SEX-COMPOSITION OF CHILDREN AND FERTILITY DESIRE IN VIETNAM

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วิทยานิพนธ์ฉบับนี้มีวัตถุประสงค์เพื่อศึกษาว่าสัดส่วนเพศของบุตรสามารถอธิบายความต้องการมีบุตรเพิ่มของสตรีเวียดนามได้หรือไม่ ประเทศเวียดนามได้ประสบกับสถานการณ์ภาวะเจริญพันธุ์ลดลงอย่างรวดเร็วตั้งแต่กลางศตวรรษที่ 20 โดยสถานการณ์นี้เกิดขึ้นภายใต้บริบทของบรรทัดฐานทางวัฒนธรรมในด้านความนิยมบุตรชาย ดังนั้นสัดส่วนเพศของบุตรจึงเป็นหนึ่งในปัจจัยสำคัญที่กำหนดพฤติกรรมการเจริญพันธุ์ในประเทศเวียดนาม เท่าที่ผู้วิจัยทราบ ยังไม่มีงานวิจัยก่อนหน้านี้ที่ได้ศึกษาความสัมพันธ์ระหว่างสัดส่วนเพศของบุตรและความต้องการมีบุตรเพิ่มของสตรีในประเทศเวียดนาม งานวิจัยนี้ใช้ข้อมูลจาก 2014 Vietnam Multiple Indicator Cluster Survey (MICS) เพื่อศึกษาความสัมพันธ์ระหว่างสัดส่วนเพศของบุตรและความต้องการมีบุตรเพิ่มของสตรีวัยเจริญพันธุ์ (อายุ 15 ถึง 49 ปี) ในประเทศเวียดนาม (จำนวนกลุ่มตัวอย่าง 5,605 คน) ผลจากการวิเคราะห์แบบจำลองการถดถอยโลจิสติกหลายตัวแปร แสดงให้เห็นถึงความสัมพันธ์เชิงบวกซึ่งมีนัยสำคัญทางสถิติ ระหว่างสัดส่วนเพศของบุตรและความต้องการมีบุตรเพิ่มของสตรี โดยควบคุมปัจจัยด้านบรรทัดฐานทางสังคมในด้านความต้องการมีบุตร ปัจจัยด้านประชากรและปัจจัยด้านสังคมและเศรษฐกิจ สำหรับสตรีในแต่ละกลุ่ม (กลุ่มที่มีบุตรหนึ่งคน กลุ่มที่มีบุตรสองคน กลุ่มที่มีบุตรสามคนหรือมากกว่า) สตรีที่ไม่มีบุตรชายมีแนวโน้มที่จะมีความต้องการมีบุตรเพิ่มมากกว่าสตรีที่มีบุตรชายอย่างน้อยหนึ่งคน อย่างไรก็ตาม สตรีที่มีทั้งบุตรชายและบุตรสาวมีแนวโน้มที่จะต้องการมีบุตรเพิ่มน้อยกว่าสตรีที่มีแต่บุตรชาย ผลการศึกษาชี้ให้เห็นว่าบรรทัดฐานทางวัฒนธรรมในด้านความนิยมบุตรชายมีอิทธิพลอย่างมากต่อความต้องการมีบุตรเพิ่ม และอาจมีผลต่อพฤติกรรมการเจริญพันธุ์ ข้อค้นพบนี้มีนัยด้านนโยบายการวางแผนครอบครัวในประเทศเวียดนาม

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This thesis aims to investigate whether the variation in sex composition of children can explain the variation of Vietnamese women's fertility desire. Vietnam has experienced rapid fertility decline since the middle of the 20th century but within a broader context of strong cultural norms regarding son preference. Thus, the sex composition of children is one of the key determinants of reproductive behavior within Vietnam. To my knowledge, no previous study has examined the relationship between sex composition of children and women's fertility desires in Vietnam. Using data from the 2014 Vietnam Multiple Indicator Cluster Survey (MICS) I investigate the association between sex composition of children and desire for additional children among women in reproductive age (15 to 49) across Vietnam (N=5,605). Multivariate logistic regression models show a statistically significant positive association between the sex composition of children and women's fertility desire, after controlling for social norms of fertility preference, demographic and socioeconomic factors. For each group of women (those with one child, those with two children, and those with three or more children) women with no son are more likely to have higher fertility desire compared to women with at least one son. However, women with both son (s) and daughter (s) tend to have lower fertility desire compared to those who have all sons. My results suggest that Vietnam's traditional cultural norm of son preference has a strong influence on fertility desire, and potentially reproductive behavior. These findings have implications for family planning policies in Vietnam.

Field of Study:	Demography	Student's Signature .....
Academic Year:	2018	Advisor's Signature .....

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CHAPTER 1: INTRODUCTION

1.1 Background of the study

Vietnam currently faces three main issues in terms of population and fertility namely (i) strong son preference, (ii) high sex ratios at birth (SRB) and (iii) low fertility (Bélanger, 2002; Guilmoto, 2012; Guilmoto, Hoang, & Van, 2009; Haughton & Haughton, 1995; Pham, Hall, Hill, & Rao, 2008)

First, a recent phenomenon in Vietnamese society is "missing women" which indicates a deficit of girls relative to the expected number due to son preference. Together with China and India, Vietnam is one of the leaders in Asia in son preference (Das Gupta, 2010; Guilmoto, 2007). Recently, the deficit of girls has becomes more prevalent in Vietnam, particularly in the North of Vietnam. Explanation for son preference in Vietnam can be based on culture, religion and belief system of the Vietnamese. Vietnamese parents believe boys are more valuable than girls (Bélanger, 2002; Van Bich, 2013). Typically, the proverb is "Nhất nam viết hữu thập nữ viết vô" (One son means having some, ten daughters mean having none) and "Con gái đái không qua ngọn cỏ" (Girls do not cross the grass). Unless at least one son is born, the woman will be under pressure from her husband's family, especially her mother-in-law and her husband. Without a son, the husband would be discriminated, even mocked as "weak or poor" by his friends, relatives, and colleagues. If a couple do not have a son, it is considered that they do not have the next generation because the family name would not continue. The sons in Vietnam receive more economic

and social benefits than daughters, for example inheriting special assets such as land or house, worshipping ancestors or undertaking religious roles that only sons can perform, and perpetuation of the family name (Le et al., 2017; UNFPA Vietnam, 2012; Vui LT, Duong DTT, & Hoa DTP, 2012).

Eldest sons usually are exalted more than other children in Vietnam because he keeps the father's name, takes over the family lineage, organizes death-anniversary ceremonies and parents usually live with their eldest son. In addition, in Vietnamese culture , one must have a son who holds the stick in front of the coffin in his parents' funeral (Jayachandran, 2017). For these reasons, there are many motivations which resulted in increased son preference in Vietnam over the years (Bélanger, 2002).

Second, while Vietnamese have many reasons for son preference, this is parallel with having several consequences of son preference, such as high sex ratio at birth, sex selection at birth and abortion. Imbalance sex ratio at birth will lead to "excess of males and deficit of females" at the marriage age, affecting the population structure in Vietnam in the future. According to a report of the General Statistics Office for Population and Family Planning, by 2050, Vietnam will face a serious problem that there will be millions of men who can not find a wife, this number is expected to range from 2.4 to 4.3 million (General Statistics Office for Population and Family Planning, 2016).

In May 2017, the Minister of Health Vietnam issued an alert about the imbalanced sex ratio at birth in Vietnam. Nearly 50% of provinces and cities

have higher sex ratio at birth than in the previous year. In 2014, 15 out of 63 provinces and cities have sex ratio at birth of 115 male births per 100 female births or higher. By 2015, this is reduced to 13/63 provinces and cities. In 2016, the number increases to 22/63 provinces and cities. Particularly in Hai Duong province in the North of Vietnam where the highest sex ratio was 120 boys /100 girls (GSO, 2017)

High sex ratio at birth has serious consequences for the socio-economic development of the country and affects the lives of women, men, families, and communities. It also leads to increased gender inequality with the belief that men have more power and more importance than women. Many women may have to drop out of school and marry at young age. The rate of divorce and remarriage of women will increase. In addition, sex selection is linked with abortion because couples will try to have at least one son, they will abort until they can have a son. According to statistics from the Department of Maternal and Child Health, Ministry of Health Vietnam, in 63 provinces there were 265,536 abortion cases based on official statistics in 2016. On average, a woman with two children has had two abortions. More specifically, the rate of abortion over 12 weeks of age accounts for nearly 80% (Department of Maternal and Child Health - Ministry of Health, 2017)

Third, demographers have noted a tendency in many countries around the world today that people are producing fewer and fewer children and Vietnam belongs to this general trend. There is strong evidence to show that total fertility

rates (TFR) are declining in Vietnam (table 1 Appendix). The desire for fewer children, the desire for sons rather than daughters together with high levels of sex-selective abortion seem to be the driving force for the low fertility rates in Vietnam. Although the total fertility rate in Vietnam is currently at approximate replacement level (TFR = 2.1 in 2014), Vietnam is facing differential in fertility across regions. In many poor areas with low living standards, the fertility rate remains high (even very high as the Kon Tum have TFR of 3.45 children/woman), while in developed localities with high living standards, the fertility rate is below replacement level (even lower than the limit of 1.5 children / woman, as Ho Chi Minh City's TFR was only 1.45 in 2015) (Department of Population and Labour Statistics, 2010a; Goodkind, 1995b).

Faced with the situation of big fertility gap among regions, the Ministry of Health of Vietnam through the Strategy about Population and Reproductive Health Vietnam in 2011-2020 seeks to maintain reasonably low fertility (TFR of 1.9 children / woman) and to stabilize the population size in the 115-120 million people in 2050, making the task related to fertility identified as urgent. In order to achieve this goal, one of the urgent requirements is to understand the trends of fertility, and to forecast fertility in the near future based on fertility desires, in order to adopt suitable policies. According to the General Department of Population and Family Planning, although the population growth rate has been controlled, the fertility of Vietnam is unpredictable. Therefore, research about fertility desire is urgent in this period to predict fertility in the future, so that the

government of Vietnam can predict upcoming fertility and have appropriate policies. As such, to understand factors related to or factors affecting on fertility desire not only can contribute to academic literature but can also have some policy implications.

One of the factors that affect fertility desire is the sex composition of children. We consider the relationship between sex composition of children and fertility desire in Vietnam with the assumption that when the children's gender composition does not meet with the mother's expectation (given son preference), she will decide to have more children to get her desired gender mix based on son preference. This is especially important in the social context of Vietnam, which has a two-child policy to limit the fertility of couples who are party members or work in state organizations. This policy has a lasting impact on Vietnam's population, having two children seems to become a norm in Vietnam (Goodkind, 1995a; Wiersema et al., 2006)

At the same time, sex composition of children will greatly affect the desire to have children in societies with norms of son preference. Couples might stop having children if they already have one son or they might pursue having another child until they get at least one son. Jayaraman, Mishra, and Arnold (2009) in their research about factors affecting reproductive behavior found that there is a negative relationship between fertility desire and the number of sons in three South Asian countries namely Nepal, India, and Bangladesh in 2004, 2005 and 2006. Childbearing intention increases among women aged 15-49 along with

lower contraceptive use and fewer number of sons. The authors explain that strong masculine preference is at the root of these results.

There is clear evidence from previous studies that Vietnam has strong son preference (Bélanger, 2002; Haughton & Haughton, 1995), which leads to the question of how sex composition of children affects fertility desire. Is it true that if the sex composition of children does not meet the needs of women, based on their preference, they will continue to give birth until they achieve the gender mix that they desire? In particular, if a woman does not have a son, will they have stronger desire to have children compared to other women in order to achieve the desired son?

To the best of our knowledge, there is a gap in research about the relationship between fertility desire and sex composition of children in Vietnam. Our research will fill this gap by providing an empirical evidence of the relationship between fertility desire and sex composition of children. This thesis aims to investigate whether the variation in sex composition of children can explain the variation in fertility desires both over time and across regions and describe the trend and pattern of fertility desires in Vietnam in 2011 and 2014 by using Vietnam Multiple Indicator Cluster Survey (MICS) data. Specifically, we examine how gender of children (with emphasis on the number of boys that women have) affect fertility desire in six economic regions in Vietnam, which are well-documented for son preference. We will focus on the group of women with two children and intended to produce more with the assumption that the

desire to have more children is stronger in women who dare to overcome two-child policy to have a son.

Sex ratio at birth is an important indicator to evaluate gender imbalance of a province or a region. By looking at SRB, we can see gender preference of a specific region. If the SRB is high for many years in a specific region we can say that this region has norms of son preference. Therefore, we can use average provincial level SRB as an indicator of social norm at the regional level.

In addition, because sex ratio at birth is considered an indicator of social norm that affects individual fertility desire, we attempt to add this variable in our model. A coordinated analysis technique is included in this research to examine the impact of average SRB in the previous average five years and sex composition of children on fertility desire. The main assumption is that women who do not have a son living in regions with high sex ratio at birth will have high fertility desire compared with women with at least one son. We compare how sex composition of children affect on fertility desire by also taking into account sex ratio at birth at the provincial level which is believed to encourage or discourage women to decide to have more children. Although this research does not directly examine the relationship between son preference and fertility desire, results from both sex composition of children and sex ratio at birth at the regional level can be interpreted to have implications regarding son preference.

This study is the first research on fertility desire in Vietnam using data at the national level. As such, understanding factors which are related to or factors

which affect fertility desire not only can contribute to academic literature but can also have some policy implications.

1.2 Research objectives

1. To examine the situations and trend of fertility desire and sex composition of children among Vietnamese women in 2014.

2. To investigate the relationship between sex composition of children and fertility desire.

3. To analyse the effect of sex composition of children on women's fertility desire for different groups of women (based on number of current children).

4. To examine whether social norms, proxied by average five years SRB at the provincial level, have an influence on how sex composition of children affects fertility desire of Vietnamese women (through an interaction term "average five years SRB * Sex composition of children")

1.3 Research questions

In this thesis, we explore whether the difference in sex composition of children can explain the desire to have children among individual women, living in six economic regions in Vietnam. To our knowledge, this is the first research about fertility desire and son preference based on the combination of social norms and sex composition of children by using MICS data in Vietnam.

The specific research questions are as follows:

1. What is the situation of SRB, fertility, fertility desire, and sex composition of children in Vietnam in 2014?

2. Is there any difference in women's fertility desire among women with one child, women with two children, and women with three children and more?

3. When data is analyzed separately for women belonging to different groups based on their number of current children, is fertility desire of those who do not have a son the same as those who have at least one son?

4. Do social norms, proxied by average five years SRB at provincial level, have an influence on how sex composition of children affects fertility desire of Vietnamese women?

Answering these research questions helps to shed light on the reasons leading to low fertility desire among some Vietnamese women and high fertility desire in others.

1.4 Hypothesis of study

1. We hypothesize that women with more sons will have a lower fertility desire because having a son will allow them greater freedom to stop having another child.

2. We also hypothesize that women with only daughters will have higher fertility desire than those with at least one son.

3. Women in better economic situation and women from the northern region of Vietnam not only desire but also get a higher proportion of sons, under

the control of others variables (this hypothesis is completely opposite to research results from India (Clark, 2000)).

