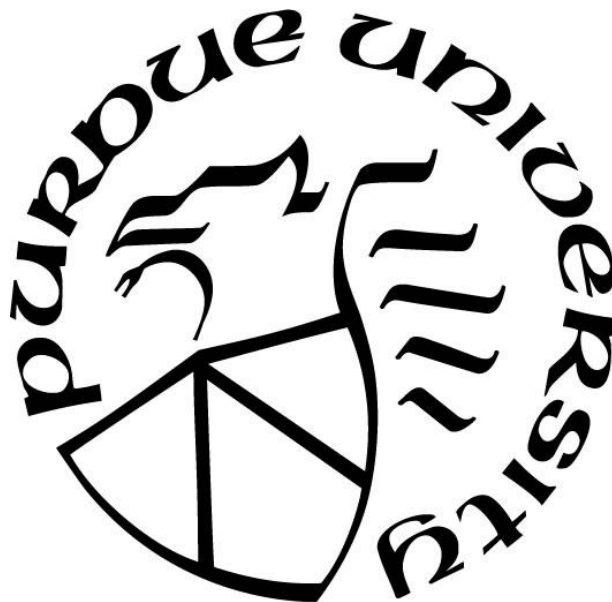# DOES RELIGION MATTER?
A STUDY OF RELIGION, SEX RATIO, SON PREFERENCE, AND
ABORTION ATTITUDE IN CHINA

by

Yunping Tong

A Dissertation

Submitted to the Faculty of Purdue University
In Partial Fulfillment of the Requirements for the degree of

Doctor of Philosophy

Department of Sociology

West Lafayette, Indiana

December 2020

THE PURDUE UNIVERSITY GRADUATE SCHOOL
STATEMENT OF COMMITTEE APPROVAL

Dr. Fenggang Yang, Chair

Department of Sociology

Dr. Christie Sennott

Department of Sociology

Dr. Daniel V. A. Olson

Department of Sociology

Dr. Danielle Kane

Department of Sociology

Dr. Trenton D. Mize

Department of Sociology

Approved by:

Dr. Linda Renzulli

Dedicated to my mother, who loved my brother and me equally.

ACKNOWLEDGMENTS

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABSTRACT

The sex ratio at birth in China has been increasingly skewed in favor of males since 1980 when the government implemented the one-child policy to control population growth. Existing studies commonly point to economic factors and their weakening effect on the Confucian tradition of son preference to understand the male-biased sex ratio at birth; however, a perspective that heavily focuses on economic factors is limited. In this dissertation, I argue that bringing in religion – a key factor shaping individual attitudes and decisions related to son preference – can shed important light upon sex ratio at birth patterns in China.

This dissertation is divided into three empirical chapters. The first study explores religious effects on county-level sex ratios at birth using data from the 2000 China Population Census and the 2004 China Economic Census. Findings reveal that greater Daoist presence is associated with more imbalanced sex ratios in the county, while the presence of Islamic and Buddhist places of worship helps mitigate male-biased sex ratios. Study two askes how religious groups vary in their preferences for sons and sex selection decisions using data from the 2010 Chinese General Social Survey (CGSS). Findings suggest that Christians stand out for their weak son preference and refrain from sex selection, while Daoists hold strong son preference and more likely to practice sex selection to have many sons. The last study uses the CGSS data to explore whether religion shapes abortion attitudes among Chinese people. It shows that Islam and Christianity have a strong influence on the disapproval of abortion, and while affiliating with Daoism does not affect one's approval of abortion, living in a neighborhood with more Daoists significantly reduces one's approval of abortion.

These studies together demonstrate that religion is an important factor shaping not only individual attitudes and behaviors but also demographic trends in society. This dissertation

serves as the first study that investigates the linkage between religion and demographic trends by examining how religion – both individual religious affiliation and religious context in a locality – affects the sex ratio at birth via shaping individual son preferences, sex selection decisions, and abortion attitudes. By highlighting religion – a factor that has been overlooked in demographic studies of China – this study contributes to a more nuanced understanding of imbalanced sex ratios and its determinants.

CHAPTER 1.   INTRODUCTION

The sex ratio at birth in China has been increasingly skewed since the government implemented the one-child policy to control population growth in 1980. Before the policy took effect nationwide, the overall sex ratio at birth (SRB) – often measured by the number of registered boys under age one per 100 girls of the same age (Cai and Lavely 2003; Miller 2001) – was around the natural value, 105.[1] The ratio increased to 111 in 1985, to 114 in 1993, to 117 in 2000, and by 2010, the SRB reached 120, according to census data (Poston et al. 2014).

The increasingly male-biased SRB has been a great concern of demographers. As Amartya Sen (1990) states, underlying abnormally high SRB is "a terrible story of inequality and neglect leading to the excess mortality of infants." A male-biased SRB is not only an indicator of female disadvantage but also a reflection of a large number of "missing girls" – unborn girls due to abortion in a society (Chakraborty and Kim 2010; Rallu 2006; South et al. 2014). According to the estimates by the United Nations Population Fund (UNPFA) in 2012, China is home to 24 million missing girls, making up more than 60 percent of the total of "missing girls" in the world (UNFPA 2012). Furthermore, on the other side of the female deficit is the male surplus, which leads to marriage market squeeze, The United Nations estimates that by 2050, about 11 percent of men under age 50 in China will be unmarried due to the shortage of brides (UNFPA 2012). The surplus of men potentially brings a series of social problems, such as sex crimes, the spread of HIV/AIDS, and trafficking in women (Merli and Hertog 2010; Bien et al. 2013; Greenhalgh 2013; Zhu et al. 2009; Tucker and Van Hook 2013).

---

[1] Note that SRB calculated from census data reflects sex ratio among the registered newborns, which potentially fails to account for babies who are not registered with the government or those who died in infancy. Despite this limitation, scholars have widely used census data to approximate the sex ratio at birth (see Huang et al. 2016).

Existing scholarship points to several factors to explain the imbalanced SRB in China: birth planning policy, sex-selective abortion, excess female infant mortality, the under-enumeration and adoption of female infants (Banister 2004; Chu 2001; Hull 1990; Johnson 1993; Johnson et al. 1998; Li et al. 2011; Miller 2001; Shi and Kennedy 2016; Cai and Lavely 2003). From these, scholars agree that sex-selective abortion is the primary determinant (Cai and Lavely 2007; Banister 2004; Ebenstein 2010; Miller 2001; Chu 2001; Dupta et al. 2003).

Besides, there is a consensus that the underlying root cause for male-biased SRB is the Confucian tradition of son preference (Chu 2001; Ebenstein 2010; Greenhalgh 2008; Gu and Roy 1995; Jiang et al. 2011; Johnson et al. 1998; Nie 2010; Poston 2002; Poston et al. 1997). Sons are preferred over daughters in the Confucian tradition. If parents strongly favor a son over a daughter under the one-child restriction, they are more likely to practice sex-selective abortion, thus resulting in a male-biased SRB. Hence, many scholars conclude that combating norms and values that undergird son preference – in China's case, the Confucian tradition – is the key to fix the "missing girls" dilemma (Chung and Gupta 2007; den Boer and Hudson 2017; Diamond-Smith and Bishai 2015; Ebenstein 2011).

For the perceived weakening effect of economic development on Confucian influence, demographers (e.g., Lu and Tao 2015; Ebenstein and Leung 2010) commonly focus on economic factors to explain the imbalanced SRB and its variations across China. They conclude that economic development will gradually bring a balanced SRB in China (see Croll 2000). Indeed, with the process of industrialization and urbanization, the Confucian influence has declined. Son preference levels are lower in more developed areas, and sex ratios at birth tend to be less imbalanced in provinces with higher economic development levels (Cooney et al. 1991; Lei and Pals 2011; Huang et al. 2016).

These studies have shed important light on the linkage between the Confucian tradition, son preference, and sex imbalance at birth in China. However, a perspective omitting religion yields only a limited understanding of the imbalanced SRB and its broader implications as various religions have gained substantial presence and are thriving in China. I argue that bringing in religion – an important factor shaping individual values and attitudes toward son preference and abortion, the two major causes of imbalanced SRB – offers a nuanced explanation for the imbalanced SRB and its regional variations in China. Including religion as a key factor is necessary not just because religions differ in their teachings on gender and family relations. It is also because of the varying embeddedness between religions and Confucianism, which is not considered a religion but a social ethnic by Chinese people (though many scholars [e.g., Sun 2013; Berger 2012] see Confucianism as a religion). Thus, different religions are likely to reinforce (or challenge) the Confucian influence of son preference and affect sex ratios at birth in unique ways.

The religious population of all five major religions in China, namely Buddhism, Daoism, Catholicism, Protestantism, and Islam, has become sizeable over the past several decades. According to the government statistics, the estimated number of people affiliated with a religion or engaged in religious activities regularly, such as visiting temples or churches, was about 100 million in 1997, and it increased to over 200 million in 2018 (State Council Information Office 2018). The government estimates that the number of Buddhism followers has reached 100 million (Buddhist Association of China 2012), Muslims 21 million (Islamic Association of China 2012), Protestants 38 million, and Catholics 6 million (State Council Information Office 2018). Scholarly estimates of Christians based on survey data are even higher given the Chinese government tends to under-enumerate Protestants, whose numbers have been growing rapidly.

For instance, the Pew Research Center estimated 58 million Protestants and 244 million

Buddhists based on data from the 2007 Chinese Spiritual Life Survey (Pew Research Center

2015).[2]

Different from China's five major religions, Confucianism is not considered a religion in

China. It is commonly seen as a leading philosophy that guides social relations. Confucian values

are, as a core component of Chinese culture, deeply embedded in Chinese people's lives – not

only the lives of those who claim to be Confucian but also adherents of other religions or

religiously unaffiliated people. Śleziak (2013) made a similar statement about the pervasive

influence of Confucianism in modern South Korea: filial piety and paying more respect to your

elder or higher authoritative relatives (*zunzun* 尊尊) are essential principles that guide Koreans'

social interactions.

In China, Confucian influence is present in all religious groups. It is strong among

Buddhists and Daoists, as Buddhism and Daoism are considered Chinese traditional religions.

Specifically, both Buddhism and Daoism endorse the idea of making offerings to deceased

ancestors and other deities. Confucian influence can also be found even among Christians (see

Zhou and Sun 2017; Yang 1999) and Muslims (see Ul Ain and Lu 2014), whose religious

teachings are in stark contrast to Confucian values. On the other hand, Christians and Muslims

would reject the Confucian tradition of ancestor worship due to their belief in one God.

Therefore, given their intertwinement with Confucian values that undergird son preference as

---

[2] There is some disagreement about the number of Christians in China. For instance, the Asia Harvest (2020) estimates that about ten percent of Chinese people are Christians, while data from the China Family Panel Studies suggests around 40 million (Lu and Zhang 2016). The discrepancy is mostly attributable to the underreporting of religious affiliation in survey responses as religion is a politically sensitive issue in China. Furthermore, the disagreement on the number of religious adherents also has to do with the fact that many Chinese people practice religion without identifying with it (Chao and Yang 2018). Nevertheless, there is a consensus that Christianity is on the rise in China.

well as their unique teachings on gender relations, it is worth exploring whether religions have varying effects on sex ratios.

Studies in Western and Asian countries show that religion affects SRB via its influence on individual son preference and abortion attitudes (Almond et al. 2013; Chung 2007; Gaudin 2011; Kim and Song 2007). The study by Kim and Song (2007) shows that highly imbalanced sex ratios tend to be in the south-east of South Korea, an area with a long history of Confucian cultural traditions but few Protestant and Catholic churches. Other studies at the individual level also confirm that due to their religious teachings denouncing abortion, Christian or Muslim families in India (Bhat and Zavier 2007; Guilmoto 2005) and Asian immigrants in Canada (Almond et al. 2013) have normal sex ratios.

However, demographic studies in China have rarely focused on the role of religion in shaping demographic trends via influencing individual fertility preferences and decisions, partly due to the assumption of an atheist China and the dominant atheist propaganda (Yang 2011, 2014). This project bridges this scholarly gap by examining religious effects – at both individual and contextual levels – on demographic trends using census and survey data. To this end, I will address three specific research questions in this project: 1) Does religious geography – the concentration pattern of various religious communities – affect the sex ratio of a locality? 2) Does religion influence individual preference for sons over daughters and their decision of sex selection? 3) Does religion, in forms of religious affiliation and religious context, shape individual abortion attitudes? These are important research questions considering the societal consequences of imbalanced SRB, female disadvantage tied to son preference, and debates on abortion. This dissertation serves as the first study that highlights the role of religion and empirically investigates its linkage with sex imbalance at birth in China.

1.1   Background

Chinese government's policy on birth control has changed over the past several decades since the government first introduced it to contain rapid population growth. From the 1950s onward, China experienced rapid population growth, and in 1957, the government officially acknowledged the necessity of birth planning. Entering in the 1960s, concerned with the shortage of food for the large population size, the leadership advocated for later marriage, the longer spacing between children, and fewer children (Greenhalgh and Winckler 2005, 72–73). Later in 1971, the nationwide family planning campaign – also known as the "later, longer, fewer" program – came into effect. The requirements were further specified in 1973: the minimum marriage of ages of 23 for women and 25 for men, the spacing between two children of at least four years, and the number of children not exceeding two (Greenhalgh and Winckler 2005, 88).

The policy became increasingly restrictive in the reform era since 1978, when the government perceived population growth as a national emergency issue (Greenhalgh and Winckler 2005). Around 1980, the one-child policy took effect nationwide. It permitted married couples to have one child only, and those who violated the rule would have to pay a hefty fine in the name of the social maintenance fee and lose their jobs if they were government employees (Short and Zhai 1998). The government relaxed the policy in 1984 to allow for regional variation and ethnic differences (Bhattacharjya et al. 2008; Greenhalgh 1986; Gu et al. 2007). Specifically, it allowed rural residents in economically underdeveloped provinces to have a second child without sanctions if their first child was a girl and members of ethnic minority groups to have two children.

Meanwhile, the enforcement of policy became coercive in a systematic way, under the charge of the National Family Planning Commission, which was established in 1981 to oversee population control. The Commission set up population reduction quotas for local officials of the

17

village/community, county, city and province levels for them to meet, putting them under high pressure to keep the number of births down to avoid losing promotion opportunity or even their positions (Whyte et al. 2015; Greenhalgh 1986). Therefore, local officials recruited grassroots family planning workers and spread them out in each village, urban work unit, and neighborhood. These workers would keep a close eye on women of reproductive age and record details related to their pregnancies, contraceptive usage, and even menstrual cycles (Whyte et al. 2015). To ensure meeting the reduction quotas, family planning workers and local officials would pressure or force women with unauthorized pregnancies to have an abortion.

Due to this restrictive family planning policy and its systematic implementation nationwide, the total fertility rate declined sharply since the 1970s. It was about five births per woman in 1971 before the "later, longer, fewer" program, and it dropped to 2.7 in 1979 before the one-child policy came into effect. The fertility rate further declined to 1.6 in 2000, which is below the replacement rate (2.1 births) – the number of births per woman needed to maintain a population's size, and it has remained at a low level since that year on.[3]

The one-child policy has succeeded in reducing population growth in China, but is also inflicted severe damages to infant girls – being aborted or neglected intentionally at an early age, which further led to an overall male-biased SRB across China. On the other hand, the policy is not the only factor responsible for the worsened sex ratio since the regional variations in the policy do not align with the geographic pattern of gender imbalance at birth. For example, Cai and Lavely (2007) noticed that even though provinces, such as Sichuan and Jiangsu, experienced the most restrictive one-child policy, their sex ratios were not seriously male-biased. By contrast, although Guangdong and Hainan provinces had less restrictive family planning policy, they were

---

[3] See World Bank "Fertility rate, total (births per woman) - China | Data."

home to highly male-biased SRB (Cai and Lavely 2007). Other important factors have contributed to the male-biased SRB and its variations across regions, which I will discuss in detail in the following section.

In 2015, the Chinese government launched a two-child policy, ending almost 40 years of limiting births. One would expect the policy's relaxation will gradually bring a balanced SRB by allowing people to have a second child. However, some scholars argue otherwise. For example, Park and Cho (1995) theorize that even without a restrictive birth policy, when parents prefer to have a small family, their son preferences would continue to distort SRB. According to this observation, the relaxed birth policy in China may not balance the male-biased SRB in light of the persistent son preference. Besides, the idea of "fewer and healthier births" has become increasingly popular among the Chinese, especially educated couples (Basten and Jiang 2014; Nie and Wyman 2005). Therefore, it is necessary to explore the determinants of imbalanced sex ratios to understand China's demographic trends.

1.2   Theoretic Framework

Contemporary scholarship points to son preference to understand male-biased sex ratios and agrees that such gender imbalance results from deliberate actions to manipulate the sex composition of offspring (see Attané 2013). As research shows, son preference often leads to parents' discrimination against girls in various ways, such as sex-selective abortion, infanticide, and abandonment (Attané 2013; Banister 2004; Chu 2001; Croll 2000; Johnson 1993; Shi and Kennedy 2016), skewing the sex ratio at birth calculated from the censuses (Lingam 1991; Manmeet 1993; Kishwar 1993).

With identifying son preference as the root cause for the imbalanced SRB, existing studies have investigated the linkage between factors such as economic development, education and son

19

preference. These studies, focusing on how economic development weakens the Confucian tradition of son preference as well as increases access to sex selection technology, have shed important light on understanding the linkage between son preference and the imbalanced SRB in China. However, they have overlooked the role that religion plays in shaping the sex imbalance at birth, given that religion is the strong predictor of individuals' son preference and their sex selection. In this dissertation, I argue that bringing in religion– in forms of individual religiosity and religious presence in a locality – as a key factor contributes to a better and nuanced understanding of the imbalanced SRB and its major determinants – son preference and abortion.

1.2.1   Son preference in China

Son preference has been an integral part of traditional Chinese culture, especially Confucian values (Poston et al. 1997). In Confucian tradition, having male offspring (at least one) is necessary for economic, cultural, and religious reasons (Li and Lavely 2003; Dupta et al. 2003; Ebenstein and Leung 2010; Arnold and Kuo 1984). Economically, sons are an important manual labor force in the agricultural context. Culturally, they are the primary provider of old-age support for parents. Grown children, especially sons, are expected to live with their elderly parents and grandparents to take care of them, which is their filial obligation (Whyte and Ikels 2004; Chu and Yu 2010). Most importantly, sons are wanted for religious reasons – to continue the family lineage and perform ancestor worship ceremonies (Pande et al. 2006; Johnson 1993). According to scholars (e.g., Attané 2013 and Croll 2000), the religious consideration of having male offspring is responsible for the persistent and pervasive son preference in China.

The Confucian tradition of son preference favors men while marginalizing women in many aspects (Pande et al. 2006; Johnson 1993). First, Confucian norms prescribe differential roles for

20

men and women in society. They emphasize women's subordinate roles as wives, mothers, and caretakers of the family while expecting men to take on important roles, including conducting religious rituals and continuing the family lineage (Dupta et al. 2003; Li and Lavely 2003; Ebenstein and Leung 2010; Fuwa 2004). As for parents, they rely primarily on sons for old-age care as daughters eventually marry out and become other people's daughters-in-law, which makes it rational for parents to favor sons over daughters (Johnson 1993; Whyte and Xu 2003).[4]

Second, the Confucian tradition of filial piety and ancestor worship further reinforces such gendered arrangements. Filial piety (*xiao*) is one of the fundamental concepts in Chinese culture, and it is a principal virtue of being a good person. Both Confucius and Mencius[5] considered it the most powerful force that helps maintain order in society. Being filially pious is to devote themselves without reservation to parents' welfare (Thompson 1996, 40–41). In practice, filial piety entails different expectations for sons and daughters: When applied to sons, filial piety is about support, serving the needs of parents, while for daughters, it means visiting parents on holidays (Miller 2004). Studies of intergenerational support in Taiwan confirmed such gendered expectations: sons are the primary caregivers, providing housing and financial support, while daughters are the supplementary caregivers (Lee et al. 1994; Yang 1996).

Third, the emphasis on filial obligations puts women in a disadvantaged position by expecting them to have male offspring. In the Confucian tradition, being unfilial is unacceptable, and the worst way of being unfilial is having no male heir (Thompson 1996, 40–41). Thus,

---

[4] In the Classic of Poetry (*shijing* 诗经), an ancient Chinese poetry book, it is written "*When a son is born/ Let him sleep on the bed/ Clothe him with fine-clothes/ And give him jade to play with / How lovely his cry is! /May he grow up to wear crimson/ And be the lord of the clan and the tribe. When a girl is born/ Let her sleep on the ground/ Wrap her in common wrappings/ And give her broken tiles for playthings/ May she have no faults, no merit of her own/ May she well attend to food and wine / And bring no discredit to her parents* (Croll 2000, 75–76)." This poetry shows different cultural expectations for sons and daughters that justify parental son preference.
[5] Mencius is a Chinese philosopher and is believed to be the Second Sage, is after only Confucius.

married women are under high pressure from husbands and in-laws to bear sons and frequently blamed and abused when they disappoint the family by giving birth to a girl (Johnson 1993). In traditional culture, the birth of a second daughter only brings grief for the whole family, and the birth of a third daughter is seen as a misfortune (Wolf 1987). By contrast, if a woman has a son at the first birth, she is considered "very capable" by her in-laws and will be envied by her neighbors (Chu 2001). Although biologically, men are the ones who determine the sex of a baby, women are often the ones who are held responsible and blamed.

The necessity of having male offspring is tied to the Confucian tradition of ancestor worship. Producing no son, according to Mencius, is a heinous offense against filial piety because it puts an end to the family lineage and ancestor worship (Thompson 1996, 40–41). Filial piety means to take care of not only your parents but deceased ancestors. According to the *Analects of Confucius*, filial piety means to '*serve your parents according to the ritual when they are alive, bury them and make sacrifices to them according to the ritual when they die*.'[6] In the Confucian tradition, the existence of deceased ancestors in the underworld depends on the worship and sacrifices from their descendants, without which, ancestors would become wild ghosts (Weller 1987). This belief makes family lineage sacred as it connects living people with their deceased ancestors, who are believed to possess spiritual power to intervene in the life of the living in forms of punishment or blessing (Whyte and Ikels 2004). Therefore, to avoid being unfilial and fulfill their filial obligations toward ancestors, the family faces enormous pressure of producing at least one son to continue the family lineage (Weller 1987; Attané 2013, 97).

---

[6] See the Internet Classics Archive, http://classics.mit.edu/Confucius/analects.1.1.html.

1.2.2 Son preference, fertility decision about sex selection, and imbalanced sex ratios

Preference for sons over daughters may manifest in parents' intervention in childbearing at any stage of pregnancy in China. Some intervention takes place before pregnancy, where parents adopt ritual methods that they believe can increase the chance of having a boy. Studies find that some women would consult charlatans and engage in some superstitious activities to improve the possibility of conceiving a boy, and some take traditional Chinese medicine that could allegedly ensure having a male fetus (Chu 2001; Croll 2000).

One primary intervention in childbearing takes place during pregnancy: sex-selective abortion. It was made possible since 1979 when the ultrasound technology became available, which was first introduced to serve the implementation of birth policy and detect fetal abnormalities but later was turned into a 'sex detection' machine. The government banned prenatal sex detection officially in 1989, making it illegal for health workers and doctors to reveal the sex of a fetus to parents. However, this did not put an end to prenatal sex selection. Parents could learn the sex of the fetus through bribing service providers (Chu 2001), and some turned to traditional methods like pulse diagnosis to determine the sex (Shi and Kennedy 2016; Peng and Huang 1999).

Besides, China's liberal abortion laws, together with sex detection, made sex-selective abortions possible. Abortion laws in China are among the least restrictive in the world where abortion is authorized up to the 28th week of pregnancy (Rahman et al. 1998; Guilmoto and Tovey 2015). Since the implementation of the one-child policy, the government removed virtually all restrictions on induced abortion as it served as the major way of dealing with unauthorized pregnancies (Rigdon 1996; Savage 1988). Consequently, with such an abortion policy as well as attitude of viewing abortion as a contraception method, the widespread use of ultrasound machines throughout China is associated with a worsening trend in the sex imbalance

at birth and female selective abortions (Chen et al. 2013). Based on her study of rural villages in northern China, Chu (2001) found that among women who had used sex detection, 90 percent of them aborted the female fetuses in the second pregnancy if their firstborn was a girl.[7]

Third, parents who prefer sons tend to mistreat daughters after pregnancy, consciously or unconsciously, resulting in a higher mortality rate among girls. Analyzing data of 1,062 women with a child (or children) collected in 1994, Li and Lavely (2003) found girl infants whose mothers reported it was important to have a son were almost twice as likely to die than their boy counterparts (11% versus 6%). Li et al. (2004) also found evidence for gender differences in child survival rates when parents admitted their neglect of daughters and providing shorter periods of breastfeeding and smaller food allocations, less child care, and daily family care for daughters.

Lastly, parental son preference also manifests itself in the registration of newborns – parents are less likely to register or report the birth of a girl. Comparing cohorts enumerated in the 1990 census and the same cohorts in the 2000 census, Cai and Lavely (2003) showed that a third of girls missing in the first enumeration reappeared in the second. Some parents would purposefully not register the birth of a daughter so that they can have a second birth opportunity of having a son (Shi and Kennedy 2016; Goodkind 2011; Merli and Raftery 2000). This under-reporting of girls further worsens the biased SRB in China as many daughters remained hidden from the official documentation.

In summary, several factors related to son preference have contributed to the male-biased SRB in China, such as sex-selective abortion, mistreatment, and under-registration. And among

---

[7] In some rural areas, if the first child was a girl, the married couple was allowed to have another birth, which was the 1.5 policy. Therefore, it is imperative to have a son as a second child. Otherwise, the couple may not have a son, or may not legally have the third birth.

them, scholars identify sex-selective abortion as the primary cause for the large number of

"missing girls" in China. Drawing data from the National Intercensus Survey of 2005, Zhu et al.

(2009) estimated that an excess of one million boys was born in the past 12 months and

concluded that the combination of abortion and prenatal sex determination accounted for almost

all excess boys. In other words, abortions driven by son preference are responsible for the male-

biased sex ratio at birth. Therefore, it is necessary to look into factors that shape individual

values and attitudes on son preference and abortion to understand SRB and its determinants in

China.

1.2.3   The balancing effect of economic development on sex ratio at birth

Demographers (e.g., Ebenstein and Leung 2010; Allendorf 2012, 2015; Malhotra 2012;

Bongaarts 2001) argue that economic advancement will gradually bring a less male-biased SRB

as it is often accompanied by diminishing gender bias.[8] Indeed, urbanization and modernization

have brought a series of social changes that help improve women's status in a family and society.

Transitioning to an industrial society from an agricultural one where sons were valuable labor

force helps increase daughters' value in families (see Gupta et al. 2003; Murphy et al. 2011).

Meanwhile, the transition brings social and cultural shifts that undermine the influence of

traditional family values such as filial piety and challenge son preference (Xie and Zhu 2009;

Takagi and Silverstein 2011; Wu and Xie, 2013).

Previous research shows that the rapid urbanization since the 1970s is linked to weakening

son preference and improved women's social status in China. Along with economic

---

[8] Studies show that economic development is accompanied by fertility decline. Shortening the time for childrearing and childbearing allows women to engage in life outside family and increases their connections to gender-neutral contexts (Ding and Hesketh 2006; Wu et al. 2014; Yount et al. 2014; Malhotra 2012).

development, women have experienced increasing education and employment opportunities (Lavely et al. 1990; Zeng et al. 2014). They are increasingly empowered to challenge gendered expectations and traditional values that marginalize women (see Fuwa 2004; Behrman and Duvisac 2017; Poston et al. 2014; Zhang and Sturm 1994). Improved women's status and the declining influence of traditional family values are evident in the declining trend of married children living with parents – census data shows that the share of intergenerational households in China dropped from 86 percent to 68 between 1982 and 2010 (Chu and Yu 2010; Hu and Peng 2015).

On the other hand, some studies lend firm evidence for Confucian tradition's lingering influence despite upward swings in economic development. For instance, Chen (2005) found that a higher share of married children live with parents from the husband's side rather than the wife's side, suggesting that patrilocal residence remains the norm in China. In South Korea, research shows that the intention of having another child when the first two are daughters remains unchanged and robust from 1991 to 2012 despite social modernization (Yoo et al. 2017).

Furthermore, there is mixed evidence for the weakening effect of education and economic advancement on son preference. Studies find that while women's education reduces discrimination against daughters, men's education may reinforce son preference (Murphy et al. 2011; Lu and Tao 2015; Attané 2009). Studies in other countries find little support for the negative relationship between economic development and son preference. Drawing data from several countries such as China, South Korea, and the United States, Arnold and Kuo (1984) concluded that son preference is influenced more by cultural factors than economic ones by showing that education has a weakening effect on son preference in some countries but not others. Noticing that sex-selective abortions in Punjab remained severe despite rapid economic

26

prosperity in the region, Gupta (1987) made a similar argument that discrimination against girls in India is motivated primarily by cultural factors.

The perspective focusing heavily on economic factors has shed important light on the linkage between son preference and sex ratios; however, it yields a limited understanding of China's imbalanced sex ratio at birth and its determinants. This is because economic development may not completely offset the Confucian tradition of son preference and thus may fail to bring a balanced sex ratio at birth.

The weak association between economic development and son preference is evident in regional variations in the sex ratio at birth – more economically developed areas may not be home to less imbalanced sex ratios at birth. Figure 1.1 presents SRB, measured by the number of boys under age five for every 100 girls of the same ages. I use child sex ratio – the sex ratio of children under five – to approximate SRB in this dissertation. The child sex ratio is a more robust measure of sex ratio of registered newborns in that it takes into account issues such as delayed-registration, under-reporting, and adoption of girls (Cai and Lavely 2003; Goodkind 2004; Johnson et al. 1998; Merli and Raftery 2000). Besides, by including children ages zero to four, this measurement not only addresses these issues mentioned above but also helps reduce the effects of short term fluctuations, thus this measurement is more robust and statistically stable (Cai and Lavely 2007).
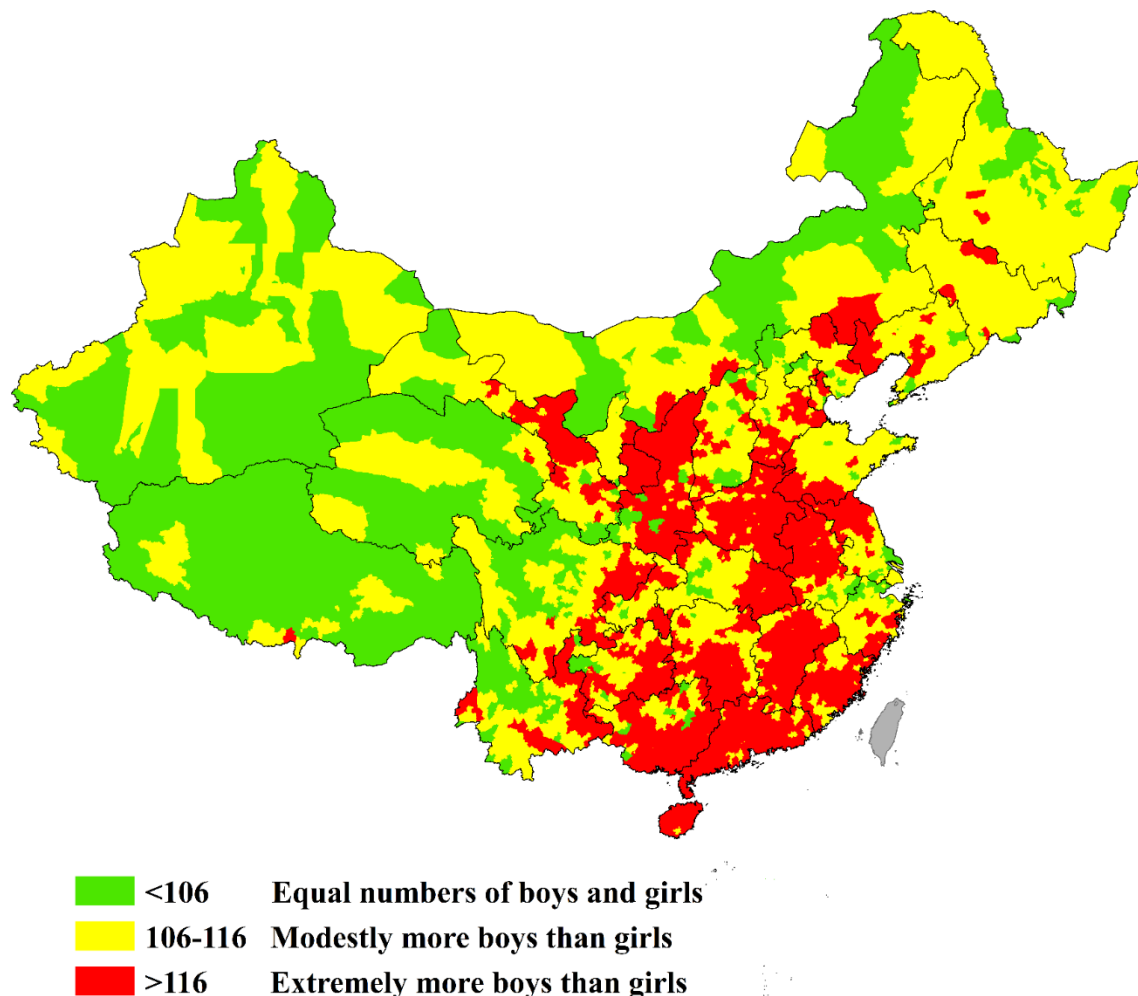
Figure 1.1 County-level child sex ratio in 2000

The figure lends little support for the negative relationship between economic development and the imbalanced SRB. For instance, a lesser degree of male-biased exists in the northwest, characterized by lower economic development levels, but a higher degree of male-biased exists in the affluent east. On the other hand, sex ratios in the south-central provinces of Henan, Guangxi, Guangdong, and Hainan are similarly male-biased, even though they differ a great deal in economic development levels. Additionally, the map suggests some clustering patterns of the

sex ratio at birth: similar ratios, male-biased or balanced, tend to concentrate geographically. The regional variations of sex ratios in China seem to support the argument of some scholars (e.g., Arnold and Kuo 1984; Gupta 1987) that cultural factors may play a more significant role than economic development in shaping gender imbalance at birth.

