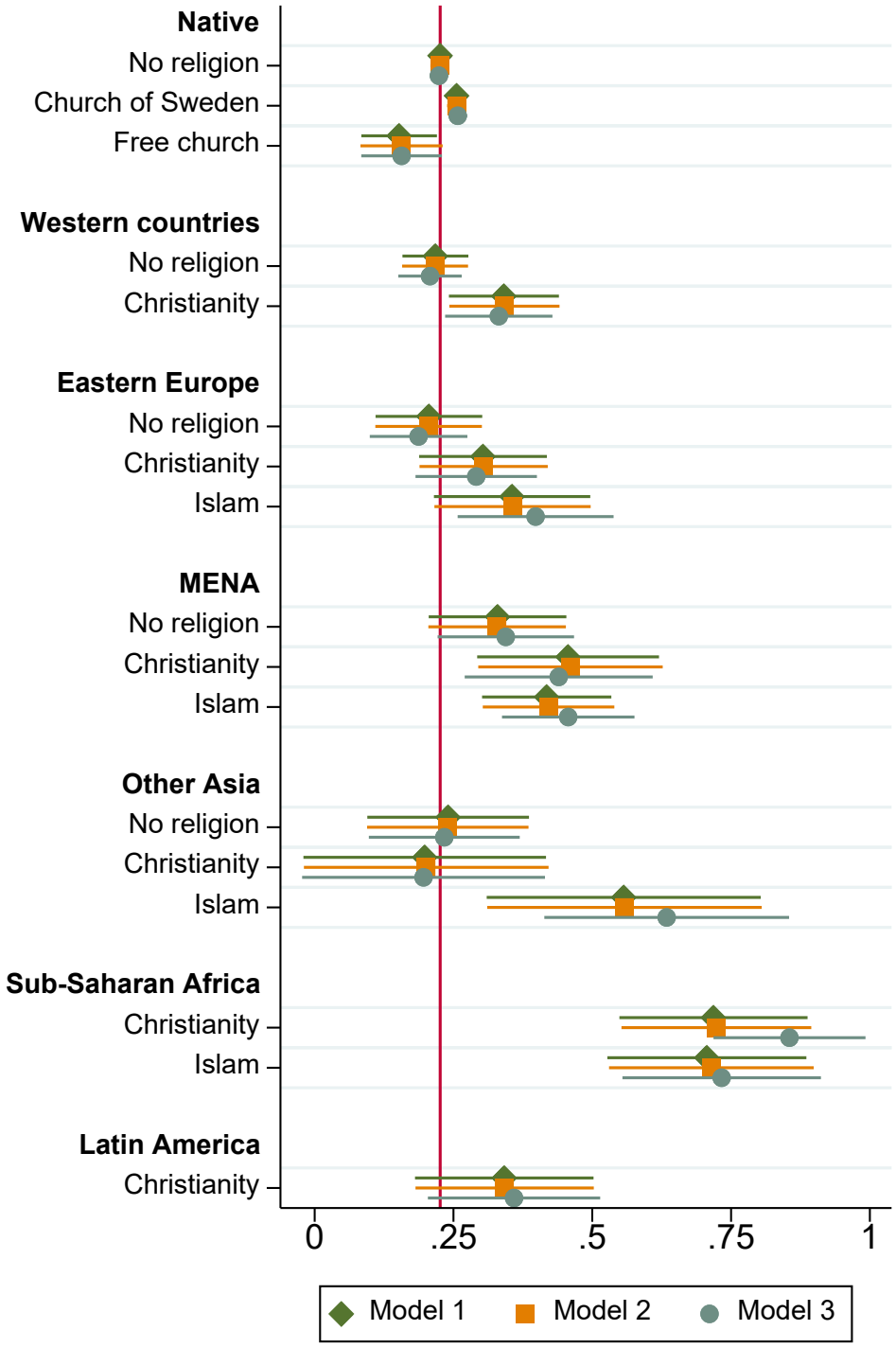
Source: Swedish Generations and Gender Survey from 2021

Appendix figure 2a. Propensity to state a positive short-term fertility intention (as opposed to a negative intention), by geographical origin and religious affiliation, logistic regression, average adjusted predictions (women)



