The Rise of Non-Religious Spirituality and Fertility Behavior in the United States

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Abstract

A growing proportion of the adult population in the United States identifies as spiritual but not religious (SBNR), a term referring to individuals who are concerned with spiritual matters, but often choose to pursue them away from organized religion. While it has been established that those with stronger religious commitment have higher fertility on average, the implications of less conventional spiritualities on childbearing are unknown. In this study, we use data from the U.S. General Social Survey from years 2014-2018 to explore fertility differences among religious, spiritual and nonreligious people. Using a reverse-survival technique, we estimate the transition to parenthood among men and women based on their religious and spiritual identification. We find that SBNR women have significantly higher rates of transition to first birth compared to those who are neither religious nor spiritual, and this is partly accounted by higher religiosity during childhood. On the other hand, no significant differences are found in fertility outcomes between SBNR men and their non-religious and non-spiritual counterparts. These findings contribute to a better understanding of the link between changes in the religious landscape and fertility trends.

Keywords: Spirituality; Religion; Fertility; Secularization; Event History Analysis

Introduction

Since the mid-20th century, most Western societies have experienced an ongoing decline in institutionalized forms of religious adherence. This decline in organized religion has been one of the key factors associated with changes in family and fertility patterns, including delayed family formation, a greater share of single households, lower fertility levels, more cohabitation over traditional marriage and, in many cases, more partnership dissolution (Adsera 2006; Lehrer 2004; Lesthaeghe 2010). In the United States, religious decline has until recently been relatively modest compared with many European countries, with a substantial drop in the proportion of religiously affiliated individuals and the share of US adults who attend religious services on a regular basis only beginning in earnest in the 1990s (Smith 2021; Voas and Chaves 2016). In addition, the total fertility rate (TFR) in the US has fallen over the past two decades from over two children per woman in the early 2000s to less than 1.7 children in 2021 (Osterman et al. 2023).

At the same time, there has been an increase in less conventional forms of spiritual beliefs and practices, outside of formalized religion. According to the Pew Research Center (Lipka and Gecewicz 2017), over a quarter of the adult population in the United States identified as spiritual but not religious (SBNR) in 2017, a rise from 19% in 2012. The SBNR label was first proposed by Fuller (2001) to describe those individuals who are concerned with spiritual matters but choose to pursue them away from organized religion, or in other words are unchurched. According to Ammerman (2014), the terms ‘religious’ and ‘spiritual’ can be used as boundary markers against one another, where the former refers to membership and behavior linked to a religious institution, and the latter denotes personal experience independent of religious authority.

While numerous studies have explored the relationship between institutional religiosity and fertility, little attention has been given to the implications of unchurched spirituality on

fertility preferences and behavior. The purpose of this study is to examine whether those who identify as SBNR exhibit different fertility patterns compared with those identifying as neither religious nor spiritual and compared with religious individuals. In addition, we explore a number of potential factors driving these differences. These include 1) vestiges of religious childhood socialization among the SBNR, with remaining religious values and ideals about family formation, gender roles and fertility among this population even if they are not actively involved with religious groups as adults (this can also include influences from remaining religious family members and friends who bring increased support for family formation and childbearing); 2) potentially improved mental health and wellbeing among the SBNR which can in turn promote higher fertility compared with nonreligious populations; and 3) socio-demographic differences between religious, spiritual and nonreligious populations, including educational attainment and racial/ethnic composition, which can potentially account for differential fertility behavior among these groups. We are not aware of any previous studies that examined fertility differences between SBNR and other (non)religious groups. In addition, while previous studies on religion and fertility focused mainly on women, we explore the role of religious and spiritual identification in relation to fertility behavior among both women and men.

Religious Influences on Family Formation and Fertility

In an era when the decision on whether to enter a formal union and whether to have children has become less constrained by state influences, peoples' own convictions (and that of communities and social groups they belong to) may gain increasing importance in relation to fertility behavior (Lesthaeghe 2014; Perelli-Harris and Lyons-Amos 2016; Rijken and Liefbroer 2016). Religion can play a role not only in forming societal norms and expectations with respect to family formation, but also in influencing individual worldviews affecting

demographic choices, including partnering and reproduction. Religious networks and groups that individuals are part of can further support and reinforce their family formation preferences and decisions. Those who hold a religious affiliation are more likely to marry and to do so at a younger age than non-affiliated individuals (Liefbroer and Rijken 2019; Sigalow, Shain and Bergey 2012). Furthermore, the more religious are less likely to divorce and more likely to remain married for a longer period (Ellison, Wolfinger and Ramos-Wada 2013; Li, Kubzansky and VanderWeele 2016). In addition, they have a higher probability of becoming parents and tend to have a greater number of children by the end of their reproductive life (Baudin 2015; Mishra and Parasnis 2017; Peri-Rotem 2020; Stonawski et al. 2010).

In short, having a religious affiliation and being more involved in religious activities are closely tied with a greater likelihood of family formation and a larger number of children (Berghammer 2009; Bessey 2017; Peri-Rotem 2016). In the US, different indicators of religiosity, including affiliation with a particular religion, the frequency of attending religious services and importance of religion in daily life are all associated with higher average number of children (Frejka and Westoff 2008; Pew Research Center 2015). The positive relationship between religion and fertility tends to hold also when other variables such as income, region of residence or education are controlled for (Dilmaghani 2018; Hackett et al. 2016).

There are a number of mechanisms at play driving higher fertility among religious populations:

First, traditional values and teachings from many of the world's largest religions, including Christianity and Islam, stress communal duties to and support for forming one's own family through marriage and childbearing (Lehrer 1996). Values and teachings that religious individuals are socialized into as children and often hold to as adults tend to emphasize more traditional gender roles, family formation, marriage, stability of partnerships and procreation. Survey-based research has shown that religion and traditionalism are related to outcomes in

many spheres of life, such as educational attainment (Glaeser and Sacerdote 2008), partnering and childbearing (Lesthaeghe 2014), female and male labor force participation as well as how couples divide childrearing responsibilities (Edlund and Öun 2016; Mencarini, Vignoli and Gottard 2015). For instance, more traditionalist women tend to reduce work-participation to a greater extent than others after having children (Edlund and Öun 2016) and are more likely to have higher order births (Berghammer 2012).

Religious values and teachings may also indirectly influence an individual's fertility outcomes, via intermediary behaviors, also known as the proximate determinants of fertility (Bongaarts 1978, 2015). For instance, religion could reduce the use of modern contraceptives versus other forms of contraception with greater likelihood of unplanned fertility (Brooks and Weitzman 2022; Dilmaghani 2018; Hill, Siwatu and Robinson 2014; Marra, Meijer and de Graaf 2020). More religious young women are less likely to use hormonal contraception (Brooks and Weitzman 2022). Belonging to a religion also reduces the likelihood of induced abortion, and makes individuals less likely to approve of abortion (Adamczyk 2022).

Second, the ways in which religious values and norms are communicated to members of religious groups may have an important role in influencing fertility behavior. Kevin McQuillan discusses the role of communication of religious values in terms of the ability to influence these values among respondents (McQuillan 2004). A charismatic pastor, a sympathetic youth leader, an online influencer or a convincing preacher could be more important in influencing values than the content of the message being communicated. Therefore, regular attendance at religious services is expected to enhance the effect of religious norms and values on fertility behavior.

Religious individuals are also more likely to socialize with other religious individuals within their social networks and communities (Cheadle and Schwadel 2012; Olson and Perl 2011). Individuals often choose friends and partners with similar values to themselves from the

available pool of people around them, and friends and partners then tend to become more like each other as they spend time together. This means that, due to trends of homophily and endogamy, religious individuals are often surrounded by others who share more traditional religious values when it comes to gender roles, family formation, marriage, stability of partnerships and procreation–which, along with their religious family and community, can reinforce and support their own family formation and greater childbearing behaviors.

Third, religion could matter for health. Evidence suggests that those who are religious may have better health, net of socioeconomic factors (Ellison and Hummer 2020; VanderWeele et al. 2020). A review of European data suggests protective associations between various forms of religious participation and lower depression, lower mortality, and better self-rated health (VanderWeele 2017).

As health is one factor affecting family formation, where those who are in poor health are less likely to marry and have children (Barclay and Kolk 2020; Ussher and Perz 2019), any beneficial effects of religion on health could improve likelihood of marriage and family formation, lead to earlier couple formation and marriage, less likelihood of divorce (and thus longer periods in partnership) and a younger onset of childbearing. Health can also be an important determinant of fertility, and poor health can be linked to lower fertility (Barclay and Kolk 2020; Lassen et al. 2015; Lemoine and Ravitsky 2015).

Religious values and teachings can affect health behaviors directly, for instance by leading to fewer risky habits, such as smoking, social and physical inactivity, as well as high alcohol intake (Hitchman and Fong 2011). They can also affect health indirectly, through increasing the likelihood of forming a stable marital union and having children. Partnership and marriage tend to improve health behaviors (e.g., higher likelihood of vaccinations, particularly for men; (Mamelund and Bergsaker 2011). In addition, parenthood is often associated with better health

and increased life expectancy (Thomeer and Ostergren Clark 2021; World Health Organization 2007).