A closer look at religious geography – an important cultural factor – suggests that a perspective with a focus on religious factors can offer insights into some variations of sex imbalance at birth across China. Figure 1.2 presents the distribution of officially registered religious venues in China, including temples, churches, and mosques, using data from the 2004 China Economic Census, which provides an overall picture of the geographic concentration of various religious groups throughout China. [9] Similar to how the SRB varies across regions, religions tend to concentrate in unique ways: Islam shows a strong presence in the northwest, Buddhism spreads out across regions with dominant influence in the south and east, and Christianity prevails more in the north and central than other parts of China. Religious geography is likely to have contributed to varying imbalanced sex ratios across and within regions.

---

[9] The reason I use data on the number of religious organizations other than survey data on the share of the religious population to present the geographic distribution of religious groups is that census data is better to provide an overall picture of the presence of various religious groups all over the country. In contrast, survey data is limited in terms of capturing all geographic units in China. Besides, the religious landscape from the 2004 CEC is consistent with the geographic pattern of religious population suggested by large-scale surveys such as the Chinese General Social Survey and China Family Panel Studies. Muslims tend to be concentrated in the northwestern part of China, whereas Buddhism is more popular in the south and east, and Christianity is more dominant in the north and central. Thus, although the number of religious organizations may not capture the absolute presence of different religions in China, it captures the relative concentration of different religious groups in China.
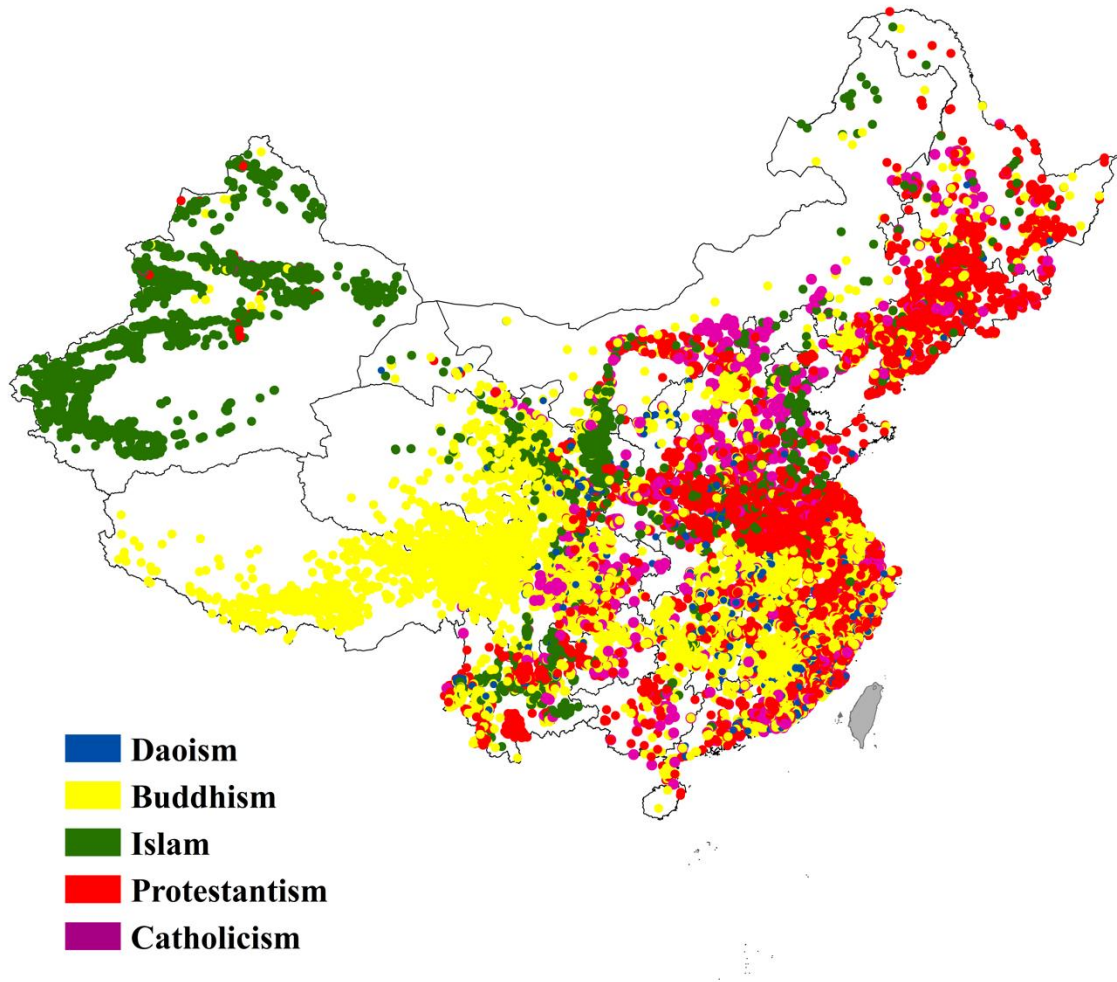
Figure 1.2 Geographic distribution of officially registered religious venues

1.2.4 Bringing in religion in understanding SRB

Religion, a significant factor shaping individual attitudes and behaviors, is often
overlooked in the study of sex ratios in China, even though several demographers (e.g., Cai and
Lavely 2007; Croll 2000) have highlighted the necessity of including cultural factors in
demographic studies. It is partly attributable to the Chinese government's unfriendly attitude
toward religion. The government considers religion incompatible with the atheistic Marxist

ideology of the Chinese Communist Party. Thus, religious groups have endured harsh suppression in history. During the Cultural Revolution (1966–1976), the government regarded religion as feudal and reactionary worldviews that should be eradicated. At that time, religious activities were banned, some churches and temples were torn down, and some statues of gods were smashed (Yang 2011).

Since the late 1970s, the government has relaxed its control on religion by rejecting the idea of eliminating religion and declaring that religious belief and normal religious activities should be respected and protected (Ng 2000; Morrison 1984). Nevertheless, it insists that religion will eventually disappear as society progresses in economy and culture toward Socialism and Communism. As a result, religion still experiences heavy regulation – religious groups need to register with the government to obtain permission for religious activities. And there are reports about how the Chinese government arrested and physically abused members of both registered and unregistered religious groups (Pew Research Center 2019).

The little scholarly attention religion receives in demographic studies may have to do with the fact that very few Chinese people are religious. Data from the Chinese General Social Survey shows that a vast majority of Chinese adults (about 85–90 percent) are religiously unaffiliated, identifying as religious nones. On the other hand, data from other sources, including official estimates, suggests a substantial presence of religious organizations and religious groups – about 200 million people engage in some religious practices and 144,000 officially registered religious venues including temples, churches, and mosques (Xinhuanet 2018).

The size of various religious communities in China has been on the rise, even though the government controls and suppresses religious practices and activities. Among all five major religions, namely, Buddhism, Daoism, Catholicism, Protestantism and Islam, the growth of

Protestantism in China has been particularly eye-catching, with an increase of 13 million in the total number of Christians in officially registered churches between 1982 and 2004 (Ying 2009) and even greater growth of the Christian population in unregistered house churches (Stark and Liu 2011). Considering the growing number of various religious groups in China and the increasing religious influence on individuals and local communities, it is of considerable interest to examine whether religion plays a role in shaping social and demographic trends in China.

In addition, different religions may help reinforce (or weaken) the Confucian tradition of son preference depending on how much they intertwine with Confucianism. Religions vary on whether they support (or challenge) the Confucian values and practices of filial piety and ancestor worship, which undergird son preference, the root cause for imbalanced SRB. For example, Buddhism – known as a Chinese religion despite its Indian origins – integrated the Confucian teachings of filial piety after being criticized by Chinese people as being unfilial in the Han dynasty. Since then, Buddhism started to encourage making sacrifices to deceased ancestors and saw it as a way of preventing ancestors from becoming hungry ghosts (Ch'en 1968). Daoism also shares the Confucian belief in the supernatural and the practice of ancestor worship, though it differs from Confucianism in holding a mystical attitude toward the world (see Weber 1951, 185).

By contrast, Islam and Christianity, so-called western religions, challenge ancestor worship because it goes against the belief in one God. Christians and Muslims in China are reluctant to participate in ancestor worship or make offerings to deceased ancestors. Although Muslims in China are mostly ethnic minorities and do not share a Confucian tradition with their Han majority counterparts, there is a discussion about ancestor worship among Muslim communities (Ul Ain and Lu 2014). As increasingly more Han Chinese convert to Christianity, there have

been many discussions and debates among the Christian community about the challenges that Confucian filial piety poses for Christians and whether Christians can participate in ancestor worship. Similar discussions can be found in other societies with a Confucian tradition, such as Taiwan (Rev. Wei 2017), and South Korea (Park and Müller 2014).

Furthermore, there is a rich body of literature exploring how Confucian understandings of men and supernatural beliefs are different from Christian ones. As Max Weber (1951) elaborates in his book *The Religion of China*, in Confucianism, men are good in nature and capable of unlimited perfection, and an ideal man is a person who fulfills his traditional obligations, among which filial piety to parents is the most important. By contrast, according to Puritan values, men are sinners and can achieve salvation through hard work and God's grace. In Confucianism, the supernatural – which consists of ancestral spirits and other ghosts and deities – are powerful and can intervene in the world of the living through punishment or blessings. Yet, because the divine intervention is never certain, worshipping deities or ghosts merely for blessings or good fortune is never encouraged (see Qin 2020). According to Confucian teachings, people shall worship their deceased ancestors to pay their sincere gratitude and respect because it is their filial obligation to do so (Li 2012). [10]

The Confucian understanding of the supernatural contrasts with the Christian belief in one true God. Mou Zongsan, a Chinese philosopher, summarizes, the Confucian tradition of worshipping deceased ancestors and other deities does not entail one's commitment to the supernatural, while in Christian belief, adherents submit themselves to the One God (see Mou 1997, 14). The contrasting views between Confucianism and Christianity on men and the

---

[10] In Confucianism, it is unwise to rely on ghosts or deities for major decisions. In *The Art of War*, Sunzi (or Master Sun) states, in wars, which are a matter of life and death, men must not consult ghosts or deities – through Shamans offering sacrifices – but, instead, should rely on men (their wisdom and experience) (see Li 2012).

supernatural is likely to bring challenges to the Confucian tradition of ancestor worship and filial piety as a growing number of people convert to Christianity. Considering the fundamental differences between Confucianism and Christianity and their disagreements on ancestor worship, the rapid development of Christianity is likely to pose challenges to the dominant Confucian influence of son preference.

However, studies suggest that some Confucian ideas, such as filial piety as the primary virtue, have permeating impacts on the life of Chinese Christians. Even though Christians tend to distance themselves from ancestor worship, many of them in China (Seville 2016) and South Korea (Park 2010) would participate in the rites to avoid being seen as unfilial by non-Christian family members and relatives. Several studies show that many rural Christians in China resemble their folk religion counterparts in seeing God as one of many, capable deities and worship them only when they have health issues (Li 2012; Liang and Qi 2015; Zhou and Sun 2017). Similarly, Muslim communities are not independent of the Confucian tradition of filial piety and ancestor worship due to its dominance dating back to the Tang dynasty. For example, there is evidence suggesting many Muslims participated in ancestor worship (see Israeli 1977). In particular, some Hui Muslims adopted the ritual and would keep ancestral tablets in the home, which they argue is not for worship but a way of expressing their natural reverence for parents (see Ul Ain and Lu 2014). Nevertheless, considering the fundamental differences between Christianity and Confucianism, it is worth examining whether it has different effects on sex ratios, whose root cause is the Confucian tradition of son preference.

This dissertation brings in religion as a key factor to provide a nuanced explanation for the imbalanced SRB and its determinants. Religion – in forms of individual religiosity and religious context – not only shapes its adherents' values and attitudes toward son preference and abortion

but can influence people living in a place dominated by a particular religious tradition. As different religions intertwine with the Confucian tradition to varying extents, they may shape the sex ratio in unique ways by challenging (or reinforcing) its root cause – son preference.

1.3   Organization of the Dissertation

This dissertation comprises three individual empirical studies. The first study explores the relationship between religious presence and the county-level sex ratio at birth to show that religion affects China's demographic trends. The second study investigates whether and how various religious groups differ in their values and fertility decisions about son preference – the underlying cause for sex imbalance at birth – using data from the 2010 Chinese General Social Survey. The final study examines how and whether religion, in forms of religious affiliation and religious context, affects individuals' abortion attitude to shed light on the pattern of abortion behaviors and sex-selective abortion in different populations. These studies together provide a nuanced understanding of how religion affects demographic and social trends via shaping individuals' values and decisions toward son preference and abortion.

CHAPTER 2. RELIGIOUS GEOGRAPHY AND COUNTY SEX RATIOS IN CHINA

2.1 Introduction

Religion affects sex ratios (the number of male births for every 100 female births) through shaping individual values toward son preference and abortion – two primary causes for imbalanced sex ratios at birth.[11] Different religious traditions vary in the extent to which their teachings emphasize the importance of having male offspring and having many sons. Combined with varying tolerance toward abortion – sex-selective abortion, in particular – between religious traditions, sex ratios often vary by religion. For example, in countries where the sex ratio is skewed in favor of male births, such as in India, Muslims and Christians tend to have relatively balanced sex ratios – 105 boys for 100 girls – due to their opposition to abortion, which protects unborn girls, while Hindus have highly male-biased sex ratios (Bhat and Zavier 2007; Guilmoto 2005; Chakraborty and Kim 2010).

Studies show that the effects of religious teachings often spill over to the local culture, affecting not just the religious population but also others living in areas dominated by a particular religious tradition (see Adamczyk et al. 2016; Adamczyk and Valdimarsdóttir 2017; Glass and Levchak 2014). As a result, sex ratios tend to vary across regions in accordance with the dominant religious tradition. For example, Kim and Song (2007) found that in South Korea, male-biased sex ratios are prevalent in the southeastern region, an area with a long history of Confucian cultural traditions but few Protestant and Catholic churches.

---

[11] The sex ratio at birth is defined as the number of boys born per 100 girls and is used in much of the literature reviewed in this paper. However, in China's context, the sex ratio under age 5 – the child sex ratio - is a more complete and accurate measure due to under-enumeration and delayed registration and thus is the sex ratio I analyze in this paper. See the Data and Methods section for a more detailed explanation of this measure. To avoid confusion, I use the more general term "sex ratios" throughout the paper.

Despite evidence suggesting a link between religion and sex ratios, there has been little scholarly attention on whether religious geography affects sex ratios. Existing studies commonly focus on economic factors to understand variations in sex ratios because economic development weakens the influence of religious traditions that have a preference for sons (see Croll 2000). This perspective has shed important light on understanding imbalanced sex ratios and their determinants, but a perspective that overlooks the role of religion – an important factor shaping attitudes and decisions about having boys – yields only a limited understanding. Studies suggest mixed evidence for the weakening effect of economic development on son preference. In particular, Arnold and Kuo (1984) found that economic development had a weak, negative effect on son preference. However, Poston et al. (2014) found that economic development had no weakening effect among individuals with strong son preferences. And in China, provinces with high economic development levels, such as Fujian and Guangdong, are home to heavily imbalanced sex ratios, with over 125 boys per 100 girls according to the 2010 census (Attané 2013). In China, the economic perspective often assumes a monolithic Chinese cultural context that is dominated by the influence of Confucian values. However, this monolithic view ignores the substantial presence of other religious traditions: In 2018, the Chinese government estimated about 200 million Chinese people engaged in some religious practices, such as visiting temples, burning incense, or attending church services (Xinhuanet 2018). This diversity of religious practice could potentially challenge (or reinforce) the dominance of the Confucian tradition. Other religious traditions, such as Christianity and Islam, differ from Confucianism on teachings related to son preference and abortion, thus affecting the sex ratio in a given place differentially. Therefore, I argue that bringing in the local religious context as a key factor can contribute to a better understanding of the imbalanced sex ratios in China.

The current study fills this scholarly gap by examining the relationship between religious presence and sex ratios using data from the 2004 China Economic Census (CEC) and the 2000 China Population Census (CPC). The 2004 CEC is the first – and only – available dataset that includes information on the number of religious venues, including temples, churches, and mosques. This dataset is particularly valuable in providing a comprehensive picture of the geographic distribution of various religious venues across all counties in China, especially considering the difficulty of collecting data on religious venues and religious populations in China due to heightened political restrictions in recent years (see Yang 2018, 4–6). For data on sex ratios, I use the 2000 CPC instead of the recent census in 2010 because it is closer in time to the 2004 data of religious venues, and the average sex ratio is similarly male-biased across the two censuses (117 in 2000 vs. 120 in 2010).

2.2   Literature Review

2.2.1   Causes of male-biased sex ratios in China

The sex ratio in China has been increasingly skewed in favor of boys since the 1970s when the government implemented a nationwide birth planning campaign to control population growth. Before the campaign, the sex ratio – often measured as the number of registered boys under age one per 100 girls of the same age in a given year – was around the natural ratio (105). Entering the 1980s, when the one-child policy came into effect, the ratio has become even more male-biased, increasing from 114 in 1993 to 120 in 2010.

The male-biased sex ratio indicates the excess of male births each year, further leading to a surplus of men in society. According to the United Nations, China had, on average, nearly one million excess male births every year between 2005 and 2010, ranking the first in the world

(UNFPA 2012). It is estimated that as these cohorts grow up, up to 30 million Chinese men of marriageable age will not be able to find a partner in the next three decades (Liu 2017). Several studies have shown that a surplus of men can lead to social problems including sex crimes, the spread of HIV/AIDS, and trafficking in women (Merli and Hertog 2010; Bien et al. 2013; Greenhalgh 2013; Zhu et al. 2009; Tucker and Van Hook 2013).

Contemporary scholarship has pointed to several factors to explain the male-biased sex ratio in China including the one-child policy, sex-selective abortion, excess female infant mortality, the under-enumeration of girl babies, and the adopting out of female infants (Banister 2004; Chu 2001; Hull 1990; Johnson 1993; Johnson et al. 1998; Li et al. 2011; Miller 2001; Shi and Kennedy 2016; Cai and Lavely 2003). From these, sex-selective abortion has been identified as a primary cause of the imbalanced sex ratio with son preference serving as the underlying motivation (e.g., Ebenstein 2010; Greenhalgh 2008; Gu and Roy 1995; Jiang et al. 2011; Poston 2002).

Scholars agree that the root cause for the imbalanced sex ratio in China is son preference, which is an integral part of Confucian values (e.g., Li and Lavely 2003; Dupta et al. 2003; Ebenstein and Leung 2010). In the Confucian tradition, male offspring are considered important for economic, cultural, and religious reasons (Li and Lavely 2003; Dupta et al. 2003; Ebenstein and Leung 2010; Arnold and Kuo 1984). Economically, sons are an important source of manual labor in the agricultural context. Culturally, sons are the primary providers of old-age support for parents as taking care of parents is their filial obligation (Whyte 2004; Chu and Yu 2010). Most importantly, sons are preferred over daughters for religious reasons: only sons can continue the family lineage and take care of deceased ancestors by performing ceremonies, thus producing no sons is a heinous offense against filial piety (Pande et al. 2006; Johnson 1993).

Son preference is linked to male-biased sex ratios because of the strong desire to have sons often results in parents' interventions in childbearing, such as aborting unwanted girls. If parents strongly prefer sons over daughters, they are likely to use ultrasound technology for prenatal sex determination to ensure the birth of boys through sex-selective abortion. This results in disproportionately more boys than girls being born. Research has also shown that parents with a strong son preference would mistreat daughters in various ways – consciously or unconsciously – such as through shorter periods of breastfeeding, smaller food allocations, and less child care and family care, which leads to higher mortality rates in infant girls despite infant boys being biologically more vulnerable (Li et al. 2004).

There is the consensus that the one-child policy intensified the skewing effect of sex-selective abortion driven by son preference on the sex ratio. Under the one-child policy, the desire to have at least one boy was reflected through the spread of ultrasound – sex detection during pregnancy – and a rise in China's sex ratio. The ultrasound, which was initially introduced to China in the late 1970s to detect fetal abnormalities but later became a 'sex detection' machine, became widely available and affordable by 2000. Its spread was accompanied by a dramatic rise in sex-selective abortions, skewing the sex ratio: the number of ultrasound machines in the county is positively correlated with its sex ratios, suggesting that sex-selective abortion has been practiced to ensure the birth of boys (Chen et al. 2013). Consequently, the overall sex ratio has soared, increasing from a balanced sex ratio of 105 (in the 1970s) to 117 boys per 100 girls by the time of the 2000 census.

There have been important policy changes since the sex ratio became noticeably skewed toward boys. In 1989, the government officially banned prenatal sex detection, making it illegal to use ultrasounds to reveal a fetus's sex to parents (Shi and Kennedy 2016). However, it was

still possible for people to learn the sex of a fetus in private clinics or hospitals by bribing service providers (Chu 2001). In more recent years, the government has relaxed fertility restrictions. In 2011, China relaxed the birth policy to allow certain couples to have two children,[12] And it launched a two-child policy in 2015, ending almost 40 years of limiting births.

Although the highly skewed sex ratio can be attributable to the one-child policy, its relaxation to allow couples to have a second legal birth may not necessarily bring a balanced sex ratio. However, a recent study by Jiang et al. (2016) shows that women have turned to sex-selective abortion to ensure they have a son for the first birth instead of having a second child. As family size norms in China have shifted toward "fewer and healthier births," (Basten and Jiang 2014; Nie and Wyman 2005), preferences for sons over daughters are likely to continue distorting sex ratios because of parents resorting to sex-selective abortion (see Park and Cho 1995). It is unlikely that the relaxed birth policy will bring a balanced sex ratio if a strong son preference remains persistent among Chinese couples (Basten and Jiang 2014). Therefore, it is important to investigate the sex ratios and its major determinants – son preference and abortion – to understand the demographic trends in China.

2.2.2   Religious geography and imbalanced sex ratios

Previous research suggests that economic and cultural factors at both the micro and macro levels affect the imbalanced sex ratio in China. Macro-level factors, such as cultural norms and economic development, help shape individuals' gender ideologies, son preference, access to sex

---

[12] In 2011, the government started allowing couples in which both the husband and wife are single children to have two children of their own. In 2013, couples could have a second child if either the husband or wife was an only child, and entering 2015, the government loosened the birth planning policy and implemented the two-child policy (Goodkind 2016). However, the relaxation of the policy turned out to be insufficient to boost the fertility rate. Goodkind (2016) found that by 2015, although 11 million couples met the criterion of having a second child, only 1.5 million applied.

detection technology, and their abortion attitudes and practices (see Lu and Tao 2015; Bianchi et al. 2000; Fuwa 2004; Karsten and Jürges 2005; Blumberg 1984). Micro-level factors such as education, income, place of residency, and adherence to Confucian beliefs contribute to one's desire for at least one son, access to sex detection technology, and willingness to get an abortion (see Hu and Tian 2018; Karsten and Jürges 2005; Murphy et al. 2011; Gaudin 2011).

However, as an important personal trait and component of local subcultures, religion is largely overlooked in studying sex ratios in China. The absence of religion in the discussion of imbalanced sex ratios in China has to do with China's overall regulative religious environment. Religion was seriously suppressed during the Cultural Revolution (1966–1976); the government regarded religion as feudal and composed of reactionary worldviews that should be eradicated. As a result, all religious activities were banned, some churches and temples were torn down, and some statues of gods were smashed (Yang 2011). Since the launch of economic reforms in the late 1970s, the government abandoned the idea of eliminating religion, though insisted that religion would disappear (Ng 2000; Morrison 1984). The Chinese government also issued regulations stating that religious belief should be respected and normal religious activities protected (Potter 2003).

Various religious groups have experienced revivals over the past several decades and are thriving despite China's regulative environment (Yang 2011). In 1982, six years after the official, complete ban of religious activities, there were 40,000 religious sites in China, and the number of sites more than doubled by 2001 (83,000) (Feng and Hu 2002). According to the 2004 China Economic Census, there was at least one officially registered church, temple, or mosque in a majority of the total 2,873 counties (78%) in China.[13] The religious population has been

---

[13] Note these statistics numerate religious venues that are registered with the government only, whereas house churches and underground Catholic churches remain hidden from official statistics.

steadily increasing as well. The government estimated that the number of people practicing religion was about 100 million in 1997, and it increased to over 200 million in 2018 (State Council Information Office 2018).

With the increasing presence of religion in China, religious geography is likely to shape local sex ratios. Religious traditions have their unique teachings on son preference and abortion, which may contribute to an enhanced/abated son preference and sex-selective abortion practices at a local level. Because religions differ in the extent to which they are embedded in Chinese culture and share values with the Confucian tradition, their geographical location and concentration can serve as an indicator of how much the Confucian tradition of son preference is the predominant influence, which has implications for the prevalence of sex-selective abortion across geographic units.

Among the five religions, Daoism and Buddhism are believed to be Chinese traditional religions and are heavily intertwined with Confucian values (Perrett 2000; Petersen 2001). Indeed, Chinese culture is often viewed as a harmonious aggregate of Confucianism, Daoism, and Buddhism (Lou 1994). The deep embeddedness of Buddhism and Daoism with Chinese society is best exemplified in the Chinese folk belief system, which comprises of elements from Buddhism (belief in Karma, rebirth, and meditational techniques), Daoism (multiple gods are organized into a hierarchy headed by Jade Emperor), and Confucianism (the idea of filial piety and ancestor worship). Most importantly, Daoism and Buddhism do not challenge the two pillars of Confucianism – filial piety and ancestor worship – which places sons in a favorable position while marginalizing daughters. It is unlikely that Buddhism or Daoism would weaken Confucian values' influence but would rather perpetuate son preference as Confucian values do.

By contrast, Islam and Christianity – often referred to as "foreign" religions – challenge the Confucian tradition of ancestor worship because it goes against the belief of one God. In particular, studies show that Chinese Christians intentionally distance themselves from traditional rituals and activities. Cao (2010) found that Christians would consciously avoid engaging in any religious activities they consider un-Christian, especially ancestor worship. Miller (2004) also observed that some Christian converts in a village of Shandong province – the birthplace of Confucius – refused to participate in burning sacrifices to their ancestors. Additionally, both Christians and Muslims oppose abortions more than traditional Chinese religionists do (see Perrett 2000; Jones 2003). Existing research suggests that religious teachings denouncing abortion help explain the balanced sex ratios of children among Christian and Muslim families in India (Bhat and Zavier 2007; Guilmoto 2005) and Asian immigrants in Canada (Almond et al. 2013).

Moreover, existing studies highlight how religious teachings often "spill over" to the local culture, affecting not just the religious population but also others living in areas dominated by the religious traditions (see Adamczyk et al. 2016; Adamczyk and Valdimarsdóttir 2017; Glass and Levchak 2014). This is because a local religious tradition can shape local social norms and public attitudes through its religious teachings when it acquires dominance. In contrast, in a location with competing values and religious traditions, it is less likely that one religion will dominantly influence public life. For instance, Marshall and Olson (2018) found that irrespective of their own religious affiliation, U.S. adults are more likely to trust others when they live in a county with a higher share of mainline Protestants or that of Catholics.

According to this argument, Buddhist teachings on abortion may affect Buddhists' attitudes and behaviors and non-Buddhists living in an area with a strong influence of Buddhist

tradition. Besides, because of similarity in the teachings of Buddhism and Confucianism, the Buddhist presence in an area is likely to reinforce the Confucian value of son preference and foster a tolerant attitude toward sex-selective abortion in pursuit of sons, thus resulting in a more imbalanced sex ratio. On the contrary, a strong Christian presence would correlate with a weakened Confucian tradition and denouncement against sex-selective abortion practices, which may aid in balancing the sex ratio in an area. Therefore, I hypothesize that counties dominated by Buddhism or Daoism are more likely to have imbalanced (male-biased) sex ratios because these religious traditions perpetuate rather than challenge son preference. Conversely, I hypothesize that counties dominated by Islam, Catholicism, or Protestantism are more likely to have less imbalanced sex ratios because these religious traditions are more likely to denounce abortion and be less supportive of son preference.

2.3   Data and Methods

To test these hypotheses, I use data from the 2004 China Economic Census (CEC) and the 2000 China Population Census (CPC).[14] The CPC – obtained through the Center on Religion and Chinese Society (CRCS) at Purdue University – includes county-level information on sex ratios, urbanization, ethnic composition, and migration. The CEC 2004 is the first national economic census in mainland China that enumerated and included information for 72,887 officially registered religious venues in China's 2,873 counties.[15] The data on religious venues from the CEC 2004 has been cleaned and geo-coded by the CRCS and is available to download (Yang et al. 2019).

---

[14] I use the 2000 CPC instead of a more recent one in 2010 because it is closer in time to the 2004 data of religious venues. Additionally, the average sex ratio is similar across the two censuses (117 in 2000 vs. 120 in 2010).
[15] This dataset includes 72,849 religious venues and 38 religious administrative offices. This study included religious venues only.

One caveat of the 2004 CEC is that it may suffer from omission issues – the census may

not collect information on all officially registered religious venues by the census year in China.

In the dataset, about 649 counties (about 23 percent) reported zero religious venues, which is

unlikely since folk religion has been thriving since the 1980s and supported by local government

who hope to profit from temple activities (Chau 2010). The zero counts in these counties might

be because of the failure of lower-level local officials to report religious venues. Additionally,

the CEC data included officially registered religious venues only, excluding underground

Catholic churches, unregistered Protestant house churches, and gathering points that are believed

to be many in China (Lee 2007). On the other hand, estimates of Christians in China by the Asia

Harvest – an interdenominational Christian ministry working in various countries throughout

Asia – suggests that the number of Christians (including Catholics and Protestants) affiliated

with the officially registered churches is strongly correlated to that of Christians affiliated with

Christian churches that are not recognized by the government, with a Pearson's correlation of

0.95 for estimates at the provincial level. The number of officially registered churches may not

represent the religious presence in terms of the number of total Christians in a region, but it well

captures the influence of Christianity in a comparative sense. Despite these limitations, the CEC

2004 data is the first (and only) available census of religious venues in China, allowing me to

conduct the first exploratory analysis of the relationship between religious geography and sex

ratios in China.[16]

---

[16] Note that according to the State Administration for Religious Affairs (SARA) of China, in 2014, there were 139,000 religious venues in total (SARA 2014), much higher than the 2004 CEC data suggests (72,849). It is unlikely that between 2004 and 2014, over 66,000 religious venues were newly registered. The inconsistency is likely due to under-reporting in the 2004 census. In China, it is common that local government officials under-report the number of religious venues or followers for political consideration because of the government's desire to reduce religious influence (Yang 2011). Such under-reporting affects Christianity and Islam the most because the government labels these religions as "western" and is especially anxious about their growth (Leung 2005). There is no source of data that fully captures the religious presence in China.

I combined datasets from the CEC 2004 and from the CPC 2000 to capture religious and demographic information for each county. I further used county-level gross domestic product (GDP) information from the *Statistic Materials of Public Finance of Cities and Counties* (2004), in accordance with the county name in each specific city and province.[17] The number of counties with valid information on GDP, sex ratios, and religious venues is 2,685 counties (93% of the total counties in China). I ran all analyses and models in Geoda^TM and R-studio. And all tests are two-tailed; I report results at $p < 0.05$ as significant.

2.3.1 Dependent variable

The variable of interest in this study is the county-level sex ratio. It is measured by the number of boys between age under *five* per 100 girls of the same age, often known as child sex ratio. I utilize this measure because it is a more complete, accurate, and robust indicator than the sex ratio of infants under age *one* (i.e., the sex ratio at birth) when using data from the census. Scholars have identified several validity issues related to sex ratio calculation based on infants under age one instead of five, including delayed-registration, under-reporting, and out adoption (Cai and Lavely 2003; Goodkind 2004; Johnson et al. 1998; Merli and Raftery 2000), leading to a less accurate value of the sex ratio at birth. Approximating the sex ratio at birth using the sex ratio of children under five helps address these issues above. Including children ages zero to four, this measurement reduces the effects of short-term fluctuations and is more robust and statistically stable (Cai and Lavely 2007).

---

[17] The book includes province names, city names, and county names. I first identified all counties within each city and province and merge them with the CPC 2000 based on their county names. Some counties and districts were renamed after 2000 and thus were excluded from the analyses.

2.3.2   Independent variables

The focal independent variable is the county-level religious presence. A frequently used measurement of religious presence in existing research is the proportion of adherents of a particular religion (or denomination) in a locality (see Olson and Li 2015; Olson and Perl 2011). Due to the lack of data on religious adherents in China, I used the number of officially registered venues of each religion as an approximate estimator of the religious presence in an area, a method that has been employed successfully by other researchers (i.e., Kim and Song 2007). I further took the log form to reduce the skewness of the number of religious venues for each religion.

2.3.3   Control variables

I control for county-level economic development, urbanization, migration, and ethnic composition, which is defined as the percentage of the Han ethnic group. Other county-level socioeconomic indicators such as family structure (share of households with two or more generations) and education (share of the population with high school/college degree) are not controlled for, though both may affect sex ratios on an aggregate level (Attané 2009; Pande and Astone 2007; Huang et al. 2016). A preliminary analysis of the data showed that both variables (household structure and education) were strongly correlated with economic development. Thus, they are excluded from the study to avoid collinearity and over-specification issues.