4. Women who do not have a son and live in regions with high sex ratio at birth will have high fertility desire to have children compared with women with at least one son.

1.5 Benefits of the study

The significance of this study is two-fold. This is the first fertility desire research in Vietnam using data at the national level to find out the relationship between sex composition of children and fertility desire incorporating the role of social norm. The study should also have important policy implications.

1.6 Proposal structure

The rest of the thesis is organized as follows. Chapter 1 gives some background of fertility, fertility desire and research questions, chapter 2 contains a review of the related literature. Chapter 3 describes the data used in the subsequent study, measurement of main variables, methodology and conceptual framework. Chapter 4 presents empirical findings, and chapter 5 provides the discussions, conclusions, limitations of the research and future research.

CHAPTER 2: LITERATURE REVIEW

This section will provide brief definitions of fertility desire, theories related to fertility and review the literature from existing studies on the relationship between fertility desire and sex composition of children.

This literature review was conducted from September 2017 to November 2018 using electronic databases: Jstor, Springer, Taylor and Francis Online, ISI Web of Knowledge, Science Direct, Proquest. The key terms used were fertility intention, fertility desire, sex ratio at birth, son preference. The reports from Vietnam were also taken from GSO Vietnam (General Statistic Office, 2011b; GSO, 2017)

2.1 Definitions and theories related to fertility desire

2.1.1 Definition of fertility desire

In the study of fertility behavior or childbearing motivation, there are two basic concepts commonly used by demographers, which are fertility desire and fertility intention. In some studies, the concepts of fertility desire and fertility intention are often confused because these two concepts have similar meaning in some languages and are used to replace each other (Miller, 2011). According to Finocchario-Kessler et al. (2010), fertility desire refers to the wish or longing for something and fertility intention is generally considered "expectation to act upon one's desire". Desired fertility is not the same as intended fertility. The difference between desires and intentions is the difference between what one would like to do given no situational constraints and what one actually plans to do given the

reality with specific constraints, for example the number of children. Desire does not require a decision and a commitment to action. However, fertility intention is closer to actual fertility than fertility desire (Kost & Forrest, 1995; Miller, Bard, Pasta, & Rodgers, 2010; Philipov, 2011). According to Oxford dictionary definition, desire is "to want something, especially strongly" and intention is "something that you want and plan to do" (Dictionary, 2008).

In general, previous studies used the term fertility intention with data that have information about the ideal number of children (Miller, 2011). If researchers do not have a specific ideal number of children, we use the term fertility desire (Kanokwara phuangprayoung, 2016). In this thesis, we use term fertility desire instead of fertility intention because in the questionnaire we do not have the question asking about how many children women want to have after the question asking whether they want to have more children. The question about specific ideal number of children that women would like to have shows commitment to give more births in the near future, it shows that women have planned to give more birth.

Fertility desire is defined as the desire to have another child in the future at the time of interview. There are several ways to measure fertility desire from macro level to individual level, which can be summarized as follows:

At the macro level, researchers have used various indicators in order to measure fertility desire such as desired total fertility rate (Lightbourne, 1985), wanted total fertility rate (Bongaarts, 1990b), unwanted fertility rate (Casterline

& El-Zeini, 2007), or the proportion of women's unwanted pregnancy (Westoff, 2010b).

At the individual level, the most popular measure of fertility desire is based on Demographic and Health Survey (DHS). DHS uses ideal family size to measure fertility desire with the question: “If you could go back to the time you did not have any children and could choose exactly the number of children to have in your whole life, how many would that be?” (Günther & Harttgen, 2016; Hayford & Agadjanian, 2012) or unwanted/wanted question “whether the current pregnancy was wanted or not” as used in research at Ivory Coast (Eugène, Harvey, Orsot, & Simplice, 2018). In addition, some studies use country-specific data such as the Measurement, Learning & Evaluation survey at Senegal in order to evaluate ideal number of children (Okigbo, Speizer, Corroon, & Gueye, 2015)

Fertility desire is one of the topics that is of interest to researchers of various disciplines, especially the demographers. To our knowledge, The first study of fertility desire was an introduction of measurement of Wanted Fertility by Lightbourne and Bongaarts (Bongaarts, 1990a; Lightbourne, 1985). This was followed by the explosion of a series of studies on the different perspectives of fertility desire. The most common are the comparative studies of actual fertility and the expected fertility based on the views of only women or of both spouses (DaVanzo, Peterson, & Jones, 2003).

Fertility desire can be measured based only on the wishes of the wife or both husband and wife. A 12-year study by DaVanzo et al. (2003) showed that the fertility desire and actual fertility go hand in hand, this means that couples who desire to have more children more likely to actually have more actual children than couples who do not desire to have more children. Husband's desire to reproduce plays a more important role in deciding the actual fertility than his wife's desire to reproduce in Malaysia (DaVanzo et al., 2003).

2.1.2 Theories related to fertility desire

Fertility desire has been a topic of interest of scholars worldwide since 1990. Miller and Pasta (1994) were the first authors to directly address this issue, although Bongaarts (1990a) had argued for the importance of "wanted fertility". In this study, we use social science theory to explore the subject in a macro-micro approach. To achieve these research objectives, we have used key theoretical frameworks as below:

2.1.2.1 Social norm theory

Our study is based on social norms theory that is increasingly used by psychologists and public health workers in explaining behaviors of individuals in contemporary societies. Social norms theory provides a framework for analyzing the impact of social norms on the behavior of individuals with the main assumption that the actions of individuals in society are influenced and controlled by the actions and thoughts of the group of people around them.

The father of this theory were Perkins and Berkowitz in 1986 with research about social norms and alcohol consumption among students (Perkins & Berkowitz, 1986). After that, social norms theory has been applied to various studies in the field of behavioral health such as smoking behavior, bullying, eating disorders, gambling, parenting behaviors, driving while intoxicated, sexual assault, sexual health behavior (Berkowitz, 2005; Scholly, Katz, Gascoigne, & Holck, 2005).

Social norms theory supposes that misperceptions are the underlying cause of individual misconduct. If a person overestimates deviant behaviors of others, he/she will be more likely to undertake these behaviors. On the contrary, if a person underestimates healthy behaviors of others, he/she will decline to undertake these behaviors. For example, Perkins and Berkowitz (1986) found that students who think that other students drink more than they do (when in fact they do not), which is an overestimation, tend to engage in drinking behavior and consume more alcohol than others. Whereas students who think that there are very few people who consume less alcohol than they do (underestimate the situation) will be discouraged to participate in the non-alcoholic group.

We can conclude that the individual's decision to perform a particular behavior depends on the norms of their social environment where they live through his/her own perception. In our study, we use the sex ratio at birth (high SRB region hold the norms of preference for boys and and vice versa) as a value representative of the social norms of each economic region in Vietnam implying

that fertility desire behavior of women is affected by social norms in the region. Individuals living in high SRB areas will be affected by the norms of the area. The mechanism of the SRB impact on the individual preferences through misperception as follows. The misperceptions of women are established when they observe that other families have sons and often boast or get more attention from communities, which makes women believe that the behavior of having sons is a majority behavior and one should act accordingly. In contrast, women have underestimated acts of having daughters because they believe that this is the behavior of the minority (there are very few people around them who have daughters; having daughters are less likely to be supported by communities; having a daughter is considered weaker than having a son), this prevents women from having daughters.

A person's behavior can be influenced by a variety of different norms because each person living in society has a relationship with family, friends, relatives, the community, and each of these social groups have different norms. The impacts of each group's norms on individual behavior are different depending on stages of the individual and the different types of behaviors. For example, when an individual is still in school, norms in school may have the most noticeable impact on individual behavior, while when individuals mature, the norms of society will have a strong impact compared with others. Therefore, considering the impact of social norms on individual behavior, attention should

be paid to the saliency of different norms on different behaviors (Berkowitz, 2005).

According to this theoretical approach, we recognize that the reproductive behavior that is specific here is the fertility desire in Vietnamese society, which must be considered in light of the specific social norms that have encouraged or discouraged women's fertility desire. This behavior is closely related to other factors in society and is influenced by these factors.

Childbirth is a matter of the individual, but it is determined by many other factors such as family, friends, relatives and social norms. Impacts of social norms upon individual behavior in general and social norms influencing on reproductive behavior, in particular, have been receiving attention since 1988 by researchers in the field of demography with studies of normative pressure (Rindfuss, Morgan, & Swicegood, 1988). Social norms are considered the standard that people must follow, if individuals deviate from social norms, they will be considered unusual and have to bear normative pressure. Rindfuss et al. (1988) found that couples are under normative pressure to be a parent in a society where most people support having children.

A prominent issue in the study of impact of social norms upon behavior is gender differences. In other words, the question is whether women or men get more influenced by normative pressures. Recent research works found that normative pressure influences childbearing desire. Research results are controversial, a research about fertility intentions in Bulgaria of Billaria et al.

(2009), using data of 10,003 samples which was conducted by the Max Planck Institute for Demographic Research in 2002, found that women have higher pressure from subjective norms than men in fertility intentions. However, when authors combined three dimensions, namely, attitudes, norms and perception in a model analyzing childbearing intention, the effect of gender is no longer found (Billari, Philipov, & Testa, 2009a).

2.1.2.2 The Theory of Planned behavior (TPB)

As we have already mentioned in the definition of fertility desire, a comparative study of fertility desire and fertility intention by Miller (2011) has suggested that these two concepts are used interchangeably and in some articles they have similar meaning. Thus, theories which are used to analyze fertility intention also applies for fertility desire.

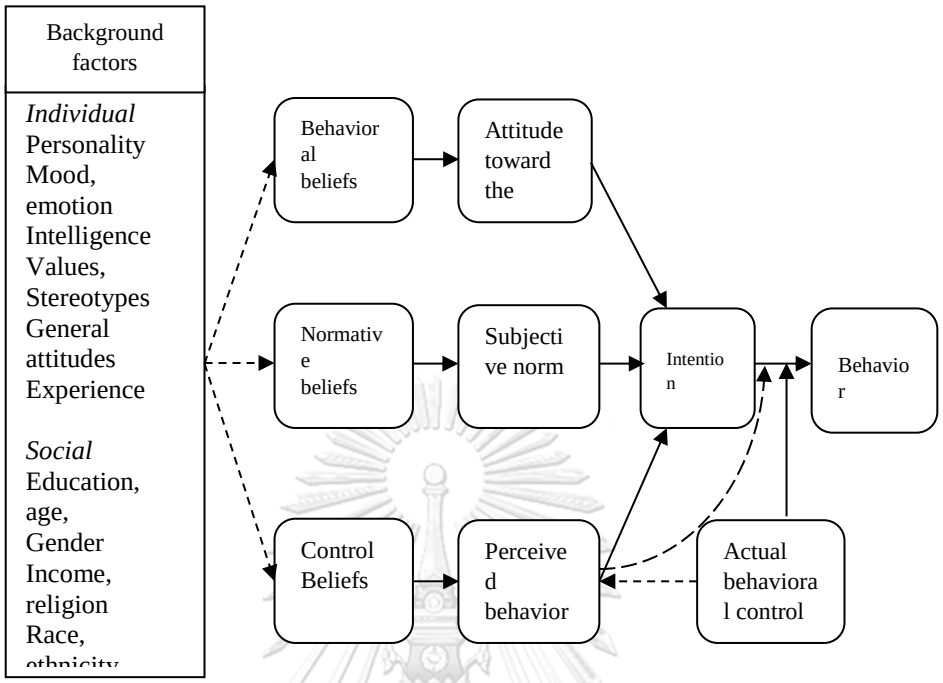
Fertility desire or desire in general is branches/forms of behavior. Based on the theories of behavior, we can identify the factors which have direct and indirect impacts on fertility desire. One of the theories of behavior is theory of planned behavior introduced by Ajzen (1991) and then was expanded in the year 2005 (Ajzen & Fishbein, 2005).

Theory of planned behavior focuses on purposeful actions. There is a positive relationship between specific desire and specific behaviors. The magnitude of this relationship depends on the type of behavior and on the time-interval between intentions and behavior. In order to understand the mechanisms

of individual decision-making, the following TPB framework is necessary to understand the determinants of intentions.

Based on theory of planned behavior, intentions or desires are directly dependent on three components: attitudes, norms and perceived behavioral control. Ajzen and Fishbein (2005) classify background factors in three groups. First, “individual” factors, such as personality traits, mood, emotion, intelligence, values, stereotypes, general attitudes, experience. Second, “social” factors, such as education, age, gender, income, religion, race, ethnicity and culture. Third, “information” factors, such as knowledge, media, and intervention.

Figure 1: The theories of reasoned action and planned behavior



Source: Ajzen and Fishbein (2005)

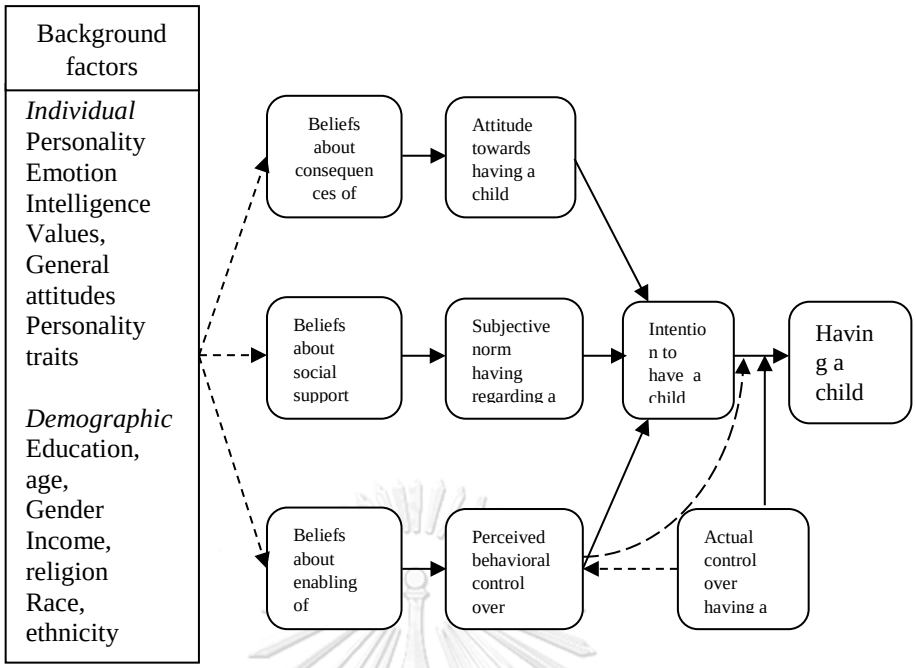
One of the key determinants of desired behavior is attitudes. An attitude can be defined as "the degree to which a person has a favorable or unfavorable evaluation or appraisal of the behavior in question" (Ajzen, 1991). Social-psychological approaches to decision-making emphasize attitudes as a key determinant of desires and, therefore, subsequent behavior as opposed to more distant value orientations. Attitudes have frequently been used as explanatory factors in demographic studies of childbearing desires and behavior (Billari, Philipov, & Testa, 2009b)

Since this theory came into being, it has been widely used by researchers, particularly demographers, in the study of fertility intention/desire. Billari et al. (2009b) applied the theory of planned behavior to consider fertility intention.