Social control and preventive behaviors are key reasons for religious persons' better health, where other community members may seek to halt risky behaviors such as drinking or social isolation (Uecker 2012; Umberson 1987). More generally though, those who are religiously active may have greater levels of social support from their religious group and community, which can be an important determinant of health outcomes (Kvande et al. 2015; Manczak et al. 2018).

The Shift from Religiosity to Spirituality

Despite a strong relationship between religiosity, union formation and fertility, a large-scale societal transformation is underway which may impact this relationship with the decline of organized religion indicators across large swaths of populations in Western democracies, including in the US (Voas and Chaves 2016; Wilkins-Laflamme 2022). Indicators of religiosity such as religious affiliation and frequent religious service attendance and prayer have been declining, especially among younger generations. At least some of this religious decline has been a shift towards less conventional spiritualities. In the 2018 International Social Survey Programme for example, only 4% and 3% of US respondents born in 1930-39 said either 'I don't follow a religion, but consider myself to be a spiritual person interested in the sacred or the supernatural' (SBNR) or 'I don't follow a religion and don't consider myself to be a spiritual person interested in the sacred or the supernatural.' For US respondents born six decades later in 1990-99 however, these two rates had both risen to 24% and 16% respectively (own estimates using ISSP data, ISSP Research Group 2020).

Defining Spirituality

Broadly conceived, spirituality refers to the realm of 'seeking', and often involves practices and beliefs that invoke connections with something that is beyond daily reality (Ammerman 2020). While there is no agreed upon universal distinction between spirituality and religiosity, people often use them differently in defining practices and behaviors in everyday life (Ammerman 2014; Kucinskas and Stewart 2022). Religion often refers to organized religious groups and traditions as well as related religious practices. By contrast, spirituality matters are often seen to be removed from conventional religion. 'Spiritual' refers to individual bricolaging of various beliefs and practices, often centered on a holistic this-worldly view of an interconnected universe and energies, and the transcendent, which can be experienced in the body and the self once a level of heightened consciousness and authenticity are achieved. 'Religious' is associated instead with membership and behavior linked to a religious institution or organized religious group.

This conceptual distinction between 'religion' and 'spirituality' emerged and sharpened in the context of the debate around the secularization paradigm. From the 1990s onwards, some researchers argued that what defines religion today is not so much its decline, but rather a shift from more conventional forms of religion (especially Christianity) to more personalized and individualized forms of spirituality, also known as self-spirituality, among large segments of Western populations (Ammerman 2014; Aupers and Houtman 2010; Davie 1994; Drescher 2016; Fuller 2001; Heelas and Woodhead 2005; Watts 2022).

Organized religion may be on the decline across birth cohorts in Western societies, but religion conceived of more broadly is thriving in new individualized and spiritualized forms, at least among some populations. Faced with advanced modernity's alienating dynamics of new technologies and neo-liberal capitalism causing social distance and individualism, some individuals turn to new forms of spirituality which sacralize the self and provide new sources of comfort, wellness and meaning in the modern age. Although the center and focus of these

spiritualities is often the individual, Steensland, Kucinskas and Sun (2022) also show that these spiritual traditions are nevertheless very much socially influenced "[…] rooted in social practice and physical embodiment, and orientated toward pragmatic action. Spirituality does not float above human power relations; it is also contested, strategically framed, and shaped by institutional forces" (Steensland, Kucinskas and Sun 2022, 4). More and more individuals draw on a number of identity constructs, beliefs, rituals, and practices from a variety of sources, some of these sources linked to religious groups and some of them not, individuals sometimes by themselves and sometimes with the support of like-minded networked communities, to build and maintain their own personalized faith systems within their social environments (Hervieu-Léger 2000; Steensland, Kucinskas and Sun 2022).

Luckmann (1967) famously refers to this phenomenon as 'invisible religion', Heelas and Woodhead (2005) as the 'spiritual revolution', and Watts (2022) as the 'religion of the heart'. Houtman and Aupers (2007, 305) argue that their cross-national findings from Europe provide evidence for a surge in post-Christian types of spirituality, and "[…] confirm the theory of detraditionalization, according to which a weakening of the grip of tradition on individual selves stimulates a spiritual turn to the deeper layers of the self." Although this form of self-spirituality is now also common among active members of religious groups, and is shaping these groups in new ways (Reimer 2023), it is also commonly found outside of conventional religious traditions.

Its eclectic nature means that researchers are constantly grappling not only with naming this phenomenon, but also how to define it and what to include within the confines of its concepts. Initially, spiritualities away from conventional religion would usually refer to those aspects of Eastern religions, pagan rituals and traditional Indigenous ways of life that some (especially White middle-class) members of the baby boomer generation imported, appropriated and popularized within Western societies notably in the 1960s and 1970s counter-

culture movements: specifically New Age (energies, alternative healing therapies, spiritual environmentalism, holism, etc.), astrology, yoga, meditation, mindfulness activities, and so forth. Now, however, the concept of spirituality as distinct from religion is conceived of more broadly. Most researchers agree that there are elements common to spiritual endeavors; even a broad shared doctrine among these spiritualities. This would include any search for one's 'authentic' self, valuing personal authenticity above conformity to external religious norms and authorities, and relocating the sacred from the external and transcendent to the internal and immanent (Aupers and Houtman 2010; Taylor 1991, 2007).

Who is Spiritual But Not Religious (SBNR)?

Spirituality can provide an alternative category of identity, which is distinct from institutional religion, as well as from secularism. It is important to note though that some individuals who self-identify as SBNR in surveys can actually be classified as more conventionally religious when we look at how they score on other measures. For example, a survey by the Pew Research Center has found that SBNRs are more likely to identify as belonging to a particular religion and to say that religion is important to them compared to those who are neither religious nor spiritual. In addition, the survey has shown that 17 percent of SBNRs attend religious services at least once a week, compared to 8 percent among the non-religious and non-spiritual group. It should be noted though, that SBNRs attendance is still lower than the average proportion of 35 percent of US adults who attend religious services once a week or more (Lipka and Gecewicz 2017).

Other unique characteristics of SBNRs include higher levels of education than the general population in the US, with over a third of SBNRs holding a college degree compared to 28% of the total adult population (Lipka and Gecewicz 2017). In addition, Kucinskas and Stewart

(2022) have shown that those identifying with the Democratic Party are more likely to report engaging in spiritual rather than religious practices.

In terms of race and ethnicity, Lipka and Gecewicz (2017) found no major differences in the racial composition between SBNRs and those who are neither religious nor spiritual, although the proportion of people of Black origin was slightly higher among the SBNR group. Similarly, Kucinskas and Stewart (2022) found that Black and mixed race individuals reported more frequent engagement in alternative spiritual practices than those who are White.

Implications of the Spiritual Turn for Fertility

The shift away from religion towards less conventional forms of spiritualities might have important implications on fertility trends. Religious decline has been closely associated with declining fertility (Kaufmann 2010). According to the Second Demographic Transition theory, the secularization process and the related rise in individualization are the main drivers of family transformations seen in industrialized societies since the latter half of the 20th century, including delayed union formation and first birth as well as lower fertility levels (Lesthaeghe 2010; Lesthaeghe and Surkyn 1988). Nevertheless, differences in fertility rates between the religious and the nonreligious persist also in areas that have seen important religious declines; higher fertility rates are consistently found among proportionally smaller populations that demonstrate strong religious commitment in the United States and in other Western societies (Frejka and Westoff 2008; Peri-Rotem 2016; Perry and Schleifer 2019).

Against these trends, there is widespread concern regarding low fertility and its implications for society, in terms of economic growth prospects, sustainability of social security systems, military security and political implications (Apt 2014; May 2019; Teitelbaum 2013; United Nations 2021). There is concern that most pronatal government policies, including economic support for childbearing, often have limited or no significant impacts on

fertility levels, and where effective, they often only temporarily influence reproductive patterns (Bergsvik, Fauske and Hart 2021; Bonner and Sarkar 2020; Skirbekk 2022). This has shifted the debate towards cultural changes, where young people have fewer children as they prioritize personal development, down prioritize child-rearing as a potential hindrance to other life goals, and shift away from traditional norms and religious beliefs (Baker and Smith 2015; Lesthaeghe 2020; Van de Kaa 2001).

Several religious leaders and political parties thus oppose the rise in alternatives to traditional religion, including spirituality and movements away from organized religion (Berzano 2019; Cremer 2023; Herbert 2019; Tromp, Pless and Houtman 2020). By contrast, others may see a reduced influence of organized religious groups and less influence of their pronatalism as a positive development and a way to reach lower population growth and a more sustainable environmental and ecological development (Bajaj and Stade 2023; Schliesser 2023).