I use county-level GDP per capita as a measurement of economic development. I include logged GDP per capita in the analysis to reduce the skewness of GDP per capita. I constructed a dichotomous variable indicating whether the county is an urban district (1) versus a rural county (0) because existing research suggests that the influence of the Confucian tradition and son preference (Cooney et al. 1991; Li and Cooney 1993; Zhang and Sturm 1994), female infant

mortality rates, and sex ratios are higher in rural areas (Huang et al. 2016; Attané 2013).

Distinguishing urban counties from rural ones also helps adjust for the difference in birth control

regulations, which are usually stricter in urban areas (Gu et al. 2007).

I control for the level of migration because Lu and Tao (2015) found that outmigration is

associated with diminished son preference. Following past research, I use the net migration rate,

calculated as (1 – hukou[18] population/census enumeration) ×100 (see Cai 2010), and (Wang and

Chi 2017). The county-level net migration rate captures the proportion of people without local

hukou registration per the county's total population. A positive value of the net migration rate

indicates a migration inflow, while a negative value suggests a migration outflow (see Cai 2010).

The measure of county-level ethnic composition is the proportion of the county population

that is of the Han ethnic group. This is because the Confucian tradition of ancestor worship is a

primary characteristic of Han Chinese, the majority ethnic group in China (Skinner 1997), and

consequently, high sex ratios are found in areas dominated by Han populations (Lavely et al.

2001; Cai and Lavely 2007). Moreover, ethnic minorities had a lenient birth policy, which

allowed them to have at least two births legally during the one-child policy era.

The one-child policy was relaxed in 1984 to allow rural couples in some areas to have a

second birth if the first child was a daughter, often known as the 1.5-child policy (Gu et al.

2007). Although data on variation in birth policy is not available at the county level, it is

available at the province level. Therefore, based on the provincial level birth planning policy –

complied by Gu et al. (2007) – I constructed a continuous variable indicating the share of the

county population that is eligible for the 1.5-child policy.[19]

---

[18] Hukou refers to household registration, which puts all citizens into two broad categories, rural or nonrural, based on the locale in which they live.

[19] Apart from the 1.5-child policy, there are other regional variations, such as one-policy for all, for rural residents, and for the Han population (see Gu et al. 2007). To address this issue, I calculate a harshness score for each county

2.3.4 Analytic strategy

I use spatial regression to examine the relationship between county-level sex ratios and religious presence and adjust for the spatial nonindependence/clustering in the distribution of sex ratios (Cai and Lavely 2007).[20] The clustering is attributed to two types of spatial processes: dependence and heterogeneity, and each requires different modeling specifications. Spatial dependence refers to a contagion-type effect where the sex ratio in one region proliferates into the neighboring regions, resulting in clusters. Spatial heterogeneity results from the contextual variations over space, due to exogenous factors such as climate, topography, culture, or demographic diversity across areas (Anselin 2001).

The primary spatial process that causes the clustering pattern needs to be determined to ensure the appropriate model specification. While the effects of these two types of spatial processes are impossible to distinguish using cross-sectional data, there is a consensus that the Lagrange Multiplier (LM) test is a reliable method of testing for the spatial process (Anselin 2001; 1988). The LM test is used to distinguish between spatial dependence as a nuisance and a substantive spatial process, and it guides the choice between spatial error autocorrelation and a spatial lag (Anselin and Rey 1991). Regarding weight matrix W, I use a first-order contiguity spatial weight matrix that identifies contiguous counties that share common boundaries, often known as queen contiguity (see Anselin and Rey 2014).

The LM test results suggest that a spatial error model (SEM) is preferable to examine the

---

by weighing the share of the county population under the strict one-child policy. The analyses, however, show that the harshness score is highly correlated with the percentage of the Han population to the extent that it has no effect on the dependent variable when the latter is included in the model. Therefore, to avoid over-specification, I exclude the harshness measure from the analyses and keep the Han population and 1.5-child policy variables in the model to account for regional differences in the birth policy.

[20] Another way of addressing non-independence error is through multi-level modeling with the province as the clustering unit. However, this strategy is not appropriate in exploring sex ratios because scholars have found that high or low child sex ratios do not correspond to provincial boundaries (Cai and Lavely 2007). Thus, spatial regression is the ideal modeling strategy to examine the relationship between religious presence and child sex ratios.

associations between sex ratios and religious presence. Table 1 presents the LM test results for the model with all predictors. First, the test confirms spatial clustering in the sex ratio, indicated by the statistically significant Moran's I ($p < 0.001$). Second, the results show that both types of spatial processes: spatial dependence and heterogeneity may contribute to the observed clustering, as the LMLAG (for spatial lag) and the LMERR (for spatial error) are both statistically significant. However, the Robust LM (for spatial error) is the model with a larger value for the test statistic, suggesting spatial heterogeneity may play a larger role, according to Anselin (2004).[21] Therefore, I use SEM to examine the relationship between sex ratios and religious presence with the clustering pattern of sex ratios accounted for. I present the equation of the model below:

$$Y_{ij} = \beta_0 + X\beta + \lambda W_\varepsilon + \varepsilon;$$

λ is the spatial autoregressive coefficient, W is an N by N spatial weight matrix, and ε is an N by one vector of i.i.d errors. The spatial matrix W expresses the strength of the potential interaction between each observation and its neighbors (Anselin and Rey 1991).

Table 2.1 Diagnostics for spatial dependence for OLS model

Test	MI/DF	Value	Prob.
Moran's I	0.613	51.248	0
LM (lag)	1	1565.268	0
Robust LM (lag)	1	18.701	0
LM (error)	1	2579.182	0
Robust LM (error)	1	1032.614	0

Note: Calculated by the *Geoda*[TM] software. The aforementioned spatial weight matrix has been used in these diagnostics.

---

[21] Anselin (2004, 199–200) recommends that when both of the robust LM test statistics reject the null hypothesis of no spatial autocorrelation, one should go with the model with the largest value for the test statistic. Additionally, the spatial error model has greater R-squared and Log-likelihood values than the spatial lag one (R-squared 0.677 vs. 0.545), indicating a better fit of the error model.

2.4 Results

Table 2 presents descriptive statistics of all variables. As shown, the county-level child sex ratio, measured by the number of boys aged between 0 and 4 per 100 girls of the same age, is 116 on average based on the 2000 census. Table 3 presents regression estimates predicting county-level sex ratios. This first model (+GDP) is the linear regression model, which includes only logged GDP per capita, and the results show that economic development is negatively correlated with the sex ratio, which is consistent with prior studies. Specifically, a one-unit increase in logged GDP per capita is associated with a 1.68 decrease in the county-level sex ratio ($p < 0.001$), meaning that a ten percent increase in GDP per capita is associated with 0.16 decrease in the ratio.

Table 2.2 Variable definitions and sample descriptive statistics (N=2,685)

Variable	Definition	Mean/Prop.	SD
Sex ratio	Number of boys aged between 0 and 4 per 100 girls of the same age	116.568	13.859
GDP per capita	GDP per capita (in 1,000 *yuan*)	10.002	16.135
Logged GDP	Logged GDP per capita	1.965	.779
Logged Buddhist temples	Logged number of Buddhist sites per 100,000 people	.583	.963
Logged Catholic churches	Logged number of Catholic sites per 100,000 people	.119	.284
Logged Daoist temples	Logged number of Daoist sites per 100,000 people	.130	.403
Logged Protestant churches	Logged number of Buddhist sites per 100,000 people	.395	.645
Logged Islamic mosques	Logged number of Buddhist sites per 100,000 people	.347	.967
% 1.5-child policy	Percentage of rural population in the 1.5-child policy	52.329	38.742
Urban county	County in urban area	.397	
% Han	Percentage of Han population	82.976	29.679
Net migration	Percentage of immigrants	-.214	11.594

The second model (+Religion) includes all religious predictors, bringing in an improvement in the R-square, from 0.007 to 0.11. [22] The model results suggest that religious presence is significantly associated with the county-level sex ratio for all five religions, Buddhism, Catholicism, Daoism, Protestantism, and Islam. SRBs in counties with more Buddhist, Catholic, and Islamic sites are less male-biased ($p < 0.001$), whereas those in counties with more Daoist ($p < 0.001$) and Protestant ($p < 0.01$) sites are more in favor of boys. And the effect size is substantial. For example, a one-unit increase in the logged Buddhist temples per 100,000 people in a county decreases the sex ratio by 3.42 ($p < 0.001$) controlling for logged GDP per capita. This means that a 10 percent increase in the number of Buddhist temples decreases the predicted sex ratio by 0.32 (= 3.42*log(1.1)). A ten percent increase in the number of Daoist temples predicts a 0.67 (= 7.07*log(1.1)) increase in the sex ratio ($p < 0.001$).

---

[22] I conducted diagnostics on religious variables Stata 15 to see if it introduces collinearity issues when all religious predictors are included in one model. The test result provides little evidence for the multi-collinearity – VIFs are less than 2 (see Allison 2012).

Table 2.3 Regression estimates for county-level sex ratios (N=2,685)

	+GDP	+Religion	+Controls	+Spatial
Logged GDP per capita	-1.686***	-2.294***	-1.840***	-1.147***
	(0.342)	(0.328)	(0.344)	(0.292)
Buddhist		-3.422***	-1.315***	-0.676*
		(0.281)	(0.314)	(0.317)
Catholic		-2.955**	-4.286***	-0.078
		(0.930)	(0.886)	(0.610)
Daoist		7.074***	4.048***	1.449**
		(0.704)	(0.700)	(0.560)
Protestant		0.966*	0.041	0.011
		(0.416)	(0.401)	(0.313)
Islamic		-2.884***	-1.033***	-0.770*
		(0.264)	(0.279)	(0.311)
Urban county			-0.306	-0.674
			(0.588)	(0.401)
%Han			0.081***	0.068***
			(0.011)	(0.013)
%1.5-child policy			0.078***	0.054***
			(0.007)	(0.009)
Net migration			-0.135***	-0.041*
			(0.024)	(0.019)
Spatial error				0.801***
				(0.013)
Constant	116.568***	116.568***	116.689***	115.626***
	(0.266)	(0.253)	(0.334)	(0.756)
R2	0.009	0.110	0.202	0.677
Log Likelihood	-10855.840	-10710.770	-10565.6	-9580.207
Akaike Inf. Crit.	21717.680	21437.540	21155.230	19186.410
Wald Test (df = 1)				3,804.559***
LR Test (df = 1)				1,970.815***

Note: The dependent variable is county-level child sex ratio, measured by the number of boys aged between 0 and 4 per 100 girls. Religious presence is calculated as the logged number of sites per 100,000 people. Standard errors are in parentheses.
* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

The third model (+ Controls) includes all control variables. The results show that after controlling for all other variables, all religions except for Protestantism are significantly associated with the county-level sex ratio. Logged GDP per capita, urban counties, and immigration are negatively associated with the sex ratio ($p < 0.01$), whereas the percentage of the population that is Han and the percentage of the population eligible for the 1.5-child policy are positively associated with the sex ratio ($p < 0.001$). A 10 percent increase in the GDP per capita predicts a 0.17 (=1.84*log(1.1)) decrease in the sex ratio. As noted above, the logged number of Protestant sites lost significance after including all control variables in the model. The effect sizes declined for Buddhism, Catholicism, Daoism, and Islam after controlling for socioeconomic factors, but remained significant.

The final model (+ Spatial) is the spatial error model, which adds a spatial dimension to the county-level child sex ratio. The coefficient of the spatially correlated errors is 0.80, significant and positive ($p < 0.001$). This suggests significant spatial dependence in errors, which may be due to factors that are not included in the model. For example, factors such as climate, weather, and topography may influence gender norms and therefore lead to different sex ratios.[23] As a result, accounting for spatial dependence in errors yields a substantial improvement in the model fit: the R-square becomes 0.67 as compared to 0.20 in the previous model.

Compared with results from the previous model, the effect size of logged GDP per capita declines by nearly half, and the percentage of net immigrants loses significance. The logged number of religious sites for Buddhism, Daoism, and Islam remains significantly associated with the sex ratio ($p < 0.01$) in this model, whereas no significant relationship is found for that of

---

[23] Klaus and Tipandjan (2015) note that sex ratios in rice-growing areas tend to be less imbalanced, whereas those in wheat-growing areas are more imbalanced (male-biased). This is because women play a major role in rice production but not in wheat production, which requires more male labor.

Protestant or Catholic churches. After accounting for spatial dependence, a 10 percent increase in the number of Daoist sites per 100,000 people in a county is associated with an increase the sex ratio by 0.14 (=1.45*log(1.1)), whereas the same increase in the number of Buddhist sites is associated with a decrease of 0.06 (=0.67*log(1.1)) in the ratio. A 10 percent increase in GDP per capita is expected to lower the sex ratio by 0.11 (=1.14*log(1.1)). The comparison of the effect sizes for religious presence and economic development suggests that religion has a substantial impact on county-level sex ratios.

In summary, several findings are worth noting. First, as the literature suggests, economic development has a significant mitigating effect on the county-level sex ratio. Less imbalanced ratios tend to be in economically advanced counties. Second, the religious presence in a county plays a significant role in shaping its sex ratio, and the association varies by religion. The presence of Buddhist ($p < 0.01$) and Islamic ($p < 0.01$) sites are negatively associated with the county-level sex ratio, while that of Daoist temples is positively associated ($p < 0.001$). No statistically significant effect is found for Protestantism or Catholicism. Moreover, the effect size of the religious presence on sex ratios is substantial, if not greater than that of economic development, as measured by GDP per capita.

One might suspect that the negative relationship between the number of Buddhist temples in a county and its sex ratio is caused by the uniqueness of Tibet, a province dominated by a majority non-Han population and Tibetan Buddhists. It is possible that counties in Tibet alone are driving the observed effect of the Buddhist presence on child sex ratios because of the lenient birth policy in non-Han-dominant regions. Such concern also applies to Xinjiang, a province with predominantly ethnic minorities, most of which are Muslim. It is also important to consider possible omissions in the 2004 CEC in that counties with a zero report (presumably incomplete

56

information) on temples or churches may be qualitatively different from counties with complete information. Considering all of these issues, I re-estimated the final model excluding Xinjiang and Tibet as well as those counties with zero reports on the total number of religious venues to test the robustness of the results. The results from models with these counties excluded are not substantively different from the result reported above. Instead, both models yield the same finding – Buddhist and Islamic presence is associated with less male-biased sex ratios, while the presence of Daoist temples worsens the sex ratio. In other words, the findings of the significant impact of religious presence on sex ratios are robust when all possible scenarios that might affect the model results are accounted for.

2.5   Discussion and Conclusion

Religion in China has revived since the late 1970s. With the increasing presence of religious venues and religion-practicing populations, it is of scholarly consideration to explore whether religious geography plays a role in shaping demographic trends in China. The current study shows that religious presence in a county is tied to its child sex ratio, measured as the number of boys aged under five per 100 girls. Moreover, the effect size of religious presence on the county-level sex ratio is considerable; it is greater than that of economic development, which has been the focus of much past research. Specifically, the results show that counties with an influential presence of Daoist temples are more likely to have heavily imbalanced sex ratios favoring boys, despite their advanced economy.

The study also shows that different religions affect county-level sex ratios in unique ways. First, Daoist presence is associated with imbalanced sex ratios in favor of boys, which is likely because of Daoism's embeddedness in the Confucian tradition of son preference. The strong influence of the traditional value of having sons to continue the family lineage in a locality can

facilitate discriminatory practices against female fetuses, leading to a male-biased sex ratio in that place. Conversely, Islamic presence helps to mitigate imbalanced sex ratios, which is, in part, attributable to Islamic teachings denouncing abortion. Dominant Islamic presence in a place is likely to associate with the disapproval of abortion in pursuit of sons, thus contributing to a balanced sex ratio by protecting unborn daughters (Almond et al. 2013).

Second, the study lends little support to the hypothesis that a greater Buddhist presence correlates with a more imbalanced sex ratio. The analyses suggest the opposite: sex ratios in counties with a greater Buddhist presence are less male-biased. Considering the extent to which Buddhism, Daoism, and Confucianism share values on ancestor worship and abortion, it is interesting that Daoist presence is associated with more imbalanced sex ratios, whereas Buddhist presence mitigates it. The finding suggests that in the Chinese context, although Buddhism shares many values with Confucian tradition, Buddhist influence in an area has a unique influence on public life, perhaps by discouraging people from abortion practice in pursuit of sons. Future investigation of the relationship between religion, son preference, and sex selection at the individual level is needed to understand how Buddhism and Daoism may play unique roles shaping individual behaviors and broader social and demographic patterns.

Third, the analyses lend no support to the mitigating effect of Christianity (Protestantism/Catholicism) on county-level sex ratios. There are several possible explanations for this finding. First, this might be a measurement issue. This data included only those religious venues that were officially registered, and thus lacked information on the number of underground Catholic churches or unregistered Protestant house churches, which are common in China (Lee 2007). Therefore, it is likely that the number of officially registered religious venues fails to capture the full Christian presence in a county. Second, it might be that the influence of

Christianity has not grown strong enough to challenge the Confucian tradition of son preference, which is pervasive in Chinese society. As the research by Cao (2010) suggests, even devout Christians in so-called China's Jerusalem, Wenzhou, prefer sons over daughters and would choose to violate the one-child policy to have a second birth if the first child was a daughter. Some scholars (e.g., Yang 2004) have pointed out that it is not uncommon for Chinese Christians, such as those living in the United States, to selectively absorb some Christian teachings and interpret them in a way so that they are consistent with Confucian values. Studies in China also show that many rural Christians see Christian God as one of many gods and attend church services only when they or their family have health issues (Li 2012; Liang and Qi 2015; Zhou and Sun 2017). In other words, because of the deeply rooted Confucian tradition, Christian belief may not yet have substantial and unique influence over individual life and shape the attitudes and decisions related to son preference people who live in predominantly Christian places.

There are some limitations to this study. First, the measurement, officially registered religious venues, may underestimate the presence of some religions, especially Catholicism and Protestantism. Nevertheless, the data on religious venues analyzed here is the most recent and comprehensive available in China. More detailed information on the religious population (i.e., the share of adherents of different religious groups) and religious presence (i.e., the size of the temple/church) is needed to understand better the relationship between religious presence and county-level sex ratios. Second, due to a lack of data, this study did not account for the size of the religious venues or use the percentage of the population affiliated with each religion as a direct measure of religious presence. It is likely that Christianity have stronger influence in a county with two mega-churches versus in a county with five smaller churches. Better data is

needed to investigate how religious geography affects demographic trends and further explore whether and how the combinations of different religions may affect sex ratios differently.

Despite these limitations, this study highlights the important role religious geography plays in shaping sex ratios in China. Previous research has commonly assumed a monolithic Chinese context with the Confucian tradition's dominant influence and focused on economic factors. However, this study shows that not only have religions other than the Confucian tradition developed substantial presences and helped shape local subcultures and public life, different religions can also help reinforce or weaken the Confucian influence. The study finds that religion is an important community trait that can transmit teachings and values into local subcultures to influence people living in the area and shape demographic trends.

CHAPTER 3.   EXPLORING RELIGION'S RELATIONSHIPS TO SON PREFERENCE AND FERTILITY DECISION

3.1   Introduction

Religion is an important factor shaping individuals' preferences and decisions of how many children – sons and daughters – to have. Religious teachings differ in the extent to which they emphasize childbearing and the importance of having at least one son or many sons. Religious groups often have different fertility rates and vary in how they achieve their fertility desire to have sons. Some would practice sex selection to ensure the birth of sons when sex selection technology is available. In contrast, others choose to have additional births until they have an ideal number of sons. These differences in fertility decisions about son preference would lead to varying imbalanced sex ratios of children between religious groups.

Existing studies show that religion plays a role in shaping sex ratios at an aggregate level for its influence on individuals' values of son preference and their decisions about it. In India, scholars notice that sex ratios of children are relatively normal among Christian or Muslim families, while they are highly male-biased among Hindus (Bhat and Zavier 2007; Guilmoto 2005; Chakraborty and Kim 2010). Kim and Song (2007) also pointed out that in South Korea, male-biased sex ratios are more prevalent in the south-eastern region, an area with a long history of Confucian cultural traditions but fewer Protestant and Catholic churches, than the rest of the country. Likewise, an analysis of religious geography and county child sex ratios in the previous chapter suggests that Daoist presence is associated with more male-biased county sex ratios while that of Buddhism or Islam less so.

Several studies have investigated the relationship between religion, son preference, and fertility decisions at the individual level to understand how religion may shape demographic trends. Research in India (e.g., Borooah and Iyer 2004; Iyer and Joshi 2013) shows that Hindus and Muslims adopt different strategies of having sons, even though they show similarly strong son preferences. Hindus are more likely than Muslims to engage in discriminatory practices against female fetuses or girl infants to balance the gender composition of their children; thus, Hindus have more male-biased sex ratios of children. Echoing the idea that religion is a strong factor shaping one's son preference and fertility decision, Almond et al. (2013) find that in Canada, Christian and Muslim Asian families tend to continue having children to obtain sons, while other Asian parents practice abortion to select for sons. As a result, sex ratios of children are balanced among Christian and Muslim Asian families but male-biased among other Asian families. Similarly, studies in South Korea show that Christians are less likely than their Confucian counterparts to hold son preference (Chung 2007; Kim and Song 2007),

In stark contrast to much research on the relationship between religion, son preference, and fertility decision in other countries, religion has received little scholarly attention in demographic studies of China. To date, a few studies (e.g., Hu and Tian 2016) have examined how religion affects sex selection decisions in China, a country with the history of a draconian one-child policy. Existing studies often focus on explaining how the one-child policy has inevitably resulted in a seriously male-biased sex ratio of births in China: under the one-child policy, parents with strong son preference are likely to engage in discriminatory practices against daughters such as abortion and intentional neglect, thus distorting the sex ratio at the national level (Chu 2001; Ebenstein 2010; Greenhalgh 2008; Gu and Roy 1995; Jiang et al. 2011; Johnson et al. 1998; Nie 2010; Poston 2002; Poston et al. 1997).

The perspective focusing on the birth policy has shed important light on the linkage between son preference and sex selection decisions; however, it overlooks the heterogeneity within people with similar son preference levels. As Kashyap and Villavicencio (2016) summarize, people who desire more sons than daughters often make different decisions about achieving their fertility preferences. Some may not pursue having an ideal number of sons; some may denounce sex-selective abortion and choose to continue childbearing until they obtain the ideal number of sons; others may practice sex selection and have sons within a few births.

Considering the variations in the fertility decisions about having an ideal number of sons, I will ask these questions in the Chinese context: do son preference levels vary across different religious groups? Do religious groups differ in the decisions about whether and how to achieve son preference under the restrictive birth policy? These questions deserve more scholarly attention as the two-child policy came into effect in 2015 (Goodkind 2016). One may expect that the relaxed policy would help bring a balanced sex ratio of births since people desiring at least one son can legally have a second birth for another attempt to obtain a son. However, a recent study by Jiang et al. (2016) finds that couples preferring sons had turned to sex-selective abortion to ensure their first child was a boy rather than having a second birth. In other words, when couples prefer smaller family sizes, son preference could continue to distort the sex ratio of births by putting girls in a disadvantaged place of being aborted or neglected even under a lenient birth policy (Park and Cho 1995). Therefore, it is critical to examine not only son preference but also determinants that influence whether and how people implement their son preference to understand China's demographic trends.

This study aims to explore how religious groups may hold different son preference levels and make different decisions about sex selection in pursuing sons. To this end, this study

investigates relationships between religious affiliation, desiring more sons than daughters, the decision to have additional children, and the sex ratio of their children. By doing so, this study provides a better picture of how religion shapes individuals' sex selection decisions and thus affects sex ratios of a society.

3.2   Theoretical Background

3.2.1   Son preference, fertility decision, and sex ratio: an overview

Early investigation suggests that son preference often leads to an increase in the total fertility rate – the average number of children a woman has – in society (Bongaart 2001; 2002). It is because couples preferring sons over daughters tend to continue childbearing until they have achieved the desired number of sons. The linkage between son preference and fertility is particularly true in a society without fertility restriction or prenatal sex detection technology. To realize their son preferences, parents mainly practice differential stop behavior (see Bongaarts 2013; Clark 2000; Denton and Spencer 2014; Zaidi and Morgan 2016). Those whose first child was a girl were more likely to hasten the timing of their second birth (Ren 1995), whereas those with more sons or at least one son are more likely than couples with more daughters or only daughters to use contraception because they want no more children (Arnold and Liu 1986; Wang 1988). Such son-targeting fertility behavior is likely to result in a noticeable increase in the total fertility rate. Yet, it does not affect the overall sex composition of children ever born as no human manipulation is involved in the birth of each child (see Bongaarts 2013; Zaidi and Morgan 2016; Wen 1993).

However, son preference may not boost the fertility rate but result in a male-biased sex ratio when human intervention during pregnancy, such as sex-selective abortion, is present.

China is the case where an increasingly male-biased sex ratio occurs with the declining total fertility rate (Li et al. 2011; Gu et al. 2007). The total fertility rate decreased from about six in the early 1970s to only 2.7–2.8 by the end of the decade (Whyte et al. 2015). At the same time, the sex ratio at birth, measured by the number of registered newborn boys per 100 girls in a given year, increased from 109 in 1982 to 120 in 2010 (Poston 2002; Poston et al. 2014).

Research shows that parents with strong son preference in China (Chu 2001) and India (Kishwar 1993; Lingam 1991; Manmeet 1993) would engage in sex selection to abort female fetuses and ensure the birth of a boy (or avoid the birth of a girl). In her study of rural women in northern China, Chu (2001) find that half of the surveyed women with pregnancy history had an ultrasound test, and about 90 percent of them aborted the female fetuses in second pregnancies if their first child was a girl.[24]

Additionally, son preference often correlates with parents mistreating girls, which leads to a higher mortality rate in girl infants even though boy infants are more vulnerable biologically (Waldron 1983). Parents with son preference often, consciously or unconsciously, discriminate against daughters in various aspects, such as providing shorter periods of breastfeeding and smaller food allocations, less child care, and less daily family care for daughters. (Li et al. 2004). Analyzing data of 1,062 women with a child (or children) collected in 1994, Li and Lavely (2003) found that girl infants whose mothers reported it was important to have a son were almost twice as likely to die than their boy counterparts (11% versus 6%). In summary, son preference not only potentially leads to a male-biased sex ratio of births but worsens the sex ratio of living children when parents favor sons over daughters.

---

[24] In some rural areas, if the first child was a girl, the policy allows the married couple to have another birth, which was called the 1.5-birth policy. Therefore, for couples whose firstborn is a girl, it is imperative to have a son for the second birth. Otherwise, they may not have a son.

The one-child policy since the 1980s further intensifies the discrimination against girls. By permitting couples only one legal birth, it deprives couples of the option to have additional children to achieve the ideal number of sons (Ebenstein 2010; Attané 2009; Denton and Spencer 2014; Li et al. 2011). As a result, many couples are motivated to turn to prenatal sex detection to ensure having a son for the first birth, resulting in a highly male-biased sex ratio of births (Jiang et al. 2016). Still, some couples may accept the idea that "a daughter is as good as a son" and give up pursuing a son (Shi 2017), while others may violate the policy and have additional births to obtain a boy or boys, leading to an increase in the total fertility (Peng 2010). Besides, some couples may prefer having many sons and take strategies that are a combination of sex-selective abortions and having additional children to achieve their preferences. These different fertility decisions about son preference have varying impacts on sex ratios of births as well as fertility.

In summary, investigating the determinants that influence not only son preference but also decision-making about achieving the ideal gender composition of children is critical to understand demographic trends in China. Considering that religion is a robust factor influencing individuals' fertility preferences and their decisions related to childbearing, this study examines its effects on son preference and fertility decisions under the one-child policy in China.

3.2.2 Religion and son preference

The prevalent son preference in China is mainly attributed to the dominant Confucian influence. In Confucian tradition, sons are preferred over daughters: they are the primary providers of old-age support for parents (Whyte and Ikels 2004; Chu and Yu 2010), and only sons can continue the family lineage and perform ancestor worship (Pande et al. 2006; Johnson 1993). Furthermore, because producing no son puts an end to the family lineage and ancestor worship, it is seen as a heinous offense against filial piety – a principal virtue of being a good

person (Thompson 1996, 40–41). Scholars (e.g., Attané 2013; Croll 2000) point out that the religious consideration of having sons is responsible for the persistent and pervasive son preference in China.

Confucian influence has declined in China, which can be partially attributed to severe repression by the Chinese government during the Cultural Revolution between 1966 and 1976. During that period, the government launched campaigns to attack feudal and reactionary worldviews, harshly suppressing Confucian rituals for their perceived feudality (Whyte and Ikels 2004). Moreover, the government promoted the idea of treating men and women equally and providing equal opportunities for them (Hannum and Xie 1994; Nie and Wyman 2005), which directly challenged the subordinate position of women that inheres in traditional values. As a result, the Cultural Revolution has remarkably eroded the Confucian ideology, which undergirds traditional family values in Chinese society (Chu et al. 2011). Studies show a declining trend of married children living together with their parents (Chu et al. 2011; Logan et al. 1998; Takagi and Silverstein 2011), and many Chinese parents no longer accept the traditional family value of carrying on the family lineage (Wu and Xie, 2013). These changes pose challenges to Confucian influence and the coercive force of filial piety.

Nevertheless, the Confucian tradition of son preference has survived the harsh suppression and has maintained its strength among Chinese people. Several studies suggest the continuity of traditional familial and gender norms. For instance, Logan et al. (1998) find that the norm remains unchanged that parents legitimately live with their married sons instead of daughters. Likewise, Chen (2005) noticed that it is more common for married children to live with parents from the husband's side than with parents from the wife's side. Although the influence of Confucian values has diminished, the cultural values that favor men while disadvantaging

women have persisted, and China remains patrilocal and extremely male-dominated, leaving women in a vulnerable position (Attané 2013).

Confucian tradition's lingering influence also implies that many Chinese people – even though they do not self-identify as Confucian – endorse Confucian values and abide by Confucian teachings on filial piety and ancestor worship. Data from the 2007 China Spiritual Life Survey suggests that about 70 percent of the respondents participate in venerating the spirits of ancestors or visiting the gravesite of ancestors, even though only a few self-identified Confucians (see Hu 2016). In other words, the Confucian way of living and its favoring sons over daughters may have profound influence among a vast majority of people in China, including those religious "nones" who identify with no religion.

This study examines how different religions may perpetuate or weaken son preference among Chinese people. Several major religions in China, including Buddhism, Christianity, and Islam, appear to emphasize the superiority of male offspring, but they vary in the extents. For example, Christianity, so-called foreign religion in China, may attenuate son preference since it challenges the Confucian tradition of ancestor worship (Cao 2010). By contrast, Buddhism and Daoism would likely reinforce son preference as they highly intertwine with Confucianism, and Buddhists and Daoists actively engage in worshipping deceased ancestors (Perrett 2000; Petersen 2001). Thus, it is reasonable to expect that Buddhists and Daoists hold strong son preference. I hypothesize:

H1a: Buddhists and Daoists are more likely than religious nones to prefer sons over daughters.

Existing research suggests that Muslims hold strong son preference as Islamic teachings tend to place women in a subordinate position. In Islam, men are important for lineage

continuation, kin strength in village conflict, economic security, and religious intervention before and after death (Kirk 1966). Such emphasis on sons' importance is likely to foster discrimination against girls. Studies suggest that girls in Muslim dominated countries are less likely to receive education than boys (Cooray and Potrafke 2011; Feldmann 2016; Ostby et al. 2017). In China, Man (2014) finds that Dongxiang people, an ethnic minority group that holds Islamic belief and most resides in Gansu province, has the highest female illiteracy rate among all ethnic minorities.[25]

On the other hand, some scholars disagree on the linkage between Islamic teachings and observed gender inequalities among Muslims. Ahmed (1992) points out that the original text of Islam can be interpreted in ways that favor women's rights. Some scholars argue that gender inequality among Muslims has less to do with Islam *per se* but more to do with other factors, such as economic development and local family law policies (Ross 2008; Charrad 2001, 2009). Although Muslims around the world share the same beliefs, there are important regional and country differences in how Islamic teachings are enacted (Pew Research Center 2013). For instance, McClendon et al. (2018) analyze the gender gap in education by religion in 151 countries and find that there are great variations in Muslim women's education patterns across countries. While in many countries, Muslim women are less educated and have wider gender gaps than other religious groups, in some countries such as Qatar and Saudi Arabia, Muslim women are more likely than men to have post-secondary degrees. Their study suggests that economic factors, other than Islam itself, are responsible for Muslim women's disadvantage in education.

---

[25] Note that about ten ethnic minority groups in China are dominantly Muslims, and most of them are concentrated in autonomous regions and municipalities (Zheng 2011).

Still, as Charrad (2001) explains, being a Muslim often entails accepting the Islamic way of life where Islamic law plays a central role in setting the social and moral order. The gender hierarchy in Islamic beliefs puts women in disadvantaged positions, and as a result, Muslim women are likely to have internalized these gendered norms and expectations. Empirical studies in other countries show that Muslims are more likely than non-Muslims to prefer sons over daughters. For example, Bharati et al. (2011) and Clark (2000) found that Muslim women hold stronger son preference, measured by desiring a greater number of sons than daughters, than Christian women. In the Philippines, Muslims show higher son preference levels than non-Muslim Filipinos (Stinner and Mader 1975). Therefore, I hypothesize:

H1b: Muslims are more likely than religious nones to prefer sons over daughters.

Sharing a historical connection of recognizing Abraham as the first prophet with Islam, Christianity attaches greater value to men than to women, in particular, when the Bible is interpreted literally. However, many Christian women in China experienced Christianity as a liberating force that challenged some indigenous patriarchal practices (Kwok 1992). For example, Christian missionaries started the anti-footbinding movement since 1840 when many of them came from Europe to proselytize, opposing the patriarchal practice of using artificial means to stunt the normal growth of women's feet and keep them small. After the fall of the Qing dynasty in 1911, Christian leaders in China continued to be committed to providing equal opportunities for women to take part in church ministry and held a vision of promoting the status of women in China by facilitating female leadership in the church (Wong 2015). By the twentieth century, most Protestant churches had primary schools for both boys and girls (Lutz 2010).