According to the theory of planned behavior approach, background factors influence the construction of desires through their effect on attitudes. These may include, for instance, economic theories (emphasizing income, wealth, education) and ideational theories of fertility (emphasizing religion, value orientations), as well as general demographic factors such as gender, age, cohort.

Similar to Ajzen and Fishbein (2005)'s model, Billari et al. (2009b) classify background factors into three groups, namely, individual, demographic and societal. First, "Individual" factors include personality, emotion, intelligence, values, general attitudes. Second, "demographic" factors included age, education, gender, income, religion, race, and ethnicity. Third, "social" factors include social norms, culture, economic and political context.

Figure 2: Theory of planned behavior applied to fertility intention



Source: Ajzen and Klobas (2013)

2.1.2.3 Value of children

Many researchers in various fields such as economics, psychology, sociology, anthropology and demography have studied the value of children (VOC) (Friedman, Hechter, & Kanazawa, 1994; Hoffman & Hoffman, 1973; Kagitcibasi & Ataca, 2005; Nag et al., 1978; Trommsdorff & Nauck, 2005; Zelizer, 1994). The first authors to propose an analytical framework for VOC are Hoffman and Hoffman (1973), with nine values including:“(1) social identity and adulthood status; (2) the expansion of the self, the link to a larger entity, the desire of 'immortality'; (3) morality, religion, altruism, group welfare, norms concerning sexual behavior, impulsive action, virtues; (4) primary group ties, affection; (5) stimulus, novelty, amusement; (6) realization, competence, creativity; (7) power, influence, efficacy; (8) social comparison, competition; (9)

economic utility". When we discuss VOCs, most of them are values of children to parents (Hoffman & Hoffman, 1973).

The theoretical model of the value of children provided by Hoffman and Hoffman (1973) is an integrative model of crucial factors from culture to psychology and economics to explain human reproductive behavior. VOC for parents are one-way relationships, only parents have the right to decide whether to have children. Children do not have the right to choose their parents. The core value of children is to serve or meet the needs of the parent. Nine values above become the determinants of childbirth; in different societies, the values will have different priorities. In developing countries, an economic value will be given priority so that parents can have more workforce, increase household income, and provide economic security and care for old age. While in developed countries social identity and extending of self into a larger entity are prioritized (Hoffman & Hoffman, 1973). Under the influence of alternative sources, expense of childbirth and childrearing, social institutions provide encouragement and discouragement to changing VOC and VOC will change following the characteristics of society. When the social security system for the elderly is guaranteed, the economic value of the children for old age will be reduced. The cost of raising children in terms of finances, time and health, decreasing employment opportunities, or pursuing individual career goals will reduce the value of the child in terms of social identity. Whereas if child care services are expanded and facilities are provided and accessible, this will increase the

likelihood of achieving parental VOC (Hoffman & Hoffman, 1973; Sayer, Bianchi, & Robinson, 2004; Trommsdorff & Nauck, 2005).

Since 1994 a group of authors have attempted to build a theory of value of children and prove it by empirical findings (Friedman et al., 1994). VOC is based on two main edges at an individual level and society level. VOC is considered as cost and benefit of having children. At the individual level, the VOC is considered for the parent, the values that the child will contribute to their mother or their father upon becoming a parent. The benefits are increasing the value of a woman and reinforcing the stability of marriage, positive relationship, and longer duration of marriage. In contrast, the negative effects mentioned are health of women and job opportunities (Friedman et al., 1994).

Other authors focusing on the value of children usually attribute the benefits to two main areas: economic benefits and psychological-emotional benefits (Friedman et al., 1994; Nag et al., 1978; Sayer et al., 2004; Tienda, 1979).

On the one hand, it is clear that children have economic benefits i.e., increasing income of household by contribution of children, security for old age, increasing labor in household, helping with household chores, VOC in terms of economic benefits is one of the concerns of parents in industrial society (Friedman et al., 1994; Nag et al., 1978; Tienda, 1979). On the other hand, VOC in terms of psychological-emotional benefits namely, self-enrichment, development and attainment of adult status, joy of being parents and raising a

child , care for parents in old age in mental aspects (old age insurance value), are more prominent in modern societies. Where there are abundant natural resources, parents will receive material benefits by having many children. Under such conditions, the psychological value has little effect. As natural resources, especially land, are becoming increasingly scarce and socio-economic changes are increasingly widespread, the economic benefits of having a large number of children will decrease while the cost of raising children will increase. Then, the psychological value becomes more important (Friedman et al., 1994; Sayer et al., 2004).

In this approach, the cost and benefit of children are based on parental attitudes related to having children. According to Hoffman and Hoffman (1973), rural parents emphasize the economic and practical benefits of their children, while urban parents, especially those with higher education, emphasize the emotional and psychological aspects of having children.

Furthermore, the differences in attitudes towards the value of the children between husband and wife have been found. This difference may be due to the gender role and the division of labor in the family. For example, when considering the value of a child, women often emphasize maternal love through having children, address psychological stresses, and health requirements during pregnancy, while men often refer to the need for children to follow the lineage and pay more attention to the economic costs of having children (Choi, Yeon, Kwon, & Hong, 2013; Muller-Nix et al., 2004).

Trommsdorff and Nauck (2005) also conclude that the value of the children is the general standard for the children that a social group offers and and it is different by cross-culture perspective of a specific country or specific communities. However, the rules and standards in each society are not always maintained, they can change according to the choice of the majority of people in society and culture.

2.2 Determinants of fertility desire

Through the literature review, we can note that researchers, especially demographers, study the fertility desire for two main reasons, namely, predicting future fertility and finding the factors that influence fertility desire (Ajzen & Klobas, 2013; Philipov, 2011). For the first purpose, comparative studies of fertility desire and actual fertility using longitudinal data have shown that there is close relationship between predicted fertility and actual fertility at the macro level. For the second purpose, some factors related to fertility desire including individual, demographic and societal were found (Ajzen & Klobas, 2013). In this proposal, our concern concentrates on the second aim in particular the relationship between sex composition of children and fertility desire.

The following sections describe the factors influencing fertility desire, namely, (2.2.1) sex composition of children, (2.2.2) women's education, (2.2.3) son preference, (2.2.4) contraceptive methods, (2.2.5) women's empowerment, (2.2.6) other determinants.

2.2.1 Sex composition of children and fertility desire

Studies of the sex composition of children mostly concentrated on investigating its impact on reproductive behavior, parental lifestyle, parents' mortality, the prosperity of parents, marriage dissolution and subjective well-being at old age (Andersson & Woldemicael, 2001; Grundy, 2009; Morgan, Lye, & Condran, 1988). In our research scope, we are particularly interested in the impact of sex composition of children on fertility desire.

The reason that the sex composition of children is one of the key determinants of reproductive behavior is that reproductive behavior is representative of the ideals and preferences of each particular society based on the ideal number of children, number of sons and number of daughters (Edmeades, Pande, Macquarrie, Falle, & Malhotra, 2012). A few studies throughout the world reveal that sex composition of previous children and fertility desire have tight relationships (Arnold, Choe, & Roy, 1998; Calhoun, Nanda, Speizer, & Jain, 2013; Edmeades et al., 2012; Jayaraman et al., 2009). Depending on the area of study, the results found notable differences. The following paragraphs outline the differences in sex composition of existing children in specific social contexts, namely, countries that have son preference, countries with preference for mixed-sex composition and countries with daughter preference.

First, in countries with son preference such as Nepal, India, Bangladesh and China, sex composition of previous children illustrated by the number of sons becomes key determination of fertility desire, in other words, women with

two daughters and no son are more likely to want more children as compared to women with two sons and no daughter (Arnold et al., 1998; Calhoun et al., 2013). The role of son preference on fertility behavior, specifically fertility desire, is a controversial issue. Morgan and colleagues found a positive relationship between son preference and fertility in China (Morgan, Zhigang, & Hayford, 2009). In other words, stronger son preference leads to higher fertility. This happens in some remote areas of China, where one-child policy is loosened. Couples are allowed to have a second child when the first child is a girl. This led to the number of children in some families being larger than one due to the birth of a second child after the first daughter (Baochang, Feng, Zhigang, & Erli, 2007).

In contrast, in 2008 a group of authors found a negative relationship between son preference and fertility. That is, the increase in son preference reduces fertility in China because of norm of having one child. After one-child policy was abolished in China, TFR remains super low in Jiangsu province, China with TFR nearly 1.0 in 2008 although Chinese can have two children according to the new law. It seems that having one child has become the norm in Chinese society. In addition, with strong son preference, couples with a son do not want to have another child compared with those with a daughter, son preference makes norms of one child stronger (Zhenzhen, Cai, Feng, & Baochang, 2009). In some countries where parents prefer to have boys rather than girls, fertility desire was negatively related with the number of sons that

women have. The desire to have more children grows stronger in Indian mothers without any son compared with women without daughters (Chaudhuri, 2012). The higher the number of sons, the lower fertility desire, and the higher the prevalence of contraceptive use (Jayaraman et al., 2009). A few studies have looked into how the sex composition of the previous child affects fertility and fertility desire. They have argued that having an additional son reduces the probability of having another children (Clark, 2000). Children's sex composition, particularly sons are more important in the parents' decision to have more children because in a society with strong preference for sons, sons are a security for old age, and take on roles such as worshipping ancestors, continuing of the family name and raising the status of parents in society (Clark, 2000; Das Gupta et al., 2003; Guilmoto, 2012; Larsen, Chung, & Gupta, 1998).

Second, preference for mixed-sex composition or balance of children's sex is quite common in Western countries (Andersson, Hank, Rønsen, & Vikat, 2006; Hank & Kohler, 2000), and some parts of India such as Madhya Pradesh. Families in Madhya Pradesh have a standard for children's sex composition being two sons and a daughter. The highest proportion of desire to have another child is found in the group having two girls only relative to otherwise (Edmeades et al., 2012).

Last, daughter preference is found in the Czech Republic, Lithuania, Sweden and Portugal (Hank & Kohler, 2000). Four main benefits of having a daughter is discussed in Mills and Begall (2010) namely, caring for younger

brothers or sisters, helping with household chores, participating in the labor force to improve household economic situation and caring for parents in old age, such that there is increasing daughter preference in these countries. Families with two girls have the lowest proportion wanting to have more children (Murphy, 1992). In addition, no gender preference is found in Finland, France, Western Germany, Norway, Poland (Hank & Kohler, 2000).

Furthermore, the results of previous researches support the notion that there is an association between the sex composition of existing children and parents' mortality. Christiansen's study in Norwegian population from 1980 to 2008 shows that those who have only daughters have higher mortality than those with only sons or mixed sex (Christiansen, 2014). In addition, childless people high-risk of mortality compared with parents with children and the number of children is inversely proportional to parents' mortality. The authors explain that children are a good source of positive emotions, motivation, and security for old age. However, a turning point is noted for couples with four to five children, which means that parents' mortality with four or more children is higher than otherwise (Christiansen, 2014; Grundy, 2009).

2.2.2 Women's education and fertility desire:

On the one hand, most research finds that women with higher education are less likely to have large families and more likely to have low fertility desire in Asian countries and in postindustrial countries. On the other hand, some empirical evidence in European countries, such as West Germany, and Norway,

finds that highly educated women are more likely to have more children (Heiland, Prskawetz, & Sanderson, 2008; Jayachandran, 2017; Kravdal & Rindfuss, 2008; Testa, 2014).

The relationship between education and reproductive behavior is well documented in countries around the world, especially in developing countries. Fertility desire has negative relationship with female education (Jayachandran, 2017). Impact mechanisms of education, markedly education of women are as follows: education increases the equality of women, increases the proportion of women entering the labor market, and increases access to family planning services, from which women have the power to decide on the number of children and the family size they want. Indeed, women who pursue higher education will delay the marriage and delay childbearing because they must spend more time for education rather than getting married and giving birth, which leads to low fertility desire and small family size at the end of their fertility compared with otherwise (Liefbroer, 2009). Women with higher education are more likely to have later first births, smaller number of children and also more likely to be childless than otherwise (Kravdal & Rindfuss, 2008).

The impacts of each level of education (no education, primary or secondary and higher education levels) on fertility desire are different and change over time. The report about the desired number of children conducted in 60 countries between 2000 and 2008 found that there was an association of women's education and the desire to have more children. Two-thirds of women

with no education in 25 sub-Saharan African countries such as Uganda, Benin, Ethiopia, and Zimbabwe want more children, only one-third of women with no education want no more children. However, the trend of desiring no more children in the group of uneducated women was found to increase sharply in Cambodia and India, from 36 percent in 2000 to 61 percent in 2005, and from 54 percent in 1992 to 73 percent in 2005, respectively. Women with secondary school education tend to have lower desired number of children than uneducated women. There is no big difference among women having primary and secondary education regarding fertility desire in sub-Saharan African over time (Westoff, 2010c).

On the contrary, an emerging trend, which is worth noting, is that female education has a positive relationship with fertility desire and large family size. Testa (2014) found that in countries like Italy, Belgium and Sweden, women who spend more time improving their human capital have a higher likelihood of having more children than women with lower education. This happens in societies where institutional contexts support women's reproductive rights, family-friendly ideologies are illustrated with policies providing high-quality daycare, and policies enhancing the time of child care of the husband and gender equality. Highly educated women are not forced to choose to either pursue careers or give birth; they can easier combine both work and family at the same time. There are three main key points hidden deep behind the strong positive relationship between women's education and fertility desire, which are gender

equality, provision of quality childcare, and good economic conditions (Kravdal & Rindfuss, 2008; Testa, 2014).

2.2.3 Son preference

Existing studies reveal that there are relationships between fertility desire and son preference. Son preference increases fertility because parents tend to give birth until they get one or more sons (Jayachandran, 2017). Research about the effect of family sex composition on fertility desire and family planning behaviors in urban Uttar Pradesh, India, showed a strong connection between son preference and fertility desire. Women with two daughters are more likely to want more children as compared to women with two sons (Calhoun et al., 2013).

Guilmoto (2012) found that son preference is related to kinship systems and ethnic groups in Vietnam by using data set of census 2009. The Vietnamese kinship system is influenced by China with the patriarchal tradition, where the elders and sons have the highest position in the family. And “Kinh” people are the largest ethnic group, accounting for more than 80 percent of the population, and are associated with stronger son preference compared to other ethnic groups in Vietnam.

Although this proposal does not directly address the issue of son preference, the sex composition of children implies the effect of son preference on fertility desire. Therefore, we will provide a brief overview of how previous studies measure son preference.

Methods to measure son preference are still controversial at present. There are several ways to calculate son preferences, namely, based on the desired number of children (Lin & Adserà, 2013), based on ideal and actual number of children or ideal number of sons/daughter (Clark, 2000), gender of the children if only has one child (Jiang, Li, & Sánchez-Barricarte, 2016), parity progression ratios, sex ratio at birth or sex ratio.