Spirituality may for some represent a way to achieve inner harmony, better sexual relations, greater love, and more intimate relationships (Strube 2022). Spirituality may also be seen as part of the cause of low fertility. As for the perception of it being "anti-family" or a sign of moral decline, this is often due to other cultural or religious viewpoints, as well as specific views on spirituality. Spiritual beliefs, mindsets and lifestyles may syncretize elements from different religious traditions, including Christianity, Buddhism, Hinduism, Paganism, and others. For those who adhere to a specific religion, this blending of beliefs can be seen as heretical or sacrilegious. The spiritual movement places great emphasis on personal spiritual growth, which can be seen as fostering an individualistic, or even narcissistic attitude, focused on one’s own happiness and wellbeing (Stone 2016). This focus on the self might be interpreted as being at odds with family values or community responsibilities, which often stress the importance of sacrifice and putting others' needs before your own. Many spiritual philosophies

suggest that truth and morality are subjective and can vary from person to person, and are more focused on how individuals can achieve inner peace and satisfaction (Shining 2020). This contrasts with more traditional belief systems, which often posit a set of absolute moral laws. Thus, critics might see the rise in less conventional spiritualities as leading to moral relativism and a breakdown of ethical standards. Others may instead see spirituality as a continuation of traditional, pre-Christian era religion and nature worship, a type of modern day folk religion, which for some involve nature beliefs (Albanese 1991).

Despite these strong feelings among certain groups and political debates that are currently happening on the topics of religion, spirituality and fertility, our study is focused specifically on the mechanisms at play on the ground among individuals when it comes to less conventional spiritualities and fertility behaviors. What does the shift towards less conventional forms of spiritualities among certain segments of the population actually mean for fertility outcomes in the United States?

Study Hypotheses

Although the rise in alternative spirituality represents a move towards more individualized forms of religious adherence, those who identify as Spiritual But Not Religious may demonstrate attitudes and behaviors that are closer to conventional religion than those who are neither religious nor spiritual. Therefore, some of the explanations for the higher fertility among more religious individuals could also apply to the SBNR group. Additionally, spirituality often encourages personal growth and development. This may involve cultivating qualities like patience, love, compassion, and resilience, all of which are crucial in parenthood. Therefore, spiritual individuals might feel more prepared or motivated to have children as a part of their personal and spiritual growth journey. For many, less emphasis on their own material consumption is important, which could give way for other life priorities, including

family formation. Spirituality also often involves community engagement and mutual support. These networks can be significant in providing the social and emotional support necessary for raising children. The strength and quality of these connections might encourage higher fertility rates, as well as a faster transition to first birth. Therefore, we assume that *SBNRs will have a higher transition rate to first birth compared to non-religious and non-spiritual individuals (H1)*. Nevertheless, a number of other mechanisms could also be at play driving differential fertility patterns among those who identify as spiritual but not religious, as opposed to religious individuals as well as to those identifying as neither religious nor spiritual.

Vestiges of Religious Socialization

Some researchers see the increases in spiritualization as a stepping stone to greater secularization (Bruce 2017; Pollack and Pickel 2007; Voas 2009; Voas and Chaves 2016; Voas and Crockett 2005). In other words, these researchers see spiritualization as a later stage in the secular transition process whereby individuals who received some religious socialization as children hold on to some vestiges of religion in the form of less conventional spiritualities as adults, but are also less likely to pass this spirituality on to the next generation in more secular social environments. Consequently, those who are SBNR would be those who were raised as children to assign importance to transcendent matters despite no longer being actively involved with religion as adults. It has been argued that early life religious exposure can lead to an earlier transition to first birth, through the explicit and implicit dissemination of values that promote familism and complementary gender roles (Pearce and Davis 2016). The SBNRs would also then be more likely to have been raised with religiosity in their childhood family and community environments and may still have some traces of values they learnt and internalized as children when it comes to traditional gender roles as well as earlier marriage and larger family and fertility ideals. Although these values may not be as strong among the SBNR as

among actively religious individuals who often see these values reinforced during their adult years by their religious group and networks. Therefore, our second hypothesis contends that *higher religiosity during childhood contributes to the higher rates of first birth among SBNRs, compared with non-religious and non-spiritual individuals (H2).*

Improved Health and Wellbeing

Much research has shown that spirituality can be a source of comfort, wellness and meaning in modern life (George et al. 2000; Mossière 2022). Various spiritual practices are often promoted as ways to cope with depression, anxiety, stress and other mental health challenges. Although there have also been critiques of this literature for defining spirituality positively and thus finding biased positive health outcomes tied to this definition (Koenig 2008, 2013). If spirituality is in fact tied to some improved health and wellness it may also contribute to a more positive view of major life transitions, such as family formation and parenthood, and help cope with the stresses of childrearing. This in turn could potentially drive higher fertility among SBNR populations who may have more positive experiences of having and raising children. Thus, the third hypothesis contends that *improved subjective health contributes to increased rates of first birth among SBNRs compared with their non-religious and non-spiritual counterparts (H3).*

Socio-Demographics

The socio-demographic composition of the SBNR population in the US may also be affecting their fertility rates in different ways. Higher educated individuals, found in greater proportions among the SBNR (Lipka and Gecewicz 2017), typically have lower fertility (Colleran and Snopkowski 2018; Zang 2019). Education has been found to cause a postponement of the onset of childbearing and a reduction in family size outcomes (Cygan-

Rehm and Maeder 2013; DeCicca and Krashinsky 2020). However, it has been shown that religiosity may mitigate the negative relationship between education and fertility, as increased levels of education are less likely to result in reduced fertility among religiously devout women (Newman and Hugo 2006; Peri-Rotem 2020).

People of color in the US, including those of Black or mixed-race heritage, are also found in greater proportions among the SBNR (Kucinskas and Stewart 2022; Lipka and Gecewicz 2017). In addition, Black and other non-White women typically have higher fertility levels than those of White origin (Guzzo and Schweizer 2020; Mathews and Hamilton 2019). Therefore, our fourth hypothesis contends that *the higher transition rate to first birth among SBNRs, compared with non-religious and non-spiritual individuals, is partly attributed to differences in the ethnic composition between these groups (H4)*.

By contrast, some of the mechanisms that drive higher fertility among religious individuals are less prevalent among SBNRs. For example, SBNRs are less likely than those who are religious to engage in organized religious activities (e.g. religious service attendance), and therefore, they are usually less exposed to doctrines and values that highlight the importance of family formation and childbearing (McQuillan, 2004). Moreover, compared to their religious peers, SBNRs may place greater emphasis on individual goals and self-fulfilment values, which can be at odds with traditional family trajectories (Lesthaeghe 2014). Spirituality often involves the pursuit of meaning and purpose, values that for some would align with the decision to have children, yet conflict with family formation for others. Some might find a deep sense of fulfillment in parenthood, which may be reflective of their spiritual journey, and others may not. Therefore, we hypothesize that *individuals who are SBNR will have lower rates of first birth compared to religious individuals (H5)*.

Data and Methods

The data for this study are taken from the United States General Social Survey (GSS) (Davern et al. 2021). The GSS is a nationally representative survey of adults that has been carried out in the US since 1972 with a fresh sample of respondents around every two years since 1994, documenting demographic, behavioral and attitudinal information. For the purpose of this study, we use pooled GSS data from recent available years (2014, 2016 and 2018)[1]. We limit the sample to respondents in main reproductive ages (18-45 for women and 18-54 for men), who responded to the questions on fertility, education, health, ethnicity and childhood religiosity. This results in a sample size of 1,193 women and 1,324 men.

Measures

The measure for spiritual and religious identification is constructed by combining information from two separate questions on the extent of spiritual identification ("To what extent do you consider yourself a spiritual person?") and religious identification ("To what extent do you consider yourself a religious person?"). Each of these questions has four response categories: very, moderately, slightly and not at all. These responses from the two original variables are grouped into four categories in one new variable for the purposes of this study: "neither religious nor spiritual" (not at all religious and not at all/slightly spiritual), "SBNR" (not at all religious and moderately/very spiritual), "slightly religious" and "moderately or very religious", where the latter two groups include people with varying levels of spirituality[2].

In addition, we include a measure of frequency of religious service attendance. This variable has been collapsed into three levels: "never", "yearly" or "monthly or more often". Two additional measures are used to capture religiosity during childhood and adolescence. The first one measures the religion in which the respondent was raised in, which includes the following options: no religion, Protestant, Catholic, other Christian and other religion. The

second measure asks respondents whether the religion they were raised in (at the age of 16) is fundamentalist, moderate or liberal, including those raised with no religion.

To control for respondents' health status, we use the GSS measure of subjective health. The question is phrased as "Would you say your own health, in general, is excellent, good, fair, or poor?". We also include a measure for race and ethnicity, including the categories White, Black, Hispanic and Other. In addition, a binary variable is used to denote whether the respondent was born in the US or elsewhere. Other demographic measures include marital status (ever/never married), age in years and years of schooling. Finally, our fertility measures include the number of children ever born and respondent's age when their first child was born.