Besides, the command in Christian teachings that one shall worship no gods except for God has made ancestor worship – one essential pillar of Confucian tradition – a serious sin. It has been well-documented that Chinese Christians would intentionally distance themselves from traditional rituals and activities related to ancestor worship. Based on an ethnographic study in the church community of Wenzhou city in Zhejiang province between 2004 and 2006, Cao (2010) found that Christians would consciously avoid engaging in any religious activities they consider un-Christian, especially ancestor worship. Miller (2004) conducted fieldwork in a village in Shandong province in 1997 and found that some Christian converts refused to take part in burning sacrifices to their ancestors or worship them for blessings. Therefore, the Christian teaching of worshiping no gods except for God is likely to undermine the sacredness of family lineage and attenuate son preference. Based on the literature review, I hypothesize:

H1c: Christians are less likely than religious nones to prefer sons over daughters.

3.2.3   Religion and fertility decision about son preference

Religion has long been a strong factor in influencing individuals' reproductive behaviors. Different religious groups vary in their views on childbearing, including the importance of bearing many children and of having male offspring. Buddhism, for instance, does not require followers to have many children, while Christianity and Islam encourage childbearing (Skirbekk et al. 2015). And this, to some extent, helps explain the lower fertility rate among Buddhists than non-Buddhists observed in Asian countries (Skirbekk et al. 2015). The low fertility desire or preference for a small family size holds for Buddhists in China: Li (2017) finds that traditional religionists – comprising 70 percent of Buddhists – prefer fewer children than Christians.

Heavily influenced by the Confucian tradition of son preference, Buddhists in China may not have fewer children since son preference could drive them to continue childbearing in pursuit

71

of sons. Existing studies have established a strong association between son preference and fertility behavior – the intention of having another birth is strong when the first birth is a girl. For instance, women whose first child was a girl were more likely to hasten the timing of their second birth (Ren 1995). By contrast, those with the first one as a boy are more likely to use effective contraceptive methods and accept the one-child certificate, which indicates no fertility intention as well as their compliance with the one-child policy (Cooney et al. 1991; Wang 1988).[26]

Still, some Buddhists with son preference may prefer sex-selective abortion to achieve their son preference under the one-child policy. They may practice sex-selection for the first birth, given their relatively tolerant attitude toward abortion (Almond et al. 2013) and desire for small family size (Skirbekk et al. 2015). Based on the characteristics of Buddhists, it is reasonable to expect that Buddhists are more likely to have a boy for their first child, or they are more likely than religious nones to have a second child in pursuit of a son. Therefore, I hypothesize that:

H2a: Buddhists are more likely to have a boy for their first or single child as opposed to a girl.

H3a: Buddhists are more likely to have a second child than religious nones.

Daoists may share a similar pattern of fertility decisions with Buddhists as both religions are embedded with Confucianism. In traditional Chinese culture, if a woman has a son in her first birth, she is considered "very capable" by her in-laws and envied by her neighbors (Chu 2001). By contrast, the birth of a second daughter only brings grief for the whole family, and the birth of

---

[26] The government devised the one-child certificate to encourage compliance with the policy. Couples who have decided to have one single child voluntarily are eligible for this certificate, which entitles them with privileges such as priority access to schools and a child allowance (Zhang and Sturm 1994).

a third daughter is seen as a misfortune (Wolf 1987). Besides, Daoism shares the Confucian teachings on abortion, allowing for a liberal interpretation of terminating unwanted pregnancies (Nie 2005, 92). The high pressure to bear sons is likely to lead Daoists to sex-selection abortions to ensure the birth of boys. Therefore, I expect to find that:

H2b: Daoists are more likely to have a boy for their first or single child as opposed to a girl.

Furthermore, the traditional belief of "more sons more blessings" among Daoists might encourage them to pursue more than one son (Li 2017). Hu and Tian (2018) find that folk religion (or Daoist) practice, such as having a genealogy, is positively associated with having many children. Although the one-child policy was enforced in a draconian way, it was not rare that people violated it and had multiple births. For instance, Peng (2010) found that couples in villages with dense lineage networks had more births than those in villages without these networks. He argued this is mainly attributable to the reinforced pro-natalist norms that resisted the state birth control policies in their local community (Peng 2010). In other words, Daoists' adherence to the idea of having many sons as well as many children may lead them to be more likely than religious nones to violate the policy to have more than one birth. Therefore, I hypothesize that:

H3b: Daoists are more likely to have a second child than religious nones.

H4: Daoists are more likely to have a third child than religious nones.

Muslims and Christians are not different from Daoists in encouraging childbearing, but they are more likely to oppose abortion than Daoists and Buddhists. Researchers point out that religious teachings denouncing abortion protect unborn girls in Muslim and Christian households from being aborted (Almond et al. 2013). Considering their strong disapproval of abortion, I

73

expect that Christians and Muslims are not more likely to have a boy as opposed to a girl for the first child.

H2c: Christians and Muslims are less likely to have a boy as opposed to a girl for the first child.

Note that Muslims in China experience a more lenient birth policy due to their unique ethnic composition – virtually all Muslims in China are ethnic minorities. According to data from the 2010 Chinese General Social Survey, about 98 percent of Muslims were members of ethnic minorities, while only four percent of Christians were. The government relaxed the one-child policy to allow people of ethnic minorities to have two children in 1984, about four years after the policy took effect (Gu et al. 2007; Short and Zhai 1998). Given the variations in the birth policy, Muslims would have higher fertility than religious nones. Therefore, I hypothesize:

H3c: Muslims are more likely to have a second child than religious nones.

By contrast, Christians would have lower fertility than Muslims or religious nones. First, Christians are likely to hold weak son preference since Christian organizations in China have been advocating for women's education and engaging in raising women's social status (Wong 2015). And improved education and social status among women are often associated with lower fertility (see the review by Brewster and Rindfuss 2000) and weak son preference (Li and Lavely 2003; Behrman and Duvisac 2017). Second, Christianity encourages its adherents to comply with worldly laws, including those ungodly ones, such as the one-child policy. For example, *Romans* 13:1–2 says, "Obey the government, for God is the one who put it there." Thus, Christians are likely not to implement their son preference but to have one child only in compliance with the policy.

H3d: Christians are less likely to have a second child than religious nones.

3.2.4 Religion and the sex ratio of children

The sex ratio of children can vary by religion as religious groups hold different son preference levels and make different fertility decisions about their preferences. Christians often have balanced sex ratios of children, which is partially due to their strong opposition against abortion as well as weak son preference (Hoffmann and Miller 1998; D'Antonio and Stack 1980; Evans 2002; Almond et al. 2013). Likewise, despite Muslims' son preference, the sex ratio of their children is relatively balanced because their denouncement of abortion helps protect the unborn girls (Bhat and Zavier 2007; Guilmoto 2005; Chakraborty and Kim 2010).

Sex-selective abortions have a direct effect on the sex ratio of children in society. In theory, the sex of a child is a random event with the probability of having a son fixed at 0.512 (It is 0.488 for having a girl, see Bongaarts and Potter 1983). In a society where sex-selective abortion is absent, the overall sex ratio of children will be balanced, around 105. The ratio is relatively stable regardless of whether parents adopt a son-targeting fertility behavior (see Altindag 2016).

According to Altindag (2016), the family composition in such a society follows this pattern: In single-child families, the sex ratio of children is male-biased. The ratio is balanced in families with two children and even becomes female-biased in families with three or more children due to son-targeting fertility behaviors. In a word, the sex ratio of children tends to be more balanced in larger households while less so in smaller ones. However, such a pattern holds only if parents rarely engage in discriminatory practices that negatively harm the birth of girls, as well as the survival of girls (see Clark 2000). The sex ratio of children will be male-biased when parents treat boys and girls differently, such as selectively aborting female fetuses, and abandoning and neglecting girls (Chen et al. 2013; Zhu et al. 2009; Coale and Banister 1994; Lee and Wang 1999; Banister 2004; Lai 2005; Croll 2000; Johnson et al. 1998).

Considering the different attitudes toward abortion between religious groups, sex ratios of children vary even after adjusting for the number of total children. I expect to find that Daoists and Buddhists are more likely to have more boys than girls since they are relatively tolerant toward abortion. By contrast, Christians and Muslims have an approximately equal number of boys and girls. I hypothesize:

H4: When holding the number of total children constant, Buddhists/Daoists have more boys than girls, while Christians/Muslims have an equal number of boys and girls.

3.3   Data and Methods

This study uses data from the 2010 Chinese General Social Survey (CGSS). The CGSS is a nationally representative survey that collects information on social attitudes and behaviors in order to monitor the social change and quality of life in China. The data for analysis was collected in 2010 with a sample covering 31 provinces in mainland China. The survey follows a multi-stage stratified sampling design: first sampling county-level units, then community-level, and finally households. In each selected household, an adult aged 18 years old is selected to answer the questionnaire. The total number of respondents in the dataset is 11,783. It is the most recent available data that includes a module on religious beliefs and practices.

The 2010 CGSS data is ideal for examining the relationships between religious affiliation, son preference, and sex selection decisions under the one-child policy. Most respondents (80%) in the sample had their first child after the implementation of the one-child policy in 1980, and all births took place before the relaxation of the birth policy in 2013.

The sampling strategy of the CGSS indicates that individual respondents are nested within different counties. Thus, simple regression modeling is inappropriate because it violates the independence assumption and will miscalculate the error term. To address this issue, I use robust

76

logistic regression with adjustments for potential clustering standard errors. Additionally, I apply a multi-level modeling strategy when there is a considerable variation in the dependent variable that is at the county level. All tests are two-tailed; I report results at $p < .05$ as significant.

3.3.1 Dependent variables

The outcomes of interest in this study are son preference and sex selection decisions. Researchers have developed several ways of measuring son preference. Some measure son preference by to what extent respondents agree that it is necessary (or imperative) to have at least one son (Murphy et al. 2011; Yoo et al. 2017; Li and Lavely 2003; Chung and Gupta 2007). Some use a measure of whether respondents continued birth after having a daughter (Poston 2002; Poston et al. 1997; Zhang and Sturm 1994; Almond et al. 2013). The most frequently-used measure is the desired sex ratio – the ideal number of sons over the ideal number of total children (Behrman and Duvisac 2017; Bharati et al. 2011; Gaudin 2011; Lin 2009; Stinner et al. 1975). Son preference is identified when the ideal number of boys is more than half of the ideal number of total children.[27]

This study measures son preference using the ratio of the ideal number of boys versus girls. I develop two measurements of son preference based on answers to questions as follows, "*If the policy permits, how many children do you want to have? How many boys? How many girls?*" I code respondents as preferring sons over daughters when: 1) the respondent reports that, ideally, they want more boys than girls, 2) the respondent reports that they want at least one boy.

---

[27] Pande et al. (2007) went further to make son preference into an ordered categorical variable: zero when a respondent reports no son preference (including daughter preference or a response of 'does not matter'); one when a respondent reports an ideal of one son more than the ideal number of daughters; and two when a respondent reports an ideal of two more or sons more than the ideal number of daughters.

All respondents answering that gender does not matter are coded as 0, reflecting their null preference for boys over girls.

Several indicators measure sex selection decisions. The first one is the probability of having a boy (as opposed to a girl) as the first child. Under the one-child policy, whether to practice sex selection on the first child is an important decision. The study uses the sex of the first child instead of the first birth for two reasons. The sex of the first birth may be a better measure than that of the first living child, for the former is directly tied to sex-selective abortion in favor of male births. But the 2010 CGSS did not include information on births. Considering that boys are biologically more vulnerable than girls, the sex of the first child is preferable for this study as it yields a conservative estimate of sex-selective abortions for the first birth. On the other hand, the over-representation of boys among the first child can likely be more a result of daughter neglect than sex-selection abortions. Studies show that girls tend to receive less health and medical attention and have higher risks of death (Li et al. 2004; Wu et al. 2006). Nevertheless, according to the United Nations, daughter neglect accounts for one-fifth of all "missing girls" in the world. On balance, the sex ratio of the first child can serve as a reliable indicator of sex-selective abortions. I coded respondents with a boy as the first child as 1, those with a girl as 0.[28]

Second, under the one-child policy, son preference may encourage people to violate it to have additional children. I developed two variables indicating whether respondents had a second or had a third child. Respectively, I coded respondents who had more than one child as 1, those with a single child as 0, and those who had more than two children as 1, those with two children

---

[28] I developed this measurement using information reported by respondents on their children's age and gender. I first identified the oldest sons and the oldest daughters. I coded respondents as 1 when their oldest son is older than or of the same age as their oldest daughter.

as 0. Last, I calculated the sex ratio of children and created a variable denoting whether respondents have a higher proportion of sons (versus daughters). Respondents with more sons than daughters are coded as 1, otherwise 0.

3.3.2 Independent variable

The focal predictor is individual religious affiliation. The CGSS asked respondents about their religious affiliation and provided these options: Buddhism, Daoism, Folk religion, Islam, Catholicism, Protestantism, Other Christianity, and others. Due to the paucity of self-identifying Catholics and Daoists in China, I combined them with Christians and folk religionists, respectively. Religious affiliation is coded into a variable with five categories where 1= 'Religious none', 2 = 'Buddhist', 3 = 'Daoist (including folk religionist)', 4 = 'Christian', 5 = 'Muslim'.

Recently, scholars in the sociology of religion (e.g., McGuire 2008; Ammerman 2013) argue that with the growing interest in spirituality, not affiliating with a particular religion does not indicate being indifferent to religion. Instead, religiousness can be expressed in unconventional activities such as yoga, listening to spiritual music, and meditation (Ammerman 2013; Pettit 2014). In other words, there are increasingly more people who do not identify with a particular religion but practice religiosity/spirituality in their everyday life. In this case, it is not accurate to label the vast majority of respondents who had reported no religious affiliation as religious nones. Echoing with this idea, Chao and Yang (2018) point out, religions in China are so diffused in various aspects of life that many people do not self-identify with a particular religion even if they hold supernatural beliefs and maintain religious practices. These studies raise doubt on using religious affiliation to capture religious influence on Chinese people.

To address this issue, I conducted some preliminary analysis. The results suggest that religious affiliation is a valid measurement for this project. First, there is strong evidence that suggests the substantial differences between people who self-identify with a religion and those religious nones in their religious practice and belief. The findings, presented in table 3.1, show that those who are religiously affiliated distinguish themselves from those nones in supernatural beliefs and religious practice. As the table shows, religious respondents are much more likely than religious nones to hold supernatural beliefs. About 40 percent of the religious held beliefs in heaven or afterlife, compared with less than ten percent of religious nones. Similarly, religious nones are much less likely to participate in religious activities – the share of religious nones who never attended religious services is 85 percent, compared to about 25 percent of the religiously affiliated.

Table 3.1 Religiously affiliated respondents are much more engaged in supernatural beliefs and religious practice than religious nones.

	Obs	None	Buddhist	Daoist	Muslim	Christian	Religious vs. None
		Prop.	Prop.	Prop.	Prop.	Prop.	t
Belief in the supernatural							
Afterlife	3989	0.09	0.39	0.29	0.40	0.59	20.57***
Heaven	4005	0.06	0.31	0.20	0.71	0.77	28.28***
Hell	3997	0.06	0.34	0.20	0.68	0.67	26.76***
Religious miracle	3863	0.03	0.29	0.09	0.62	0.64	31.97***
Reincarnation	3934	0.05	0.34	0.19	0.33	0.40	20.92***
Nirvana	3104	0.02	0.27	0.13	0.30	0.28	19.71***
Ancestor	3851	0.09	0.28	0.28	0.37	0.27	13.63***
Religious practice							
Have religious objects in the household	4203	0.12	0.59	0.66	0.31	0.46	25.19***
Grew up in a religious household	4206	0.09	0.62	0.79	0.98	0.44	42.97***
Have never participated in religious activities	4170	0.85	0.25	0.35	0.26	0.16	-35.34***

Considering a large share of the surveyed respondents identified as religious nones, I explored their potential heterogeneity based on their religious practice and affiliation with the Chinese Communist Party (CCP). I put religious nones into several subgroups to examine whether there is any statistically significant difference between subgroups in son preference and sex selection outcomes. There are three subgroups: religiously indifferent (who never participated in religious activities in the past 12 months), atheist nones (who are members of the CCP), and religiously active nones (who participated in religious activities at least once a year). The results, presented in table 3.2, suggest that these subgroups are not different from each other in terms of how they achieve their son preferences except for atheist nones, which are significantly less likely to hold son preference than other nones that are not affiliated with the CCP. In particular, active religious nones are not substantially different from those who have never attended religious services in both son preference measures. The findings suggest that although religious nones have varying degrees of engagement in religious services, because of their weak commitment to religion, they are a relatively homogenous group, at least, on measures relating to son preference. To summarize, these results above confirm that religious affiliation is a robust measure of religious teachings on individuals as the religiously affiliated are much more engaged in supernatural beliefs and religious practices while religious nones are significantly less so.

Table 3.2 Active religious nones are not different from inactive nones in son preference measures

Son preference	Religiously active nones	Religiously indifferent	Atheist nones	Active vs. Indifference	Active vs. Atheist	Indifference vs. Atheist
	Prop.	Prop.	Prop.	*t*	*t*	*t*
Desiring more sons than daughters	.16	.15	.12	.61	2.08*	2.22*
Having more sons than daughters	.46	.44	.47	.75	-.33	-1.53

3.3.3 Control variables

I control for socioeconomic factors that affect individual son preference and fertility decisions, including education, household income, and co-residence with the elderly family members. Research in India (Pande and Astone 2007) and South Korea (Poston et al. 2014; Chung and Gupta 2007) suggests that education has a weakening effect on son preference. Education is also negatively associated with the fertility rate (Kane 1995). Educated people tend to have better access to medical knowledge and medical facilities of prenatal sex detection/selection (Musick et al. 2009; Hayford and Guzzo 2016). In this study, education is a continuous variable, denoting years of schooling respondents received.

There is mixed evidence for the relationship between household income and individual son preference. Some studies in India (Pande et al. 2006; Gaudin 2011) and in South Korea (Chung and Gupta 2007) show that household income has a weakening effect on son preference among women, while the study by Li and Lavely (2003) finds no significant impact on women in rural China. Household financial situation may influence the decision of having another child as well. For instance, Shi (2017) points out that many parents in China are reluctant to have another child

because they worry their lifestyle would be compromised. In this project, household income is measured by the family's annual income and normalized by 1,000 Chinese *yuan*.

Existing research has shown that living with parents or parents-in-law associates with strong son preference because it suggests individuals' conformity to traditional family values (Cooney et al. 1991; Pande and Astone 2007). When living apart from their parents, married couples are more likely to adopt modern values and fertility preferences (Thornton et al. 1986). I code any respondents who live with their elderly family members, including parents, in-laws, and grandparents as 1, otherwise 0.

For other demographic variables such as gender (1= man), age (in years), place of residence (1 = rural), and party membership (1 = CCP member), they are controlled. I also included the birth year of the first child when assessing the relationship between religious affiliation and fertility decision about sex selection variables. I coded respondents with the first child that was born before 1979 as 0, those after 1979 as 1. (The one-child policy took effect in 1980.) The geographic region is also controlled for in the analysis. There are seven geographic regions in China, North, Northeast, East, Central, South, Southeast, and Northwest.[29] These regions differ in economic development, industrialization, climatic and topographic characteristics, and ethnic composition. The considerable geographic variation in resources and development is manifest in China's internal migration patterns – migrant workers are highly concentrated in the South, North, and East while not noticeable in the Southwest and Northwest (Liang et al. 2014; Liang and Ma 2004).

---

[29] Sometimes, people combine the Central and South regions as one and divide China into six regions. In this study, I use the classification of seven regions because of the wide gap in economic development between the two regions – the South is economically advanced while the Central is lagging behind (Heilig 2006).

Note that ethnicity is not controlled for, because of the collinearity issue with religious affiliation – virtually all Muslims in the sample are members of ethnic minorities. This collinearity issue also applies to Buddhism and Daoism. About 17 percent of respondents who identified as Buddhists or Daoists in the 2010 CGSS sample were ethnic minorities. Most ethnic minority Buddhists are from Tibet, accounting for 63 percent of the total ethnic minority Buddhists, while most ethnic minority Daoists are from Guangxi, making up 76 percent. To address the possible confounding effect between ethnicity and religion, I estimated a separate set of models excluding the two provinces. The results from models with those two provinces excluded are not distinguishably different from those presented in this chapter.[30]

3.4   Results

Table 3.3 presents descriptive statistics of variables used in the analyses. As the table shows, among the total respondents in the 2010 CGSS sample, about 13 percent of them identified with a religious tradition: 5.4 percent Buddhists, 2.6 Daoists, 2.7 Muslims, and 2.3 Christians. The overall level of son preference, measured by an ideal number of sons greater than that of daughters, does not appear to be strong, and about 15.2 percent of respondents showed son preference. However, when measured by whether they would like to have at least one son when the policy permits, the overall son preference is prevalent – about 70 percent of respondents showed son preference. After listwise deletion, the share of respondents having a boy as the first child was 56 percent, much above the natural probability of having a boy when

---

[30] I also estimated the models excluding all ethnic minorities (and Muslims). The results for Buddhists, Daoists, and Christians are not different from the previous ones.

prenatal sex selection is absent. [31] According to Bongaart and Potter (1983), the natural chance of

having a boy is 0.512. Nearly four-in-ten respondent with at least one child had a second birth,

and about 36 percent of those with at least two children had a third child. [32] About 44 percent of

the respondents had a male-biased sex ratio of children – with more boys than girls.

---

[31] The probability of having a boy as opposed to a girl at birth can serve as an ideal benchmark. This is because boy

infants are more vulnerable than girls biologically, which would presumably result in a lower probability of having a

boy as the first child (Waldron 1983). A higher probability of having a boy (as opposed to a girl) for the first child

indicates potential discriminatory practices against girls, which has led to a higher mortality rate among girls and an

inflated survival chance for boys.

[32] Before listwise deletion, about six-in-ten respondents had a second child and about 40% of them had a third birth.
The change is due to disproportionate missing values among older respondents on the age of their first child, which is
used to calculate whether they had the first child before 1979.

Table 3.3 Descriptive statistics

	N	Mean/Prop.	SD	Min.	Max.
Desiring more sons than daughters	10181	.152			
Having more sons than daughters	9057	.438			
Desiring at least one son	10181	.707			
Having a boy for the first child	5755	.564			
Had a second child	5717	.431			
Had a third child	3636	.359			
Religious Affiliation	10181				
Religious None		.871			
Buddhist		.054			
Daoist		.026			
Muslim		.027			
Christian		.023			
Rural Resident	10181	.401			
Party Membership	10181	.127			
Years of Formal Education	10181	8.797	4.780	.000	19.000
Age	10181	47.478	15.249	17.000	96.000
Logged Household Income	10181	10.076	1.050	5.247	15.607
Co-residence with relatives	10181	.132			
Year of the first birth: after 1979	5755	.910			
Region	10181				
North		.131			
Northeast		.135			
East		.274			
Central		.150			
South		.078			
Southwest		.147			
Region					
Northwest		.086			
Mean Logged Income in the County/City	10181	10.072	.544	8.788	11.782
Mean Years of Education	10181	8.776	2.218	4.735	14.714
Percent Rural	10181	.400	.293	.000	1.000

3.4.1 Son preference

Table 3.4 presents the model results predicting the probability of desiring more sons than daughters and desiring at least one son. After controlling for all other factors, religious affiliation significantly affects the level of son preference. Christians are less likely than religious nones in desiring more sons than daughters ($p < 0.05$), while Daoists ($p < 0.01$) and Muslims ($p < 0.001$) are much more likely. There is no significant difference between Buddhists and religious nones in their desire for more sons than daughters. The variation in son preference still holds when measuring for people who desire at least one son. About 70 percent of the respondents would like to have at least one son in an ideal situation, showing an overall strong desire to have at least one son to continue the family lineage among Chinese people. Daoists are significantly more likely to desire at least one son than religious nones ($p < 0.01$), whereas no significant difference is observed between Buddhists, Muslims, Christians, and religious nones.

I calculated average marginal effects to understand the effect size of religious affiliation because odds ratios do not clearly illustrate the substantive magnitude of an effect (see Long and Freese 2014). As shown in Figure 3.1, Christians show low levels of son preference, whereas Daoists strongly favor sons over daughters. Specifically, compared with religious nones, Christians are 5.4 percentage points less likely to desire more sons (than daughters), while Daoists are 8.7 percent more likely ($p <0.01$). Additionally, Daoists are predicted to be ten percentage points more likely than religious nones to desire at least one son, suggesting their persistent and robust son preference ($p <0.01$). These results of wanting more sons than daughter combined with those of desiring at least one son lend support to Hypotheses 1a –1c that Daoism and Islam perpetuate son preference while Christianity weakens it.

Table 3.4 Logistic estimates for son preference (N=10,181)

	More sons	+ Controls	One son	+ Controls
*Religious Affiliation**				
Buddhist	1.34*	1.22c	1.28	1.34
	(0.20)	(0.17)	(0.20)	(0.21)
Daoist	1.91**	1.80***c	2.08***	1.78**
	(0.40)	(0.32)	(0.39)	(0.35)
Muslim	1.63*	1.65*c	2.08	1.54
	(0.33)	(0.35)	(0.88)	(0.56)
Christian	0.74	0.59*bdm	1.59*	1.37
	(0.16)	(0.13)	(0.32)	(0.26)
Rural Resident		0.94		1.38***
		(0.07)		(0.11)
Man		1.11		1.05
		(0.06)		(0.05)
Co-residence		1.16		0.94
		(0.11)		(0.07)
CCP Member		0.80*		1.38***
		(0.08)		(0.11)
Age		1.02***		1.00
		(0.00)		(0.00)
Logged Household Income		0.97		0.98
		(0.03)		(0.03)
Education		0.96***		0.96***
		(0.01)		(0.01)
Constant	0.17***	0.14***	2.28***	2.19***
	(0.01)	(0.02)	(0.14)	(0.28)
AIC	8661.70	8454.62	12276.75	11921.47
BIC	8697.84	8584.73	12312.89	12051.58

*The reference category is "religious none." Region is controlled for but not shown in the table. Exponentiated coefficients; Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
bSignificantly ($p < .05$) different than Buddhist, dDaoist, cChristian, mMuslim.
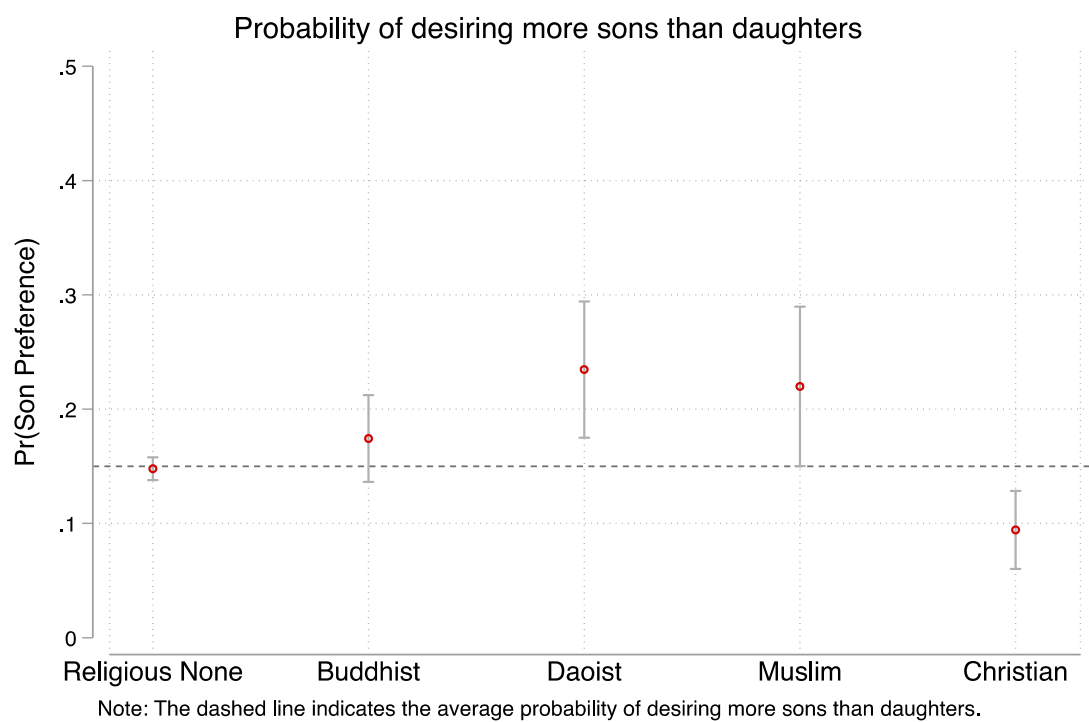
Figure 3.1 Predicted probability of desiring more sons than daughters

3.4.2 The gender of the first child

Table 3.5 presents results predicting the probability of having a son (as opposed to a daughter) as the first child. As the table shows, with control for all other factors, the probability of having a son varies significantly across different religious groups. Figure 3.2 presents the predicted probability of having a boy by religion. As the figure shows, the probability is significantly higher than the natural value (0.512) among religious nones (0.56, $p < 0.001$), Buddhists (0.57, $p < 0.05$), and Daoists (0.62, $p < 0.01$). At the same time, it is not different from the natural value among Muslims and Christians. The results suggest that Muslim and Christian parents rarely practice sex-selective abortion at the first birth. By contrast, Buddhists, Daoists, and religious nones are more likely to abort female fetuses and ensure giving birth to a boy at the first birth. These findings lend strong support to Hypotheses 2a –2c.

There are several other interesting findings. For instance, after the implementation of the one-child policy, the predicted probability of having a boy as the first child increased dramatically, by 6.5 percent. It indicates that girls experienced even more serious discrimination since 1980 (Nie 2011). Interestingly, rural people are less likely to have a boy for the first child, which can partly be explained by the birth policy, which allows rural people in some provinces to have a second birth if their first one was a girl (Gu et al. 2007). Consequently, couples in rural areas are likely to practice sex-selection on their second child but not their first one because they need to ensure the second child is a boy when their firstborn is a girl (see Chu 2001). Education is positively associated with having a boy as the first child. This is consistent with the findings of other investigators that educated people are better informed about possible sex-selection practices (Attané 2009; Assche 2004).

Table 3.5 Logistic estimates for the gender of the first child (N=5,755)

	+ Religion	+ Controls
*Religious Affiliation**		
Buddhist	1.07	1.04
	(0.12)	(0.12)
Daoist	1.29	1.30^{m}
	(0.20)	(0.21)
Muslim	0.78*	0.79^{*d}
	(0.08)	(0.08)
Christian	1.04	0.99
	(0.17)	(0.16)
Rural Resident		1.06
		(0.07)
Man		0.95
		(0.05)
Co-residence		1.03
		(0.08)
CCP Member		1.14
		(0.10)
Age		1.01*
		(0.00)
Logged Household Income		0.98
		(0.03)
Education		1.00
		(0.01)
After 1979		0.65**
		(0.09)
Constant	1.29***	1.85***
	(0.03)	(0.28)
AIC	7887.58	7855.69
BIC	7920.87	7982.19

*The reference category is "religious none." Region is controlled for in the "+Controls" model but not shown in the table. Exponentiated coefficients; Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
^{b}Significantly ($p < .05$) different than Buddhist, ^{d}Daoist, ^{c}Christian, ^{m}Muslim.
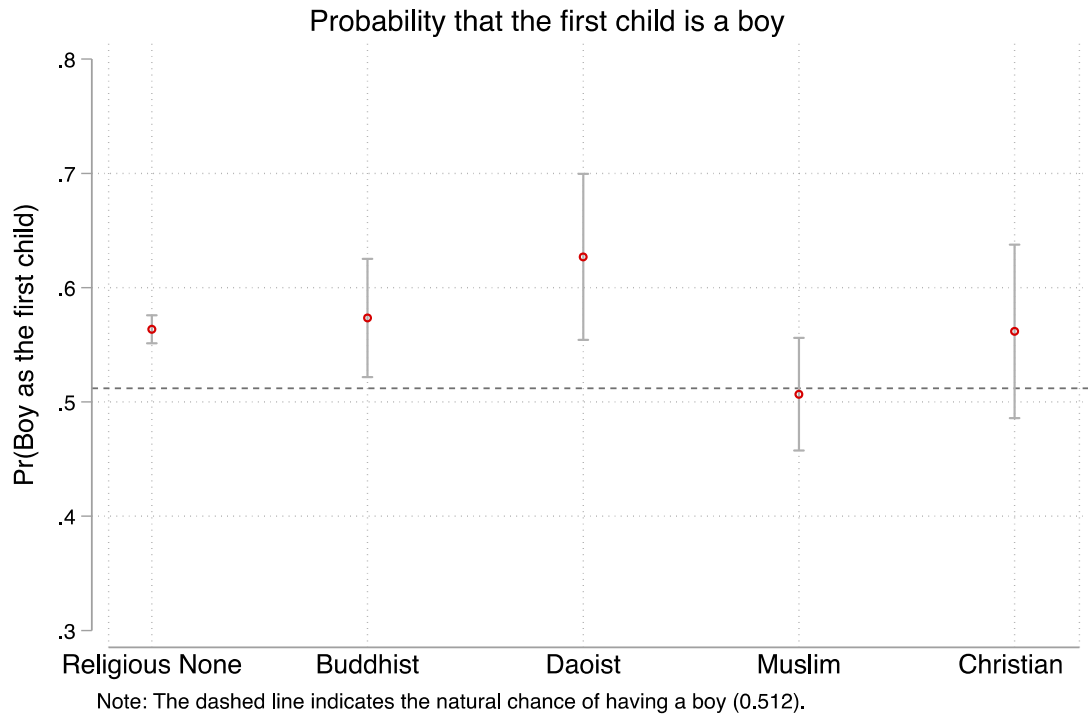
Figure 3.2 Predicted probability of having a boy for the first child

These findings provide a nuanced picture of how religious groups make different sex-selection decisions on the first child. Research in China and South Asia suggests that sex selection is rarely used on the first birth, which is evident in the relatively balanced sex ratio of the first births in census data (Guilmoto and Tovey 2015; Chen et al. 2013; Jayaraman et al. 2009). However, the less balanced ratio of the first births in comparison to that of later births does not imply that firstborn girls and boys are treated equally by parents. In fact, this study finds firm evidence for parents aborting female fetuses to ensure giving birth to a boy at the first birth. Even when factoring in the possibility that girls may die of daughter neglect, the inflated chance of having a boy as opposed to a girl as the first child reflects that firstborn girls experience severe discrimination.