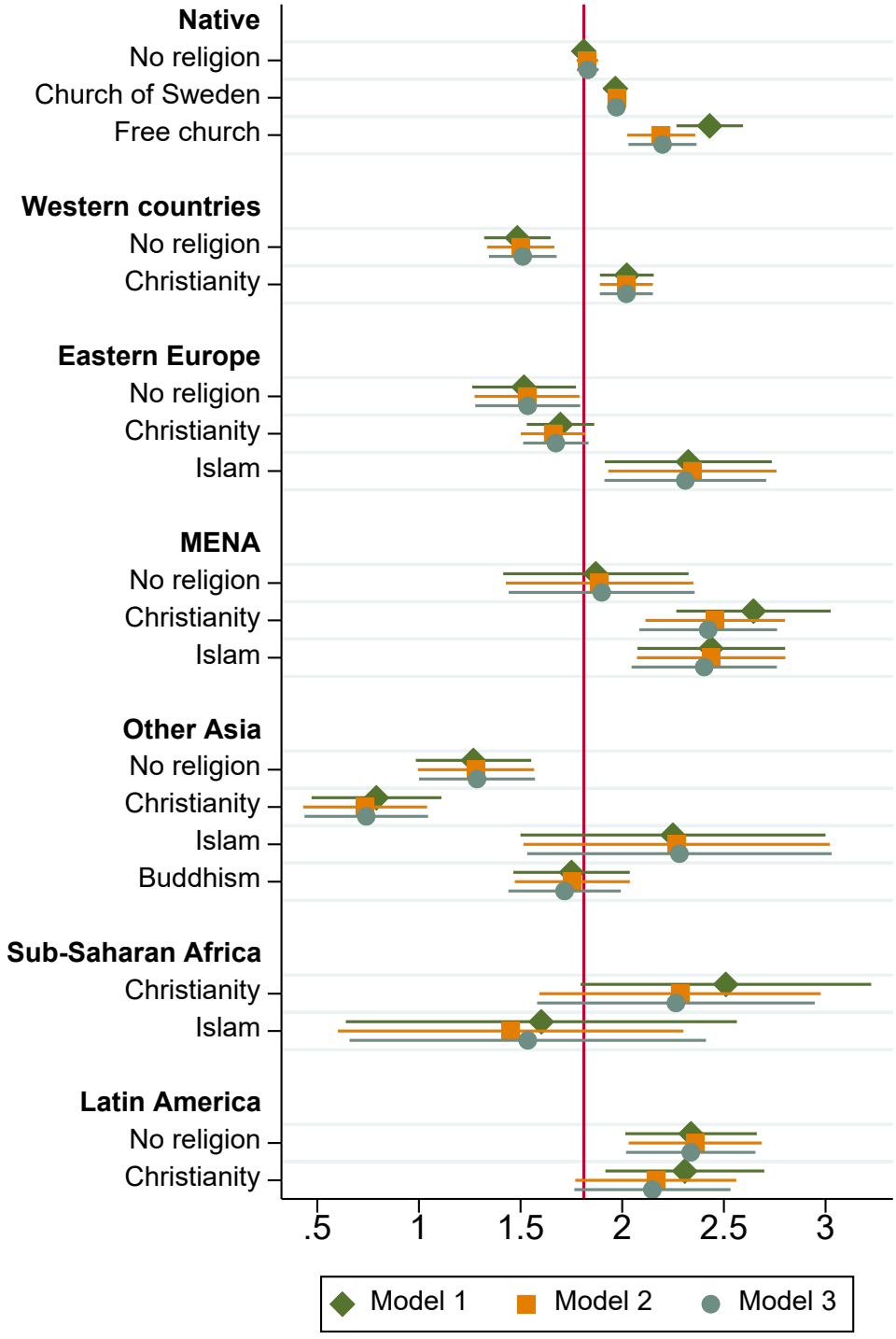
Note: Model 1 controls for age, parity, and partnership status. Model 2 adds frequency of attendance at religious services to Model 1. Model 3 adds educational attainment to Model 2. 84 % confidence intervals. n = 2,822
Source: Swedish Generations and Gender Surveys from 2012/2013 and 2021

Appendix figure 2b. Propensity to state a positive short-term fertility intention (as opposed to a negative intention), by geographical origin and religious affiliation, logistic regression, average adjusted predictions (men)