Analytical Strategy

First, we explore the bivariate correlations between religious and spiritual identification and other religious, health and socio-demographic variables as described above. This allows us to identify any differences in these characteristics by religiosity and spirituality among both men and women. We also estimate the average number of children for each religiosity/spirituality category across different age groups for men and women.

However, the completed family size can only be obtained for those who have already finished their reproductive period, meaning that childbearing outcomes would have occurred well before respondents are asked about their religious and spiritual identification. Therefore, we use an event history analysis that includes only those men and women who are still in reproductive ages at the time of the survey. Using information on age at first birth, we conduct a reverse survival technique to estimate the timing of transition to first birth from the age of 15 until the date of interview. In this method, each respondent contributes the number of years since age 15 until the year in which the event of first birth occurred or until the year of interview for those who have not (yet) become parents (i.e. censored cases). This resulted in 12,438

person-years for female respondents and 19,001 person-years for male respondents. We then analyze the likelihood of first birth using a logistic regression analysis, where the probability of the transition occurring in a given year is estimated using a set of fixed and time-varying covariates. The fixed-time variables include measures for whether the respondent is foreign born, or ever married, as well as their ethnicity and health status, years of schooling, childhood religiosity and religiosity/spirituality identification. The time varying variables include age and age squared, the reconstructed time period in years (since the respondent was 15 until the last observation) and whether the respondent was enrolled in education in that year. The timing of enrolment in education is based on the total years of schooling, which is used to estimate the year in which the respondent completed full-time education.

Finally, to identify the contribution of specific covariates to the likelihood of first birth by religiosity and spirituality identification, the regression analysis is done in a nested model, where the variables of interest are gradually added. In addition, we estimate whether the average discrete change in the effect of religiosity/spirituality on first birth varies significantly across these models, using the method offered by Mize et al. (2019) of seemingly unrelated estimation (SUEST).

Results

Tables 1a and 1b present the sample characteristics of women and men from the GSS pooled data from 2014 to 2018 by religiosity/spirituality category. Among women, only 13% identify as neither religious nor spiritual, while nearly a quarter of men identify with this category. This is in line with previous findings showing generally higher levels of religiosity for women compared with men (Schnabel 2015; Trzebiatowska and Bruce 2012). Similarly, a higher proportion of women identify as either moderately or very religious (48%) compared to

the parallel proportion for men (42%). However, the proportion of men and women who identify as spiritual but not religious is similar at just under 10%.

When comparing the age profile of the religiosity and spirituality groups, members of the 'neither' group have the youngest average age, while moderately or very religious respondents are relatively older. Those who identify as spiritual but not religious have an average age that is closer or similar to that of the moderately/very religious group. These patterns are the same for both men and women.

The average number of years of schooling also varies significantly by religiosity, as those who are neither religious nor spiritual and those who are spiritual but not religious both have higher levels of education compared with men and women who identify as religious. Furthermore, the share of respondents who have ever married is highest among the moderately or very religious men and women, with no major differences between the non-religious and SBNRs.

- Tables 1a-b about here -

In terms of subjective health status, the proportion of women reporting excellent health is somewhat higher among non-religious and SBNRs than among religious women. However, these differences are not statistically significant. Similarly, no significant differences by religiosity and spirituality are found among men. Consequently, we do not find much evidence for better self-declared health among SBNR individuals, not even among religious individuals, when compared with the non-religious and the non-spiritual.

Another relevant finding is the relatively low proportion of people of color among those who are neither religious nor spiritual compared to the other groups. This difference is particularly pronounced for men. Among both men and women, the most religious group also

has the highest proportion of people with Black origin. In addition, the share of Hispanic people is relatively higher among the slightly or more religious individuals. Overall, the racial composition of SBNR men and women is closer to that of religious individuals than to those who are neither religious nor spiritual.

As expected, the frequency of religious service attendance is lowest among those who are neither religious nor spiritual, with over two thirds of men and women in this group reporting that they never attend religious services. By comparison, SBNRs attend religious services slightly more often, though significantly less than religious individuals.

In terms of differences in religious socialization, the 'neither religious nor spiritual' group has the highest share of respondents who grew up with no religion. By comparison, a smaller share of SBNRs were raised without a religion, though this share is larger compared to that of the more religious groups. Furthermore, the proportion of those in the 'neither religious nor spiritual' group who reported being raised in a fundamentalist religion is significantly lower compared to all other groups, including SBNRs. In sum, SBNRs show similar levels of education as the non-religious ones, although their ethnic composition and share of those reported being raised in a fundamentalist religion is closer to that of the more religious groups.

Next, we explore differences in the number of children ever born by religiosity and spirituality across different age groups. Figures 1a and 1b present the average number of children by religiosity and spirituality identification, and by age among women and men. Within each age group, men and women from the 'neither religious nor spiritual' category have a lower number of children on average compared to all other groups, indicating not only later onset of childbearing, but also an overall smaller family size. SBNR men and women have similar fertility levels to that of the slightly religious group, though among women, the slightly religious start childbearing earlier than SBNR women. Those who are moderately or very religious have the highest number of children, particularly among those who are near the end

of their reproductive years; among women in the 40-45 age group, this group has an average family size of 2.6 children, compared to 2.4 among the slightly religious and SBNRs, and 2.2 children among those who are neither religious nor spiritual.

Among men aged 40-54, the 'neither religious nor spiritual' group have an average of 1.5 children, compared to 1.7 among the slightly religious, 1.9 among the SBNRs and 2.3 among the most religious men. However, these findings do not control for other socio-demographic factors, nor measures of childhood religiosity.

- Figures 1a-b about here -

Event History Analysis

This section presents findings from the event history analysis of the transition to first birth by religiosity and spirituality. First, we estimate the survival function of first birth among men and women according to their religiosity and spirituality classification. Figures 2a and 2b show the unadjusted survival curve of the transition to first birth by age for women and men. Both figures show that the 'neither religious nor spiritual' group is least likely to experience the transition to first birth. In Figure 2a, it is shown that all religious women have a higher likelihood of experiencing first birth compared to non-religious and non-spiritual women, with SBNR women found in between. For men (Figure 2b), those who are more religious also show higher first birth probabilities, although the difference between the 'neither religious nor spiritual' group and the SBNRs is somewhat smaller for men than for women.

- Figures 2a-b about here -

Next, we present the results of the logistic regression model for the likelihood of first birth as a function of religiosity and spirituality identification and other covariates. Table 2a shows the regression model for the transition to first birth among women aged 18-45 at the time of interview. In the first model, it is shown that both SBNR and those with higher levels of religiosity have significantly higher transition rates to first birth compared to women who are neither religious nor spiritual. This model takes into account current religious service attendance, the religion in which the respondent was raised in, their subjective health status and measures of education and enrolment status, as well as marital history, country of birth and age and period effects (Table 2a, Model 1).

Model 2 includes respondent's race, showing that women of Black origin have significantly higher likelihood of experiencing the transition to first birth compared to women with White background. However, Hispanic women and those of other non-White origin do not show different first birth probabilities compared to the reference group of White women. After including respondent's racial identity, the average discrete changes in first birth probability for SBNR and the moderately/very religious group become slightly smaller, though remain significant compared to the reference category (Table 2a, Model 2). Similar results are found when religious fundamentalism at age 16 is included (Table 2a, Model 3). It is shown that women who reported being religiously fundamentalist at the age of 16 are more likely to experience the transition to first birth than those who reported being religiously moderate. In addition, when adding fundamentalism at the age of 16, with or without accounting for race, the average marginal effect of SBNR declines further but remains statistically significant (Table 2a, Models 3-4).

- Tables 2a-b about here -

To estimate whether the changes in the coefficients for spirituality and religiosity are significant, we use the SUEST method. The SUEST test indicates that the average discrete change in first birth probability for SBNR in relation to non-religious and non-spiritual women varies significantly when adding childhood religious fundamentalism to the model. However, the inclusion of racial identity does not lead to a significant change in the SBNR coefficient (see Appendix, Table A1). Thus, the higher first birth probability of SBNR women compared to non-religious women cannot be explained by differences in the racial composition between these groups.

The analysis of the transition to first birth for men aged 18-54 at the time of interview is shown in Table 2b. For men, no significant difference is found between SBNR and their non-religious and non-spiritual peers in the transition rates to first birth (Table 2b, Models 1-4). Furthermore, in contrast to the findings for women, no relationship is found between religious fundamentalism at the age of 16 and the transition to first birth among men (Table 2b, Models 3-4). Race on the other hand, appears to play an important role in the transition to first birth among men. It is found that men of Black or Hispanic origin have significantly higher likelihood of entering parenthood than men of White origin. Moreover, the inclusion of race leads to a reduction in the average discrete change of the religious and spiritual categories, so that the coefficient for moderately or very religious men becomes insignificant. The SUEST test indicates that the differences shown in the religiosity/spirituality coefficients are indeed significant (see Appendix, Table A2). Thus, for men, racial identity appears to be a stronger predictor of first birth than religious and spiritual identification.