3.4.3 Having additional children

I employed multi-level logistic regression to assess the relationship between religious affiliation and having additional children because a considerable amount (about 20 percent) of the variation in having a second/third child is at the county-level. I also included several county-level control variables, such as the average household income in the county, the share of rural residents, and average years of formal education, to adjust for the difference between counties. I also included the gender of the first child in the models of having a a second child.[33] All these variables are centered at their grand means. Table 3.6 presents the analytical results of the relationship between religious affiliation and having additional children.

Figure 3.3 presents the predicted probability of having additional children by religion. As the figure suggests, there are substantial differences between religious groups. First, Muslims are more likely to have a second child than religious nones ($p < 0.01$), while other religious groups, including Buddhists, Daoists, and Christians, are not significantly different from religious nones. This is likely due to the lenient birth policy for ethnic minority groups – virtually all Muslims are members of ethnic minorities – that allow them to have two births. Second, both Muslims and Daoists are more likely than religious nones to have a third child ($p < 0.01$). No significant difference is found between Buddhists, religious nones, and Christians in having a third child.

The effects of sociodemographic variables are consistent with the findings of existing research. Having another child is conditioned on the gender composition of previous children. Respondents with a boy as the first child are significantly less likely to have a second child, indicating an overall son preference among Chinese people. Similarly, people with two girls for

---

[33]I did not control for the gender of the previous children in the models of having a third child for sample size reasons. Out of 3,636 respondents with at least two children, over 1,000 of them, mainly older respondents, were missing in measures of the gender or age of the first or second child. In addition, results of the models with the gender of the previous two children included are not different from those presented in this chapter.

their first two children are much more likely to have a third child than those with at least one boy, reflecting the prevalence of son-targeting fertility behaviors. More educated respondents are less likely to have a second or third child. Respondents who had the first child after the one-child policy are significantly less likely to have a second or third child. Rural and older respondents are more likely than the urban and younger ones to have a second or third child. Ironically, party members, who are expected to follow the rules and laws more closely, are not different from non-members when comparing their likelihood of having a second or third child, after controlling for all other factors.

Table 3.6 Multi-level logistic estimates for having additional children

	2nd Child	+ Controls	3rd Child	+ Controls
*Religious Affiliation**				
Buddhists	1.38*	1.36	1.44*	1.13[m]
	(0.21)	(0.23)	(0.23)	(0.22)
Daoists	2.00**	1.52	1.49*	1.64[*c]
	(0.44)	(0.35)	(0.30)	(0.38)
Muslims	2.44**	2.61**	1.92*	2.49[**c]
	(0.79)	(0.88)	(0.53)	(0.83)
Christians	1.60*	1.25	1.03	0.83[dm]
	(0.33)	(0.29)	(0.23)	(0.23)
Rural Resident		3.24***		1.64***
		(0.28)		(0.18)
Man		1.06		0.97
		(0.08)		(0.09)
Co-residence		0.74**		0.98
		(0.08)		(0.15)
CCP Member		0.78*		0.91
		(0.09)		(0.15)
Age		1.06***		1.09***
		(0.00)		(0.01)
Logged Household Income		1.11*		1.02
		(0.05)		(0.05)
Education		0.90***		0.96**
		(0.01)		(0.01)
After 1979		0.95		0.71**
		(0.14)		(0.10)
First-child son		0.39***		
		(0.03)		
Constant	0.52***	0.72	0.46***	0.24***
	(0.06)	(0.20)	(0.03)	(0.07)
Var (Level2)	4.00***	1.94***	1.35***	1.54***
	(0.86)	(0.22)	(0.09)	(0.15)
N	5717	5717	3636	3636
AIC	6896.46	5772.60	4612.12	3754.29
BIC	6936.37	5932.23	4649.31	3896.86

*The reference category is "religious none." Region and city-level average income, education, and proportion of rural respondents are controlled for but not shown in the table. Exponentiated coefficients; Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
[b]Significantly ($p < .05$) different than Buddhist, [d]Daoist, [c]Christian, [m]Muslim.
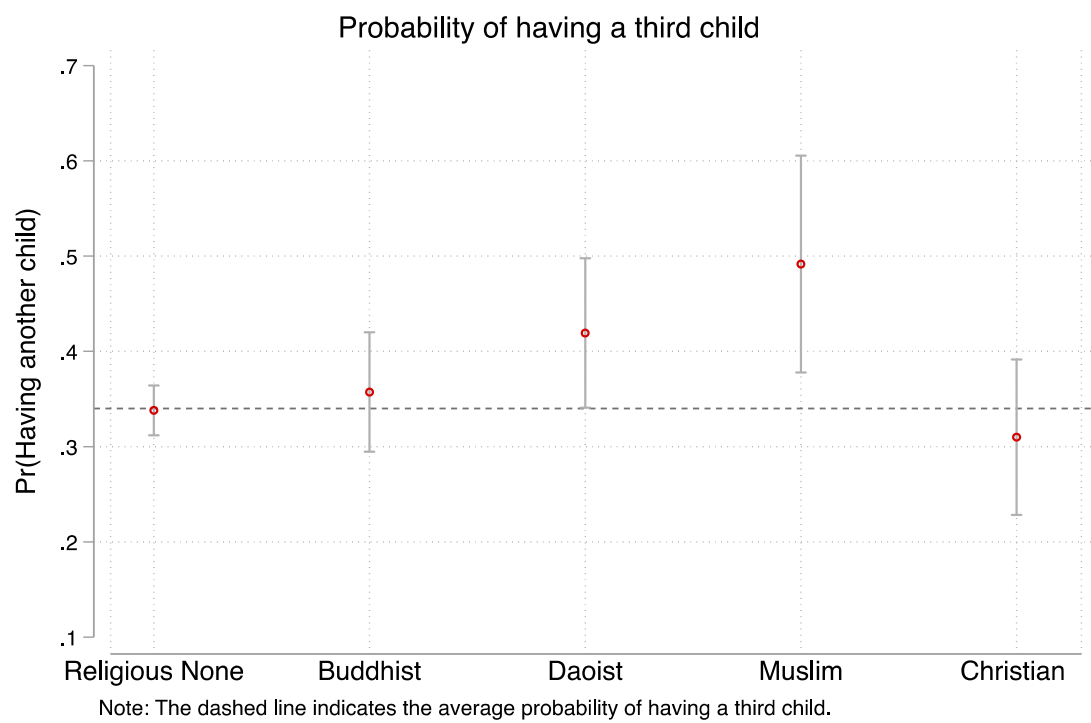
Figure 3.3 Probability of having a third child

3.4.4 The sex ratio among children

Table 3.7 presents results predicting the probability of having more sons than daughters. The model (+ Controls) includes religious affiliation, the total number of children, and other demographic variables. The result shows no significant relationship between religious affiliation and whether the sex ratio of children is male-biased. Interestingly, having more children associates with less male-biased sex ratios of children when controlling for all other factors (p <0.001). Having more children helps balance the sex ratio of children as the decision to have another birth depends on the sex of previous births. Parents with daughters are more likely to continue childbearing, while those with sons are more likely to stop. In such a case, the sex ratio of children can be strongly male-biased when parents have only a few children, and it becomes less male-biased when the family size is large (Yoo et al. 2017; Altindag 2016; Basu and Jong 2010; Park 1983).

The model (+ Interaction) includes an interaction term between religious affiliation and the total number of children, which provides a nuanced understanding of the link between having additional children and sex selection. The interaction is statistically significant (p <0.05), meaning the effect of having an additional child on the sex ratio of children varies by religion. Figure 3.4 presents the average marginal effect of having an additional child at the mean by religion. As the figure shows, having an additional child has an overall balancing effect on the sex ratio of children – the sex ratio of children becomes less male-biased as the number of children increases. But such an effect is more pronounced among some religious groups than others. Specifically, the balancing effect is absent for the Daoist group, even after accounting for all other factors, which is in stark contrast to other religious groups, whose sex ratio of children is less male-biased in large households. This finding suggests that having more children does not alleviate the highly male-biased sex ratio of children among Daoists. They consistently have

97

more sons than daughters regardless of the number of children they have, which is consistent with the fertility pattern identified by Hu and Tian (2018) that Daoists pursue not only one son but also many sons.

Table 3.7 Logistic estimates for having more boys than girls (N=6,888)

	+ Religion	+ Controls	+ Interaction
*Religious Affiliation**			
Buddhist	1.00	1.07	0.58*
	(0.10)	(0.13)	(0.13)
Daoist	1.19	1.55	0.47*
	(0.19)	(0.35)	(0.16)
Muslim	0.76**	1.20	0.50**
	(0.07)	(0.17)	(0.12)
Christian	0.83	0.90	0.74
	(0.12)	(0.14)	(0.25)
Rural Resident		1.11	1.14
		(0.08)	(0.08)
Man		0.94	0.94
		(0.05)	(0.05)
Co-residence		1.07	1.08
		(0.08)	(0.08)
CCP Member		1.13	1.12
		(0.10)	(0.10)
Age		1.01**	1.01**
		(0.00)	(0.00)
Logged Household Income		1.04	1.04
		(0.03)	(0.03)
Education		1.00	1.00
		(0.01)	(0.01)
After 1979		0.58***	0.57***
		(0.06)	(0.06)
Total number of children		0.57***	0.52***
		(0.03)	(0.03)
Buddhist X # of Children			1.38**
			(0.15)
Daoist X # of Children			1.72**
			(0.29)
Muslim X # of Children			1.48***
			(0.16)
Christian X # of Children			1.12
			(0.18)
Constant	0.80***	2.84***	3.30***
	(0.02)	(0.42)	(0.48)
AIC	9460.82	9111.83	9082.67
BIC	9495.01	9248.58	9246.77

*The reference category is "religious nones." Region is controlled for in the "+Controls" model but not shown in the table. Exponentiated coefficients; Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
[b]Significantly ($p < .05$) different than Buddhist, [d]Daoist, [c]Christian, [m]Muslim.

Average marginal effects of having an additional child on sex ratio
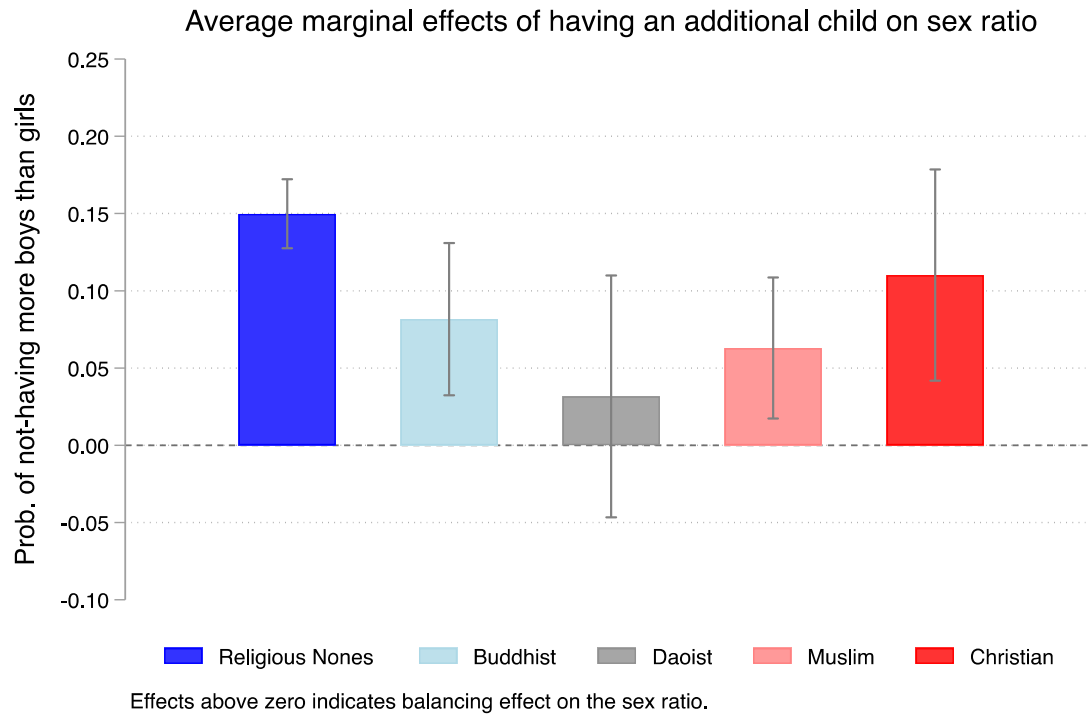
Figure 3.4 Balancing effect of having additional children on the sex ratio of children

Sex selection patterns become more evident when comparing the sex ratios of children between religious groups. The average sex ratio of children in the sample is 113, about 113 boys per 100 girls, which is above the natural child sex ratio (105) observed in most societies (see Altindag 2016). Note that the sex ratio of children favors boys more for Daoists (130), while it is less so for Muslims (94) and Christians (112).[34] The strongly male-biased sex ratio of children indicates that Buddhists and Daoists are more likely to engage in discriminatory practices against girls than other religious groups.

To summarize, religious affiliation not only shapes individual son preference but influences their sex-selection decisions, contributing to varying sex ratios of children between religious groups. First, while the religiously affiliated tend to hold strong son preference,

---

[34] The sex ratio of children among Buddhists is 116.

Christians stand out for their weak son preference. Christians also rarely practice sex selection for their first child, unlike Buddhists, Daoists, and religious nones, even though virtually all of them have the same, draconian one-child policy since 1980. Relatively refraining from practicing sex-selective abortions, helps explain Christians' less male-biased than that among Buddhists and Daoists.

Second, Daoists show strong son preference and their persistent pursuit of sons. They are more likely than religious nones to desire more sons than daughters and want at least one son. They would implement their preference by practicing sex selection on the first child and having additional children to obtain a son or sons. The probability of the first child to be a boy is much higher than the natural chance for the Daoist group. Despite the restrictive birth policy, they are more likely than religious nones to have a third child.

Third, as the results suggest, Muslims and Daoists share a similar level of son preference, and both are likely to have a third child. However, they differ in terms of sex selection decision-making. Daoists have a much higher probability of having a boy as the first child, in contrast with a natural chance for Muslims. The balancing effect of having additional children is substantial for Muslims but neglectable for Daoists. The differences in sex selection decisions help explain their divergence in the sex ratio of children – Muslims have a balanced sex ratio of children, while Daoists have a highly male-biased one. In a word, Muslims, despite preferring sons over daughters, rarely practice sex selection to manipulate the gender composition of children. By contrast, Daoists mainly rely on sex selection to achieve their strong preferences for sons.

Last, the findings show that Buddhists and religious nones are similar in several measures. They are not significantly different from each other in son preference, the probability of the first

child as a boy, and the likelihood of having a second or third child. The indistinguishable differences between the two groups, to some extent, suggest Confucian's pervasive influence on Buddhists and religious nones. Despite identifying with no religion, religious nones are not independent of the Confucian influence of son preference, and Buddhists do not appear to distinguish themselves from religious nones in son preference and sex selection decisions.

3.5   Discussion and Conclusion

Religion has long been absent in demographic studies in China. Although scholars agree on including cultural factors in understanding fertility patterns, they overlook religion and its influence in Chinese society. This study highlights the roles of religion in shaping demographic trends by demonstrating the differences among religious groups in son preference and sex selection decisions. Drawing on a national sample from the 2010 Chinese General Social Survey, this study shows that Christians are the least likely to prefer sons over daughters and engage in sex-selective abortions against girls, while Daoists are the most likely to do so.

This study shows that, although Confucianism maintains its dominant influence in Chinese society, other religious traditions can shape individuals' values and fertility decisions related to son preference. Christianity associates with weak son preference and refraining from sex-selective abortions, contributing to a relatively balanced sex ratio of children among Christians. Besides, although their religious teachings encourage childbearing, there is little evidence suggesting that Christians are more likely than religious nones to have more than one child under the one-child policy. It seems that their fertility behaviors are more guided by the teachings of complying with worldly laws – they are reluctant to violate the policy to continue childbearing.

In stark contrast to Christians, Daoists associate with strong son preference and sex-selective abortions that resulted in boys outnumbering girls at the highest ratio. The findings

show that Daoists not only strongly prefer sons over daughters but also engage in sex selection. Thus, they have disproportionally more sons than daughters and a significantly higher chance of having a boy for the first child. Besides, Daoists are more likely than religious nones to have many children (a third child), and yet having additional children does not appear to balance their sex ratio of children, which serves as firm evidence for their pursuit of many sons. As a result, Daoists are more likely to have disproportionately more sons than daughters and the most male-biased sex ratio of children.

Primarily due to the lenient birth policy among Muslims, the pressure of having a son is less compared with other dominantly-Han religious groups. The unique ethnic composition among Muslims makes it impossible to isolate religion from ethnicity when understanding their fertility decisions about sex selection. Nevertheless, we can catch a glimpse of the linkage between Islamic influence and fertility decisions by comparing Muslims with Daoists as they share a similarly strong son preference and the probability of having a third child. The sex ratio of children is balanced among Muslims, while it is heavily biased toward boys among Daoists. In addition, having additional children helps balance the sex ratio of children among Muslims but not among Daoists. In other words, even though Daoists and Muslims show similarly high son preference levels and fertility rates under the restrictive birth policy, Daoists would turn to sex selections to have many sons, while Muslims mainly rely on childbearing while refraining from sex-selective abortions to pursue sons. The combination of a balanced sex ratio of children with a strong preference for sons is best explained by their opposition to abortion (Almond et al. 2013).

While all other religious groups show a distinct pattern of son preference and sex selection decisions, Buddhists are not different from religious nones in these measures. The analyses suggest that both Buddhists and religious nones would discriminate against girls while favoring

sons and are not different from each other in the decision of having a second or third child. Interestingly, the findings show that Buddhists do not have lower fertility rates, which is different from the previous research suggesting that Buddhists tend to have fewer children (Skirbekk et al. 2015). The finding may indicate that relatively strong son preference among Buddhists help boost their fertility as they may continue childbearing after having a daughter for the first birth. Note that this study does not distinguish Tibetan vs. Han Buddhists because of data limitations. Also, because most Buddhists in the analyses are ethnic Han Chinese, though some Han Buddhists have adopted practices and teachings from Tibetan Buddhism (Jones 2011), the findings of this study may not extend to Tibetan Buddhism.

Furthermore, the extent to which religious teachings shape individual attitudes and behaviors varies by religion. Consistent with their religious teachings on abortion, Christians and Muslims are less likely to engage in sex-selective abortions even though they prefer sons over daughters. On the contrary, the foremost doctrine in Buddhism – "refraining from harming living things," appears to be insufficient to prevent Buddhists from engaging in discriminatory practices against girls. The reason can be that Buddhism has been so intertwined with Confucian values that it is unable to trickle down any independent influence upon its adherents. On the other hand, it may be because Buddhism lacks the organizational structure that fosters interaction and communication among fellow Buddhists to reinforce its teachings. As noticed by Kim and Song (2007), the strong influence of Protestantism on people in South Korea is largely attributed to the socializing activities such as group prayer meetings and bible studies that help ensure its doctrine is effectively conveyed. Thus, self-identifying as Christian implies high levels of adherence to Christian teachings, while being Buddhist may entail a weak commitment to a Buddhist way of living.

Although sharing a similar way of worship and practice with Buddhism, Daoism has a substantial influence on adherents' son preference and reproductive behaviors. Daoists distinguish themselves from religious nones in their desire and pursuit for sons, many sons. Note that most Daoists in this sample are not Daoist clergies or monks (less than 8 percent), but respondents who worship Daoist deities, such as God of fortune (guangong 关公) or Heavenly princess (Mazu 妈祖), or practice folk religion rituals. Thus, caution should be used in generalizing the findings in this study to the entire Daoist population. Besides, the unique geographic concentration pattern of the Daoist respondents in this sample also requires caution when understanding the sex selection patterns among Daoists. For instance, a substantial share (roughly 65 percent) of Daoists are in coastal provinces of China, such as Fujian, Guangdong, and Guangxi. In particular, Fujian, a province that is believed to be the birthplace of Mazu (see Ruitenbeek 1999), is home to about 22 percent of the total Daoists. Meanwhile, Fujian has a strong tradition of ancestral worship, with over 10,000 ancestral halls – buildings that are dedicated to venerating ancestors of a particular family or clan (Gan 2019). The substantial presence of ancestral halls also indicates powerful clan associations that help reinforce Confucian norms and values among local communities, even at the expense of violating the formal law. For instance, Peng (2010) finds that villagers in communities with dense clan associations are found to have more children than those with loose ones under the one-child policy. Therefore, their geographic concentration patterns and local organizational structures may play a role in shaping Daoists' values and decisions related to son preference.

Several limitations need to be mentioned. First, data in this project are cross-sectional, so causal interpretation of the findings should be made with caution. Although theoretical argument lends support to the effect of religious affiliation on son preference, more definite conclusions

cannot be made until panel data are available. The relationship might be bilateral; those with a daughter as the first child may later convert to Christianity to cope with the pressure of producing a son. Second, this study did not account for the Confucian influence. There is not a valid measure of engagement in Confucian activities such as compiling family genealogy and renovating ancestral halls in the survey. Future research needs to account for the Confucian influence to assess the net association between Buddhism/Daoism and reproductive behaviors. On the other hand, it may be impossible to isolate the net impact of Buddhism or Daoism due to the murky nature of traditional religion in China – a harmonious fusion of elements from Buddhism, Daoism, and Confucianism (Tamney 1998; Lou 1994). A vast majority of Buddhists in China (about 80%) actively participate in folk religious practices such as ancestor worship (see Leamaster and Hu 2014). Additionally, data in this study was collected in 2010, before the two-child policy came into effect in 2015. More recent data is needed to explore how various religious groups may make different fertility decisions in response to the relaxed birth policy.

Notwithstanding these limitations, this study is the first rigorous and quantitative investigation of the association between religious affiliation and sex selection in China. It illustrates the role of religion in shaping son preference and sex selection decisions. Considering the recent relaxation of the birth policy in China, the study sheds important light on the fertility rate and sex ratio trends in China. As the findings imply, one may expect a fertility boost among religious groups, such as Christians and Daoists. As for the sex ratio, relaxing the policy alone may be insufficient to protect unborn girls from discrimination as the pursuit of many sons remains strong among Daoists. To conclude, this study provides a nuanced picture of how religion affects the demographic process by shaping individuals' attitudes and decisions related to son preference.

CHAPTER 4.   A MULTI-LEVEL ANALYSIS OF RELIGION AND ABORTION ATTITUDE IN CHINA

4.1   Introduction

Abortion has an ancient history in China. In premodern times, it was seen as a self-inflicted punishment of the fetus's parents instead of a crime against God or society (Tribe 1992, 62). Since the Tang dynasty, causing a pregnant woman to abort was, in certain circumstances, punishable under one section of the law of assault (Luk 1977). In 1901, pressed by western forces, the Qing government made abortion a criminal offense (Savage 1988). However, abortion laws have become less strict since the establishment of the People's Republic of China. In particular, in 1953, the Chinese government relaxed abortion laws for birth control purposes as officials were concerned with the rapid growth in China's population (Guo and Chen 2007). The government further extended abortion rights to women in good health and pregnancies of less than 10-week gestation in 1957 (see Guo and Chen 2007). After the one-child policy took effect nationwide in 1980, the Chinese government removed virtually all restrictions on induced abortion (Rigdon 1996; Savage 1988), and abortion served as an effective way of dealing with illegal pregnancies.

With the relaxation of abortion laws and the campaign of controlling population growth, the number of abortions performed in China has risen rapidly since the 1970s. Under the restrictive birth policy, women with unauthorized pregnancies were pressed to have an abortion (Chen 2007), and some women would voluntarily choose abortion because they accepted and supported the national policy of having one child only (Nie 2005). The number of abortions increased from 5 million in the early 1970s to 9.5 million in 1980 and peaked at nearly 14.4 million in 1983, three years after the one-child policy took effect (Li et al. 1990). The abortion

106

rate continued to be staggeringly high even after the government relaxed the birth policy in 2013

to allow couples to have a second child if either husband or wife is an only child. According to

government statistics, there were about 13 million abortions performed in 2015 (Zhou et al.

2015).

A large number of induced abortions, perhaps, mirrors Chinese people's tolerant attitude

toward abortion. The survey conducted by Nie (2005) in 1997, with a sample size of 620

respondents, suggests an overall liberal abortion attitude among Chinese people. He found that

an overwhelming majority (over 90 percent) agreed that abortion was acceptable – even

necessary – in situations such as when the mother is mentally retarded, the mother is a prostitute,

and the mother is an unmarried college or university student (Nie 2005). The liberal attitude

toward abortion seems to be consistent with the official narrative, which sees abortion as a

substitute for contraception (Guo and Chen 2007).

However, to this date, very little is known about the views of abortion among Chinese

people. Research on abortion in China heavily focuses on its linkage with birth policy and

population control. For example, there is much discussion on sex-selective abortion as the

primary cause for the highly male-biased sex ratios in China and the one-child policy facilitating

abortion practices (Chen et al. 2013; Chu 2001). These studies have shed important light on the

relationships between abortion practices, son preference, and sex imbalance at birth in China.

However, such a perspective assumes a liberal abortion attitude among Chinese people. It

considers abortion as one method of birth control by emphasizing the strong linkage between son

preference and abortion practices while ignoring variations in abortion attitude.

By contrast, research in western contexts often explores abortion attitude and its

determinants. Religion, in particular, religious beliefs and practices, has received much attention

in the study of abortion in western contexts. Numerous studies include religion as an important factor, as religions often vary in their teachings on the beginning of life (Combs and Welch 1982; Ebaugh and Haney 1980; Cochran et al. 1996; Harris and Mills 1985; McIntosh et al. 1979; Hans and Kimberly 2014). For instance, studies in the United States find that conservative Protestants and Catholics are strongly pro-life and more likely than religiously unaffiliated people to hold unfavorable attitudes toward abortion (Hoffmann and Johnson 2005; Adamczyk and Valdimarsdóttir 2017; Hans and Kimberly 2014; Wu and Ida 2018). On the other hand, these studies tend to focus on the difference within Christian groups. How abortion attitude may vary between religious groups, such as Christians, Buddhists, Daoists, and Muslims, has received little scholarly attention.

Built upon existing research, this study bridges the scholarly gap by exploring how religion influences individuals' abortion attitudes in the Chinese context. The rapid development of various religions over the past several decades makes China an ideal case to examine religion's effects on abortion attitudes at both individual and contextual levels. I will ask these questions in this study: Does religion make a difference amidst the dominant official discourse that sees abortion as one birth control method? Do religious groups hold different abortion attitudes? Does living in a place with a strong religious tradition affect one's abortion attitude? This study serves as the first to empirically investigate the effects of religion on abortion attitude in China.

4.2   Theoretical Background: Religious Influences on Abortion Attitudes

4.2.1   Buddhism and Daoism

Buddhism and Daoism are often referred to as Chinese traditional religions in China (Thompson 1996). Together with Confucianism, Chinese religions share teachings on human

108

life, which opposes abortion. In Confucianism, each individual's life, from beginning to end, is closely related to nature, which attaches sacredness to human existence (Nie 2005). According to traditional Chinese notions of fetal life, human life begins before birth; thus, abortion is not permissive (Nie 2005). While Confucian teachings oppose abortion, some ideas and practices of the Confucian tradition, such as filial piety and ancestor worship, can undermine the moral legitimacy of abortion (see Ivanhoe 2010; Nie 2005). Thus, Confucian teachings leave space for a liberal interpretation of abortion (Nie 2005, 92).

Such a liberal interpretation of abortion also holds for Buddhism. In Buddhism, the dual commitment to compassion for the aborted fetus and the pregnant woman, as well as the belief in reincarnation, results in a relatively weak opposition toward abortion (Kim and Song 2007). The central ethic of Buddhism is to refrain from taking life, which Buddhists often cite to claim their disapproval of abortion.[35] However, the same precept also addresses the moral ideal of compassion – showing compassion to women pregnant with unwanted fetuses, which leads to Buddhists' weak stance on opposing abortion (Perrett 2000; Jones 2003).

Besides, Buddhist organizations rarely state their anti-abortion position or engaged in pro-life advocacy (Tribe 1992; Tedesco 1999). Studies show that some Buddhist temples and organizations tolerate abortion practices. For example, some Buddhist temples in Taiwan would provide services to appease the ghosts of aborted fetuses (Moskowitz 2001). In Japan, Buddhist clergies would hold a memorial service called *mizuko kuyo* for parents who want to apologize to their children who have died of induced abortion (Perrett 2000).

As a result, despite Buddhist teachings and scriptures straightforwardly opposing it,

---

[35] The Five Precepts of Buddhism require all Buddhists to refrain from harming living things, taking what is not given, sexual misconduct, lying, or gossip, taking intoxicating substances ("Buddhism - An Introduction" 2014).

abortion is not uncommon among Buddhists (Nie 2005; Tedesco 1999). For instance, research shows that in Thailand, a country with a majority Buddhist population, the share of abortions for socio-economic reasons made up about 70 percent of the total abortions as of 1999, even though the government banned abortion in nearly all cases (with exceptions when the woman's health was at risk or pregnancy was due to rape) (Warakamin et al. 2004). Studies in South Korea also suggest that Buddhists are more likely than the religiously unaffiliated to approve of abortion (Kim and Song 2007), and Buddhist women are more likely than other non-Buddhist ones to have an abortion (Tedesco 1999).

Daoists' views on abortion have been largely shaped by the teachings from Buddhism and Confucianism since Daoist scriptures and teachings rarely address abortion directly (see Nie 2005). Considering the embeddedness of Daoism with other Chinese religions, it is likely that Daoists and Buddhists have similar levels of disapproval of abortion. However, it is unclear whether these two groups are more likely to oppose abortion than religious nones. On the one hand, the Confucian tradition remains the dominant influence on Chinese people – including religious nones – and their way of living; on the other, in the dominant, official discourse, abortion has been seen as one of the contraceptive methods since the 1980s, when the one-child policy took effect. Considering religious nones are less likely to abide by any religious teachings that attach sacredness to fetal life, I expect that Buddhists (and Daoists) are less tolerant toward abortion than religious nones. I hypothesize:

H1: Buddhists are more likely to disapprove of abortion than religious nones.

H2: Daoists are more likely to disapprove of abortion than religious nones.

4.2.2   Christianity and Islam

Christianity and Islam, are often referred to as "foreign" religions in China, even though it is well-documented that both religions were first introduced to China in the Tang Dynasty (618-907) (See Imamuddin 1984; Ferreira 2007). Among all religions, Christianity and Islam stand out for explicitly denouncing abortion (Almond et al. 2013). In Islam, children are seen as a gift from God; the Qur'an depicts children as 'the decoration of life'" (Dunn 2011). Because abortion involves killing a creature that belongs only to God (Daragahi 2008), Muslims see it as murder. They strongly oppose it (Dunn 2011), and many Muslim-majority countries either forbid abortions or allow them only under tight restrictions (Shaikh 2003).[36] Similarly, Christians oppose abortion since, according to the bible, life is a sacred life from God. Besides, Christian leaders not only advocate for pro-life values among their fellow Christians, but some of them also would publicly denounce abortion.

Empirical studies have lent support for different abortion attitudes between religious groups. Christians and Muslims tend to oppose abortion, while Buddhists are less likely to do so. In South Korea, Protestants are more likely than religious nones to disapprove of abortion, while Buddhists are less likely to oppose abortion (Kim and Song 2007). In Taiwan, Christians are more likely than Buddhists, Daoists, and religious nones to disapprove of abortion (Zhai 2007). Based on these studies, I hypothesize:

H3: Christians are more likely than Buddhists, Daoists, and religious nones to disapprove of abortion.

H4: Muslims are more likely than Buddhists, Daoists, and religious nones to disapprove of abortion.

---

[36] According to Islamic laws, abortion is not considered killing when performed before the fetus is "infused with life", which is after 40 or 120 days depending on the school of Islamic laws (Dunn 2011).

4.2.3 Does living in a religious place influence one's abortion attitude

Existing research shows that religious factors at the contextual level – religious composition of an area – can shape individuals' attitudes and behaviors. Scholars (Stark 1996; Stark et al.1982; Regnerus 2003) developed the "moral communities" hypothesis to understand the contextual effects of religion: that religious influence can enter freely into everyday interactions and become a valid party of the normative system when this religious tradition is dominant in the area (Stark 1996). Specifically, religious teachings can transmit to the lives of people living in the area through multiple channels, such as interpersonal interactions, local organizations and institutions, and local norms and policy-making (see Olson 2019). Consequently, religious teachings potentially affect not only the religious affiliates but also others living in areas dominated by these religious traditions (Glass and Levchak 2014).

Studies show firm support for the contextual effects of religion. Religious context, often measured by the dominance of a religious population in an area, shapes individuals' behaviors, such as deviance (Stark 1996; Regnerus 2003), gambling (Eitle 2011), crime (Ulmer and Harris 2013), and divorce (Glass and Levchak 2014), and attitudes such as homosexuality (Adamczyk et al. 2016), and trust (Olson and Li 2015; Marshall and Olson 2018). In particular, Adamczyk and Valdimarsdóttir (2017) investigated the contextual effect of religion on abortion attitudes of American adults. They found that living in areas where residents are actively engaged in religious activities increases one's disapproving views of abortion, regardless of his/her own religious affiliation.