Table 1: Summary of methods to calculate son preference

	Authors	Year	Method to calculate son preference
i	Lin & Adserà	2013	Based on desired number of children. $\text{Son preference} = \frac{\text{Desired number of sons}}{\text{Desired number of children}}$

ii	Koolwal	2007	Based on ideal number of sons and daughters $S^* = \frac{1}{n}\sum_{k=1}^{n}\left(\frac{I_B}{I_B + I_G}\right)_k,$ IB: ideal number of sons IG ideal number of daughters $\left(\frac{I_B}{I_B + I_G}\right)_k$ "ideal number of boys relative to ideal number of children individual k in the household would have liked to have had" S*: average of these reports across all n household members
iii	Clark	2000	Based on ideal number of sons and daughters and actual number of sons and daughters. $\text{ideal proportion of sons} = \frac{\text{woman's ideal number of sons}}{\text{woman's ideal number of children}}$ $\text{Actual proportion of sons} = \frac{\text{woman's actual number of sons}}{\text{woman's actual number of children}}$
iv	Jiang, Li, and Sánchez - Barricarte	2016	Gender preference with the condition of having one child Based on the question ''If you could only have one child, would you prefer a boy or a girl, or is there no preference?'

v	Guilmoto	2012	Based on parity progression ratios $\text{Son prefernce} = \frac{\text{parity progression ratio without previous son}}{\text{parity progression ratio with previous son}}$
vi	Hobbs	2004	Based on sex ratio at birth $\text{Sex ratio at birth} = \frac{\text{number of male births}}{\text{number of female births}} * 100$
vii	Rai et al. and Malhi	1995 and 2014	Son Preference ratio $= \frac{\%\text{ Women having 2 sons who did not want any more children}}{\%\text{ Women having 2 daughters who did not want any more children}}$

First, one way to measure son preference is to look at the desired proportion of sons, as in the method of Koolwal (2007) as method (i) and Lin and Adserà (2013) method (ii) in table 1.

$$SP = \frac{\text{Desired number of sons}}{\text{Desired number of children}}$$

"SP" is son preference index. If SP>0.5, it means that the individual has son preference (more sons than daughters). If SP =0.5, we can say that there is indifference in gender, in other words, “sex doesn’t matter” in this case. However, this method is based on information about desired number of sons that we do not have in our data set.

Other popular son preference measurements rely on the ideal number of sons and daughters as method (iii) in table 1 by asking the question "How many

sons and daughter do you want to have?". Ideal proportion of sons is calculated as the ratio between the ideal number of sons and total ideal number of children, then compared with the actual number of sons and daughters of women (Clark, 2000). Some authors rely on the Demographic and Health surveys questionnaire with the main question "How many of these children would you like to be boys, how many would you like to be girls and for how many would it not matter if it's a boy or a girl?" in order to proxy for son preference. However, this leads to the consequence that this variable is based on the assumption that is not true at present and it has an indirect relationship with son preference. And obviously there is a big gap between assumption and reality (Guilmoto, 2017).

In addition, Jiang et al. (2016) measure son preference based on the question ''If you could only have one child, would you prefer a boy or a girl, or is there no preference?'' and based on the question 'What is your ideal number of children if you do not consider the family planning policy?" to measure fertility intention.

Second, Guilmoto (2012) used parity progression ratios (PPRs) to estimate son preferences in Vietnam, in which parity progression ratios is measured by proportions of women with n births who have an additional (n+1) birth. Thus son preference equal ratio of parity progression ratio without previous son divided by parity progression ratio with a son as method (v) in table 1. In the meantime, the author also provides an indicator to calculate the average effect of son

preference on fertility progression by "parity weighted average of parity specific son preference".

$$\text{Son prefernce} = \frac{\text{parity progression ratio without previous son}}{\text{parity progression ratio with previous son}}$$

The method based on the synthetic parity progression ratios to consider fertility has been known since 1998 to replace the calculation of fertility simply based on age. Since another author have suggested that the tendency to reproduce largely depends on how many children women have, not how old they are (Hinde, 1998). PPR is the proportion of women who have certain number of children and go on to have another child (Wachter, 2014)

$$\text{PPR} = \frac{\text{Number of women who have x} + 1 \text{ children who go on to have another child}}{\text{Number of Women who have x child who go on to have another child}}$$

Third, some authors used sex ratio at birth or sex ratio as proxy variable for son preference as method (vi) in table 1, other scholars prefer using sex of last birth, masculinity proportion in total population and excess/deficit of male to identify son preference (Hobbs, 2004). According to Le et al. (2017) sex ratio at birth was measured at an individual level. Many previous studies find that the sex ratio in Vietnam is higher than the world average. The normal sex ratio at birth is 103–106 boys born per 100 girls meanwhile in Vietnam sex ratio at birth is 112.2 boys born per 100 girls in 2014 (Neuhäuser, 2003; UNFPA, 2015). Higher sex ratio at birth has been considered a consequence of Vietnam's traditional patriarchal society which has strong son preference. According to

WHO and Neuhäuser (2003), the standard of the SRB is 105 boys / 100 girls, ranging from 103 to 106.

Finally, Rai et al. and Malhi suggest a method to calculate son preference ratio based on percentage response of those who already have two children and do not want more children as method (vii) in table 1 (Malhi, 1995; Rai et al., 2014). Furthermore, these authors also suggest desired balance ratio, which is based on the method of Rai et al. and Malhi and is calculated as follows:

$$\text{Desired balance ratio} = \frac{\%\text{ Women having 2 children of } \textit{opposite} \text{ sex who did not want any more children}}{\%\text{ Women having 2 children of the } \textit{same} \text{ sex who did not want any more children}}$$

2.2.4 Contraceptive methods and fertility desire

The explosion of modern contraceptive methods contributes greatly to the decline in fertility in developing countries. The use of contraception methods depends not only on individual factors but also on socio-cultural contexts. Studies in sub-Saharan Africa provide evidence that there is a negative relationship between fertility desire and contraceptive behavior. Women who wanted to have more children use less contraceptive, compared with those who do not want more children. Fertility desires closely related to contraceptive behavior (OlaOlorun, Seme, Otupiri, Ogunjuyigbe, & Tsui, 2016).

Previous studies focused primarily on women's contraceptive use as women are the ones who get pregnant and ignored the role of men (Forrest & Fordyce, 1993). From 1998, the role of men in the decision to use contraceptives is particularly prominent in developing countries, where most important decisions are in the hands of men, especially in patriarchal regimes in countries

like China, India and Vietnam. Husband is the main decision maker in using contraceptive methods and is more likely to use contraception than wife in India (Bankole & Singh, 1998)

Studies have also shown clearly that if couples do not want to have more children, they will be more likely to use contraceptive methods. Research in Sub-Saharan Africa has noted low rates of contraceptive use in couple where husbands want more children, but wives do not want to have more children. This means that the husband's fertility desire is more likely to affect the use of contraceptives compared to his wife's, which is also consistent with the socio-cultural context where men hold the power in household decision making (Ainsworth, Beegle, & Nyamete, 1996).

Religion is also one of the important factors that affect the use of contraceptives. Muslim women who want to have more children have lower proportion using a contraceptive due to their beliefs that contraceptive is "against religion" (Knodel, Gray, Sriwatcharin, & Peracca, 1999).

Overall, fertility desire can become a relatively accurate indicator for forecasting contraceptive behavior. Parents with high fertility desire are less likely use contraceptive methods; meanwhile parents with low fertility desire are more likely use contraceptive method to achieve the ideal number of children (Bankole & Singh, 1998).

2.2.5 Women's empowerment and fertility desire

Women's empowerment is defined as “the expansion of people's ability to make strategic life choices in a context where this ability was previously denied to them” or women's empowerment is “the process in which women elaborate and recreate what it is that they can be, do, and accomplish in a circumstance that they previously were denied" (Kabeer, 2001, 2005). Women's empowerment is one of the key indicators of sustainable development, especially in developing countries where women are more limited in rights than men. In 2000, Women's empowerment has become one of the official targets for Millennium Development Goals. In general, scholars found that women's empowerment has a relationship with number of children, birth interval, fertility preference, unintended pregnancy, contraceptive use, abortion and low fertility (Kritz, 2000; Upadhyay et al., 2014; Upadhyay & Karasek, 2010). Research on gender role in Sub-Saharan Africa countries namely Guinea, Mali, Namibia, and Zambia has proven that there is an inverse relationship between women's empowerment and fertility desire, increased women's empowerment is associated with lower childbearing desire in 2007 (Upadhyay & Karasek, 2010).

There are a variety of measures for women's empowerment depending on the purpose of the researcher, the culture context and the data available of researcher. Most studies use "women's participation in household decision-making" as an index of women’s empowerment (Upadhyay et al., 2014) while another authors use index as where women can go without permission to measure

women's empowerment (Al & Afifi, 2003) or attitudes about gender roles. Women's empowerment also was measured by 3 indices namely: freedom of movement, economic power and non-coercion. The result from Malaysia and India show that Muslim women have lower freedom of movement and economic power but higher fertility desire compared with non-Muslim women (Morgan, Stash, Smith, & Mason, 2002; Upadhyay & Karasek, 2010). The results show that increased gender-role is associated with lower ideal number of children (Upadhyay & Karasek, 2010).

Mechanisms of how women's empowerment affect fertility desire are that women have the right to decide whether to use contraceptives, abortions and follow their desire whether or not to have more children without the pressure of husbands, husbands' relatives and society. Empirical findings show that the more number of children women have the less women's empowerment, and women without empowerment prefer large family size (4 and more children) compared to women with empowerment (Bhattacharya, 2006). Women who do not have the right to participate in household decision-making are less likely to tell her husband about her fertility desire (Hogan, Berhanu, & Hailemariam, 1999).

The role of women's empowerment on fertility desire differs in different social contexts. In communities with medium gender equality, women's empowerment is inversely related to fertility desire. More specifically, women with higher empowerment tend not to want to have more births. Meanwhile, in societies with high gender equality, there was no statistical significance between

women's empowerment and fertility desire (Kritz, 2000). There is a more important factor that strongly impacts on fertility desire which is sociocultural differences based on where women live (Upadhyay et al., 2014)

2.2.6 Other factors affecting on fertility desire

Fertility desire can be influenced by a number of factors such as socioeconomic or individual levels. Fertility desire can be influenced by mothers' socioeconomic and demographic characteristics such as age, education, husband’s education, number of daughters, number of sons etc. (Kost & Forrest, 1995; Miller et al., 2010; Philipov, 2011). From the literature review, there are broad factors affecting on fertility desire such as direct and indirect indicators effect on fertility desire or ‘‘factors positively influencing’’ and ‘‘factors negative influencing’’ on fertility desire.

Factors influencing on fertility desire negatively or having a negative relationship with fertility desire are household wealth, income, urban residence, sex ratio at birth, level of women's autonomy and human development index (at the country level) (Jayachandran, 2017; Westoff, 2010a).

First, Westoff (2010a)'s research uses data from DHS collected from over 60 countries including sub-Saharan Africa countries, southern and eastern Africa, Asia North Africa, Latin America and the Caribbean found that human development index (HDI) has a negative relationship with desire to have more children. Among women with three children, the percentage of women who want no more children in the least developed countries is lower than most developed

countries (17 percent of 11 least developed countries out of 60 countries and 75 percent of 13 most developed countries) (Westoff, 2010b).

Second, Jayachandran (2017) found that fertility desire and sex ratio have negative relationship due to son preference and low fertility. It this case, low desired fertility is related with high sex ratio because parents who have son preference find it difficult to gain their purpose (having a son) by chance in the context of low fertility, thus they use sex-selective methods at birth to be able to have only one birth and get their expected sex of the child. By using the fertility preference data collected in Haryana, the author shows that decline in fertility happens because of increasing sex ratio (Jayachandran, 2017).

Third, there are two types of research about fertility desire which are women's fertility desire/ wife's fertility desire or men's fertility desire/husbands' fertility desires and couple's fertility desire (Thomson, McDonald, & Bumpass, 1990). Matovu, Makumbi, Wanyenze, and Serwadda (2017) found that fertility desire in a rural district in southwestern Uganda is different by gender of respondent. It has been found that husbands have higher fertility desire than wives and males also have higher fertility desire than females. In addition, there are two directions of fertility desire, which are positive and negative. The desire for more children is positively related with gender (being a male), low education (having primary education) and age at first marriage being 19-24. On the contrary, fertility desire is negatively related with use of contraception, length of

marriage 5+ years, number of children (6+children) and age of mother (Matovu et al., 2017).

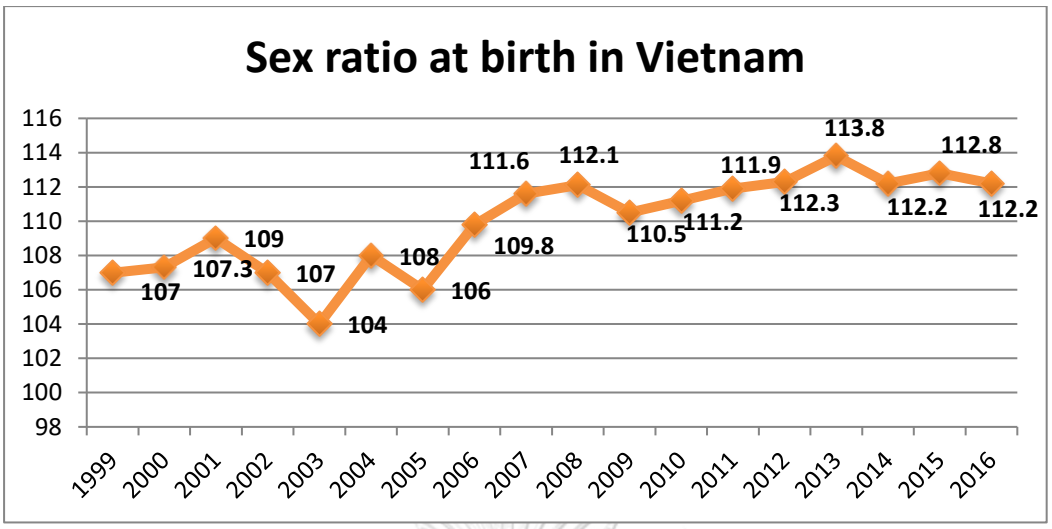
Furthermore, previous researchers found that religion of women can influence fertility desire through their belief. Morgan et al. (2002)'s research in four Asian countries including India, Malaysia, Thailand, and the Philippines have shown that religion has an influence on fertility desired, especially Islam. Muslim communities are more likely to desire to have another child compared with other communities (with base line being Buddhist communities in Thailand, Christian communities in the Philippines, Hindu communities in Malaysia and in India). The reason behind higher desire for children is that Muslims follow the patriarchal tradition with lower autonomy of women, less contraceptive use and son preference. Muslim women want to have more child or bear a son in order to consolidate her position with her husband and family in law, as well as to ensure support and care for her old age (Mason & Taj, 1987; Morgan et al., 2002)

2.3 Vietnamese Context

2.3.1 Sex ratio at birth in Vietnam

The picture of SRB in Vietnam is quite diverse and shows strong fluctuation across regions and over the years. Due to the variation in the SRB by region, it is essential to look at the trend of gender imbalance at the provincial level.