Another finding of interest is that the measure for subjective health is not significant and does not have any effect on the relationship between religiosity and spirituality identification and first birth rates, either for women or for men. Finally, Figures 3a and 3b show the odds ratios of first birth when using SBNR as the reference category in the basic and full models

specified in Tables 2a-b. In Figure 3a, it is shown that while SBNR women have significantly higher odds of experiencing first birth compared to non-religious women, no significant differences are found between SBNRs and the two religious categories. Among men, first birth probabilities for both non-religious and religious categories do not differ significantly compared to that of SBNRs.

- Figures 3a-b about here -

Discussion and Conclusions

In this study, we explored differences in fertility outcomes among women and men based on their religious and spiritual identification. Our goal was to examine whether those who are spiritual but not religious show different fertility patterns, with a focus on the transition to first birth, compared with those who are neither religious nor spiritual as well as with religious individuals. In addition, we tested the role of several factors in explaining these patterns.

Our descriptive findings show that among SBNR women and men, the average number of children is found to be higher compared to that of non-religious and non-spiritual individuals, but lower compared to moderately or very religious individuals. Similarly, SBNR individuals have higher transition rates to first birth compared to those who are neither religious nor spiritual, while more religious men and women show higher propensity to enter parenthood. However, our multiple regression analysis shows that the difference in first birth probabilities between SBNRs and those who are neither religious nor spiritual is significant among women, but not among men when controlling for other demographic and socio-economic factors. Therefore, our first hypothesis about the higher likelihood of first birth among SBNRs compared to non-religious and non-spiritual individuals is only partially supported by the findings. Furthermore, in line with our second hypothesis, we found that higher religious

fundamentalism at the age of 16 among SBNR women is partly responsible for their higher transition rate to first birth compared to women who are neither religious nor spiritual. Previous studies suggested that religious values and beliefs are expected to have a more pronounced effect on women's family formation and fertility behaviors than for men (Corijn and Klijzing 2001; Goldscheider and Goldscheider 1993). As many of the major religious traditions emphasize the importance of traditional family roles, and, particularly women's roles as wives and mothers, higher religiosity is more likely to affect women's family formation patterns, through prioritizing family obligations over other endeavors (Goldscheider and Goldscheider 1993; Inglehart and Norris 2003). These gendered expectations of family roles may explain the higher importance of religious and spiritual identification, as well as childhood religiosity, to women's transition to first birth, compared to that of men.

While religious fundamentalism at childhood is found to contribute to differences in first birth rates among SBNR and non-religious and non-spiritual women, no support was found for the third hypothesis, according to which improved health and well-being contribute to the higher rate of first birth of SBNRs compared to non-religious and non-spiritual individuals. The lack of a significant association between subjective health and fertility outcomes may be due to using a measure based on reported health at the time of the survey.

Although racial identity is found to be a significant factor in the transition to parenthood among both men and women, differences in racial composition between SBNR and non-religious women do not account for the higher first birth probabilities of the former, as our fourth hypothesis predicted. However, race did account for differences in first birth probabilities between non-religious and religious men, indicating that race might play a more important role than religiosity in explaining the variation in the transition to parenthood among men. The different findings for men and women may reflect the underlying interactions between religion, race and gender in relation to fertility outcomes. Previous studies have

emphasized that the ways in which religion intersects with other race, ethnic, class and gender identities has implications on fertility and sexual behaviors (McQuillan 2004; Pearce, Uecker, and Denton 2019). For example, attitudes to premarital sex and the use of birth control tend to vary across social groups depending on their unique religious, ethnic and socioeconomic background (Krull, Pearce, and Jennings 2020; Pearce et al. 2019). These inter-dependencies are likely to affect the observed relationship between religious and spiritual identities and fertility outcomes. However, disentangling these complex interactions is beyond the scope of this study.

Finally, our fifth hypothesis stated that those who are spiritual but not religious would have a lower rate of transition to first birth compared to religious individuals. However, our findings show no significant differences in first birth probabilities between SBNRs and more religious individuals, neither for women nor for men, when controlling for other covariates. In other words, it appears that the fertility behavior of SBNRs is closer to that of religious individuals rather than to that of those who are neither religious nor spiritual, at least in the context of first birth rates among women. This also remains the case when controlling for childhood fundamentalism, meaning that other unobserved factors contribute to the higher fertility outcomes of SBNR women compared to non-religious and non-spiritual ones. For example, SBNRs may attribute lower importance to material needs than those who are neither religious nor spiritual, which could counter perceived financial limitations to starting a family or expanding it (Newman and Hugo 2006). Therefore, the direct and indirect costs associated with childbirth could be perceived differently by SBNR and by non-religious and non-spiritual women. In addition, as our study shows, those identifying as SBNR are more likely to have had a religious upbringing compared to those who are neither religious nor spiritual. Hence, SBNRs are likely to have stronger links to religious communities and interact with religious friends and family members who hold more traditional family values. This continuous exposure

to values that promote the centrality of the family and complementary gender roles can accelerate the transition to first birth, particularly among women.

These findings contribute to our understanding of the potential implications of religious decline on fertility levels in the United States. Over the past decades, there has been a decline in the proportion of individuals who identify as religious, alongside an increase in populations who identify as non-religious, as well as those identifying as spiritual but not religious (Lipka and Gecewicz 2017; Voas and Chaves 2016). As those who identify as SBNR have fertility patterns that are closer to that of religious individuals (particularly among women), it will mitigate the expected decrease in fertility as a result of the declining proportion of religious populations. In addition, this study contributes to a better understanding of the secularization process and the rise of unchurched religiosity. Our findings lend support to the vestiges of religious socialization explanation, which significantly contributes to the higher fertility outcomes of SBNRs compared to that of other non-religious women. In other words, SBNR women are more likely to have experienced a fundamentalist religious upbringing, which is in turn linked with higher propensity to enter motherhood. If fertility ideals and behavior of SBNR are shaped by institutional religious socialization, unchurched spirituality is more likely to be a transitional stage towards increased secularization, rather than an alternative to conventional religion. It is also possible that religious socialization is more likely to have a long-lasting influence on women than on men, which accounts for the non-significant relationship between religious fundamentalism during childhood and transition to first birth among men in our study.

Our study has some shortcomings. We are not able to reveal a causal relationship between spiritual and religious identification and fertility, since the information on this identification is only available at the time of the survey rather than prior to childbearing ages. There can also be challenges associated with the measurement of SBNR over time and across regions, since the concept of spirituality may be understood differently and have different implications

depending on the context. Moreover, there are several issues and mechanisms when it comes to spirituality and fertility that we are not able to address with the GSS data. For example, marital status is closely associated to the transition to first birth, and, while we could account for whether each respondent has ever been married, the exact timing of marriage is unknown. Another factor we cannot account for in our statistical analyses which may nevertheless play a role in the relationship between spirituality and fertility is social capital. As explained above, SBNRs may be more likely to have stronger networks of other religious and spiritual persons around them to support their fertility ideals and decisions. This support in turn may drive higher fertility than among non-religious and non-spiritual individuals who are less likely to have such individuals in their networks and relationships (Wilkins-Laflamme 2022). In addition, we do not have adequate measures for fertility intentions and preferences, or the value of children, which may vary by religious and spiritual identification.

Despite these limitations, our study contributes to a better understanding of the potential consequences of religious decline on fertility behavior. Although the proportion of non-religious individuals has been growing over the past few decades in the US, we find that within that group, women who identify as spiritual have fertility patterns that are closer to that of religious women. This could potentially mitigate the trend of fertility decline that is associated with the decline in religion. Future studies should therefore pay attention to different types of (non)religious and spiritual identities and their intersection with race, ethnicity and gender, as they are likely to have different implications on fertility behaviors. Similarly, more research should be done on the implications of the rise in non-religious spirituality on other demographic and social aspects, including partnership formation, union stability, education, consumption patterns and health behaviors. In addition, future research should explore the implications of religious and spiritual identification during childhood on fertility patterns over the life course, as well as the intergenerational transmission of spirituality as opposed to traditional forms of

religion. This would help in estimating the implications of religious and spiritual trends on overall fertility in the short and the longer term.

Notes

[1] While more recent data from 2021 is available, it was not included due to major changes to the methods of data collection for that year amid the Covid-19 pandemic.

[2] Additional analyses were conducted using six categories of religiosity and spirituality identification, where the “slightly religious” and the “very/moderately religious” are split into spiritual and non-spiritual groups. However, since it had no effect on the findings, it was decided to use the four-category measure.