Religious context is likely to play a role in shaping individuals' abortion attitudes in China. Yet, considering the Chinese government keeps a close eye on religious activities, religious influence at the contextual level can be limited. The government prohibits religious organizations, especially those of so-called foreign religions, from promoting religious values

among nonreligious people. Still, Christian groups in mainland China manage to influence the general public through evangelical activities. For example, members of a Protestant Church in Chengdu, Sichuan province, took to the streets on Children's Day to distribute anti-abortion leaflets to people and advocate for the pro-life teachings (see Xue 2018). Besides, religious influence can transmit to local subcultures through informal ways, such as the interactions between adherents and others outside of the religious traditions. Studies show that as the religious presence in an area increases, people living there are more likely to have friends from that religious tradition and thus be influenced by the religious teachings (Adamczyk et al. 2016; Olson and Perl 2011). Therefore, people living in an area with a strong Christian or Islamic presence are likely to be exposed to more anti-abortion attitudes and form unfavorable views of abortion. Based on the literature review, I expect to find a negative association between the share of Christians/Muslims in an area and approving views of abortion (H5). Conversely, because Buddhist and Daoist organizations in China rarely denounce abortion in public, I expect no effect between Daoist or Buddhist presence and abortion attitudes (H6).

4.3   Data and Methods

This study uses data from the 2010 Chinese General Social Survey (CGSS). The CGSS is a nationally representative survey that collects information on social attitudes and behaviors to systematically monitor the social change and quality of life in China. The 2010 survey is the most recent available data that includes a module on religion and abortion attitudes. The module randomly chose one-third of the surveyed respondents to answer questions related to religious beliefs, religious practices, and abortion attitudes. About 4,231 respondents answered questions on both religion and abortion.

I use multi-level logistic regression to examine the effects of religion on abortion attitudes at both individual and contextual levels. This modeling strategy allows me to adjust for the nonindependence issue between observations from the same cluster (see Abadie et al. 2017). In this study, I use community/neighborhood as the clustering unit because it is a small enough geographic unit to rule out potential heterogeneity in social norms and cultures within the unit, which makes the neighborhood a preferable clustering unit than a city or county (see Adamczyk and Valdimarsdóttir 2017). The sample consists of 474 neighborhoods, with an average of seven respondents nested within each neighborhood. Analyses are conducted in Stata version 16, and all reported tests are two-tailed with significance assessed at the $p < 0.05$ level throughout.

4.3.1 Dependent variables

The 2010 CGSS survey included two items on abortion. It asked respondents to report their (dis)approval on abortion under the two circumstances: 1) *when a serious defect is diagnosed in the fetus;* 2) *when the couple lacks sufficient income to raise a child.* Respondents were provided with four options as follows: 1 = 'always wrong', 2 = 'mostly wrong', 3 = 'sometimes wrong', and 4 = 'always right'. I created a dichotomous measure of whether the respondent tolerates abortion by coding respondents answering 'always right' as 1 (= abortion is always right) otherwise 0.[37]

---

[37] There might be some inconsistency between abortion behaviors and attitudes. For example, the study by Chu (2001) shows that even if about 92 percent of women in rural China said it was not right to abort female fetuses, some of them practiced abortion under pressure from husband or parents-in-law. However, it is reasonable to believe that people who denounce abortion strongly for religious reasons are less likely to practice it compared to those who are permissive about abortion. Hence, this study uses abortion attitudes as an indicator of the acceptance of abortion.

I constructed two variables measuring abortion attitudes regarding two circumstances: 1) when the couple lacks the income to raise a child; and 2) when a serious defect is diagnosed. Researchers (e.g., Harris and Mills 1985; Hoffmann and Johnson 2005; Cochran et al. 1996) often distinguish abortions in the former circumstance as elective, and the latter as traumatic, and Hoffman and Johnson (2005) confirm the two are distinct categories by analyzing six questions concerning access to abortion using data from the General Social Survey.[38] Following their classification, I examined the relationship between religion and abortion attitudes in both circumstances separately.

4.3.2 Independent variables

The focal predictors are religion at both individual and contextual levels. Religious affiliation is used in this study to measure religious influence at the individual level. It is coded into a variable with five categories where 1= 'Religious none', 2 = 'Buddhist', 3 = 'Daoist (including folk religionist)', 4 = 'Christian', 5 = 'Muslim'.

Religious composition at the contextual level is measured by the share of religiously affiliated respondents in the neighborhood for each religion. Researchers (e.g., Olson and Li 2015; Olson and Perl 2011) usually use the percentage of residents belonging to a particular religion (or denomination) from census data to measure the religious composition of a locality.

---

[38] They conducted the analysis using six questions concerning abortion. These questions ask whether a woman should be allowed to obtain a legal abortion if 1) she is unmarried and does not want to marry the father of the child; 2) the family has a very low income and cannot afford any more children; 3) she is married and does not want any more children; 4) she became pregnant as the result of rape; 5) the woman's health is seriously endangered by the pregnancy; 6) or there is a strong chance of a serious defect in the baby (Hoffmann and Johnson 2005). The latent factor analysis confirms that two distinct latent variables underlie abortion attitudes. One involves positive responses to the elective abortion items, and the other involves negative responses to the traumatic abortion item. This serves as strong evidence that elective and traumatic abortion attitudes are distinct categories.

Due to the lack of census data on religious adherents in China, I use the percentage of respondents of a particular religion as a proxy of religious composition in a neighborhood. For instance, the Daoist influence in a neighborhood is captured by the percentage of Daoist respondents living there.

4.3.3   Control variables

I controlled for socioeconomic characteristics, including age, gender (1 = man), education, place of residency (1 = rural), and region. Education is coded into a continuous variable denoting years of formal education respondents received. Household income is measured by the respondents' annual family income and normalized by 1,000 Chinese *yuan*.

CCP membership (1 = Party member) is controlled for. The Chinese government requires members of the Chinese Communist Party to reject any religious or superstitious beliefs, which implies that CCP members would be less likely than non-members to consider the fetus ensouled. Besides, all members are expected to closely follow the CCP's policies and guidelines on social life, such as the birth control program, for which abortion serves as one of the birth control methods together with contraception and sterilization. A study by Nie (2005) shows that party members are more likely than non-members to oppose the continuation of unwanted pregnancy, indicating their tolerant abortion attitude, just as the official discourse implies.

To assess the net effects of different religions on abortion attitudes, I control for religious participation. Existing studies suggest that religious participation, measured by church attendance, is significantly associated with individuals' attitudes toward abortion, and church/service attendance is positively associated with disapproval views of abortion (Harris and Mills 1985; Hess and Rueb 2005; Cochran et al. 1996; Bartkowski et al. 2012). Moreover, studies show that religious teachings' influence on attitudes and behaviors is more due to the

interactions among adherents than to the theological doctrine. For instance, Hess and Rueb

(2005) find no difference between Catholics and Protestants after controlling for church

attendance. Similarly, the study by Bartkowski et al. (2012) shows that infrequently attending

Catholics were not different from religious nones in abortion attitudes. A recent study of Asian

Americans by Wu and Ida (2018) also finds that after controlling for service attendance, non-

Catholic Christians and religious nones have similarly disapproving views of abortion.

Therefore, I control for religious participation to test whether the difference between religious

groups in abortion attitudes is conditioned on religious participation. I code religious

participation into a binary variable where 1 = 'have ever attended religious services in the past 12

months', 0 = 'never attended service'.

Economic development at the neighborhood is controlled to assess the net influence of

religious composition. I first calculate for the neighborhood-level household income, education,

and urbanization by aggregating the information of surveyed respondents from the same

neighborhoods. Then, to avoid the multicollinearity issue between these socioeconomic measures

($r > 0.61$, $p < 0.001$), I create a summated scale based on these three variables to denote the level

of economic development of each neighborhood.

4.4   Results

Table 4.1 presents descriptive statistics. As the table shows, about six-in-ten (63%)

surveyed respondents say that abortion is always right when a fetus is diagnosed with a serious

defect. Only 28 percent of respondents say that abortion is always right when the couple lacks

sufficient income to raise a child. The analytic sample size in this study is 3,253 for the case of

serious birth defects and 3,274 for low income. The survey results from the 2010 CGSS show

that most Chinese people disapprove of abortion, especially in the case of low income, which is

similar to abortion attitudes in the United States. Using pooled data from the General Social Survey (1972–2012), Smith and Son (2013) show that the share of people who say that abortion should be legal is 77 percent in the case of serious defects and 45 percent in the case of low income.[39]

While the general population expresses disapproving views of abortion, there are great variations between religious groups (shown in Figure 4.1). Muslims hold the most unfavorable attitudes toward abortion in both cases of serious birth defects and low income, followed by Christians and Daoists. Buddhists and religious nones show the most favorable views of abortion.

4.4.1 Abortion is always right in the case of low income

Results from the multivariate binary logistic regression models show that religious affiliation has no effect on one's probability of saying that abortion is always right in the case of low income, after controlling for all other socio-demographical factors. The hypothesis that religion affects one's abortion attitude in the case of low income is not supported.

---

[39] Note that the survey in the United States asks respondents whether or not they think it should be possible for a pregnant woman to obtain a legal abortion in various circumstances, which emphasizes the legal aspect of abortion. However, in China, the survey asks respondents whether they consider abortion to be right or wrong, which addresses the moral aspect of abortion practice. The difference in the wording may help to explain the similar approval of abortion in two societies with different cultural contexts.

Table 4.1 Descriptive statistics

	N	Mean/Prop.	SD	Min.	Max.
Abortion is always right (birth defects)	3253	.628			
Abortion is always right (low income)	3274	.278			
Rural Residents	3628	.408			
Party Membership	3628	.118			
Years of Formal Education	3628	8.721	4.790	.000	19.000
Age	3628	47.649	15.233	17.000	94.000
Logged Household Income	3628	10.061	1.045	5.247	14.509
Religious Affiliation	3628				
Religious None		.862			
Buddhist		.058			
Daoist		.026			
Muslim		.027			
Christian		.026			
Religious Practice	3628	.768			
Neighborhood-level development scale	3628	-.053	.937	-2.090	2.070
Percent Daoist	3628	2.696	9.579	.000	88.462
Percent Religious None	3628	87.077	18.335	.000	100.000
Percent Muslim	3628	2.918	14.216	.000	100.000
Percent Christian	3628	2.229	4.386	.000	34.783
Percent Buddhist	3628	5.079	8.654	.000	88.889
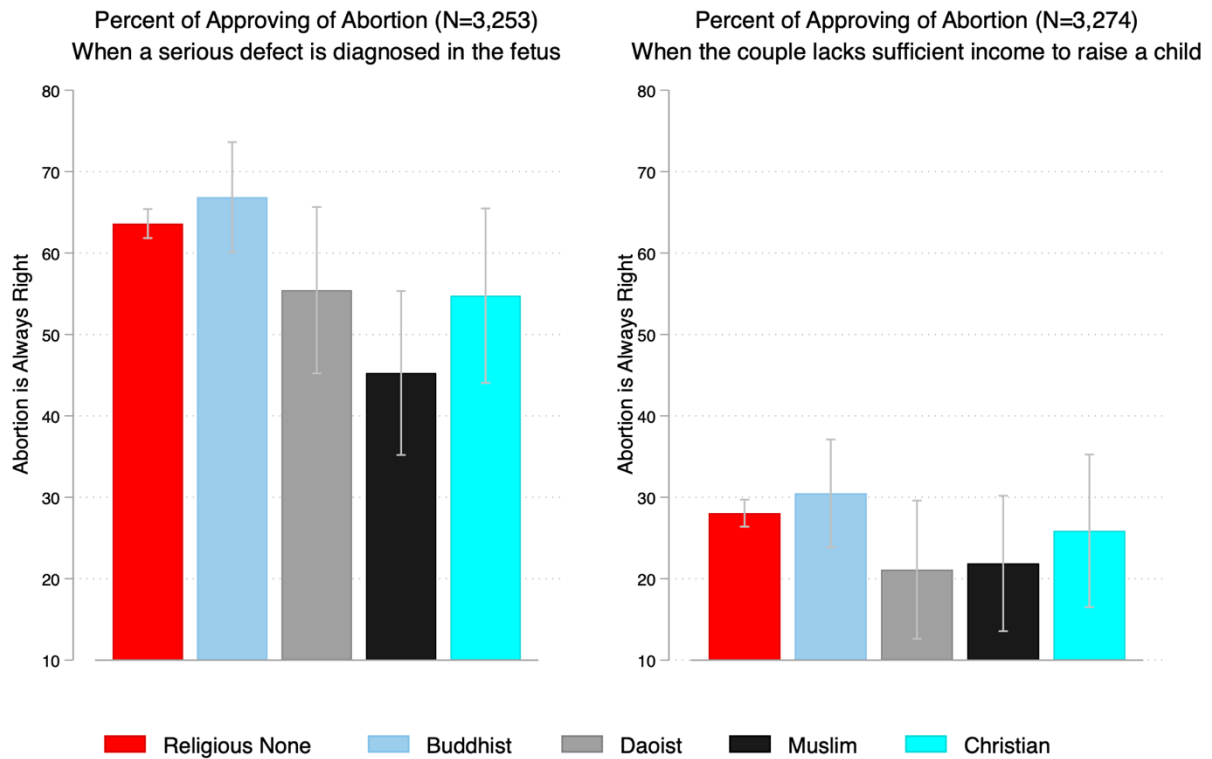
Figure 4.1 Percentage of the respondents saying that abortion is always right

4.4.2   Abortion is always right in the case of serious birth defects

Table 4.2 presents results from multi-level logistic regression models predicting approval

of abortion in the case of serious birth defects. There are about 20 percent of the variations at the

neighborhood level, indicating that abortion attitudes are not randomly distributed across places

(ICC=0.20). The simple model includes religious affiliation only, and the second model (+

Controls) adds social-demographic variables. The results show that there are statistically

significant differences between religious groups ($p < 0.05$).

The third model (+ Religious Practice) includes the religious practice variable. The results

show that religious participation has no impact on one's attitude toward abortion in the case of

serious birth defects, meaning that religious participation does not mediate the difference between religious groups in abortion attitudes.

The final model (+ Percent Daoist) incorporates religious composition at the neighborhood level. To avoid collinearity issues with contextual level measures of all religious groups in the same model (see Marshall and Olson 2018), I include each of these religious composition measures in separate models. The analyses show that among all contextual measures, only percent Daoist is significantly associated with the approval of abortion. Table 4.2 presents the results of the final model with percent Daoist included. The results of the final model show that religious affiliation significantly influences one's approval of abortion, even after controlling for all other factors at the individual and neighborhood levels. Muslims and Christians are less likely than religious nones to say abortion is always right in the case of serious birth defects ($p < 0.05$).

Table 4.2 Logistic estimates for abortion is always right (serious birth defect) (N=3,253)

	+ Religious Affiliation	+ Controls	+ Religious Practice	+ Percent Daoist
Buddhist	1.19	1.16	1.11	1.10
	(0.22)	(0.22)	(0.22)	(0.22)
Daoist	0.89	0.95	0.92	1.25
	(0.24)	(0.25)	(0.25)	(0.37)
Muslim	0.42**	0.50*	0.48*	0.46*bd
	(0.14)	(0.16)	(0.15)	(0.15)
Christian	0.56*	0.58*	0.55*	0.53*bd
	(0.14)	(0.15)	(0.15)	(0.14)
Rural Resident		1.32	1.33	1.34
		(0.25)	(0.25)	(0.26)
Man		0.77**	0.77**	0.78**
		(0.07)	(0.07)	(0.07)
CCP Member		1.01	1.02	1.01
		(0.14)	(0.14)	(0.14)
Age		1.01**	1.01**	1.01**
		(0.00)	(0.00)	(0.00)
Logged Household Income		1.12*	1.11*	1.12*
		(0.06)	(0.06)	(0.06)
Education		1.04**	1.04**	1.04**
		(0.01)	(0.01)	(0.01)
Neighborhood Development Scale		1.32*	1.32*	1.30*
		(0.14)	(0.14)	(0.14)
Never Participated			0.93	0.90
			(0.11)	(0.10)
Percent Daoist				0.98*
				(0.01)
Constant	1.91***	1.94***	2.07***	2.09***
	(0.12)	(0.21)	(0.30)	(0.30)
Var (Level-2)	2.40***	2.10***	2.10***	2.06***
	(0.31)	(0.25)	(0.25)	(0.24)
AIC	4135.08	4094.49	4096.05	4091.52
BIC	4171.61	4173.62	4181.27	4182.83

Exponentiated coefficients; Standard errors in parentheses. [b]Significantly ($p < .05$) different than Buddhist, [d]Daoist, [c]Christian, [m]Muslim. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

I calculate average marginal effects to understand the effect size of religious affiliation because odds ratios do not clearly illustrate the substantive magnitude of an effect (see Long and Freese 2014). As shown in Figure 4.2, Muslims and Christians are less tolerant toward abortion than other religious groups. Meanwhile, there is no significant difference between Buddhists, Daoists, and religious nones in their abortion attitudes in the case of serious birth defects. Specifically, the predicted probability of Muslims saying abortion is always right is 0.47, about 16 percentage points lower than religious nones and about 19 percentage points lower than Buddhists or Daoists ($p < 0.05$). Similarly, the predicted probability of Christians saying abortion is always right is 0.50, and it is 13 percentage points lower than religious nones, 15 points lower than Buddhists, and 17 points lower than Daoists ($p < 0.05$). These findings suggest that affiliating with the so-called western religions is strongly associated with disapproving views of abortion in the case of serious birth defects, whereas affiliating with Chinese religions does not affect one's abortion attitude.

Although affiliating with Islam or Christianity significantly decreases one's approval of abortion, living in a neighborhood with a greater presence of Christians or Muslims, measured by percent Christian/Muslim in the community, does not affect one's abortion attitude. Interestingly, percent Daoist in the neighborhood is negatively associated with approving views of abortion ($p < 0.05$). Figure 4.3 presents the predicted probabilities of the approval of abortion based on neighborhood-level percent Daoist. As the percent Daoist in a community increases, the predicted probability of saying that abortion is always right in the case of serious birth defects decreases. On average, a standard deviation (about ten percent) increase in the percentage of Daoists in the neighborhood is associated with a three-percentage-point decrease in the predicted probability of one saying that abortion is always right ($p < 0.05$). Put differently, living in a

123

neighborhood with more Daoists lowers one's approval of abortion in the case of serious birth defects, regardless of his/her own religious affiliation.

There are some other interesting findings. With control for all other factors, men are less likely to say abortion is always right ($p < 0.01$). Education, age, and logged household income are positively associated with approval views of abortion. The neighborhood-level economic development is associated with less unfavorable abortion views in the case of serious birth defects.
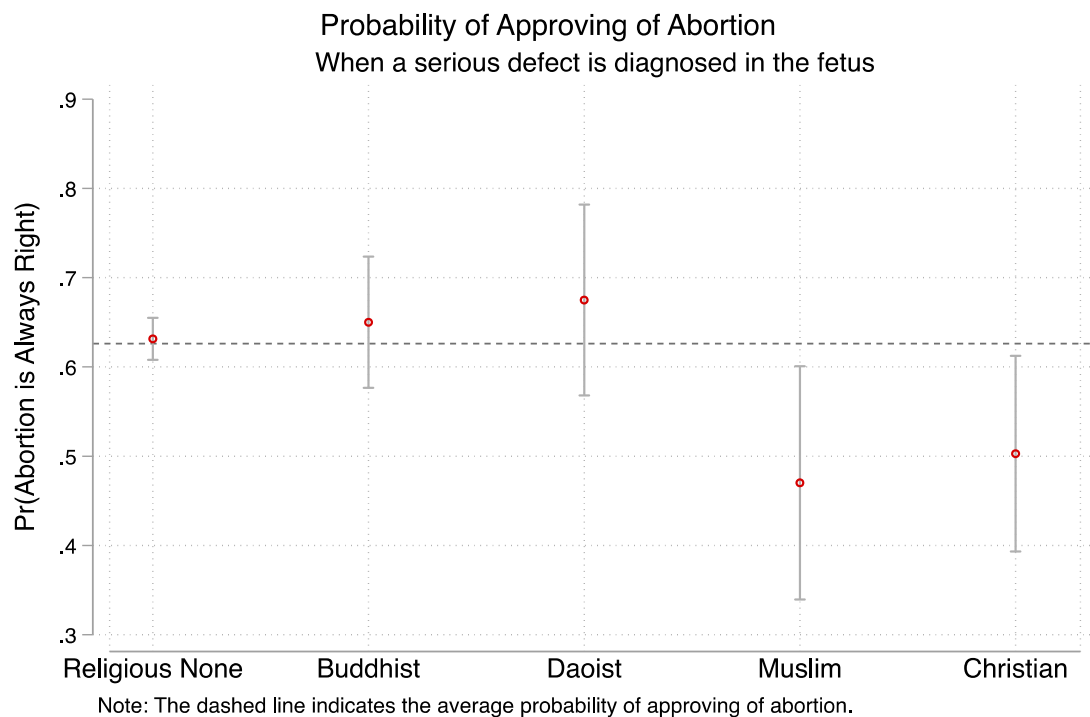

Figure 4.2 Predicted probability of approving of abortion

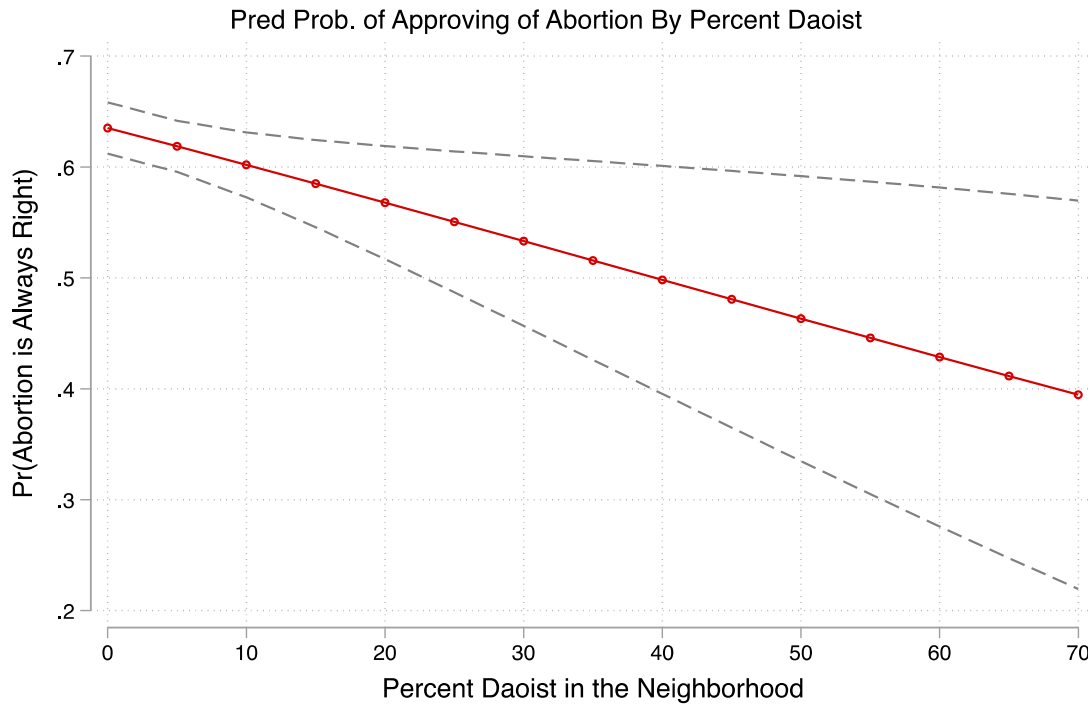Pred Prob. of Approving of Abortion By Percent Daoist

Figure 4.3 Predicted probability of approving of abortion by percent Daoist

Because many Chinese people hold some supernatural beliefs even though they claim to affiliate with no religion (see Chao and Yang 2018), I examine the validity of using religious affiliation as a measure of religious influence in the Chinese context. I explore whether religious belief is a better predictor of approval of abortion. Using respondents' answers to questions on whether they believe in the afterlife, reincarnation, religious miracles, hell, heaven, and nirvana from the 2010 CGSS, I create a binary variable for each item by coding those who answered "somewhat/completely believe" as 1, otherwise 0.

The results show that supernatural beliefs, such as belief in heaven ($p < 0.01$) and belief in religious miracles ($p < 0.05$), negatively associates with one's approval of abortion in the case of serious fetal defects. (Beliefs in any supernatural force/power are not correlated with abortion attitude in the case of low income.) However, after controlling for religious affiliation, supernatural beliefs no longer have any statistically significant effect on the approval of abortion,

meaning that the relationship between supernatural beliefs and the approval of abortion can be explained by religious affiliation. Thus, religious affiliation is a more robust indicator of religious influence in terms of shaping abortion attitudes.

To address the possible heterogeneity within the religious none category, I also examine whether supernatural beliefs may shape abortion attitudes among respondents who reported no religious affiliation. The results, shown in Table 4.3, suggest that holding any supernatural beliefs has no significant effect on one's approval of abortion. Although some religious nones may believe in the supernatural, it appears that their belief is not strong enough to distinguish them from those who hold no supernatural belief in views of abortion.

Table 4.3 Means for dependent variables, with t-statistics for religious nones with and without supernatural beliefs

	Abortion is always right in the case of:					
	Serious defects		Diff.	Low income		Diff.
Belief in the supernatural	Belief	No belief		Belief	No belief	
	Prop.	Prop.	*t*	Prop.	Prop.	*t*
Afterlife	0.60	0.63	-1.06	0.28	0.27	0.05
Heaven	0.59	0.63	-1.32	0.26	0.27	-0.51
Hell	0.59	0.63	-1.35	0.28	0.27	0.14
Religious miracle	0.59	0.63	-0.77	0.21	0.27	-1.19
Reincarnation	0.61	0.63	-0.66	0.28	0.27	0.08
Nirvana	0.70	0.64	0.97	0.34	0.28	1.01
Ancestor	0.67	0.63	1.47	0.28	0.27	0.31

4.5 Discussion and Conclusion

There has been a general belief that the Chinese have little – if any – concern with the morality of terminating unwanted pregnancy (Nie 2005). It is true that the fetus carries little moral weight, and abortion is one fertility control method, according to the dominant official

discourse. However, the assumption that Chinese people hold a liberal abortion attitude is not accurate. Survey results from the 2010 CGSS suggest that the general population is not as tolerant toward abortion as inferred by the state policy.

Analyses of data from the 2010 CGSS suggest that religion – an overlooked factor in the study of abortion in China – plays an important role in shaping individuals' abortion attitudes, specifically, abortion in the case of serious birth defects. First, consistent with findings in western settings, Christians and Muslims hold strong disapproving views of abortion. They are less likely than the rest of the population to say abortion is always right in the case of serious birth defects.

Second, Daoists or Buddhists are not different from religious nones in their attitudes toward abortion. This finding resonates with the fact that Buddhism, Daoism, and Confucianism are highly intertwined and share teachings on the beginning of life and abortion (Nie 2005). On the other hand, the null effect may be a reflection of the weak influence of the teachings of Buddhism and Daoism on adherents because of their organizational characteristics. Buddhism and Daoism do not require service attendance (Zhai 2007), and their religious activities are often loosely organized and with an emphasis on self-discipline and meditation (Kim and Song 2007). By contrast, in Christianity (mainly Protestantism), regular service attendance and group activities such as prayer meetings and bible studies help foster stable social networks and reinforce religious teachings among members (Kim and Song 2007). Studies point out that religious networks are critical to ensure Christians follow their teachings and let religious values guide their attitudes and behaviors (Ellison and McFarland 2011; Jung and Olson 2014; Eitle 2011). Therefore, the null effect of Buddhism or Daoism may not be attributable to their teachings *per se*, but the fact that their teachings have limited influence on adherents' attitudes

and behaviors due to a lack of community life and organizational contacts (see Zhai 2007).

Third, while Islam and Christianity have a strong influence on the disapproval of abortion at the individual level, no effects are found at the neighborhood level, lending little evidence for the "moral communities" hypothesis. Living in neighborhoods with a higher concentration of Muslims/Christians has no impact on one's approving views of abortion (in the case of serious birth defects). There are several explanations for this null effect. The share of Muslims in the neighborhood is highly correlated with affiliation with Islam because Muslims in China – as ethnic minorities – primarily concentrate in autonomous regions, including prefectures, counties, and villages, as a way of preserving their traditions and cultures.[40] The geographic concentration of Muslims implies their religious teachings may not enter the life of non-Muslims or the Han majority. As for Christianity, the null effect may indicate its limited influence on shaping local cultures due to heavy regulation on Christian religious activities. Indeed, the Chinese government prohibits Christian groups from advocating for values that deviate from the official discourse. For instance, nearly all Christian activities in China focus on social welfare programs, such as caring for the elderly and promoting anti-drugs, and none of them is pro-life related (see CCC&TSPM 2018).[41]

Last, although Daoism has no effect on abortion attitude at the individual level, it is associated with less approval of abortion at the neighborhood level. Respondents living in areas with a higher percentage of Daoists are less likely to approve of abortion in the case of serious birth defects. This finding further confirms that religious influence on individuals largely depends on whether the teachings are effectively conveyed. A closer examination of the data

---

[40] Nearly all Muslims in the 2010 CGSS sample are ethnic minority.
[41] CCC&TSPM refers to China Christian Council and National Committee of Three-Self Patriotic Movement of the Protestant Churches in China. These activities listed here are from the annual report of ministry of Protestant churches. Catholic activities on social service are similar, focusing on caring and helping people in need (see Chen 2011).

reveals that neighborhoods with a dense concentration of Daoists are in provinces, such as Guangdong and Fujian, with strong clan associations in local communities. For example, in Fujian, there are over 10,000 ancestral halls, buildings dedicated to venerating ancestors of a particular family or clan, according to Gan (2019). The substantial presence of ancestral halls indicates not only Confucian's dominant influence but also powerful clan associations that help reinforce Confucian norms and values among local residents (Peng 2010; Tsai 2002). Subsequently, in these areas, teachings from traditional Chinese religions on abortion – despite lacking a strong opposing attitude – can effectively foster disapproving views of abortion among people living there, regardless of their own religious affiliations. By contrast, in areas where Daoists are few, religious teachings may not become part of the social norms. Furthermore, because the effects of the individual's religious commitment will be muffled and curtailed where the religious sanctioning system is not pervasive (Stark 1996), Daoist teachings even have little impact on Daoists themselves.

Some limitations need to be mentioned. First, this study examines religious effects on abortion attitudes, not abortion practices. It is important to acknowledge the potential inconsistency between one's abortion attitude and actual abortion practice. For instance, Chu (2001) found that although 92 percent of the interviewed women in rural China said it was not right to abort female fetuses, they practiced abortion under pressure from the husband or parents-in-law. Nevertheless, it is reasonable to believe that people denouncing abortion are less likely to practice abortion than those with liberal views of abortion. Second, the religious affiliation measure does not take into account Confucianism. Even though Buddhism, Daoism, and Confucian traditions are highly intertwined, exploring each religion's independent influence is critical to understand how religion shapes people's attitudes and behaviors in China. Third, the

129

sample size is small and thus inefficient to explore the interaction effects between religious factors and other contextual measures. Future research is needed to explore how religion influences abortion attitudes and practices and whether the effects may vary in different contexts to contribute to a better understanding of religion's impact on social life and Chinese society.

Despite the limitations, this study bridges the scholarly gap by bringing religion into the study of abortion in China. By analyzing the relationship between religion and approval of abortion at both individual and contextual levels, the study shows that religion is not only an important personal trait but also a critical group property. Religion, in the form of religious presence in a place, can produce conformity to its norms among both its followers and others who are not religious.

CHAPTER 5.   CONCLUSION AND DISCUSSION

5.1   Summary and Discussion of Findings

The dissertation is the first empirical study exploring how religion affects sex ratios and influences son preferences and abortion attitudes in China. I first examine the relationship between religious geography and county-level sex ratios, then investigate the effects of religious factors on individuals' son preferences, sex selection decisions, and abortion attitudes – major causes of imbalanced sex ratios. This dissertation contributes a nuanced understanding of the sex ratio and its determinants in China by highlighting the role of religion in shaping demographic processes.

Drawing data from the 2004 China Economic Census, the 2000 China Population Census, and the 2010 Chinese General Social Survey, I demonstrate that religion has substantial effects on sex ratio trends in China via shaping individuals' abortion attitudes and their values and decisions related to son preference. Religious groups vary in the levels of preferences for sons over daughters and in their fertility decisions to achieve son preference – continue childbearing or practice sex-selective abortion, which will skew the sex ratio of their children to varying degrees. Meanwhile, the influence of some religions can spill over to the local community, while others may not have that kind of effect. For example, Daoist teachings are found to foster disapproval of abortion among not exclusively Daoists, but also non-Daoists, living there. As religious teachings can influence the local subcultures in an area dominated by a particular religious tradition and shape the attitudes and behaviors of people, regardless of their own religious affiliations, a county's sex ratio is tied to its religious geography.

The analyses of the relationship between religious geography, measured by the number of officially registered religious organizations, and the county-level sex ratio at birth, defined as

the sex ratio of children under age five, provide an overall picture of how religion affects demographic trends in China. The findings suggest that different religions affect county-level sex ratios in unique ways. Specifically, a greater presence of Daoist temples is associated with more imbalanced sex ratios, while the presence of Islamic and Buddhist places of worship helps mitigate male-biased sex ratios. The number of Christian (Protestant or Catholic) churches in the county does not affect sex ratios.