Figure 3: Sex ratio at birth in Vietnam from 1999 to 2016



Source: GSO (2017)

According to geographic area, the SRB distribution in Vietnam is quite consistent by region. High SRB provinces are generally located in the same area and vice versa. For example, provinces in the Red River Delta, including Hung Yen, Hai Duong and Hai Phong provinces, have the highest SRB and are contiguous. Similar results were also found by the General Statistics Office using the local Moran's I index and GIS method, the distribution trend of the SRB and region is statistically significant with Moran = 0.46 which means high or low SRB tend to concentrate regionally (General Statistic Office, 2011b) (appendix figure 3). Sex ratio at birth in 2014 for the whole population is 112.2, therein SRB of red river delta is 118, Northern Midlands and Mountains is 116.1, North and South Central Coast 105.5, Central highlands is 108.0, Southeast is 108.9 and Mekong river delta is 114.1 (Appendix figure 2)

Guilmoto (2012) and Guilmoto et al. (2009) found that son preference has positive relationship with sex ratio at birth in Vietnam. High SRB in Vietnam is

a consequence of various factors such as low fertility, high abortion rate, prenatal sex determination, ultrasound technology in which the root cause is son preference.

2.3.2 The influence of the Vietnamese zodiac on giving birth in Vietnam: auspicious years for childbearing in Vietnam

In Vietnam, the calendar is made up of regularly changing cycles of the moon. Because of the lunar calendar, the exact dates of a new year vary from year to year. One of the twelve animals represents each year. According to the zodiac of the Vietnamese, the first animal is the rat (Tí), then the buffalo (Sửu), followed by the tiger (Dần), the cat (Mão), the dragon (Thìn), the snake (Tỵ), horses (Ngọ), goats (Mùi), monkeys (Thân), chickens (Dậu), dogs (Tuất), and finally pigs (Hợi)) (Table 2)

Table 2: Vietnamese zodiac by year of born

Rat	1924	1936	1948	1960	1972	1984	1996	2008	2020	2032
Buffalo	1925	1937	1949	1961	1973	1985	1997	2009	2021	2033
Tiger	1926	1938	1950	1962	1974	1986	1998	2010	2022	2034
Cat	1927	1939	1951	1963	1975	1987	1999	2011	2023	2035
Dragon	1928	1940	1952	1964	1976	1988	2000	2012	2024	2036
Snake	1929	1941	1953	1965	1977	1989	2001	2013	2025	2037
Horse	1930	1942	1954	1966	1978	1990	2002	2014	2026	2038

Goat	1931	1943	1955	1967	1979	1991	2003	2015	2027	2039
Monkey	1932	1944	1956	1968	1980	1992	2004	2016	2028	2040
Rooster	1933	1945	1957	1969	1981	1993	2005	2017	2029	2041
Dog	1934	1946	1958	1970	1982	1994	2006	2018	2030	2042
Pig	1935	1947	1959	1971	1983	1995	2007	2019	2031	2043

Source: Hi di tran doan (2018)

The differences in the twelve zodiac signs in Vietnam and other countries like China, Korea, Japan, and Thailand are that the cow is replaced with the buffalo and the rabbit is replaced with the cat. Some researchers are still working on this fascinating difference (Tho, 2015).

Vietnamese people believe that the personality of each individual is affected by their birth year, such that the person will be like the zodiac that represents for them. For example, those who were born in Tiger year have the character of strong leaders, courage, high competitiveness and this year is not good for having a daughter (Duong, 2015). They also believe that there are good years for giving birth, specially, in the case of sons, as follows:

According to Vietnamese culture the following years are considered beautiful years to give birth to children, especially boys, namely 2003, 2007, 2009 and 2012. In 2003 as years of golden goat (Quí mùi) with the belief about children who are born will be happy and have great fortune. Year 2007 was the year of Golden Pig (Dinh Hoi). Parents believed that this year was a very good

year and had to wait 60 years to get another one. Year 2009 is the year of the golden buffalo. Year 2012 is the year of the golden dragon (nhâm thìn), it is believed that children born this year will be wealthy and successful.

In addition, there are bad years for giving birth to children, specially, childbearing daughters. The concept of "Trai Đinh, Nhâm, Quý thì tài; Gái Đinh, Nhâm, Quý qua hai lần đò" (Males who were born in “Đinh, Nhâm, Quý” years will become a talented person; Female who were born in “Đinh, Nhâm, Quý” years will suffer family dissolution and remarry) has existed in Vietnam for a long time. And this is now supported by the majority of the population, especially the rural population. The system belief based on Vietnamese zodiac strongly influences fertility behavior. It makes increasing SRB in specific years such as 2009 and 2012.

SRB go in hand with the belief of auspicious years for childbearing and son preference in Vietnam, clear evidence suggests that the SRB is higher over the auspicious years (Duong, 2015).

Because of the difference between the lunar and the solar calendar, the solar calendar new year will come before the Lunar New Year approximately one to two months. Therefore, some children born at the end of the year 2003 lunar calendar will be counted as born in the solar calendar year 2004. Another reason is that, traditionally, Vietnamese people usually hold a wedding ceremony at the end of the year, which is considered "wedding season" in Vietnam. Couples who marry at the end of the year usually give birth at the end of the

following year. Assuming that parents who wanted to have a son in golden dragon 2012, married in December 2011 lunar year, then they spent nine months to get pregnant. And they would have children in December 2012 lunar year (January 2013 solar year). So the sex ratio at birth in 2013 will include this group of children. This explains why the sex ratio at birth in the years following the auspicious years in Vietnam is always higher than the auspicious years. For example, the sex ratio at birth in Vietnam has soared in 2004 (SRB=108) instead of 2003 (SRB=104) and 2013 (SRB=113.8) instead of 2012 (SRB=112.3) (Figure 5) (GSO, 2017).

2.3.2 Internal migration in Vietnam

As we mentioned above, we use SRB at region level as a proxy to measure the impact of social norms on reproductive behavior of Vietnamese women, an issue of concern is the problem of migration in Vietnam. The data used in our study is the individual's current place of residence that omitted migration information. The hypothesis is that if an individual is born in area A and then migrated to area B, the impact of the SRB on the individual birth behavior will be skewed. To solve this problem we rely on the migration trend in Vietnam which has been documented recently.

Migration becomes a huge concern in Vietnam from 1960s, particularly internal migration. Political fluctuations triggered a strong wave of migration between parts of Vietnam from 1960 to 1970, followed by international migration to countries such as the United States, Australia, Canada and France from 1971 to the present. Acording to the Department of Population and Labour Statistics, from total population of 78 million people in 2009, about 1.6 million people were intra-district migrants (within district), 1.7 million people were inter-district migrants (between district), 3.4 million people were inter-provincial migrants (Department of Population and Labour Statistics, 2010b).

The vast majority (about 70%) of the internal migrants are for economic reasons, including migrants seeking jobs and improving living conditions. (Department of Population and Labour Statistics, 2010b). Data from the 1999 Census also show that migration to urban areas accounts for more than half of Vietnam's total internal migration with 53% , of which 27% emigrated from rural to urban areas and 26% migrated between urban areas (GSO, 2014).

Evidence of migration in Vietnam shows that after Doi Moi in 1986, economic reforms were introduced in Vietnam and this created unequal economic growth and income inequality between rural and urban because most of Doi Moi policies concentrated on urban areas (Fesselmeyer & Le, 2010; Migheli, 2012). Therefore, gaps between rural and urban or among regions increased over time (Nguyen, Albrecht, Vroman, & Westbrook, 2007). Migrants tend to move to big cities where have better education, better health care and

they can receive higher income. It also makes pull factor for internal migration in Vietnam over 30 years. Phan and Coxhead in the study of regional inequality and inter-provincial migration show similar results that Vietnamese migrants tend to migrate from low income areas to high income areas, from smaller cities to larger cities by using census data in Vietnam (Phan & Coxhead, 2010). For overall Vietnam, the majority of migration flows from low-level development to higher levels of development, from rural to urban areas, from small cities to large cities and from high SRB to low SRB areas.

Migration trends in Vietnam clearly give us the potential for our research, the downward bias will appear in our model analysis. That means that the empirical results tend to be lower or weaker than they actually are. This will be explained in more detail in the methodology section.

In addition, we used the economic region variable for our analysis, which would limit the impact of migration on the analytical model instead of using province level, which has smaller acreage compared with region. Geographical map shows that each economic zone in Vietnam is quite wide, covering more than ten provinces. Base on the situation reported in Luong (2009) internal migration from one province to another is more popular than inter-regional migration in the south of Vietnam.

2.3.3 Sex selective abortion in Vietnam

The booms of ultrasound scans with cheap price, which are easily accessible, combined with abortion being lagal, are the roads leading to high sex

selective abortion in Vietnam (Bélanger, Khuat, Liu, Le, & Pham, 2003). There have been studies of abusive and excessive ultrasound scans in Vietnam (Gammeltoft & Nguyên, 2007). According to the Decree No. 114/2006 / ND-CP dated October 3, 2006: “Providing for sanctioning administrative violations in the population and children”. Article 9: Acts of sex selection of fetuses, forbidden sex selection, there are three groups of prohibited behaviors: propagation and dissemination of methods of creating fetal sex in many forms; diagnosis of fetal sex; abortion for the purpose of sex selection in any form. A fine from 500 thousand to 1 million VND and 3.7 million VND and 7-15 million is imposed for the above behavior. In addition, there are additional penalties such as Deprivation of the right to use licenses or practicing certificates for one to six months, for individuals or organizations that violate the above regulations. Now, the sex of the fetus is the biggest "advantage" in private clinics. In order to circumvent the ban, many doctors did not disclose the sex of the fetus but said suggestive words: "like mother", "like father", "preparing the skirt for the child", "prepare to become maternal grandparents”.

Gender imbalance at birth has caused many serious consequences, which directly affect the population structure and family structure. In addition, despite the late arrival, the pace of gender imbalance in Vietnam is increasing rapidly, spreading from urban to rural and occurring across six economic regions of the country. One of the special features of SRB in Vietnam is in some areas of the North with strong son preference norms, in developed regions and the more

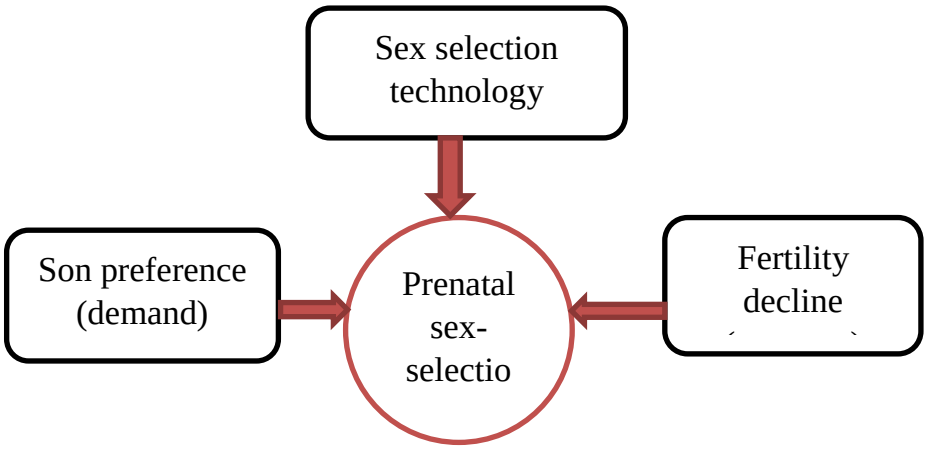
economically inclined. The higher the level of education, the higher the sex selection at birth.

Abortion in Vietnam is legal without sex selection. According to paragraph 1 of Article 44 of the 1989 Law on the Protection of People's Health, the right of women to have gynecological examination and treatment and abortion: Women have the right to have abortions as they wish. Medical examination and treatment of gynecological diseases are to be monitored during pregnancy and to be provided with medical care at birth in medical establishments. In addition, under the Population Ordinance 2003 and Decree 104/2003/NĐ-CP, it is strictly forbidden to remove the fetus due to sex selection through abortion methods, providing and using chemicals, drugs or other measures (Bélanger & Hong, 1999).

According to statistics in 2012, Vietnam has about 1.4 million abortions per year and the majority of women who have abortions are between 25 and 29 years old (Binh, 2012). Women with lower education have more abortions than those with higher education. One point worth noting is that the highest region of abortion was the Northwest, which also has the highest SRB and highest son preference in Vietnam in 2011. The rate of abortion in couples with one or two children is higher than the rate of abortion in couples with three or more children (Binh, 2012). There are three conditions that lead to the prenatal sex selection, namely, first condition and the prerequisite is the preference for boys or girls, the second condition is the availability of modern medical services and the third

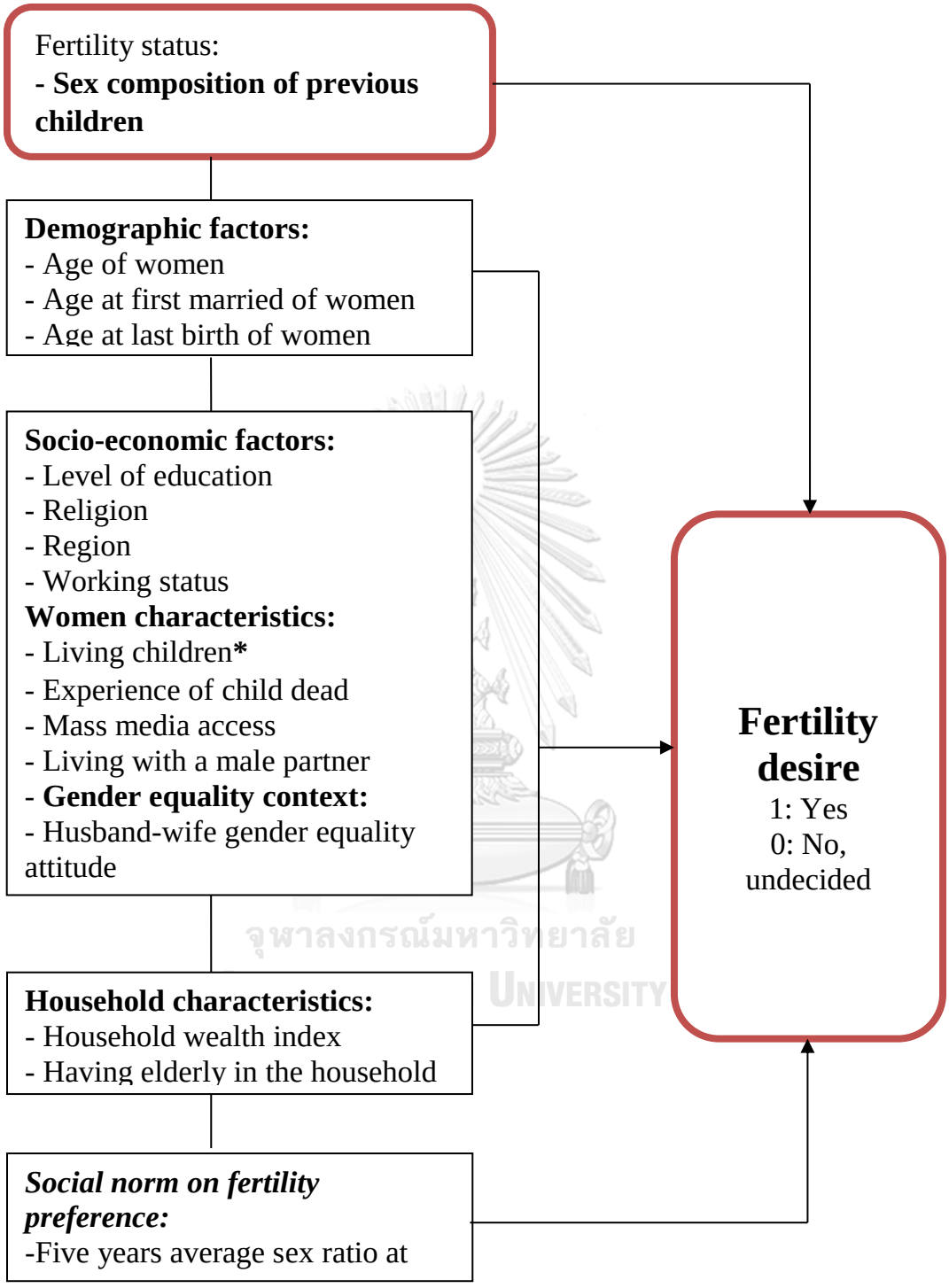
condition is low fertility (Guilmoto et al., 2009). Vietnam has strong son preference. Son preference creates the pressure that leads to couples' desire to choose the sex of their children. Specifically, they choose the sex of the fetus before conception, determine sex of the baby during pregnancy and have abortion when the desired result has not been achieved. Sex selective abortion is forbidden in Vietnam, but it is easy for people to do this in private clinics (Binh, 2012). Currently, health services that support sex-selective pre-pregnancy interventions or fetal sex ultrasonography can be easily found in metropolitan areas, large cities, or even is the countryside in Vietnam. In addition, people want to have fewer babies but they also want to have a son, this causes many couples to seek health care services that support their son preference. It is important to note that abortion in Vietnam is legal but sex-selective abortion is illegal in Vietnam. Most cases of sex-selective abortion are not recorded so we cannot have accurate statistics on this issue. The majority of studies on sex-selective abortion in Vietnam are qualitative studies conducted by anthropologists or sociologists (Gallo & Nghia, 2007; UNFPA, 2016)

Figure 4: Factors effect on prenatal sex-selection



Source: UNFPA (2016)

2.4 CONCEPTUAL FRAMEWORK



Note: the analysis is conducted for different groups of women based number of current children.