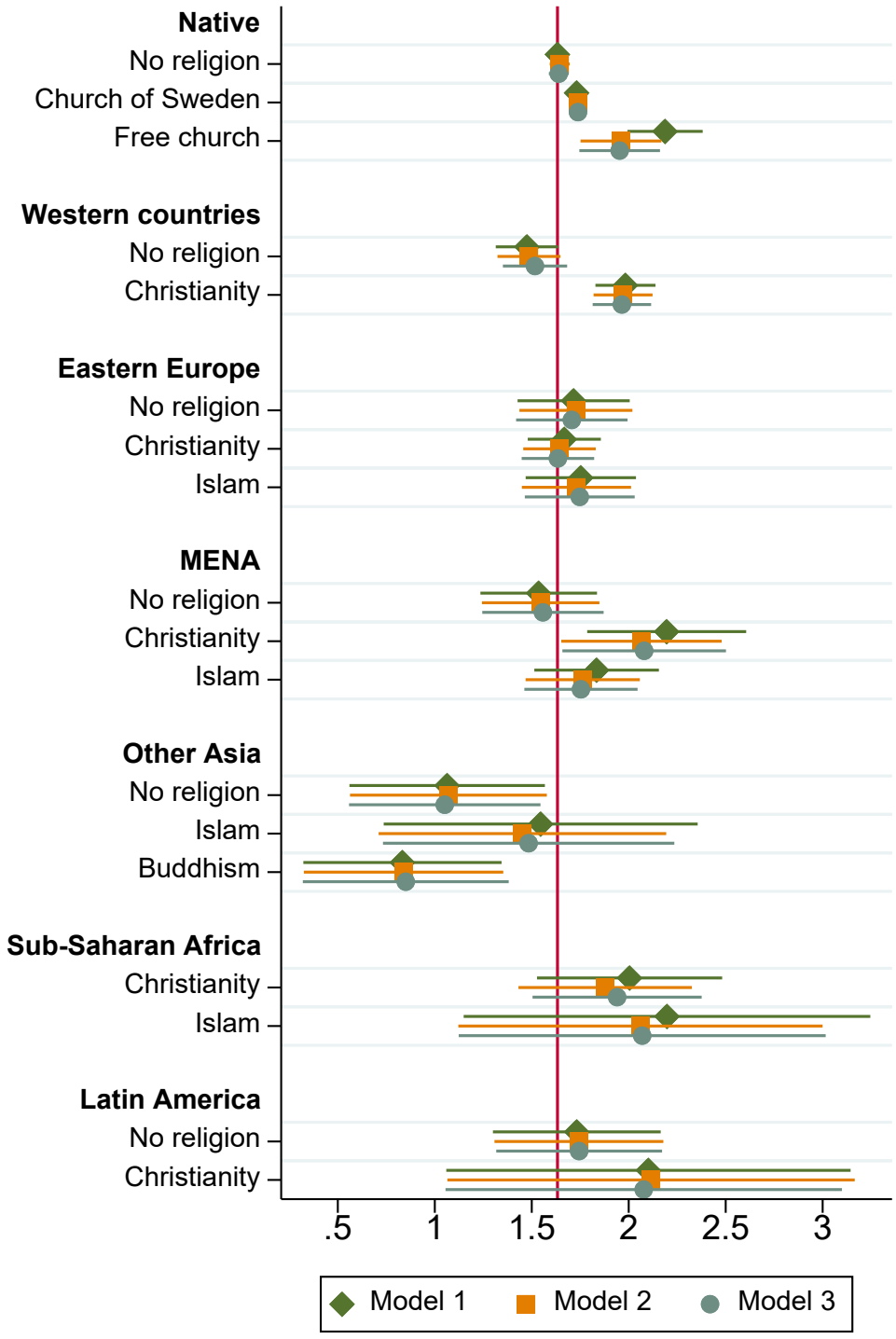
Note: Model 1 controls for age, gender, survey year, parity, and partnership status. Model 2 adds frequency of attendance at religious services to Model 1. Model 3 adds educational attainment and employment status to Model 2. Buddhists of other Asian origin are omitted because the number of respondents in the category was lower than 5. Non-religious individuals of Latin American origin are omitted due to perfect prediction, i.e. all respondents in the category had the same type of short-term fertility intention. 84 % confidence intervals. n = 2,376
Source: Swedish Generations and Gender Surveys from 2012/2013 and 2021

Appendix figure 3a. Achieved number of children at age 40 by geographical origin and religious affiliation, Poisson regression, average adjusted predictions (women)



Note: Model 1 controls for age. Model 2 adds frequency of attendance at religious services to Model 1. Model 3 adds educational attainment to Model 2. 84 % confidence intervals. n = 4,518
Source: Swedish Generations and Gender Surveys from 2012/2013 and 2021

Appendix figure 3b. Achieved number of children at age 40 by geographical origin and religious affiliation, Poisson regression, average adjusted predictions (men)



Note: Model 1 controls for age. Model 2 adds frequency of attendance at religious services to Model 1. Model 3 adds educational attainment to Model 2. Christians of other Asian origin are omitted because the number of respondents in the category was lower than 5. 84 % confidence intervals. n = 3,856
Source: Swedish Generations and Gender Surveys from 2012/2013 and 2021

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