To understand the linkage between religious geography and county-levels sex ratios, I examine the relationships between religion and son preference, sex selection decisions, and abortion attitudes at the individual level. I find that Daoists tend to hold strong son preferences and are more likely than Christians, Muslims, and religious nones to practice sex selection in favor of boys. This finding helps explain why in counties with many Daoist temples – which are often associated with a high share of the Daoist population, sex ratios tend to be biased toward boys. By contrast, despite holding similarly strong son preference as Daoists, Muslims are less likely to practice sex selection, mainly attributable to their strong opposition to abortion. Thus, sex ratios in counties with more Islamic mosques are less male-biased, and this relationship holds even after controlling for all other factors, including GDP per capita, immigration, ethnic composition, urbanization, and birth policy.

Some findings from the individual-level analyses appear to contradict with those from the county level. For instance, the results suggest that Buddhists are not different from religious nones in son preference, fertility decision about sex selection, and abortion attitude. Yet, a greater Buddhist presence at the county level is associated with less male-biased sex ratios. Conversely, the county-level Christian presence has no impact on sex ratios, even though Christians tend to hold weak son preference and rarely practice sex selection in favor of boys. In

addition, the finding that Daoists are the most likely to practice sex-selective abortions is inconsistent with the fact that living in a neighborhood with many Daoists reduces one's approval of abortion.

The mixed evidence points to the idea that religious influence on individual attitudes and behaviors can sometimes be muffled and can enter into the lives of non-religious people living in an area when it is the dominant religious tradition. Christianity, for instance, has teachings on childbearing and abortion that are effective among Christians – Christians hold weak son preference and rarely practice sex selection in favor of sons. However, it has a limited impact on non-Christians living in local communities – living in neighborhoods with many Christians does not affect non-Christians' abortion attitudes (in the case of serious birth defects). On the one hand, it suggests that even in areas with a dominant Christian presence, because of heavy regulations by the government on Christian evangelical activities, Christianity has not grown prevalent enough to spill over its influence to non-Christians who have long been influenced by the Confucian tradition.

On the other hand, the limited influence of Christianity on local subcultures may be attributable to the Christian group's internal diversity, with variations in their adoption (or rejection) of Confucian values and rituals. For example, in the United States, Yang (1999) observed that, while some Chinese evangelical Protestants reject any possible "pagan" practices in Chinese traditions and distance themselves from ancestor worship, those in Catholic and mainline churches have integrated Confucian rituals into their religious practices. A national survey in China shows that about two-thirds of Protestant Christians claimed that their conversion was due to their illness being cured miraculously by God (Jin and Qiu 2010). Several studies (Li 2012; Liang and Qi 2015), based on interviews or observations of Christians in rural

China, suggest that many Christians resemble folk religionists, who worship multiple deities for blessings. To some extent, they share the view that the Christian God is one of many, capable gods. For example, Zhou and Sun (2017) interviewed Protestant Christians in a rural village and found that some of them attended church services only when they fell sick or ill, some gave up their Christian belief after the death of a family member, while others held firm faith and devoted themselves to the Christian God. The variations within the Christian community help explain Christianity's limited impact on public attitudes, even in a place with many Christians.

The findings of Daoists further highlight religion as a community trait to shape local cultures. Some Daoist teachings may not have an effective influence on individuals' attitudes and behaviors, including Daoists, in areas where Daoists are few. However, in areas where Daoists are many, Daoist values and teachings are more likely to enter public life, influencing not only Daoists but also non-Daoists living in the area. In particular, most Daoists in the sample are from Fujian – a province with a strong Confucian influence and powerful clan associations. Researchers (e.g., Peng 2010; Tsai 2002) point out that communities with powerful clan associations are better positioned to foster compliance with informal social norms, even at the expense of violating formal laws. For instance, villagers in communities with dense clan associations are found to have more children than those in communities with loose or few clan associations under the one-child policy (Peng 2010). More importantly, the strong desire for sons, together with disapproving views of abortion in these communities, is likely to encourage people to carry their unauthorized pregnancies to term, particularly when they know the fetus is male. The greater efforts of preserving unauthorized male fetuses over female ones would result in male-biased sex ratios as well as higher fertility rates under the one-child policy. In other words, male-biased sex ratios in areas with many Daoists may not be a result of their aborting

unwanted female fetuses but the tendency to violate the policy and carry unauthorized pregnancies of males to term.

5.2   Data limitations

Each study acknowledges specific limitations; however, there is one major limitation I would like to discuss in further detail: measures of religious influence. In the first study, I use the number of officially registered religious organizations as an indicator of religious presence.On the one hand, this measurement is valid in capturing the visibility of one religion in the county. On the other hand, the overwhelming physical presence of temples or churches in a place might not equate to the pervasive influence of a particular religion. Christianity, for instance, its influence may prevail in a place with only a few official churches but many house churches are hidden from the official record. In this case, the number of officially registered organizations fails to capture Christianity's actual presence.

Furthermore, building churches or temples in China is often tied to local economic conditions, as evident in the positive association between economic growth and the number of Christian churches in the province (Wang and Lin 2014). Besides, many local officials build Buddhist or Daoist temples to boost tourism and local economic development other than to meet the religious demand of residents (Chan 2005). Thus, a better measurement of religious geography is needed to assess the net effect between religious presence and other social and demographic outcomes.

In the second and third studies, I use religious affiliation as an indicator of religious influence at the individual level. This measurement – though valid in capturing religious influence in the western context – can be limited when studying religion in Chinese society. As scholars (e.g., Chao and Yang 2018) point out, many Chinese people may engage in religious

135

practices without considering themselves religious, which brings in the heterogeneity within the religious none category. Additionally, because of the fluid boundaries of Chinese religions, people who self-identify with one religion may regularly engage in activities or practices of other religions. For example, Leamaster and Hu (2014) find that self-identified Buddhists in China not only hold folk religious beliefs and actively participate in folk religious practices, but also are even more likely than religious nones to engage in folk religious practices and beliefs. Therefore, more nuanced measures of religiosity are needed to understand the role that religion plays in shaping individuals' attitudes and behaviors in China.

5.3   Contributions

This dissertation contributes to the literature on religion and demographic studies in China in several ways. Existing research has documented the importance of cultural factors in shaping demographic processes. But studies in China overlook religion and its impact on sex ratio trends through influencing individuals' attitudes and decisions related to son preference. This study is the first empirical one that investigates these linkages. By including religion as a key factor, this study provides a nuanced understanding of variations in the imbalanced sex ratio and its major determinants – son preference and abortion. The findings of this study show that the local religious context is as important a factor as economic development in shaping county-level sex ratios in China.

Another contribution of this dissertation is that it examines religious influences on individuals' son preferences and their sex selection decisions. Past research has shown that son preference is the root cause for discrimination against daughters, which further leads to excessive female infant mortality and imbalanced sex ratios in society (Chu 2001; Ebenstein 2010; Greenhalgh 2008; Gu and Roy 1995; Jiang et al. 2011; Johnson et al. 1998; Nie 2010; Poston

136

2002; Poston et al. 1997). Many scholars (e.g., Li and Lavely 2003; Dupta et al. 2003; Ebenstein and Leung 2010) contend that Confucian tradition is the culprit for parents favoring boys while discriminating against girls. Past research, however, pays little attention to religious factors, even though different religions in China are intertwined with Confucianism in unique ways and may reinforce (or weaken) the Confucian tradition of son preference. This study contributes to the literature by demonstrating that religious groups differ in their son preference levels and their decisions about whether and how to achieve their preferences, which has important implications of sex ratio trends.

By employing a multi-level approach, this dissertation moves beyond the analysis of religion and abortion attitude at the individual level, contributing to a better understanding of the impact of religion on social life in China. Past research has documented that not only individual religiosity is a powerful predictor for abortion attitudes, but also religious context can influence individuals' attitudes through shaping local subcultures. This dissertation examines how different religious contexts may affect the approval of abortion. This study highlights religion both as an important personal trait that affects the views of abortion among its followers and as an important group property that can foster conformity among local residents who are not religious.

Moreover, in this dissertation, analyzing differences between various religious groups contributes to de-mystifying religion in China and its influence on the way of living of Chinese people. The finding that Buddhists, Daoists, and religious nones are similar in aspects, such as sex selection of children (the gender of the first child) and abortion attitudes, confirms the fluid boundaries between Chinese religions. It shows that religious nones in China are not independent of the influence of Confucian traditions. In addition, the study contributes to a nuanced

understanding of Christianity's influence on public life in China, which is probably curtailed not only by the regulative religious policy but also the dominant influence of Confucian values.

The finding of the null effect of Christian presence on sex ratios, son preference, and abortion attitudes also contributes to the on-going discussion of Chinese people's belief system, how they understand supernatural beliefs and navigate their Christian beliefs. For example, a closer examination of Confucian classics shows that the principle of reciprocity – pay a debt of gratitude for blessings received – is the key to understand why people worship the supernatural – deceased ancestors and other ghosts/deities (see Qin 2020). This principle is best exemplified by ancestor worship: worshipping one's own ancestors to offer gratitude to deceased parents for giving him/her a life. It also helps explain the worship of deities that are not one's own ancestors, such as some local deities in the Confucian tradition. People worship these deities to express their gratitude for blessings received. The same logic applies to the mourning ritual: people are expected to mourn for a longer period of time for the death of someone to whom they are indebted (see Zhou 2015). The prevalence of conversion to Christianity after illness being cured among Chinese people (Zhou and Sun 2017) appears to confirm the principle of reciprocity in worshipping the supernatural. Although Chinese Christians actively engage in church activities, many of them have been so deeply influenced by Confucian values that they worship the Christian God in the same way that folk religionists worship local deities. Consequently, the unique influence of Christianity on local cultures, as well as on some Christians, can be limited.

Last, this study contributes to the discussion of the interaction between modern values and traditional beliefs; Chinese people adopt some modern values such as fewer children and self-choice marriage while resisting other values such as gender equality, as opposed to son preference. The developmental idealism framework – which has been held in high regard by

demographers and policy-makers – suggests that as economic development proceeds, individuals further rid themselves of "traditional" beliefs in favor of newer, more "modern," beliefs and practices (see Thornton 2001). Since the establishment of the People's Republic of China in 1949, the Chinese government has implemented many of the elements of developmental idealism, such as The New Marriage Law issued in 1950 and family planning policy (including abortion as a fertility control method) (Thornton and Xie 2016). Along with social modernization, some modern family values, including neolocal residence, self-choice marriage, late marriage for women, and fewer children, have become prevalent among Chinese people (Lai and Thornton 2015). Nevertheless, the preference for sons over daughters has not faded away.

Chinese people's selective adoption of modern family values is likely to result from the fact that these modern values were imposed upon them by the Chinese government rather than produced from the everyday lives of Chinese people. Thornton et al. (2001) point out that as many of the elements of developmental idealism are deeply rooted in the historical cultures of Western societies, non-Western actors have had to construct their own reactions. They either resist, modify, or accept these elements according to their personal ideals, in particular, religious or cultural heritage (Thornton 2001). However, in China, the spread of developmental idealism took on the form of a top-down movement of disseminating modern values through formal and informal channels. The state played a critical role in fostering the transition of family life from a traditional one characterized by male dominance and patriarchy, to a modern one, which emphasizes individuality and autonomy (Yan 2003). As a result, Chinese people hold a mixture of modern and traditional values.

Chinese people's selective adoption of modern values partially helps explain China's highly imbalanced sex ratio. As this study shows, Buddhists and religious nones are more likely

to have a boy as opposed to a girl for the first (or the single) child; under the one-child policy, they appear to prefer a small family while insisting on having at least one son. To some extent, this finding echoes Yan's observation of the changes in private life in northeastern China between 1989 and 1999. He found that village youths had developed a flawed understanding of modern lifestyle during the transformation of family values fostered by the state (Yan 2003). For instance, regarding individuality, village youths emphasized individual rights but denied the commitment to civic duty (see Yan 2003). According to Yan (2003), it is the consequence of the lack of public life at the local level since the state has destroyed many community rituals and family ceremonies, such as ancestor worship, during the Cultural Revolution. My findings of Daoists lend support for his argument about the vital connection between community rituals and traditional values. The fact that Daoists are more likely than other groups, such as Buddhists and religious nones, to comply with traditional values and attitudes of childbearing and abortion has to do with the dense, powerful clan associations in which many Daoists are embedded. In a word, this dissertation provides insights into the interplay between modern and traditional values among Chinese people.

5.4   Potential future studies

I believe the relationship between religion and demographic behaviors deserves further research. Although a vast majority of the Chinese population identifies with no religion, due to the rapid growth of the religious population, religion and its influence on the demographic process is never neglectable. Systematic studies of how religious groups vary in attitudes and decisions about son preference and sex selection decisions are particularly important to understand sex ratio and fertility trends in China, considering the recent relaxed birth policy.

140

One direction of future research could be the interplay between economic development and religion – how factors such as education and income may mediate religious influence on county sex ratios and individual values and attitudes toward son preference and abortion. For instance, religious teachings may have less influence among the well-educated than those with little education. On the other hand, educated people may be more empowered to pursue and comply with their religious beliefs and values.

Another direction of future research can be gender and religion – how gender may mediate religious effects on issues related to gender equality. The study shows that men are consistently less likely than women to say abortion is always right, but they are not different in their son preference levels. It is of scholarly interest to investigate gender differences within and between religious groups.

Religious beliefs in China can be one more direction for future studies. Data employed in this study suggests that about 13 percent of Chinese people are religious and five percent are Buddhists. According to data from the 2007 Chinese Spiritual Life Survey, however, over 22 percent of Chinese people are religious, and Buddhists make up 17 percent of the total population. Better measures on religious practices and beliefs are needed in future research to assess the relationship between religion and demographic behaviors in China.

The relations between Confucianism and different religions in China deserve more scholarly attention as Confucian values are deeply embedded in Chinese society – the belief in ancestral spirits is substantial across all religious groups (as Table 3.1 shows). Future studies are needed to explore the potential subgroups within each religious group and better understand how much different religions have an independent influence on not only individual attitudes and behaviors but also public life.

REFERENCES

Abadie, Alberto, Susan Athey, Guido Imbens, and Jeffrey Wooldridge. 2017. "When Should You Adjust Standard Errors for Clustering?" Cambridge, MA: National Bureau of Economic Research.

Adamczyk, Amy, Katharine A. Boyd, and Brittany E. Hayes. 2016. "Place Matters: Contextualizing the Roles of Religion and Race for Understanding Americans' Attitudes about Homosexuality." *Social Science Research* 57 (May): 1–16.

Adamczyk, Amy, and Margrét Valdimarsdóttir. 2017. "Understanding Americans' Abortion Attitudes: The Role of the Local Religious Context." *Social Science Research*, December.

Ahmed, Leila. 1992. *Women and Gender in Islam: Historical Roots of a Modern Debate*. New Haven: Yale University Press.

Allendorf, Keera. 2012. "Like Daughter, Like Son? Fertility Decline and the Transformation of Gender Systems in the Family." *Demographic Research* 27 (October): 429–54.

———. 2015. "Fertility Decline, Gender Composition of Families, and Expectations of Old Age Support." *Population Research and Policy Review* 34 (4): 511–39.

Allison, Paul. 2012. "When Can You Safely Ignore Multicollinearity?" Statistical Horizons. 2012. https://statisticalhorizons.com/multicollinearity.

Almond, Douglas, Lena Edlund, and Kevin Milligan. 2013. "Son Preference and the Persistence of Culture: Evidence from South and East Asian Immigrants to Canada." *Population and Development Review* 39 (1): 75–95.

Altindag, Onur. 2016. "Son Preference, Fertility Decline, and the Non-missing Girls of Turkey." *Demography* 53 (2): 541–66.

Ammerman, Nancy T. 2013. *Sacred Stories, Spiritual Tribes: Finding Religion in Everyday Life*. New York: Oxford University Press.

Anselin, Luc. 1988. *Spatial Econometrics: Methods and Models*. Dorddrecht: Kluwer Academic Publishers.

———. 2001. "Spatial Econometrics." *A Companion to Theoretical Econometrics* 310330.

———. 2004. "Exploring Spatial Data with *GeoDa*^{TM}: A Workbook." *Urbana* 51 (61801): 309.

Anselin, Luc, and Serge Rey. 1991. "The Performance of Tests for Spatial Dependence in a Linear Regression (91-13)."

Anselin, Luc, and Sergio J Rey. 2014. *Modern Spatial Econometrics in Practice: A Guide to GeoDa, GeoDaSpace and PySAL.*

Arnold, Fred, and Eddie D.C. Kuo. 1984. "The Value of Daughters and Sons: A Comparative Study of the Gender Preferences of Parents." *Journal of Comparative Family Studies* 15 (2): 299–318.

Arnold, Fred, and Zhaoxiang Liu. 1986. "Sex Preference, Fertility, and Family Planning in China." *Population and Development Review* 12 (2): 221–46.

Asia Harvest. 2020. "How Many Christian Are in China?". https://asiaharvest.org/how-many-christian-are-in-china/.

Attané, Isabelle. 2009. "The Determinants of Discrimination against Daughters in China: Evidence from a Provincial-Level Analysis." *Population Studies* 63 (1): 87–102.

Attané, Isabelle. 2013. *The Demographic Masculinization of China: Hoping for a Son*. Springer International Publishing Switzerland.

Banister, Judith. 2004. "Shortage of Girls in China Today." *Journal of Population Research* 21 (1): 19–45.

Bartkowski, John P., Aida I. Ramos-Wada, Chris G. Ellison, and Gabriel A. Acevedo. 2012. "Faith, Race-Ethnicity, and Public Policy Preferences: Religious Schemas and Abortion Attitudes Among U.S. Latinos." *Journal for the Scientific Study of Religion* 51 (2): 343–58.

Basten, Stuart, and Quanbao Jiang. 2014. "China's Family Planning Policies: Recent Reforms and Future Prospects." *Studies in Family Planning* 45 (4): 493–509.

Basu, Deepankar, and Robert De Jong. 2010. "Son Targeting Fertility Behavior: Some Consequences and Determinants." *Demography* 47 (2): 521–36.

Behrman, Julia, and Sara Duvisac. 2017. "The Relationship Between Women's Paid Employment and Women's Stated Son Preference in India." *Demographic Research* 36 (May): 1601–36.

Berger, Peter L. 2012. "Is Confucianism a Religion?" *The American Interest* (blog). February 15, 2012. https://www.the-american-interest.com/2012/02/15/is-confucianism-a-religion/.

Bharati, Susmita, Suparna Shome, Manoranjan Pal, Prabir Chaudhury, and Premananda Bharati. 2011. "Is Son Preference Pervasive in India?" *Journal of Gender Studies* 20 (3): 291–98.

Bhat, P. N. Mari, and A. J. Francis Zavier. 2007. "Factors Influencing the Use of Prenatal Diagnostic Techniques and the Sex Ratio at Birth in India." *Economic and Political Weekly* 42 (24): 2292–2303.

Bhattacharjya, Debarun, Anant Sudarshan, Shripad Tuljapurkar, Ross Shachter, and Marcus Feldman. 2008. "How Can Economic Schemes Curtail the Increasing Sex Ratio at Birth in China?" *Demographic Research* 19 (October): 1831–50.

Bianchi, Suzanne M., Melissa A. Milkie, Liana C. Sayer, and John P. Robinson. 2000. "Is Anyone Doing the Housework? Trends in the Gender Division of Household Labor." *Social Forces* 79 (1): 191.

Bien, Cedric H., Yong Cai, Michael E. Emch, William Parish, and Joseph D. Tucker. 2013. "High Adult Sex Ratios and Risky Sexual Behaviors: A Systematic Review." *PLOS ONE* 8 (8): e71580.

Bignami-Van Assche, Simona. 2004. "A Different Perspective on the Imbalance of Reported Sex Ratios at Birth in Rural China" 4 (2): 18.

Blumberg, Rae Lesser. 1984. "A General Theory of Gender Stratification." *Sociological Theory* 2: 23–101.

Boer, Andrea den, and Valerie Hudson. 2017. "Patrilineality, Son Preference, and Sex Selection in South Korea and Vietnam." *Population and Development Review* 43 (1): 119–147.

Bongaarts, John. 2001. "Fertility and Reproductive Preferences in Post-Transitional Societies." *Population and Development Review* 27: 260–81.

———. 2013. "The Implementation of Preferences for Male Offspring." *Population and Development Review* 39 (2): 185–208.

Bongaarts, John, and Robert G. Potter. 1983. *Fertility, Biology, and Behavior: An Analysis of the Proximate Determinants*. Elsevier.

Borooah, Vani, and Sriya Iyer. 2004. "Religion and Fertility in India: The Role of 'Son Preference' and 'Daughter Aversion,'" https://doi.org/10.17863/CAM.5410.

Brewster, Karin L., and Ronald R. Rindfuss. 2000. "Fertility and Women's Employment in Industrialized Nations." *Annual Review of Sociology* 26 (1): 271–96.

"Buddhism - An Introduction." 2014. BBC. 2014. http://www.bbc.co.uk/schools/religion/buddhism/.

Buddhist Association of China. 2012. "A Brief Introduction to the Buddhist Association of China." 2012. http://www.chinabuddhism.com.cn/js/jj/2012-04-20/869.html.

Cai, Yong. 2010. "China's Below-Replacement Fertility: Government Policy or Socioeconomic Development?" *Population and Development Review* 36 (3): 419–40.

Cai, Yong, and William Lavely. 2003. "China's Missing Girls: Numerical Estimates and Effects on Population Growth." *China Review* 3 (2): 13–29.

———. 2007. "Child Sex Ratios and Their Regional Variation." In *Transition and Challenge: China's Population at the Beginning of the 21st Century*, edited by Zhongwei Zhao and Fei Guo, 108–23. Oxford: Oxford University Press.

Cao, Nanlai. 2010. *Constructing China's Jerusalem: Christians, Power, and Place in Contemporary Wenzhou*. Stanford University Press.

CCC&TSPM. 2018. "Annual Report on Social Service Ministry (2018)." http://www.ccctspm.org/proworker.

Chakraborty, Tanika, and Sukkoo Kim. 2010. "Kinship Institutions and Sex Ratios in India." *Demography* 47 (4): 989–1012.

Chan, Selina Ching. 2005. "Temple-Building and Heritage in China." *Ethnology* 44 (1): 65–79.

Chao, L. Luke, and Fenggang Yang. 2018. "Measuring Religiosity in a Religiously Diverse Society: The China Case." *Social Science Research* 74 (August): 187–95.

Charrad, Mounira. 2001. *States and Women's Rights: The Making of Postcolonial Tunisia, Algeria, and Morocco*. Univ of California Press.

Charrad, Mounira M. 2009. "Kinship, Islam, or Oil: Culprits of Gender Inequality?" *Politics & Gender* 5 (4): 546–53.

Chau, Adam Yuet. 2010. *Religion in Contemporary China: Revitalization and Innovation*. Routledge.

Chen, Feinian. 2005. "Residential Patterns of Parents and Their Married Children in Contemporary China: A Life Course Approach." *Population Research and Policy Review* 24 (2): 125–148.

Ch'en, Kenneth. 1968. "Filial Piety in Chinese Buddhism." *Harvard Journal of Asiatic Studies* 28: 81–97.

Chen, Ruixue. 2011. "Catholic Diocese of Xi'an - Social Service." 2011. http://www.chinacatholic.cn/html/report/18070564-1.htm.

Chen, Wei. 2007. "Induced Abortion and Its Demographic Consequences." In *Transition and Challenge: China's Population at the Beginning of the 21st Century*, edited by Zhongwei Zhao and Fei Guo, 87–107. Oxford: Oxford University Press.

Chen, Yuyu, Hongbin Li, and Lingsheng Meng. 2013. "Prenatal Sex Selection and Missing Girls in China: Evidence from the Diffusion of Diagnostic Ultrasound." *Journal of Human Resources* 48 (1): 36–70.

Chu, C. Y. Cyrus, Yu Xie, and Ruoh rong Yu. 2011. "Co-residence With Elderly Parents: A Comparative Study of Southeast China and Taiwan." *Journal of Marriage and Family* 73 (1): 120–35.

Chu, C. Y. Cyrus, and Ruoh-Rong Yu. 2010. *Understanding Chinese Families: A Comparative Study of Taiwan and Southeast China*. Oxford: Oxford University Press.

Chu, Junhong. 2001. "Prenatal Sex Determination and Sex-Selective Abortion in Rural Central China." *Population and Development Review* 27 (2): 259–81.

Chung, Woojin. 2007. "The Relation of Son Preference and Religion to Induced Abortion: The Case of South Korea." *Journal of Biosocial Science* 39 (05): 707–707. https://doi.org/10.1017/S0021932007001988.

Chung, Woojin, and Monica Das Gupta. 2007. "The Decline of Son Preference in South Korea: The Roles of Development and Public Policy." *Population and Development Review* 33 (4): 757–783.

Clark, Shelley. 2000. "Son Preference and Sex Composition of Children: Evidence from India." *Demography* 37 (1): 95–108.

Coale, Ansley J., and Judith Banister. 1994. "Five Decades of Missing Females in China." *Demography* 31 (3): 459–79.

Cochran, John K., Mitchell B. Chamlin, Leonard Beeghley, Angela Harnden, and Brenda Sims Blackwell. 1996. "Religious Stability, Endogamy, and the Effects of Personal Religiosity on Attitudes toward Abortion." *Sociology of Religion* 57 (3): 291–309.

Combs, Michael W., and Susan Welch. 1982. "Blacks, Whites, and Attitudes Toward Abortion." *The Public Opinion Quarterly* 46 (4): 510–20. https://www.jstor.org/stable/2748771.

Cooney, Rosemary Santana, Jin Wei, and Mary G. Powers. 1991. "The One Child Certificate in Hebei Province, China: Acceptance and Consequence, 1979–1988." *Population Research and Policy Review* 10 (2): 137–155.

Cooray, Arusha, and Niklas Potrafke. 2011. "Gender Inequality in Education: Political Institutions or Culture and Religion?" *European Journal of Political Economy* 27 (2): 268–80.

Croll, Elisabeth. 2000. *Endangered Daughters: Discrimination and Development in Asia*. Psychology Press.

D'Antonio, William V., and Steven Stack. 1980. "Religion, Ideal Family Size, and Abortion: Extending Renzi's Hypothesis." *Journal for the Scientific Study of Religion* 19 (4): 397–408.

Daragahi, Borzou. 2008. "Abortions on the Rise in Mideast." 2008. http://articles.latimes.com/2008/jun/29/world/fg-abortion29.

Denton, Frank T, and Byron G Spencer. 2014. "Exploring the Population Implications of Male Preference When the Sex Probabilities at Birth Can Be Altered." *Demographic Research* 31 (October): 757–78.

Diamond-Smith, Nadia, and David Bishai. 2015. "Evidence of Self-Correction of Child Sex Ratios in India: A District-Level Analysis of Child Sex Ratios From 1981 to 2011." *Demography* 52 (2): 641–66.

Ding, Qu Jian, and Therese Hesketh. 2006. "Family Size, Fertility Preferences, and Sex Ratio in China in the Era of the One Child Family Policy: Results from National Family Planning and Reproductive Health Survey." *BMJ: British Medical Journal* 333 (7564): 371–73.

Dunn, Nicholas. 2011. "Abortion, Ijtihad, and the Rise of Progressive Islam." *Human Life Review* 37 (1/2): 53–62.

Ebaugh, Helen Rose Fuchs, and C. Allen Haney. 1980. "Shifts in Abortion Attitudes: 1972-1978." *Journal of Marriage and Family* 42 (3): 491–99. https://doi.org/10.2307/351894.

Ebenstein, Avraham. 2010. "The 'Missing Girls' of China and the Unintended Consequences of the One Child Policy." *Journal of Human Resources* 45 (July 2013): 87–115.

———. 2011. "Estimating a Dynamic Model of Sex Selection in China." *Demography* 48 (2): 783.

Ebenstein, Avrahan, and Steven Leung. 2010. "Son Preference and Access to Social Insurance: Evidence Pension Program." *Population and Development Review* 36 (1): 47–70.

Echávarri, Rebeca A., and Roberto Ezcurra. 2010. "Education and Gender Bias in the Sex Ratio at Birth: Evidence from India." *Demography* 47 (1): 249–68.

Eitle, David. 2011. "Religion and Gambling Among Young Adults in the United States: Moral Communities and the Deterrence Hypothesis." *Journal for the Scientific Study of Religion* 50 (1): 61–81.

Ellison, Christopher G., and Michael J. McFarland. 2011. "Religion and Gambling Among U.S. Adults: Exploring the Role of Traditions, Beliefs, Practices, and Networks." *Journal for the Scientific Study of Religion* 50 (1): 82–102.

Evans, John H. 2002. "Polarization in Abortion Attitudes in U.S. Religious Traditions, 1972–1998." *Sociological Forum* 17 (3): 397–422.

Feldmann, Horst. 2016. "Which Religions Still Affect Schooling? A Study of 143 Countries." *Comparative Sociology* 15 (4): 439–84.

Feng, Jinyuan, and An Hu. 2002. "改革开放新形势下中国宗教现状及我们的理论思考 Gaigekaifang xinxingshi xia zhongguo zongjiao xianzhuang ji women de lilunsikao." 当代宗教研究, no. 1: 11–19.

Ferreira, Johan. 2007. "Did Christianity Reach China in the Han Dynasty?" *Asia Journal of Theology* 21 (1): 124.

Fuwa, Makiko. 2004. "Macro-Level Gender Inequality and the Division of Household Labor in 22 Countries." *American Sociological Review* 69 (6): 751–67.

Gan, Mantang. 2019. "Clan Culture in Fujian 福建宗祠文化的当代社会价值." *Southeast Academic Research* 4.

Gaudin, Sylvestre. 2011. "Son Preference in Indian Families: Absolute Versus Relative Wealth Effects." *Demography* 48 (1): 343–70.

Glass, Jennifer, and Philip Levchak. 2014. "Red States, Blue States, and Divorce: Understanding the Impact of Conservative Protestantism on Regional Variation in Divorce Rates." *American Journal of Sociology* 119 (4): 1002–46.

Goodkind, Daniel M. 2004. "China's Missing Children: The 2000 Census Underreporting Surprise." *Population Studies* 58 (3): 281–95.

———. 2011. "Child Underreporting, Fertility, and Sex Ratio Imbalance in China." *Demography* 48 (1): 291–316.

———. 2016. "The Population Averted by China's Birth Restrictions, 1971–2060: Estimates, Nightmares, and Reprogrammed Ambitions." Washington, D.C.

Greenhalgh, Susan. 1986. "Shifts in China's Population Policy, 1984-86: Views from the Central, Provincial, and Local Levels." *Population and Development Review* 12 (3): 491–515.

———. 2008. *Just One Child: Science and Policy in Deng's China*. Univ of California Press.

———. 2013. "Patriarchal Demographics? China's Sex Ratio Reconsidered." *Population and Development Review* 38: 130–49.

Greenhalgh, Susan, and Edwin A. Winckler. 2005. *Governing China's Population: From Leninist to Neoliberal Biopolitics*. Stanford University Press.

Gu, Baochang, and Krishna Roy. 1995. "Sex Ratio at Birth in China with Reference to Other Areas in East Asia: What We Know." *Asia-Pacific Population Journal* 10 (3): 17–42.

Gu, Baochang, Feng Wang, Zhigang Guo, and Erli Zhang. 2007. "China's Local and National Fertility Policies at the End of the Twentieth Century." *Population and Development Review* 33 (1): 129–148.

Guilmoto, Christophe Z., and James Tovey. 2015. "The Masculinization of Births: Overview and Current Knowledge." *Population, English Edition* 70 (2): 185–242. https://muse.jhu.edu/article/593158.

Guilmoto, CZ. 2005. "Spatial Regression and Determinants of Juvenile Sex Ratio in India." Singapore. http://www.cicred.org/Eng/Seminars/Details/Seminars/FDA/PAPERS/68_Guilmoto.pdf.

Guo, Zhigang, and Wei Chen. 2007. "Below Replacement Fertility in Mainland China." *Transition and Challenge: China's Population at the Beginning of the 21st Century*, 54–70.

Gupta, Monica Das. 1987. "Selective Discrimination against Female Children in Rural Punjab, India." *Population and Development Review* 13 (1): 77–100.

Gupta, Monica Das, Jiang Zhenghua, Li Bohua, Xie Zhenming, Woojin Chung, and Bae Hwa-Ok. 2003. "Why Is Son Preference So Persistent in East and South Asia? A Cross-Country Study of China, India and the Republic of Korea." *Journal of Development Studies* 40 (2): 153–87.

Hannum, Emily, and Yu Xie. 1994. "Trends in Educational Gender Inequality in China: 1949-1985." *Social Stratification and Mobility* 13: 73–98.

Hans, Jason D., and Claire Kimberly. 2014. "Abortion Attitudes in Context: A Multidimensional Vignette Approach." *Social Science Research* 48 (November): 145–56.

Harris, Richard J., and Edgar W. Mills. 1985. "Religion, Values and Attitudes toward Abortion." *Journal for the Scientific Study of Religion* 24 (2): 137–54.

Hayford, Sarah R., and Karen Benjamin Guzzo. 2016. "Fifty Years of Unintended Births: Education Gradients in Unintended Fertility in the US, 1960-2013." *Population and Development Review* 42 (2): 313–41.

Heilig, Gerhard K. 2006. "Many Chinas? The Economic Diversity of China's Provinces." *Population and Development Review* 32 (1): 147–161.

Hess, Jennifer A., and Justin D. Rueb. 2005. "Attitudes toward Abortion, Religion, and Party Affiliation among College Students." *Current Psychology* 24 (1): 24–42.

Hoffmann, John P., and Sherrie Mills Johnson. 2005. "Attitudes toward Abortion among Religious Traditions in the United States: Change or Continuity?" *Sociology of Religion* 66 (2): 161–82.

Hoffmann, John P., and Alan S. Miller. 1998. "Denominational Influences on Socially Divisive Issues: Polarization or Continuity?" *Journal for the Scientific Study of Religion* 37 (3): 528–46.

Hu, Anning. 2016. "Ancestor Worship in Contemporary China: An Empirical Investigation." *China Review* 16 (1): 169–86.