*Living children variable only apply for group two children and more.

CHAPTER 3: DATA AND METHODOLOGY

3.1 Data

Our study draws on nationally representative data from the 2014 Vietnam Multiple Indicator Cluster Survey (MICS). Multiple Indicator Cluster Surveys in Vietnam employed three types of questionnaires namely household questionnaire, individual questionnaire for women and questionnaire for children under five. In some countries, there is an individual questionnaire for men but this questionnaire is not employed in the MICS survey in Vietnam (General Statistic Office, 2011a; Kersten, 2010). The United Nations Children's Fund (UNICEF) provided funding for this survey. MICS program was born in order to provide international household surveys that are internationally comparable between countries. In the case of Vietnam, starting in the 1990s until now MICS has been launched five rounds with specific purposes for some rounds[1]. The most recent round is the sixth round that was set up with global goals - Sustainable Development Goals (SDGs) that will be collect in near future.

The 2014 MICS survey collected data for 10,018 households, 9,827 women (the information collected is related to women of reproductive age, ranging from 15 to 49 years) and 3,316 children under five years old, separately. This survey was conducted from December 2013 to April 2014 by the GSO in

[1] To date, the Mics was carried out 5 times in 1999,2000,2006, 2011,2014 inVietnam (General Statistic Office, 2011a; Kersten, 2010)

Vietnam. The total response rate is 99.6% for households, 96.4% for women and 99.1% for children under five[2].

In our study, we merged these separate datasets, using a unique identifier, to capture information at each level in order to have a more comprehensive picture of women's fertility desire. First, using women's dataset as our main dataset, we merged household's dataset with women's dataset. After that, we merged this women's dataset (with household information) with birth history dataset to get information on specific number of children for each woman. Next, we checked the duplicate observations in our sample and removed them.

Given that the main purpose of this study is to investigate the association between the sex composition of children and women's fertility desire (or desire for additional children), we restricted the dataset to women of reproductive age, ranging from 15 to 49 years, with at least one child, currently not pregnant and able to get pregnant. Finally, we produced a sample of 5,605 women with at least one child for our analysis.

While we use Vietnam Multiple Indicator Cluster Survey (MICS) data sets in order to investigate the relationship between women's fertility desire and sex composition of children, we also take average five years SRB at provincial level from the report "Sex imbalance at birth in Vietnam 2014: Trends, factors

[2] We get four sub datasets MICS, namely, birth history data), children's data, household's data and women's data from website http://mics.unicef.org through account haiyen.sarah@gmail.com on 28, October 2016.

and differences" in order to examine whether social norms, proxied by average sex ratio at birth at the provincial level, have an influence on how sex composition of children impacts on fertility desire of Vietnamese women. The report "Sex imbalance at birth in Vietnam 2014: Trends, factors and differences" draws from the Mid-term Population and Housing Survey of Vietnam, which are conducted in April 2014 by UNFPA and Vietnam General Statistical Office (UNFPA & GSO, 2016). The basic purpose of Mid-term Population and Housing Survey is to collect information on population dynamics, collect basic data about population and housing representing the whole country, six socio-economic regions and provinces as a basis for synthesis and compilation of some statistical indicators. The data for average five years SRB (from 2010 to 2014) was taken from figure 6: Estimating the sex ratio at birth in 2010-2014 periods, by province in Vietnam on page 24 in the report "Sex imbalance at birth in Vietnam 2014: Trends, factors and differences".

3.2 Variables

3.2.1 Dependent variables

The key outcome of our research was fertility desire. Fertility desire plays a role as the dependent variable of this research. Existing researches show two main approaches to measure fertility desire at the macro level and individual level as presented in the literature section. For the scope of our research, we focus on individual level, specific women's fertility desire. Fertility desire is defined

as the desire to have another child in the future of women aged 15-49 at the time of interview.

First, respondents were divided into two groups, namely women who were currently pregnant (n=357) and otherwise. Then they were asked if they desired to have another child in the future. Those who desire to have another child in the future were asked about how far in the future (months/years) they wanted to wait to have another child, and the period of waiting was categorized as <1 year, 1–2 years, 3–4 years or 5 or more (5+) years.

Next, we decided to exclude women who were currently pregnant (n=375) because of the following reasons. The main purpose of this thesis is investigate the relationship between sex composition of children and women's fertility desire, and we assume that women who are currently pregnant do not know her child's gender. Knowing her child's gender would affect her fertility desire, therefore the group of pregnant women would not be appropriate for our research on fertility desire.

One crucial condition is that our sample must be able to get pregnant to be able to fulfill her fertility desire. Therefore, we also exclude women who cannot get pregnant because they are not physically able to get pregnant (n=437).

Next, in our research, we use the question UN6 in questionnaire for individual women "I would like to ask some questions about the future. Would you like to have (a/an another) child, or would you prefer not to have any more children?". This question was asked for non-currently pregnant women with

three categories for the answer “have another child” (31.94%) “no more/none” (52.34%) and “undecided" (10.78%) (see detail in table A1 appendix section).

Please note that some previous studies still keep all three categories (“have another child” “no more/none” and “undecided”) in their research. For our study, we decided to combine “undecided” and “no more” to one single category. The main explanation is that by combining the two categories we can get a strong direction of fertility desire. “Undecided” is just a temporary behavior, it will become a “yes” or “no” behavior over time. In a study about fertility intentions and actual behavior in France, 63.9% of women who answered “undecided” did not give birth after 2 years (Monnier, 1989). In addition, a research about fertility desire in Thailand also combined “undecided” and “no more” to one variable (Kanokwara phuangprayoung, 2016). Therefore, combining the two categories “undecided” and “no more” into one category is reasonable.

In addition, for the analysis of desire for additional children, we select only women with at least one child, excluding women who do not have a child because we investigate the association between sex composition of children and women’s fertility desire. Therefore, a crucial condition is the number of children that women have, and the gender of the children. And we also limit age of mother in childbearing age (from 15- 49)

Overall, for the analysis of women’s fertility desire we exclude women who are pregnant at the time of collection data, women who do not have a child,

and women who are able to get pregnant. Table 3 shows percentage distribution of women's fertility desire in our sample. Most respondents say that they do not want additional children (77.89%) and 22.11% report that they desire for more children.

Table 3: Fertility desire of women with at least one child

Women's fertility desire	Observation	Percentage
No more / none	4,369	77.89
Have (a/another) child	1,240	22.11
Total	5,609	100

3.2.2 Independent variables

Sex composition of existing children is the main independent variable. Our research examines the role of sex composition of existing children in the desire to have more children in the context of Vietnam under the control of other factors. Previous studies use different ways to consider sex composition of children such as concentrating on the number of sons or using three categories "only sons", "only daughters" and "mixed gender" (Christiansen, 2014).

In the process of writing our thesis, we tried to use many ways to construct sex composition of children variable[3]. Finally, we decided to create a variable

[3] First, if SCC coded as women who have all sons, women who have all daughters, women who have more son (s) than daughter (s), women who have more daughter (s) than son (s) and women who have same sons and same daughters (0 "all sons" 1 "all daughters" 2 "more sons" 3 "more daughters" 4 "same sons and daughters"), it only can apply for the groups with three children and more. Because women have one child or two children cannot answer "more sons" or "more daughters".We run logistic regression for the group with three children and more and there are no statistical significant in every

with three categories namely, women who have all sons, women who have all daughters and women who have children with gender mix. For closer examination of the influence of sex composition of children on women's desire for more children, we stratified the sample into two groups of women based on their number of current children:

- Group 1: women with one child and sex composition as follows: (i) one son (ii) one daughter.
- Group 2: women with two or more children and sex composition as follow: (i) all previous children are “sons” (ii) all previous children are “daughters” (iii) Mix gender.

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categorical of SCC. In addition, the result of cross table shows that 100 percent women who have same sons and same daughters do not want to have more child in group with three children and more. Second, if we consider SCC as “no son” and “at least one son”, we can apply for all groups of women. Or SCC can be coded as number of daughters with “no daughter”, “one daughter”, “two daughters” and “three daughters and more” or number of sons with “no son”, “one son”, “two sons” and “three sons and more”. However, these methods only concentrate on having sons or daughters rather than sex composition of children.

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- For women with two or more children, we also further divide them into the group with exactly two children ((i) two sons (ii) one son and one daughter (iii) two daughters), and the group with three or more children ((i) all sons (ii) mix gender (iii) all daughters).

  Please note that the living children in our sample include children who are living with their mother and children who do not live with their mother. We exclude children who died. The total number of current children of women is calculated by summing up the total number of living sons and the total number of living daughters.

Vietnam has a two-child policy to limit the fertility of couples who are party members or work in state organizations (Goodkind, 1995a). This policy has a lasting impact on Vietnam's population, having two children seems to have become a norm in Vietnam. We looked at the group of women with two children and intended to produce more under the influence of the SRB with the implication that the desire to have more children is stronger in women who dare to overcome two-child policy to achieve a son.

A brief descriptive statistic in the table 4 presents the percentage distribution of three groups of women according to the number of children. In the group with one child, about 55% report that they have one son, 45% have one daughter. In the groups with two children, 52% have one son and one daughter and in the groups with three or more children 76% have both son(s) and daughter.

Table 4: Percentage distribution of three groups of women according to the number of children.

Group of women	**Observation**	**Percentage**
Women with one child		
1 son	825	54.96
1 daughter	676	45.04
Total	1,501	100
Women with two children		
Two sons	846	28.44
Two daughters	591	19.87
One son, one daughter	1,538	51.7
Total	2,975	100
Women with three or more children		
All sons	102	8.99
All daughters	166	14.63
Mix gender	867	76.39
Total	1,135	100

3.2.3 Control variables

There are seven groups of control variables in our study. First, demographic factors include women's age, age at first marriage of women and age at last child's birth. Second, socio- economic factors include level of education, religion, region and employment. Third, women's characteristic factors are, namely, experience of child dead, mass media access and living with male partner. The last, four factors are, gender equality context, last child characteristics, household characteristics and social norms on fertility preference (proxied by five years average sex ratio at birth at the provincial level). A full description of these covariates is presented in Table 5.

Table 5: Measurement of demographic, economic and social characteristics

Variable	Source	*Question*	Classification and measurement of variables
Demographic factors			
Age of mother	W	*Question wb2: How old are you?*	Continuous
Age at first married = ma8 - wb1	W	*Question ma8: In what month and year did you marry or start living with a man as if married?* *Question Wb1: In what month and year were you born? (in year)*	Continuous
Age group of mother at last birth in 5 years interval = cm12-wb1	W	*Question cm12: of these (total number in cm10) births you have had, when did you deliver the last one?(in year)* *Question Wb1: In what month and year were you born? (in year)*	Categorical: 0= 15-20 (Reference) 1 = 20-24 2 = 25-29 3 = 30-34 4= 35-39 5=40 up
Socio-demographic factors			
Living children	W	*Cm5. How many sons live with you?* *How many daughters live with you?* *Cm7. How many sons are alive but do not live with you?* *How many daughters are alive but do not live with you?* *totalchild_alive = son_live + daughter_live + son_elsewhere + daughter_elsewhere*	Continuous
Women's education	W	*Question Wb4: What is the highest level of school you attended ?* *0= Preschool* *1= Primary* *2= Lower Secondary* *3= Upper Secondary* *4=Professional School*	Categorical: 0 = Primary (Reference) 1 = Lower secondary 2 = Upper secondary 3 = Professional School 4 = College/University

		5= College/ University & above	
Religion	HH	*hc1a: What is the religion of the head of this household?* *1= Buddhism* *2= Muslim* *3= Cao Dai* *4= Hoa Hao* *5= Christian Catholic* *6= Christian Protestant* *7= Other religion (specify)* *8= No religion*	Categorical: 0 = No religion (Reference) 1 = Buddhism 2 = Christian 3 = Other religion
Economic region	HH	*Question hh7:Region* *1= Red River Delta* *2= Northern Midlands and Mountain area* *3= North Central and Central Coastal area* *4= Central Highlands* *5= South East* *6= Mekong River Delta*	Categorical: 0= Southeast (Reference) 1 = Red river delta 2 = Northern Midlands and Mountain area 3 = North central and central coastal area 4 = Center highlands 5 =Mekong river delta
Place of residence	HH	*Question HH6.* *Area:2 = rural, 1 = urban*	Dichotomous: 0 = rural, 1 = urban
Employment	HH	*Question mp6:* *In the last 12 months has (name) worked for income probe: worked for wage/salary, household production or service in planting, breeding, forestry, or aquaculture, or trading/business for household?*	Dichotomous: 0 = Not employed, 1 = employed
Women characteristic:			
Experience of child dead	W	*Question cm8:* *Have you ever given birth to a boy or girl who was born alive but later died?* *if "no" probe by asking: i mean, to a child who ever breathed or cried or showed other signs of life – even if he or she lived only a few minutes or hours?*	Dichotomous: 0 = Child dead, 1 = No child dead

Access mass media	W	*Question Mt2:* *how often do you read a newspaper or magazine: almost every day, at least once a week, less than once a week or not at all?* *Question Mt3.* *Do you listen to the radio almost every day, at least once a week, less than once a week or not at all?* *Mt4. How often do you watch television: would you say that you watch almost every day, at least once a week, less than once a week or not at all?*	Dichotomous: 0 = not access , 1 = access
Living with a male partner	W	*Question Ma1:* *Are you currently married or living together with a man as if married?* *Categorical: 1 = yes, currently married, 2= yes, living with a man, 3= no, not in union*	Dichotomous: 0 = No male partner, 1 = Male partner
Gender equality context:			
Gender role	W	*Question dv1:* *Sometimes a husband is annoyed or angered by things that his wife does. In your opinion, is a husband justified in hitting or beating his wife in the following situations:* *[A] if she goes out without telling him?* *[b] if she neglects the children?* *[c] if she argues with him?* *[d] if she refuses to have sex with him?* *[e] if she burns the food?* *[f] if she does not complete her housework to his satisfaction?* *[g] if she is doubted about her being faithful?*	Dichotomous: 0 = Unacceptance of violence, 1 = acceptance with violence

[h]if she is disclosed that she was unfaithful ?