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Table 1a. Descriptive statistics for women aged 18-45, GSS 2014-2018 (n=1,193)

	All women	**Neither religious nor spiritual**	**Spiritual but not religious (SBNR)**	**Slightly religious**	**Moderately/ very religious**	**Anova/ χ^2 test**
Age: mean (SD)	**32.8 (7.2)**	30.7 (7.2)	33.6 (7.1)	32.3 (7.6)	33.6 (6.9)	Pr<0.001
Years of schooling: mean (SD)	**13.8 (2.9)**	14.3 (2.6)	14.4 (3.1)	13.7 (2.9)	13.6 (2.9)	Pr=0.007
Foreign born	**14.1%**	10.6%	7.5%	12.6%	17.1%	Pr=0.015
Race/ethnicity:						
White	**66.1%**	75.6%	65.4%	66.4%	63.5%	
Black	**21.3%**	13.8%	20.6%	20.4%	24.0%	
Hispanic	**6.8%**	3.7%	4.7%	6.9%	8.0%	
Other non-White	**5.8%**	6.9%	9.3%	6.3%	4.5%	Pr=0.037
Ever married	**55.9%**	49.4%	48.6%	49.4%	63.0%	Pr<0.001
Subjective health status:						
Excellent	**25.7%**	32.5%	28.0%	21.8%	25.8%	
Good	**50.0%**	51.3%	47.7%	49.4%	50.5%	
Fair	**19.5%**	13.7%	17.8%	23.0%	19.4%	
Poor	**4.7%**	2.5%	6.5%	5.8%	4.3%	Pr=0.130
Religious service attendance:						
Never	**28.4%**	71.9%	60.7%	28.7%	10.2%	
Yearly	**30.0%**	23.1%	23.4%	44.6%	24.4%	
Monthly or more	**41.6%**	5%	15.9%	26.7%	65.4%	Pr<0.001
Religion respondent was raised in:						
No religion	**12.8%**	35.0%	22.4%	10.0%	6.6%	
Protestant	**50.5%**	33.1%	43.0%	50.6%	56.7%	
Catholic	**32.4%**	28.1%	30.8%	34.2%	32.9%	
Other Christian	**2.9%**	0.7%	2.8%	3.2%	3.5%	
Other	**1.3%**	3.1%	0.9%	2.0%	0.3%	Pr<0.001
Fundamentalism at age 16:						
Fundamentalist	**33.3%**	19.4%	31.8%	30.8%	38.9%	
Moderate	**46.7%**	34.4%	40.2%	50.0%	49.3%	
Liberal	**20.0%**	46.2%	28.0%	19.2%	11.8%	Pr<0.001
Total n (% of total)	**1,193 (100%)**	**160 (13.4%)**	**107 (9.0%)**	**348 (29.2%)**	**578 (48.4%)**	

Table 1b. Descriptive statistics for men aged 18-54, GSS 2014-2018 (n=1,324)

	All women	**Neither religious nor spiritual**	**Spiritual but not religious (SBNR)**	**Slightly religious**	**Moderately/ very religious**	**Anova/ χ^2 test**
Age: mean (SD)	**36.9 (10.3)**	34.4 (9.5)	37.3 (10.4)	36.4 (10.5)	38.6 (10.3)	Pr<0.001
Years of schooling: mean (SD)	**13.7 (3.0)**	14.2 (2.9)	14.2 (2.6)	13.2 (3.1)	13.7 (3.0)	Pr<0.001
Foreign born	**12.8%**	11.0%	7.9%	11.6%	15.6%	Pr=0.045
Race/ethnicity:						
White	**71.5%**	85.9%	71.4%	70.2%	63.8%	
Black	**15.4%**	5.0%	16.7%	15.5%	21.1%	
Hispanic	**7.0%**	3.1%	4.8%	9.4%	8.4%	
Other non-White	**6.1%**	6.0%	7.1%	4.9%	6.7%	Pr<0.001
Ever married	**56.7%**	48.9%	49.2%	50.9%	66.4%	Pr<0.001
Subjective health status:						
Excellent	**25.0%**	26.0%	27.0%	21.3%	26.2%	
Good	**49.2%**	51.7%	46.8%	48.0%	49.1%	
Fair	**21.1%**	17.9%	23.0%	24.3%	20.5%	
Poor	**4.7%**	4.4%	3.2%	6.4%	4.2%	Pr=0.383
Religious service attendance:						
Never	**34.1%**	67.7%	57.9%	29.8%	11.8%	
Yearly	**33.4%**	29.5%	27.0%	50.1%	27.1%	
Monthly or more	**32.5%**	2.8%	15.1%	20.1%	61.1%	Pr<0.001
Religion respondent was raised in:						
No religion	**12.9%**	23.2%	19.8%	11.2%	6.4%	
Protestant	**46.5%**	37.0%	43.7%	43.5%	54.5%	
Catholic	**36.0%**	32.3%	30.9%	42.6%	35.3%	
Other Christian	**3.0%**	3.1%	3.2%	2.1%	3.4%	
Other	**1.6%**	4.4%	2.4%	0.6%	0.4%	Pr<0.001
Fundamentalism at age 16:						
Fundamentalist	**26.8%**	17.9%	29.4%	24.6%	32.7%	
Moderate	**50.9%**	43.6%	43.6%	55.9%	53.8%	
Liberal	**22.3%**	38.5%	27.0%	19.5%	13.5%	Pr<0.001
Total n (% of total)	**1,324 (100%)**	**319 (24.1%)**	**126 (9.5%)**	**329 (24.9%)**	**550 (41.5%)**	

Table 2a. Event history analysis for the transition to first birth among women aged 18-45 at the time of interview (average marginal effects)

	Model 1	Model 2	Model 3	Model 4
Religiosity/ spirituality:				
Neither religious nor spiritual (ref.)				
Spiritual but not religious	.020*	.019*	.018*	.018*
Slightly religious	.032***	.033***	.032***	.034***
Moderately/very religious	.022**	.021**	.021**	.021**
Period:				
1984-90	.009	.010	.009	.010
1991-00	.002	.003	.002	.003
2001-10 (ref.)				
2011-18	-.012*	-.012*	-.012*	-.012*
Age	.019***	.019***	.019***	.019***
Age squared	-.000***	-.000***	-.000***	-.000***
Foreign born	-.017**	-.020***	-.016**	-.019**
Enrolled in education	-.042***	-.042***	-.041***	-.042***
Years of schooling	-.008***	-.008***	-.008***	-.008***
Never married	-.024***	-.031***	-.025***	-.032***
Health status:				
Excellent (ref.)				
Good	.006	.005	.006	.005
Fair	.004	.003	.005	.003
Poor	-.015	-.017	-.014	-.016
Religious service attendance:				
Never (ref.)				
Yearly	-.004	-.006	-.004	-.006
Monthly or more	.005	.001	.003	-.001
Religion in which raised:				
No religion (ref.)				
Protestant	.008	.005	-.011	-.011
Catholic	.002	.003	-.001	.002
Other Christian	-.009	-.015	-.014	-.018
Other	.012	.018	.013	.018
Race/ ethnicity:				
White (ref.)				
Black		.036***		.033***
Hispanic		.009		.009
Other non-White		.004		.004
Religious fundamentalism at 16:				
Fundamentalist			.026**	.024**
Moderate (ref.)				
Liberal			-.004	-.001
Pseudo R-squared	.07	.07	.07	.07
Women-years	12,438	12,438	12,438	12,438

*p<0.05, **p<0.01, ***p<0.001

Table 2b. Event history analysis for the transition to first birth among men aged 18-54 at the time of interview (average marginal effects)

	Model 1	Model 2	Model 3	Model 4
Religiosity/ spirituality:				
Neither religious nor spiritual (ref.)				
Spiritual but not religious	.008	.007	.007	.006
Slightly religious	.010*	.009*	.009*	.008
Moderately/very religious	.010*	.008	.010*	.008
Period:				
1975-85	-.008	-.006	-.008	-.006
1986-95	-.011**	-.010*	-.011**	-.010*
1996-05	-.005	-.004	-.005	-.004
2006-18 (ref.)				
Age	.010***	.010***	.010***	.010***
Age squared	-.000***	-.000***	-.000***	-.000***
Foreign born	.001	-.004	.002	-.003
Enrolled in education	-.037***	-.037***	-.037***	-.037***
Years of schooling	-.001*	-.001	-.001*	-.001
Never married	-.041***	-.043***	-.041***	-.043***
Health status:				
Excellent (ref.)				
Good	.000	.001	.000	.001
Fair	.004	.003	.002	.003
Poor	.007	.005	.004	.007
Religious service attendance:				
Never (ref.)				
Yearly	-.001	-.001	-.001	-.001
Monthly or more	.003	.003	.004	.003
Religion in which raised:				
No religion (ref.)				
Protestant	-.004	-.003	-.009	-.008
Catholic	-.004	-.004	-.006	-.003
Other Christian	-.016	-.015	-.018	-.016
Other	-.009	-.009	-.012	-.010
Race/ ethnicity:				
White (ref.)				
Black		.023***		.023***
Hispanic		.016*		.016*
Other non-White		.009		.009
Religious fundamentalism at 16:				
Fundamentalist			.008	.008
Moderate (ref.)				
Liberal			-.002	.001
Pseudo R-squared	.10	.10	.10	.10
Men-years	19,001	19,001	19,001	19,001