Hu, Anning, and Felicia Tian. 2018. "Still under the Ancestors' Shadow? Ancestor Worship and Family Formation in Contemporary China." *Demographic Research* 38 (January): 1–26.

Hu, Zhan, and Xizhe Peng. 2015. "Household Changes in Contemporary China: An Analysis Based on the Four Recent Censuses." *The Journal of Chinese Sociology* 2 (1).

Huang, Yan, Wen Tang, Yi Mu, Xiaohong Li, Zheng Liu, Yanping Wang, Mingrong Li, et al. 2016. "The Sex Ratio at Birth for 5,338,853 Deliveries in China from 2012 to 2015: A Facility-Based Study." *PLoS ONE* 11 (12).

Huang, Yanshu, Paul G. Davies, Chris G. Sibley, and Danny Osborne. 2016. "Benevolent Sexism, Attitudes Toward Motherhood, and Reproductive Rights: A Multi-Study Longitudinal Examination of Abortion Attitudes." *Personality and Social Psychology Bulletin* 42 (7): 970–84.

Hull, Terence H. 1990. "Recent Trends in Sex Ratios at Birth in China." *Population and Development Review* 16 (1): 63–83.

Imamuddin, S. M. 1984. "Arab Mariners and Islam in China (Under the Tang Dynasty 618-906 A.C.)." *Journal of the Pakistan Historical Society*; Karachi 32 (3): 155–181.

Islamic Association of China. 2012. "The Population of Muslim in Ethnic Minorities in China." 2012. http://www.chinaislam.net.cn/cms/whyj/yslgk/201205/21-59.html.

Israeli, Raphael. 1977. "Muslims in China: The Incompatibility between Islam and the Chinese Order." *T'oung Pao* 63 (4/5): 296–323.

Ivanhoe, Philip J. 2010. "A Confucian Perspective on Abortion." *Dao: A Journal of Comparative Philosophy* 9 (1): 37–51.

Iyer, Sriya, and Shareen Joshi. 2013. "Missing Women and India's Religious Demography." *Journal of South Asian Development* 8 (3): 301–31.

Jayaraman, Anuja, Vinod Mishra, and Fred Arnold. 2009. "The Relationship of Family Size and Composition to Fertility Desires, Contraceptive Adoption and Method Choice in South Asia." *International Perspectives on Sexual and Reproductive Health* 35 (1): 29–38.

Jiang, Quanbao, Shuzhuo Li, and Marcus W. Feldman. 2011. "Demographic Consequences of Gender Discrimination in China: Simulation Analysis of Policy Options." *Population Research and Policy Review* 30 (4): 619–38.

Jiang, Quanbao, Ying Li, and Jesús J. Sánchez-Barricarte. 2016. "Fertility Intention, Son Preference, and Second Childbirth: Survey Findings from Shaanxi Province of China." *Social Indicators Research* 125 (3): 935–53.

Jin, Ze, and Yonghui Qiu. 2010. *Annual Reports on China's Religions*. Beijing: Social Science Academic Press.

Johnson, Kay. 1993. "Chinese Orphanages: Saving China's Abandoned Girls." *The Australian Journal of Chinese Affairs*, no. 30: 61–87.

Johnson, Kay, Banghan Huang, and Liyao Wang. 1998. "Infant Abandonment and Adoption in China." *Population and Development Review* 24 (3): 469–510.

Jones, Alison Denton. 2011. "Contemporary Han Chinese Involvement in Tibetan Buddhism: A Case Study from Nanjing." *Social Compass* 58 (4): 540–53.

Jones, Ken. 2003. *The New Social Face of Buddhism: A Call to Action*. Simon and Schuster.

Jung, Jong Hyun, and Daniel V. A. Olson. 2014. "Religion, Stress, and Suicide Acceptability in South Korea." *Social Forces* 92 (3): 1039–59.

Kane, Emily W. 1995. "Education and Beliefs about Gender Inequality." *Social Problems* 42 (1): 74–90.

Karsten, Hank, and Hendrik Jürges. 2005. "Gender and the Division of Household Labor in Older Couples: A European Perspective." *IDEAS Working Paper Series from RePEc; St. Louis*.

Kashyap, Ridhi, and Francisco Villavicencio. 2016. "The Dynamics of Son Preference, Technology Diffusion, and Fertility Decline Underlying Distorted Sex Ratios at Birth: A Simulation Approach." *Demography* 53 (5): 1261–81.

Kim, Doo-Sub, and Yoo-Jean Song. 2007. "Does Religion Matter? A Study of Regional Variations in Sex Ratio at Birth in Korea." In *Watering the Neighbour's Garden: The Growing Demographic Female Deficit in Asia*, edited by Isabelle Attané and Christophe Z. Guilmoto, 49–72. Paris: Committee for International Cooperation in National Research in Demography.

Kirk, Dudley. 1966. "Factors Affecting Moslem Natality."

Kishwar, Madhu. 1993. "Abortion of Female Fetuses: Is Legislation the Answer?" *Reproductive Health Matters* 1 (2): 113–15.

Klaus, Daniela, and Arun Tipandjan. 2015. "Son Preference in India: Shedding Light on the North-South Gradient." *Comparative Population Studies* 40 (1).

Kwok, Pui-Lan. 1992. "Claiming Our Heritage: Chinese Women and Christianity." *International Bulletin of Missionary Research* 16 (4): 150–54.

Lai, Dejian. 2005. "Sex Ratio at Birth and Infant Mortality Rate in China: An Empirical Study." *Social Indicators Research* 70 (3): 313–26.

Lai, Qing, and Arland Thornton. 2015. "The Making of Family Values: Developmental Idealism in Gansu, China." *Social Science Research* 51 (May): 174–88.

Lavely, William, Jianke Li, and Jianghong Li. 2001. "Population Investigation Committee Sex Preference for Children in a Meifu Li Community in Hainan, China." *Population Studies* 55 (3): 319–29.

Lavely, William, Xiao Zhenyu, Li Bohua, and Ronald Freedman. 1990. "The Rise in Female Education in China: National and Regional Patterns." *The China Quarterly* 121 (March): 61–93.

Leamaster, Reid J., and Anning Hu. 2014. "Popular Buddhists: The Relationship between Popular Religious Involvement and Buddhist Identity in Contemporary China." *Sociology of Religion* 75 (2): 234–59.

Lee, James Z, and Feng Wang. 1999. *One Quarter of Humanity: Malthusian Mythology and Chinese Realities, 1700-2000*. Cambridge, MA: Harvard University Press.

Lee, Joseph Tse-Hei. 2007. "Christianity in Contemporary China: An Update." *Journal of Church and State* 49 (2): 277–304.

Lee, Yean-Ju, William L. Parish, and Robert J. Willis. 1994. "Sons, Daughters, and Intergenerational Support in Taiwan." *American Journal of Sociology* 99 (4): 1010–41.

Leung, Beatrice. 2005. "China's Religious Freedom Policy: The Art of Managing Religious Activity." *The China Quarterly* 184 (894): 894–913.

Li, Feng. 2017. "Does Religious Belief Affect Fertility Intention? An Analysis Using Data from 2010 CGSS." *Studies in World Religions* 3: 18–34.

Li, Hongbin, Junjian Yi, and Junsen Zhang. 2011. "Estimating the Effect of the One-Child Policy on the Sex Ratio Imbalance in China: Identification Based on the Difference-in-Differences." *Demography* 48 (4): 1535–57.

Li, Huawei. 2012. "Suffering and Conversion: The Exploration on Social Causes of Peasant's Conversion to Christianity in Henan Province." *China Agricultural University Journal of Social Sciences Edition* 29 (3): 81–91.

Li, Jiali, and Rosemary Santana Cooney. 1993. "Son Preference and the One Child Policy in China: 1979–1988." *Population Research and Policy Review* 12 (3): 277–296.

Li, Jianghong, and W. Lavely. 2003. "Village Context, Women's Status, and Son Preference Among Rural Chinese Women." *Rural Sociology* 68 (1): 87–106.

Li, Shuzhuo, Chuzhu Zhu, and Marcus W. Feldman. 2004. "Gender Differences in Child Survival in Contemporary Rural China: A County Study." *Journal of Biosocial Science; Cambridge* 36 (1): 83–109.

Li, Virginia C., Glenn C. Wong, Shuhua Qui, Fuming Cao, Puquan Li, and Jinghua Sun. 1990. "Characteristics of Women Having Abortion in China." *Social Science & Medicine* 31 (4): 445–53.

Li, Zehou. 2012. *On the history of Shamanism* 说巫史传统. Shanghai Translation Publishing House.

Liang, Zai, Zhen Li, and Zhongdong Ma. 2014. "Changing Patterns of the Floating Population in China, 2000–2010." *Population and Development Review* 40 (4): 695–716.

Liang, Zai, and Zhongdong Ma. 2004. "China's Floating Population: New Evidence from the 2000 Census." *Population and Development Review* 30 (3): 467–488.

Liang, Zhenhua, and Gubo Qi. 2015. "The Religious Construction of Illness: Understanding the Behavior and Motivation of Farmer's Illness-Cased Religious Conversion." *China Agricultural University Journal of Social Sciences Edition* 32 (4): 39–47.

Lin, Tin-chi. 2009. "The Decline of Son Preference and Rise of Gender Indifference in Taiwan Since 1990." *Demographic Research* 20 (April): 377–402.

Lingam, Lakshmi. 1991. "Sex-Detection Tests and Female Foeticide: Discrimination Before Birth." *The Indian Journal of Social Work* 52 (February): 13–20.

Liu, Jing. 2017. "30 Million Chinese Men to Be Wifeless over the next 30 Years." *China Daily*, 2017. https://www.chinadaily.com.cn/china/2017-02/13/content_28183839.htm.

Löfstedt, Petra, Luo Shusheng, and Annika Johansson. 2004. "Abortion Patterns and Reported Sex Ratios at Birth in Rural Yunnan, China." *Reproductive Health Matters* 12 (24): 86–95.

Logan, John R., Fuqin Bian, and Yanjie Bian. 1998. "Tradition and Change in the Urban Chinese Family: The Case of Living Arrangements." *Social Forces* 76 (3): 851–82.

Long, J. Scott, and Jeremy Freese. 2014. *Regression Models for Categorical Dependent Variables Using Stata, Second Edition*. Stata Press.

Lou, Yulie. 1994. "Zhongguo wenhua zhong de rushidao." *Zhonghua wenhua luntan*, no. 3: 38–47.

Lu, Yao, and Ran Tao. 2015. "Female Migration, Cultural Context, and Son Preference in Rural China." *Population Research and Policy Review*, 665–86.

Lu, Yunfeng, and Chunni Zhang. 2016. "Observation in present situation of contemporary Chinese Christian: based on the survey data from CGSS and CFPS." *The World Religious Cultures*, no. 1: 34–46.

Luk, Bernard Hung-kay. 1977. "Abortion in Chinese Law." *The American Journal of Comparative Law* 25 (2): 372–92.

Lutz, Jessie Gregory. 2010. *Pioneer Chinese Christian Women: Gender, Christianity, and Social Mobility*. Lehigh University Press.

Malhotra, Anju. 2012. "Remobilizing the Gender and Fertility Connection: The Case for Examining the Impact of Fertility Control and Fertility Declines on Gender Equality." *Fertility and Empowerment Work Paper Series*, 001–2012.

Man, Ke. 2014. "Islamic Menhuan System, Patrilineal Family, and Gender Relations of Dongxiang People in Gansu, China." In *Gender and Family in East Asia*, edited by Siumi Maria Tam, Wai Ching, Angela Wong, and Danning Wang, 177.

Manmeet, Kaur. 1993. "Female Foeticide: A Sociological Perspective." *Journal of Family Welfare* 39 (1): 40–43.

Marshall, Joey, and Daniel V. A. Olson. 2018. "Local Religious Subcultures and Generalized Social Trust in the United States." *Journal for the Scientific Study of Religion* 57 (3): 473–94.

McClendon, David, Conrad Hackett, Michaela Potančoková, Marcin Stonawski, and Vegard Skirbekk. 2018. "Women's Education in the Muslim World." *Population and Development Review* 44 (2): 311–42.

McGuire, Meredith B. 2008. *Lived Religion: Faith and Practice in Everyday Life*. New York: Oxford University Press.

McIntosh, William Alex, Letitia T. Alston, and Jon P. Alston. 1979. "The Differential Impact of Religious Preference and Church Attendance on Attitudes toward Abortion." *Review of Religious Research* 20 (2): 195–213.

Merli, M. Giovanna, and Sara Hertog. 2010. "Masculine Sex Ratios, Population Age Structure and the Potential Spread of HIV in China." *Demographic Research* 22 (January): 63–94.

Merli, M. Giovanna, and Adrian E. Raftery. 2000. "Are Births Underreported in Rural China? Manipulation of Statistical Records in Response to China's Population Policies." *Demography* 37 (1): 109–26.

Miller, Barbara D. 2001. "Female-Selective Abortion in Asia: Patterns, Policies, and Debates." *American Anthropologist* 103 (4): 1083–95.

Miller, Eric T. 2004. *Filial Daughters, Filial Sons: Comparisons from Rural North China*.

Morrison, Peter. 1984. "Religious Policy in China and Its Implementation in the Light of Document No. 19." *Religion in Communist Lands* 5974 (19).

Moskowitz, Marc L., ed. 2001. "The Haunting Fetus." In *The Haunting Fetus*, 47–76. Abortion, Sexuality, and the Spirit World in Taiwan. University of Hawai'i Press.

Mou, Zongsan. 1997. *Zhongguo Zhexue de Tezhi 中国哲学的特质*. Shanghai: Shanghai Classics Publishing House.

Murphy, Rachel, Ran Tao, and Xi Lu. 2011. "Son Preference in Rural China: Patrilineal Families and Socioeconomic Change." *Population and Development Review* 37 (4): 665–90.

Musick, Kelly, Paula England, Sarah Edgington, and Nicole Kangas. 2009. "Education Differences in Intended and Unintended Fertility." *Social Forces; a Scientific Medium of Social Study and Interpretation* 88 (2): 543–72.

Ng, Peter Tze-ming. 2000. "From Ideological Marxism to Moderate Pragmatism — Religious Policy in China at the Turn of the Century." *China Review*, no. 2000: 405–22.

Nie, Jing Bao. 2005. *Behind the Silence: Chinese Voices on Abortion*. Rowman & Littlefield Publishers.

Nie, Jingbao. 2010. "Limits of State Intervention in Sex-Selective Abortion: The Case of China." *Culture, Health and Sexuality* 12 (2): 205–19.

———. 2011. "Non-Medical Sex-Selective Abortion in China: Ethical and Public Policy Issues in the Context of 40 Million Missing Females." *British Medical Bulletin* 98 (1): 7–20.

Nie, Yilin, and Robert J. Wyman. 2005. "The One-Child Policy in Shanghai: Acceptance and Internalization." *Population and Development Review* 31 (2): 313–336.

Olson, Daniel V. A. 2019. "The Influence of Your Neighbors' Religions on You, Your Attitudes and Behaviors, and Your Community." *Sociology of Religion* 80 (2): 147–67.

Olson, Daniel VA, and Miao Li. 2015. "Does a Nation's Religious Composition Affect Generalized Trust? The Role of Religious Heterogeneity and the Percent Religious." *Journal for the Scientific Study of Religion* 54 (4): 756–773.

Olson, Daniel VA, and Paul Perl. 2011. "A Friend in Creed: Does the Religious Composition of Geographic Areas Affect the Religious Composition of a Person's Close Friends?" *Journal for the Scientific Study of Religion* 50 (3): 483–502.

Ostby, Gudrun, Henrik Urdal, and Ida Rudolfsen. 2017. "What Is Driving Gender Equality in Secondary Education? Evidence from 57 Developing Countries, 1970-2010." *Education Research International*, January.

Pande, Rohini, and Anju Malhotra. 2006. "Son Preference and Daughter Neglect in India."

Pande, Rohini P., and Nan Marie Astone. 2007. "Explaining Son Preference in Rural India: The Independent Role of Structural versus Individual Factors." *Population Research and Policy Review* 26 (1): 1–29.

Park, Chai Bin. 1983. "Preference for Sons, Family Size, and Sex Ratio: An Empirical Study in Korea." *Demography* 20 (3): 333–52.

Park, Chai Bin, and Nam-Hoon Cho. 1995. "Consequences of Son Preference in a Low-Fertility Society: Imbalance of the Sex Ratio at Birth in Korea." *Population and Development Review* 21 (1): 59–84.

Park, Chang-Won. 2010. "Between God and Ancestors: Ancestral Practice in Korean Protestantism." *International Journal for the Study of the Christian Church* 10 (4): 257–73.

Park, David, and Julian Müller. 2014. "The Challenge That Confucian Filial Piety Poses for Korean Churches." *HTS Teologiese Studies / Theological Studies* 70 (February).

Peng, X, and J Huang. 1999. "Chinese Traditional Medicine and Abnormal Sex Ratio at Birth in China." *J Biosoc Sci* 31 (4): 487–503.

Peng, Yusheng. 2010. "When Formal Laws and Informal Norms Collide: Lineage Networks versus Birth Control Policy in China." *American Journal of Sociology* 116 (3): 770–805.

Perrett, Roy W. 2000. "Buddhism, Abortion and the Middle Way." *Asian Philosophy* 10 (2): 101–14.

Petersen, Larry R. 2001. "Religion, Plausibility Structures, and Education's Effect on Attitudes toward Elective Abortion." *Journal for the Scientific Study of Religion* 40 (2): 187–203.

Pettit, Andrew. 2014. "Spiritual but Not Religious: Understanding New Forms of Spirituality, Community, and Worship through the Musical Practice of Kirtan." *International Journal of Religion & Spirituality in Society* 3 (3).

Pew Research Center. 2013. "The World's Muslims: Religion, Politics and Society."

———. 2015. "The Future of World Religions: Population Growth Projections, 2010-2050." 2015. http://www.pewforum.org/2015/04/02/religious-projections-2010-2050/.

———. 2019. "How Religious Restrictions Have Risen Around the World." https://www.pewforum.org/2019/07/15/a-closer-look-at-how-religious-restrictions-have-risen-around-the-world/.

Poston, Dudley L. 2002. "Son Preference and Fertility in China." *Journal of Biosocial Science* 34 (4): 333–47.

Poston, Dudley L., Chiung-Fang Chang, and Hong Dan. 2006. "Fertility Differences between the Majority and Minority Nationality Groups in China." *Population Research and Policy Review* 25 (1): 67–101.

Poston, Dudley L., Baochang Gu, Peihang Peggy Liu, and Terra McDaniel. 1997. "Son Preference and the Sex Ratio at Birth in China: A Provincial Level Analysis." *Social Biology* 44 (1–2): 55–76.

Poston, Dudley L, Hosik Min, and Sherry L McKibben. 2014. "Son Preference and Fertility in China, South Korea, and the United States." In *The Family and Social Change in Chinese Societies*, 229–47. Springer.

Potter, Pitman B. 2003. "Belief in Control: Regulation of Religion in China." *The China Quarterly* 174 (19): 161–73.

Qin, Pengfei. 2020. "Supernatural Beings and Confucian Rationalism." *Chinese Journal of Sociology* 40 (3): 58–87.

Rahman, Anika, Laura Katzive, and Stanley K. Henshaw. 1998. "A Global Review of Laws on Induced Abortion, 1985-1997." *International Family Planning Perspectives* 24 (2): 56–

Rallu, Jean Louis. 2006. "Female Deficit and the Marriage Market in Korea." *Demographic Research* 15 (August): 51–60.

Regnerus, Mark D. 2003. "Moral Communities and Adolescent Delinquency: Religious Contexts and Community Social Control." *The Sociological Quarterly* 44 (4): 523–54.

Ren, Xinhua Steve. 1995. "Birth Spacing Dynamics in China: The Cases of Hebei and Shaanxi Provinces." *Population Research and Policy Review* 14 (4): 411–25.

Rev. Wei, Tixiang. 2017. "No Headaches About Ji Zu during Qingming Festival; Christians Should Take a Positive View of Ji Zu." *Chinese Law & Government* 49 (3): 149–52.

Rigdon, Susan M. 1996. "Abortion Law and Practice in China: An Overview with Comparisons to the United States." *Social Science & Medicine* 42 (4): 543–60.

Roozen, David A, William McKinney, and Jackson W Carroll. 1984. *Varieties of Religious Presence: Mission in Public Life*. New York: The Pilgrim Press.

Ross, Michael L. 2008. "Oil, Islam, and Women." *American Political Science Review* 102 (1): 107–23.

Ruitenbeek, Klaas. 1999. "Mazu, the Patroness of Sailors, in Chinese Pictorial Art." *Artibus Asiae* 58 (3/4): 281–329.

SARA. 2014. "Wo Guo Zongjiao de Jiben Qingkuang 我国宗教的基本情况." 2014. http://www.sara.gov.cn/llyj/63734.htm.

Savage, Mark. 1988. "The Law of Abortion in the Union of Soviet Socialist Republics and the People's Republic of China: Women's Rights in Two Socialist Countries." *Stanford Law Review* 40 (4): 1027–1117.

Sen, Amartya. 1990. "More than 100 Million Women Are Missing." *The New York Review of Books* 37 (20): 61–66.

Seville, Jason. 2016. "The Swept Tomb vs. The Empty Tomb: A Collision of Holidays in China." *The Gospel Coalition* (blog). 2016. https://www.thegospelcoalition.org/article/the-swept-tomb-vs-empty-tomb-a-collision-of-holidays-in-china/.

Shaikh, Sa'diyya. 2003. "Family Planning, Contraception, and Abortion in Islam: Undertaking Khilafah."

Shi, Lihong. 2017. *Choosing Daughters: Family Change in Rural China*. Stanford, California: Stanford University Press.

Shi, Yaojiang, and John James Kennedy. 2016. "Delayed Registration and Identifying the 'Missing Girls' in China." *The China Quarterly* 228 (December): 1018–38.

Short, Susan E., and Fengying Zhai. 1998. "Looking Locally at China's One-Child Policy." *Studies in Family Planning* 29 (4): 373–87.

Skinner, G William. 1997. "Family Systems and Demographic Processes." *Anthropological Demography: Toward a New Synthesis*, 53–95.

Skirbekk, Vegard, Setsuya Fukuda, Conrad Hackett, Marcin Stonawski, Thomas Spoorenberg, and Raya Muttarak. 2015. "Is Buddhism the Low Fertility Religion of Asia?" *Demographic Research* 32 (1): 1–28.

Śleziak, Tomasz. 2013. "The Role of Confucianism in Contemporary South Korean Society." *Rocznik Orientalistyczny*, no. 1.

Smith, Tom W, and Jaesok Son. 2013. "Trends in Public Attitudes towards Abortion." *General Social Survey 2012 Final Report*.

Sobotka, Tomáš, and Cuiling Zhang. 2019. "The Unexpected Rapid Normalization of the Sex Ratios at Birth in China." Austin, TX.

South, Scott J., Katherine Trent, and Sunita Bose. 2014. "Skewed Sex Ratios and Criminal Victimization in India." *Demography* 51 (3): 1019–40.

Stark, Rodney. 1996. "Religion as Context: Hellfire and Delinquency One More Time." *Sociology of Religion* 57 (2): 163–73.

Stark, Rodney, Lori Kent, and Daniel P. Doyle. 1982. "Religion and Delinquency: The Ecology of a 'Lost' Relationship." *Journal of Research in Crime and Delinquency* 19 (1): 4–24.

Stark, Rodney, and Eric Y Liu. 2011. "The Religious Awakening in China." *Review of Religious Research* 52 (3): 282–89.

State Council Information Office. 2018. "China's Policies and Practices on Protecting Freedom of Religious Belief." The State Council Information Office. http://www.scio.gov.cn/zfbps/32832/Document/1626734/1626734.htm.

Stinner, William F., and Paul Douglas Mader. 1975. "Son Preference among Filipino Muslims. A Causal Analysis." *Social Biology* 22 (2): 181–88.

Stinner, William F., and Paul Douglas Mader. 1975. "Sons, Daughters or Both?: An Analysis of Family Sex Composition Preferences in the Philippines." *Demography* 12 (1): 67–79.

Sun, Anna. 2013. *Confucianism as a World Religion: Contested Histories and Contemporary Realities*. Princeton University Press.

Takagi, Emiko, and Merril Silverstein. 2011. "Purchasing Piety? Co-residence of Married Children with Their Older Parents in Japan." *Demography* 48 (4): 1559–79.

Tamney, Joseph B. 1998. "Asian Popular Religions." *The Encyclopedia of Religion and Society. Walnut Creek, CA: AltaMira*, 31–32. http://hirr.hartsem.edu/ency/Asian.htm.

Tedesco, Frank. 1999. "Abortion in Korea." In *Buddhism and Abortion*, edited by Damien Keown, 121–55. University of Hawai'i Press.

Thompson, Laurence G. 1996. *Chinese Religion: An Introduction*. Cengage Learning.

Thornton, Arland. 2001. "The Developmental Paradigm, Reading History Sideways, and Family Change." *Demography* 38 (4): 449–65.

Thornton, Arland, Ronald Freedman, Te-Hsiung Sun, and Ming-Cheng Chang. 1986. "Intergenerational Relations and Reproductive Behavior in Taiwan." *Demography* 23 (2): 185–97.

Thornton, Arland, and Yu Xie. 2016. "Developmental Idealism in China Developmental Idealism in China." *Chinese Journal of Sociology* 2 (4): 483–96.

Tribe, Laurence H. 1992. *Abortion: The Clash of Absolutes*. WW Norton & Company.

Tsai, Lily Lee. 2002. "Cadres, Temple and Lineage Institutions, and Governance in Rural China." *The China Journal*, no. 48: 1–27.

Tucker, Catherine, and Jennifer Van Hook. 2013. "Surplus Chinese Men: Demographic Determinants of the Sex Ratio at Marriageable Ages in China." *Population and Development Review* 39 (2): 209–229.

Ul Ain, Ayesha Qurrat, and Jianyou Lu. 2014. "Islam and Confucianism: Between Dissonance and Harmony." *Quarterly Journal of Chinese Studies; Xiamen* 2 (4): 84–99.

Ulmer, Jeffery T., and Casey T. Harris. 2013. "Race and the Religious Contexts of Violence: Linking Religion and White, Black, and Latino Violent Crime." *The Sociological Quarterly* 54 (4): 610–46.

UNFPA. 2012. "Sex Imbalances at Birth." https://www.unfpa.org/sites/default/files/pub-pdf/Sex%20Imbalances%20at%20Birth.%20PDF%20UNFPA%20APRO%20publication%202012.pdf.

Waldron, Ingrid. 1983. "Sex Differences in Human Mortality: The Role of Genetic Factors." *Social Science & Medicine* 17 (6): 321–33.

Wang, Donghui, and Guangqing Chi. 2017. "Different Places, Different Stories: A Study of the Spatial Heterogeneity of County-Level Fertility in China." *Demographic Research* 37: 493–526.

Wang, Feng. 1988. "The Roles of Individuals' Socioeconomic Characteristics and the Government Family Planning Program in China's Fertility Decline." *Population Research and Policy Review* 7 (3): 255–276.

Wang, Qunyong, and Xinyu Lin. 2014. "Does Religious Beliefs Affect Economic Growth? Evidence from Provincial-Level Panel Data in China." *China Economic Review* 31 (December): 277–87.

Warakamin, Suwanna, Nongluk Boonthai, and Viroj Tangcharoensathien. 2004. "Induced Abortion in Thailand: Current Situation in Public Hospitals and Legal Perspectives." *Reproductive Health Matters* 12 (sup24): 147–56.

Weber, Max. 1951. *The Religion of China: Confucianism and Taoism*. Glencoe, IL: The Free Press.

Weller, Robert P. 1987. *Unities and Diversities in Chinese Religion*. Springer.

Wen, Xingyan. 1993. "Effect of Son Preference and Population Policy on Sex Ratios at Birth in Two Provinces of China." *Journal of Biosocial Science* 25 (4): 509–21.

Whyte, Martin K. 2004. "Filial Obligations in Chinese Families: Paradoxes of Modernization." In *Filial Piety: Practice and Discourse in Contemporary East Asia*, edited by Charlotte Ikels, 106–127. Stanford: Stanford University Press.

Whyte, Martin K, and Qin Xu. 2003. "Support for Aging Parents from Daughters versus Sons." *China's Revolutions and Intergenerational Relations*, 167–96.

Whyte, Martin King, Feng Wang, and Yong Cai. 2015. "Challenging Myths About China's One-Child Policy." *China Journal* 74 (1): 144–59.

Wolf, Margery. 1987. *Revolution Postponed: Women in Contemporary China*. Stanford: Stanford University Press.

Wong, Wai-Yin Christina. 2015. "Women's Work for Women: Chinese Christian Women and Western Missionaries in Canton, South China, 1847–1938." Ph.D., United States -- California: Graduate Theological Union.

Wu, Bohsiu, and Aya Kimura Ida. 2018. "Ethnic Diversity, Religion, and Opinions toward Legalizing Abortion: The Case of Asian Americans." *Journal of Ethnic and Cultural Studies* 5 (1): 94–109.

Wu, Qiong, and Yu Xie. 2013. "Attitudes and Values 态度和观念." In *Wellbeing Development Report of China 2013 中国民生发展报告 2013*. Beijing 北京: Peking University Press 北京大学出版社.

Wu, Xiaogang, Hua Ye, and Gloria Guangye He. 2014. "Fertility Decline and Women's Status Improvement in China." *Chinese Sociological Review* 46 (3): 3–25.

Wu, Zhuochun, Kirsi Viisainen, and Elina Hemminki. 2006. "Determinants of High Sex Ratio among Newborns: A Cohort Study from Rural Anhui Province, China." *Reproductive Health Matters* 14 (27): 172–80.

Xie, Yu, and Haiyan Zhu. 2009. "Do Sons or Daughters Give More Money to Parents in Urban China?" *Journal of Marriage and the Family* 71 (1): 174.

Xinhuanet. 2018. "China Has Nearly 200 Million Religious Believers: White Paper," 2018. http://www.xinhuanet.com/english/2018-04/03/c_137084917.htm.

Xue, Yongguang. 2018. "Presbyterianism and Social Change in Urban China." PhD Thesis, Boston: Boston University.

Yan, Yunxiang. 2003. *Private Life under Socialism: Love, Intimacy, and Family Change in a Chinese Village, 1949-1999*. Stanford, Calif: Stanford University Press.

Yang, Fenggang. 1999. *Chinese Christians in America: Conversion, Assimilation, and Adhesive Identities*. University Park, Pa: Pennsylvania State University Press.

———. 2011. *Religion in China: Survival and Revival under Communist Rule*. Cary, UNITED STATES: Oxford University Press.

———. 2014. "What about China? Religious Vitality in the Most Secular and Rapidly Modernizing Society." *Sociology of Religion* 75 (4): 564–78.

———. 2018. *Atlas of Religion in China: Social and Geographical Contexts*. Leiden; Boston: Brill.

Yang, Fenggang, Zhixin Li, Christopher White, Jonathan Pettit, and Charles Chang. 2019. *Online Spiritual Atlas of China (OSAC) Data*. https://purr.purdue.edu/publications/3210/2.

Yang, Hongqiu. 1996. "The Distributive Norm of Monetary Support to Older Parents: A Look at a Township in China." *Journal of Marriage and Family* 58 (2): 404–15.

Ying, Fuk-tsang. 2009. "The Regional Development of Protestant Christianity in China: 1918, 1949 and 2004." *China Review* 9 (2): 63–97.

Yoo, Sam Hyun, Sarah R. Hayford, and Victor Agadjanian. 2017. "Old Habits Die Hard? Lingering Son Preference in an Era of Normalizing Sex Ratios at Birth in South Korea." *Population Research and Policy Review* 36 (1): 25–54.

Yount, Kathryn M., Sarah Zureick-Brown, Nafisa Halim, and Kayla LaVilla. 2014. "Fertility Decline, Girls' Well-Being, and Gender Gaps in Children's Well-Being in Poor Countries." *Demography* 51 (2): 535–61.

Zaidi, Batool, and S. Philip Morgan. 2016. "In the Pursuit of Sons: Additional Births or Sex-Selective Abortion in Pakistan?" *Population and Development Review* 42 (4): 693–710.

Zeng, Junxia, Xiaopeng Pang, Linxiu Zhang, Alexis Medina, and Scott Rozelle. 2014. "Gender Inequality in Education in China: A Meta-Regression Analysis." *Contemporary Economic Policy* 32 (2): 474–91.

Zhai, Jiexia. 2007. "Religion, Gender, and Family Relations in Taiwan." Ph.D., United States -- Texas: The University of Texas at Austin.

Zhang, Junsen, and Roland Sturm. 1994. "When Do Couples Sign the One-Child Certificate in Urban China?" *Population Research and Policy Review* 13 (1): 69–81.

Zheng, Qian. 2011. *China's Ethnic Groups and Religions*. The Sino-pedia Series. Singapore: Cengage Learning Asia.

Zhou, Feizhou. 2015. "The Mourning Apparel System and Social Structure in China." *Chinese Journal of Sociology* 35 (1): 26–48.

Zhou, Lang, and Qiuyun Sun. 2017. "The Psychology of Peasant Religious Conversion for the Purpose of Disease Control." *Chinese Journal of Sociology* 37 (4): 1–31.

Zhou, Yi, and Xiang, Nan. 2015. "Renliu Dilinghua: Miwang Qingchunzhitong 人流低龄化：迷惘青春之痛." *China Youth Daily*, January 26, 2015, sec. 07. http://www.xinhuanet.com/gongyi/2015-01-26/c_127420548.htm.

Zhu, Wei Xing, Li Lu, Therese Hesketh, Liu, and Zhang. 2009. "China's Excess Males, Sex Selective Abortion, and One Child Policy: Analysis of Data from 2005 National Intercensus Survey." *BMJ: British Medical Journal* 338 (7700): 920–23.