Last child characteristics:			
Child age last birth =2014 - cm12	W	*Question cm12: of these (total number in cm10) births you have had, when did you deliver the last one?(in year)*	Continuous
Household characteristics:			
Having older persons in household	HH	*Question hl6: How old are you? (hl6>60)*	Dichotomous: 0 = No elderly, 1 = Elderly
Household wealth index	HH	*windex: wealth index quintile*	Categorical: 0 = Poorest (Reference) 1 = Second 2 = Middle 3 = Fourth 4 = Richest
Social norm on fertility preference:			
Five years average Sex ratio at birth at province level	*MPHS*		Continuous

Note: W: women's questionnaire; HH: household's questionnaire. MPHS: Mid-term Population and Housing Survey

First, there are great differences in cultural background, history, social and economic development, believes, fertility behavior between the regions in Vietnam. In particular, the differences in governmental reproductive policy applied to each region lead to differences in fertility and fertility desire. This is the most remarkable in studying fertility in Vietnam. According to data from the

General Statistics Office, TFR in Ho Chi Minh City is around 1.5 in 10 years from 1999 to 2009. Meanwhile, TFR was about 2.8 in the Northern provinces during the same period. Vietnam has 63 provinces, divided into six economic regions[4]. So question HH7 was used to identify the region of respondents with catelogies 1. Red River Delta; 2. Northern Midlands and Mountains, 3.North and South Central Coast; 4. Central highlands; 5 Southeast; 6. Mekong river delta.

Secondly, for the variable gender equality/women empowerment, we use the proxy variable that is attitude towards domestic violence. The key variable is women's empowerment, which is measured by types of attitudes about gender roles. This information was extracted from sets of questions included in MICS questionnaire. Based on specific countries, the group of questions about attitude towards domestic violence will be adjusted to suit with the context of each country. In Vietnam MICS questionnaire, we have eight questions instead of six questions as standard questionnaire of MICS on their website. Attitude towards

[4]Since 2006, government decision on reallocation of economic zones, from eight economic regions to six economic regions include Northern Midlands and Mountains, North and South Central Coast, Red River Delta, central highlands, southeast, Mekong river delta. According to regulations in Government Decree No. 92/ND-CP dated 7 September, 2006, the Northeast and Northwest region are merged to form the Northern Midlands and Mountains; the North Central Coast and South Central Coast have been combined to form the new region with the name North and South Central Coast. Quang Ninh has been moved from the Northeast region to the Red River Delta. Ninh Thuan and Binh Thuan provinces have been moved from the Southeast to the North and South Central Coast region (General Statistic Office 2010).

domestic violence is assessed by a series of question "Sometimes a husband is annoyed or angered by things that his wife does. In your opinion, is a husband justified in hitting or beating his wife in the following situations: If she goes out without telling him? If she neglects the children? If she argues with him? If she refuses to have sex with him? If she burns the food? If she does not complete housework to his satisfaction? if she is doubted about her being faithful? if she disclosed that she was unfaithful? ”

We reconstruct a variable with two values, namely, having women empowerment and not having women’s empowerment. Those who answered “no” to eight questions above will be grouped as having women’s empowerment and vice versa.

In addition, we attempt to obtain provincial sex ratio at birth data as a proxy variable for social norm. Sex ratio in Vietnam is higher than normal standard, especially in some regions in the North of Vietnam. In most literature these phenomena are is attributed to strong son preference because of traditional patriarchal values which and highlight the role of the son in the family (Bélanger et al., 2003; Duong, 2015; Haughton & Haughton, 1998).

Sex ratio at birth in Vietnam is not the same as what is observed in other countries namely India and China. In these countries, the sex ratio at birth increases steadily from the first birth to the third birth. Nevertheless, in Vietnam, the sex ratio at birth at the first birth is 110.2. At the second birth, the ratio was slightly lower at 109, but for the third birth the ratio is up to 115 (Vinh, 2009)

In some studies, SRB was calculated directly from the sample, however with MICS data set, this variable is not appreciate. Recall that SRB is ratio between male per 100 female at birth, If we calculate SRB with MICS data set, the number of women who have child in 2014 make up only a small sample. Thus, we decided to use average five years SRB with represent for whole population. We use data of average SRB from the report "Sex imbalance at birth in Vietnam 2014: Trends, factors and differences" by UNFPA and GSO to get average SRB of each province in Vietnam.

SRB is used as a proxy for social norms at the provincial level. We constructed the average sex ratio at birth for the five years before 2014 MICS survey. In the Vietnamese context, we believe that the five-year average SRB is a better proxy for social norms relative to the SRB for one year because any given year may be biased if it was a “bad year” for childbearing in Vietnamese beliefs. Furthermore, the five-year average SRB should be a closer approximation to current social norms regarding son preference in a given province.

Some variables are not included in our model for the following reasons. First, the variable indicating whether the respondent uses contraceptive method is considered as a decision variable that affects on women’s fertility desire. These two variables have a mutually determined relationship, if women use contraception, she will not want more children and vice versa. Some authors have used contraceptive method variable and women's fertility desire as

dependent variables in the model (Amin, Kabir, Chowdhury, Ahmed, & Hill, 1994).

Second, we do not put husband's characteristics variables in our model. If we use both husband characteristics and women characteristics, it is important to be clear about multicollinearity. Based on Mortensen (1988)'s matching theory, couples often have similar elements in terms of education, income, religion, and perspective of life. For example, highly educated men often marry highly educated women. This issue will cause the phenomenon of multicollinearity in statistical analysis (Wooldridge, 2015). In addition, the MICS survey in Vietnam in 2014 did not collect information of husbands, thus, in our model, variables regarding husband characteristics do not appear

Third, the health of women is considered a factor affecting the women's fertility desire. In our dataset, we can use "delivered by caesarean section or not (mn19)" as proxy for women's health. However, this question only applies to to women with a live birth in the 2 years preceding the interview. If we take this variable into our model, our number of sample will be reduced and limited to only women who gave birth within two years prior to the interview. Consequently, the number of samples we have for analysis would be very small; therefore, we do not use the variable indicating the health of women in our model as a control variable.

Furthermore, this research uses secondary data from the 2014 Vietnam Multiple Indicator Cluster Survey (MICS). There are some limitations in this

research related to dataset. One of the limitations is that this secondary data lack information about the detail of working status, we do not know whether women work in the public sector or private sector. In addition, information about nanny is also missing because of data limitation.

3.3. Methodology

In order to achieve research goals and answer the above research questions, we would like to use the following methods:

First, we present a descriptive overview of women's characteristics for the total sample and according to the living children. In the first step, we divide our sample into two groups based on the number of current children, namely, (1) the group with one child, and (2) the groups with two or more children. In the second step, we further divide the group with two and more children into (1) the group with exactly two children, and (2) the group with three or more.

The main reasons for dividing the group of women based on the living children is that we want to compare the difference in fertility desire between women with one child and two or more children. In addition, Vietnam has a two-child policy to limit the fertility of couples who are party members or work in state organizations. This policy has a lasting impact on Vietnam's population, having two children seems to have become a norm in Vietnam. We analyze deeply at the group of women with exactly two children and the group of women with three or more children to investigate if there is any difference between these two groups.

Following this, we investigate the association between each woman's characteristics and her desire for additional children using chi-square tests of association for categorical variables and t-test for continuous variables.

Next, in order to estimate whether sex composition of current children (in particular having at least one son) is likely to reduce fertility desire among women at child bearing age in Vietnam, we conduct four regressions analyses that investigate the statistical significance and odds ratio of each variable in our models for four different groups of women based the number of current children. Please note that living children variable only apply for group two children and more.

Because the outcome variable in our research is a binary variable, we can use either logistic regression or probit regression. The decision whether to use logistic or probit in analyses is based on the assumption regarding the distribution of error terms. The main assumption for the distribution of error term in logistic regression is the standard logistic distribution. On the other hand, probit regression requires the normal distribution of error terms. In general, the results of logistic regression or probit regression are similar; the outcome results report odds ratio for logistic regression and marginal effects for probit regression. Although we apply logistic regression for all models in our analyses, we also try to run probit regression to recheck and compare results in all four models.

To investigate the effect of sex composition of children on women's desire to have more children the equation of logistic regression is as follows**:**

$$F_i = \beta_0 + G_i\beta_1 + D_i\beta_2 + S_i\beta_3 + W_i\beta_4 + E_i\beta_4 + A_i\beta_5 + H_h\beta_6 + N_i\beta_7 + \epsilon i$$

Where lowercase $_i$ denotes individual and $_h$ denotes household. $\mathbf{F_i}$ is the measure of fertility desire of individual women in household indicating whether women want to have another child or not. Women's fertility desire is the outcome variable and is measured by self-reporting coded as 0 (do not want to have another child) and 1 (want to have another child).

G denotes the vector of independent variables that indicate sex composition of children. Corresponding with each group of women, we have each sex composition of children variables. For the group with one child, sex composition of children is coded 0 (one son), and 1 (one daughter). For the group with two children and more, sex composition of children is coded 0 (all previous children are "sons"), 1 (all previous children are "daughters"), and 2 (mix gender). For the groups with two children, sex composition of children is coded 0 (two sons), 1 (two daughters), and 2 (one son and one daughter). For the groups with three or more children, sex composition of children is coded 0 (all sons), 1 (all daughters), and 2 (mix gender). Please note that logistic regression applies separately for each group of women based on the number of current children. In total, we have four logistic regressions corresponding to four groups of women.

There are seven groups of control variables in our study. **D** is a vector of demographic factors which include women's age, age at first marriage of women

and age at last child's birth. **S** denotes a vector of socio- economic factors including level of education, religion, region and employment. **W** denotes a vector of women's characteristic factors which are, namely, experience of child dead, mass media access and living with a male partner. **E** denotes a vector of gender equality context. **A** denotes a vector of age last child. **H** denotes a vector of household characteristics and **N** denotes a vector of social norms on fertility preference (proxied by five years average sex ratio at birth at the provincial level). β_0 is the intercept; εi denotes the error terms.

We estimate separate multivariate logistic regression models according to women's number of current child (one child, two-children and more, two children and three or more) to examine the relationship between sex composition of current children and women's fertility desire, controlling for confounding factors.

In addition, one of the issues that we are interested in is how social norms and the sex composition of children affect fertility desire. We want to find out whether combining both average SRB and sex composition of children (SCC) in our model leads to changes in fertility. To deal with this issue, an interaction term is introduced in our models. In order to investigate whether social norms, proxied by average five years SRB at provincial level, have an influence on how sex composition of children affects fertility desire of Vietnamese women; we add interaction terms between SRB and sex composition of children for each woman's group in logistic regression to explore differences in women's fertility

desire according to sex ratio at birth at provincial level and sex composition of children.

One common trend observed in the world in terms of SRB is that there is a positive relationship between the SRB and the birth order of children, which means that the SRB increases evenly from the first child to the second child. However, Vietnam possesses a different form of SRB, SRB fluctuates strongly from first birth to third and fourth birth. SRB increases in the first birth; decreases in the second birth and peaks in the fourth child. According to Vinh's study, the SRB in rural areas was 112.8 at first birth; dropping to 106,9 at the second birth; rising again to 111 and 115.1 at third and fourth births in 2008, respectively (Vinh, 2009). We investigate our model to women who have three children and more with three categories, namely, all sons, combination of son(s) and daughter(s) and all daughters. The main focus is to examine fertility desire of women who have three children without a son. With high SRB in third birth, we expect that an interesting result will be found in this group of women.

In our model, we assume that social norms influence fertility desire through gender of children. Social norms are an indicator that is difficult to measure and requires large data. Within the limits of the data we have, average five years sex ratio at birth at provincial level is considered one of the indicators of social norms in each region, implying that women who live in the region that have high sex ratio at birth will be affected by the social norm and they will also have strong son preference, which affects their fertility desire. In other words,

women who do not have a son (sons) living in region with high sex ratio at birth will have high fertility desire to have children compared with women with a son (sons).

One of the purposes of the thesis is to investigate the impact of the interaction between social norms and sex composition of children on fertility desire. To achieve this object, we use average sex ratio at birth for the five years before MICS surveys because of two reasons. Generally, social norms are defined as unwritten rules, which control the behavior of groups of society (Hechter & Opp, 2001). Social norms are formed over a long period of time and become one of the community's standards and are accepted and followed by the community. Most individuals tend to follow social norms in their own communities because that is the pattern acknowledged by the majority. Social norms are one of the powerful tools for predicting the behavior of individuals or the community (Saul McLeod, 2008). If we just use sex ratio at birth of one year as a proxy for social norms in each province, we cannot capture the whole picture of social norms because social norms need to build up for a long time. For the second reason, Vietnamese people believe in good and bad years to give birth to sons, thus sex ratio at birth in Vietnam sharply increases in good years and decreases in bad years (Duong, 2015). Overall, we took sex ratio at birth for each province for five consecutive years. We calculate average value of the SRB. We extract sex ratio at birth from 2010 to 2014 from the report "Sex imbalance at birth in Vietnam 2014: Trends, factors and differences" draw from the Mid-term

Population and Housing Survey of Vietnam (UNFPA & GSO, 2016), and calculate average sex ratio at birth for interval 5 years. Finally, we merge average sex ratio at birth of each province into MICS data set in 2014 to gain a full data set to analyze.

The sex ratio at birth (SRB) is usually calculated based on the number of male births per 100 female births. In general, we always observe that there are more male births than female births, with the ratio generally between 103 and 106. In some countries, this rate is abnormally high from 110 to 120 because of son preference.

$$\text{Sex ratio at birth } = \frac{\text{number of male births}}{\text{number of female births}} * 100$$

According to WHO and Neuhäuser, the standard of the SRB ranges from 103 to 106 boys/ 100 girls (Neuhäuser, 2003; UNFPA, 2015), if average SRB is bigger than 106, the area is considered to have son preference. If average SRB is smaller than 106, the area is considered not having son preference. From data regarding average five years sex ratio at birth at provincial level in Vietnam from 2010 to 2014 which took from the report "Sex imbalance at birth in Vietnam 2014: Trends, factors and differences" (UNFPA & GSO, 2016), we try to reconstructed average five years sex ratio at birth into a variable with two values as smaller than 106 and bigger than 106. However, the average SRB in Vietnam from 2010 to 2014 is quite high, approximately 111.62, therefore it is not appropriate to become a binary variable with two values, namely, higher or lower

than WHO standard SRB (106). Thus, average five years SRB in our study is continuous variable.