*p<0.05, **p<0.01, ***p<0.001

Figure 1a. Mean number of children by religiosity/spirituality identification and age group among women aged 18-45

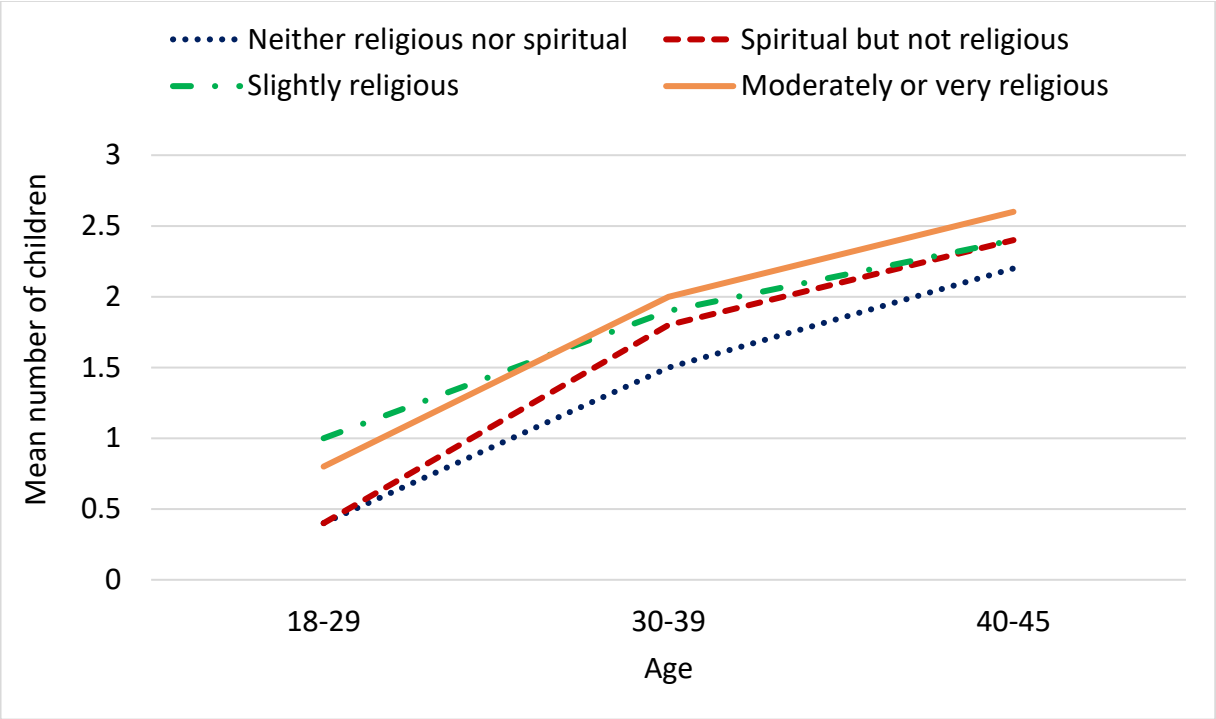


Figure 1b. Mean number of children by religiosity/spirituality identification and age group among men aged 18-54

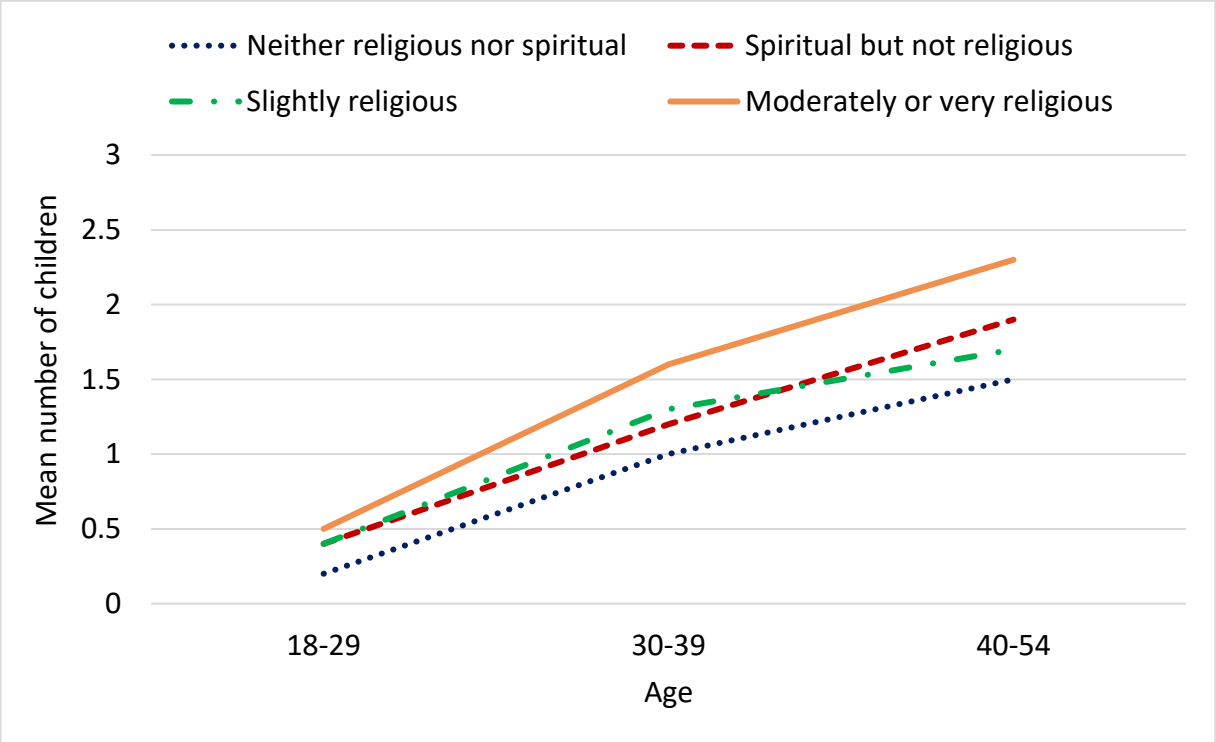


Figure 2a. Unadjusted transition probabilities to first birth by age among women

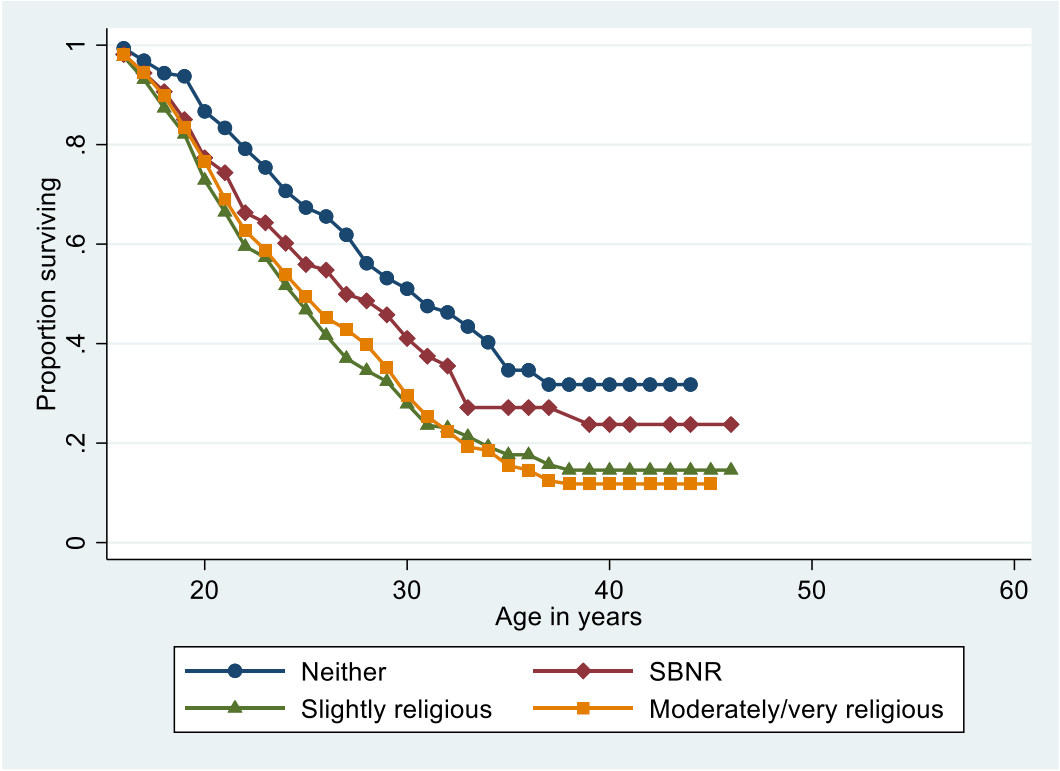


Figure 2b. Unadjusted transition probabilities to first birth by age among men

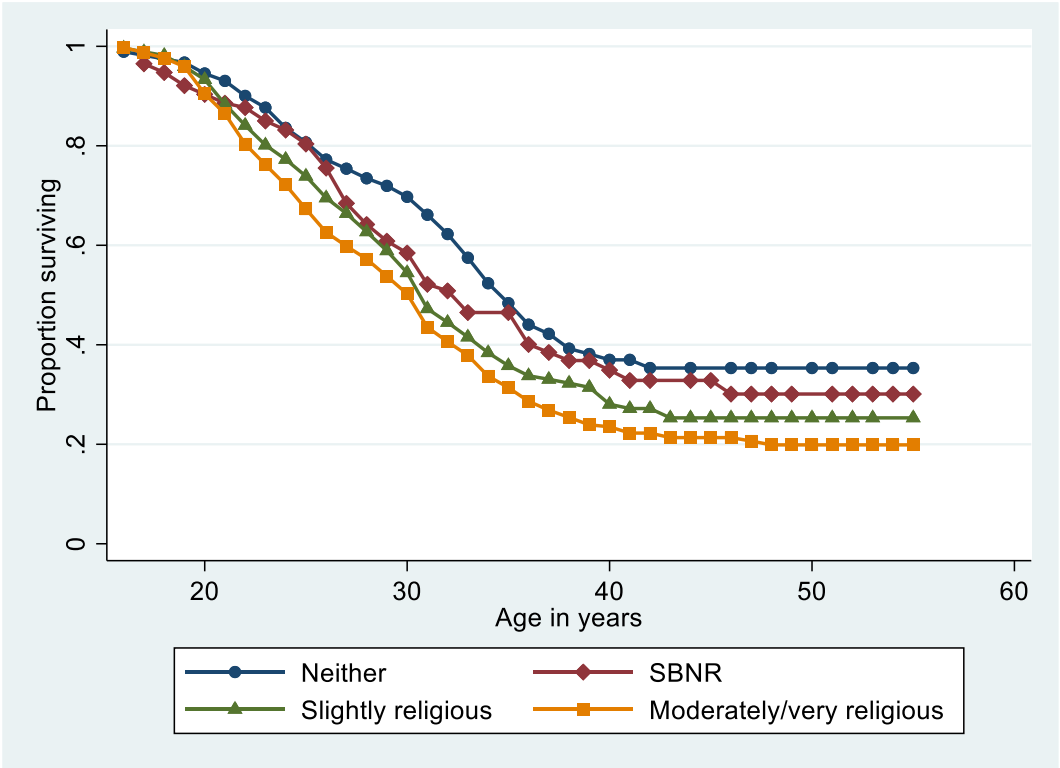


Figure 3a. Odds ratios for first birth among women by religiosity and spirituality identification, using SBNR as the reference category (SBNR=1)

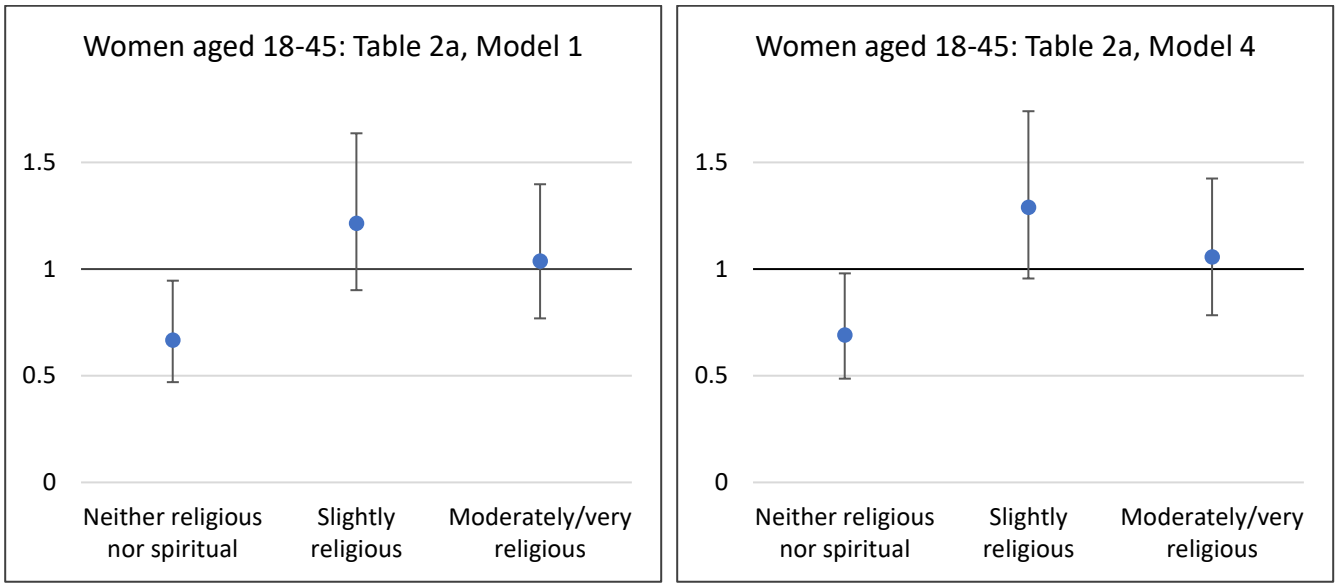
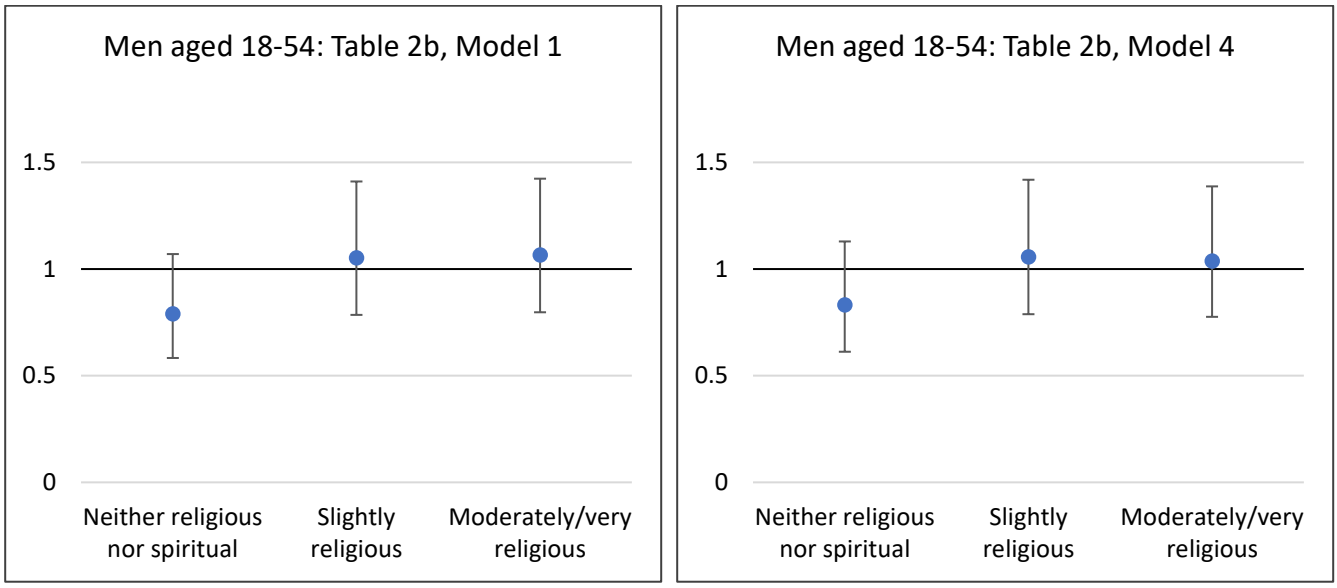


Figure 3b. Odds ratios for first birth among men by religiosity and spirituality identification, using SBNR as the reference category (SBNR=1)



Appendix

Table A1. Differences in the average discrete change in religious/spiritual identification for women aged 18-45 (using SUEST method):

	M2-M4 (adding religious fundamentalism at 16)	**M3-M4 (adding race/ethnicity)**	**M1-M4 (adding fundamentalism at 16 and race)**
Religiosity/ spirituality:			
Neither religious nor spiritual (ref.)			
Spiritual but not religious	-.001*	-.000	-.002*
Slightly religious	.000	.001**	.002**
Moderately/very religious	-.000	-.000	-.001

*p<0.05, **p<0.01, ***p<0.001

Table A2. Differences in the average discrete change in religious/spiritual identification for men aged 18-54 (using SUEST method):

	M2-M4 (adding religious fundamentalism at 16)	**M3-M4 (adding race/ethnicity)**	**M1-M4 (adding fundamentalism at 16 and race)**
Religiosity/ spirituality:			
Neither religious nor spiritual (ref.)			
Spiritual but not religious	-.001	-.001*	-.002*
Slightly religious	-.000	-.001**	-.001**
Moderately/very religious	-.000	-.002***	-.003***

*p<0.05, **p<0.01, ***p<0.001