It is important to be clear on one thing about multicollinearity in our research. In our model, we want to use both husband characteristics and women characteristics. Based on Mortensen (1988)'s matching theory, couples often have similar elements in terms of education, income, religion, and perspective of life. For example, highly educated men marry with highly educated women, high-income men marry with high-income women. This issue will cause the phenomenon of multicollinearity in statistical analysis. It happens when we have high (but not perfect) correlation between two or more independent variables (X variables). It increases standard error value and declines statistical significance of the variables. If standard deviation takes a large value, t will be a small value leading to no statistical significance of the variables.

According to Wooldridge, there are three solutions for how to solve the problem of multicollinearity namely dropping one of the variables that having correlation; getting more data, and changing the scope of analyses (Wooldridge, 2015). To avoid multicollinearity in statistical analysis, we decided to do not use husband characteristics variables such as education or income, thus these variables be eliminated from our model. In addition, the MICS survey in Vietnam in 2014 questions for husbands were not collected, so in the data set we obtained from the MICS lacking husband data, except age of husband. Furthermore, question age of husband have perfect correlation with living with

the male partner variable, as those who are not living with the male partner skip this question. Thus, in our model, we do not use any husband characteristic variable.

Furthermore, in our model, the phenomenon of downward bias occurs because we consider the effects of average SRB and the sex of children on fertility desire without controlling for migration. As mentioned above, the migration trend in Vietnam is from high SRB area to low SRB area, because we do not have migration data in the MICS data sets, so we will take the SRB at the women's place of residence. So if this woman has migrated, we have taken the SRB value lower than the real one. The results from our analytical models will also be lower than the actual ones. For example, the result indicates that women without son live in high SRB region have odds of having fertility desire higher than 1.7 times the odds of having fertility desire of the baseline group of women. It means that the actual odds of having fertility desire of women without a son must be higher than 1.7.

CHAPTER 4: FINDINGS

4.1. Descriptive statistics

The sex compositon of children is uneven in favour of boys. As shown in Table 6, the majority of Vietnamese women have only sons (31.69%) followed by those with equal gender composition of children (28.47%). Women with all daughters accounted for 25.46%. UNFPA has predicted that the propotion of families with only sons will increase in line with high sex ratio at birth (SRB) in Vietnam (GSO, 2017; UNFPA Vietnam, 2012).

Table 6: Sex composition of children among Vietnamese women of childbearing age.

Sex Composition of children	Observation	Percentage
All son(s)	1,776	31.69
Son(s) = daughter(s)	1,596	28.47
All daughter(s)	1,427	25.46
Daughters > Son(s)**	481	8.58
Sons > Daughter(s)*	325	5.80
Total	5,605	100.00

Source: *Author's calculation from MICS Vietnam 2014*

*Sons > daughter(s): Number of sons is more than number of daughter(s) and having at least one daughter.

**Daughters > son: Number of daughters is more than number of son(s) and having at least one son

Table 7 presents the characteristics of the total sample of women with at least one child, according to the number children. The five year average SRB is 111.6 and highest among women with two children at 111.9. On average, mothers are currently 36 years old but those with three or more children are older than the average age of the sample at 41 years. Looking at women's demographic characteristics, on average, mothers report their first age of marriage at 22 years but we observe differences among sub-samples such that those with three or

more children report their first age at marrage to be 20, which is younger than the sample average of 22. Most of our sample experience their last birth between ages 25-29 (37.77%) but a higher proportion of women with one child report younger age (20-24) and those with three or more children report older age (30-34). The majority of mothers in our sample do not report experiencing child mortality, do not coreside with an older person, are currently living with a male partner, and utilize contraception. In terms of economic resources, the majority of mothers are employed and have completed lower secondary education. We observe the highest proportion of those with lower level of education among women with three or more children. Most of our sample live in less wealthy houseolds (1^{st} to 3^{rd} wealth quintile) with the highest proportion among those with three or more children (near 65%). Similarly, most live in rural areas (57%) but the highest prorportion is among women with three or more children (70%). Finally, social indicators show that most women report not having a religion (75%), do not agree with domestic violence (53%) with the highest proportion among those with three or more children (59%), and almost all over 98% report having access to mass media.

Table 7: Description of women's characteristics according to the number of living children

	Total Sample (%)	**One Child** (%)	**Two Children** (%)	**Three or more children** (%)
Sex ratio at birth at provincial level, mean (sd)	111.62(5.35)	111.15(4.78)	111.9(5.58)	111.59(5.47)
Demographic Indicators				
Age of mother, mean (sd)	35.74(7.90)	29.68(7.74)	36.92(6.67)	40.72(5.99)
Age at first married, mean (sd)	21.78(3.73)	23.03(4.29)	21.74(3.45)	20.2(2.97)
Age group of mothers at last birth				
15-20 ages	3.66	11.78	1.02	NA
20-24 ages	24.51	43.25	21.22	8.62
25-29 ages	37.77	32.4	42.61	32.1
30-34 ages	23.93	8.38	26.43	37.64
35-39 ages	8.74	3.53	7.72	18.29
40 up	1.39	0.67	1.02	3.34
Child age last birth, mean (sd)	8.90(6.64)	6.01(5.97)	9.69(6.53)	10.77(6.57)
Having child dead				
No	95.06	96.61	95.84	90.77
Yes	4.94	3.39	4.16	9.23
Having older persons in household				
No	98.5	72.84	79.49	82.94
Yes	21.77	27.16	20.51	17.06
Living with a male partner				
No	6.26	9.71	4.87	5.72
Yes	93.74	90.29	95.13	94.28
Economic Indicators				
Employment				
Still working	86.82	81.56	87.61	92
Not working	13.18	18.44	12.39	8
Education				
Primary	18.98	12.51	18.31	29.46
Lower secondary	43.32	33.53	43.69	55.41
Upper secondary	20.09	26.88	19.86	11.7
Professional School	5.28	7.58	5.55	1.23
College/University	12.33	19.49	12.59	2.2
Household wealth index				
Poorest	16.4	18.58	13.94	19.88
Second	17.41	15.58	15.91	23.57
Middle	19.2	17.44	18.34	23.39
Fourth	23.59	24.5	23.96	21.9
Richest	23.41	23.9	27.85	11.26
Place of residence				
Rural	57.34	53	54.42	70.45

Urban	42.66	47	45.58	29.55
Economic region				
Red river delta	16.97	13.05	19.42	15.92
Northern midlands and mountain area	16.91	16.98	18.27	13.37
North central and central coastal area	15.9	12.78	15.47	21.37
Center highlands	17.31	15.98	13.64	28.23
Southeast	18.25	23.5	18.27	11.26
Mekong river delta	14.67	17.71	14.92	9.85
Social Indicators				
Religion				
No religion	75.45	73.19	78.34	70.89
Buddhism	12.7	14.17	11.98	12.4
Christian	9.35	9.51	7.24	14.86
Other religion	2.5	3.13	2.44	1.85
Gender role				
Unacceptance of violence	53.35	53.73	50.89	59.44
Acceptance of violence	46.65	46.27	49.11	40.56
Access mass media				
No	1.5	1.46	1.35	1.75
Yes	98.5	98.54	98.65	98.25
Number observation	5,605	1,502	2,965	1,144

Table 8 shows women's fertility desire based on sex composition of current children. The results suggest that those with no son are more likely to want to have additional children compared to those with at least one son. According to table 8, the summary statistics show that for the group with one daughter, 73.08 percent want to have more children while for the group with one son, 65.01 percent want to additional children. In the group with two children, 13.14% of those with all daughters want to have additional children and for the group with three or more children, 12.65% of those with all daughters want to have additional children. In addition, a remarkable point is the proportions of women having mixed gender of children who report not wanting to have more children in the group with two children and the group with three or more

children, approximately 95.66% and 99.13%, respectively. These proportions are higher than among the groups with all sons and all daughters. We find statistically significant differences in fertility desire based on sex composition of children for all groups. The groups with two children and the groups with three or more children show the highest level of significance (p<0.0001).

Table 8: Women's fertility desire by sex composition of children

	Fertility desire		
Characteristics of Women	No (obs,%)	Yes (obs,%)	P-value
Women with one child (n=1,502)			0.001
1 son	289 (34.99)	537 (65.01)	
1 daughter	182 (26.92)	494 (73.08)	
Total	471(31.36)	1,031 (68.64)	
Women with two children (n=2,950)			<0.0001
Two sons	806 (95.38)	39 (4.62)	
Two daughters	509 (86.86)	77 (13.14)	
One son, one daughter	1,453 (95.66)	66 (4.34)	
Total	2,768 (93.83)	182 (6.17)	
Women with three or more children (n=1,135)			<0.0001
All sons	99 (97.06)	3 (2.94)	
All daughters	145(87.35)	21 (12.65)	
Mix gender	861 (99.31)	6 (0.69)	
Total	1,105(97.36)	30 (2.64)	

Note: n: number observation. Obs: observation

Table 9 presents bivariate associations between women's characteristics and their fertility desire. Relating to women's age, on average, mothers with one child who desire for more children report their first age of marriage at 22 years but we observe differences insub-samples such that those with three or more

children who want additional children report their first age at marrage to be 19, which is younger than those with two children who want additional children (average of 21). Among women with one child who experience their last birth at age 25-29, more than fifty percent want more children, meanwhile this percentage is only 8.6% and 3.62% in groups with two children and three or more children, respectively.

For those who have no experience of child death 69.19% of those in the group with one child desire for more children, while 6.26% of those in the group with two children and 2.62% of those in the group with three or more children desire for more children. On the subject of economic indicators, for women with one child, 69.19% of those who are currently employed want additional children, and 73.37% of those in the middle group of wealth index want additional children, of those 72.49% of those currently residing in rural area want more children. In connection with women's education, in the primary level, 54.01% of women with one child want to have more children, however this percent decrease sharply in the group with more than one child (5.39% and 2.69%, respectively).

Regarding social indicators, within the group with no religion, aproximately 70% of women with one child report that they desire additional children, while more than 90% of women with more than one child report that they do not want to have more children. The similar trend is found among those with other religions such as Buddhists, Protestants, Muslim, Cao Dai. We

observe that average five year SRB at provincial level ranges from 110.9 to 114.21 across the three groups based on the number of children, and the figures are higher than standard SRB.

In addition, within the group of having an elderly in the household, the proportion of those who desire additional children is higher among those with one child (71.08%) than those with two children (7.46%) and three or more children (3.06%). However, the results of chi-square test shows that there is no statistically significant differences in fertility desire between the group having an elderly and the group without an elderly in the household.

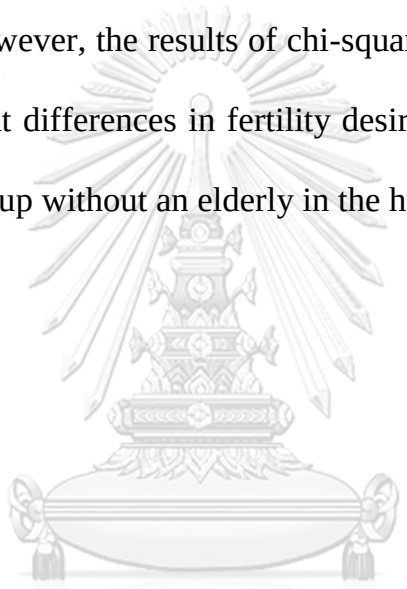


Table 9: Description of sample characteristics according to living children and their fertility desire (Chisquare test and ttest)

	One Child			Two Children			Three or more children		
Fertility desire	No (%)	Yes (%)	P-value	No (%)	Yes (%)	P-value	No (%)	Yes (%)	P-value
Age group of mother at last birth			<0.0001			<0.0001			
15-20 ages	25.42	74.58		na	na		na	na	0.546
20-24 ages	25.38	74.62		96.55	3.45		96.88	3.13	
25-29 ages	31.01	68.99		91.3	8.7		96.38	3.62	
30-34 ages	52.8	47.2		91.94	2.82		97.91	2.09	
35-39 ages	69.81	30.19		98.67	1.33		97.62	2.38	
40 up	70	30		100	na		100	na	
Having child dead			<0.0001			0.342			0.886
No	30.81	69.19		93.74	6.26		97.38	2.62	
Yes	47.06	52.94		95.87	4.13		97.14	2.86	
Education			<0.0001			0.578			0.214
Primary	45.99	54.01		94.61	5.39		97.31	2.69	
Lower secondary	36.11	63.89		93.19	6.81		96.67	3.33	
Upper secondary	28.96	71.04		93.63	6.37		100	na	
Professional School	21.05	78.95		95.86	4.14		100	na	
College/University	21.16	78.84		94.32	5.68		100	na	
Living with a man			<0.0001			0.016			0.164
No	82.19	17.81		98.59	1.41		100	na	
Yes	25.88	74.12		93.59	6.41		97.19	2.81	
Religion			<0.0001			<0.0001			0.748
No religion	28.66	71.34		94	6		97.52	2.48	
Buddhism	45.54	54.46		96.86	3.14		97.87	2.13	
Christian	27.27	72.73		87.74	12.26		96.43	3.57	
Other religion	42.55	57.45		91.43	8.57		95	5	
Place of residence			0.001			0.002			0.046
Rural	27.51	72.49		92.58	7.42		96.74	3.26	
Urban	35.69	64.31		95.32	4.68		98.82	1.18	
Household wealthy index			0.161			<0.0001			0.611
Poorest	29.03	70.97		92.91	7.09		96.46	3.54	
Second	29.06	70.94		91.96	8.04		97.03	2.97	
Middle	28.63	71.37		91.26	8.74		97.73	2.27	

Fourth	36.41	63.59		95.9		4.1		97.19		2.81	
Richest	31.48	68.52		95.27		4.73		99.21		0.79	
Economic region			<0.0001				0.001				0.099
Southeast	39.38	60.62		96.12		3.88		98.45		1.55	
Red river delta	25	75		90.92		9.08		94.54		5.46	
Northern midlands and mountain area	23.92	76.08		93.48		6.52		97.4		2.6	
North central and central coastal area	26.04	73.96		92.87		7.13		97.52		2.48	
Center highlands	24.58	75.42		92.89		7.11		97.48		2.52	
Mekong river delta	42.48	57.52		97.06		2.94		100		na	
Gender role			0.268				0.001				0.433
Unacceptance of violence	32.59	67.41		92.44		7.56		97.05		2.95	
Acceptance of violence	29.93	70.07		95.26		4.74		97.81		2.19	
Access mass media			0.503				0.261				0.467
No	38.1	61.9		89.47		10.53		100		na	
Yes	31.26	68.74		93.89		6.11		97.31		2.69	
Having older persons in household			0.214				0.139				0.688
No	32.27	67.73		94.16		5.84		97.44		2.56	
Yes	28.92	71.08		92.54		7.46		96.94		3.06	
Employment			0.461				0.859				0.257
Still working	30.94	69.06		93.8		6.2		97.51		2.49	
Not working	33.21	66.79		94.04		5.96		95.51		4.49	
Sex ratio at birth at provincial level, mean (sd)	110.9(4.15)	111.27(5.03)	0.1396	111.84(5.52)		112.76(6.23)	0.0497	111.52(5.44)		114.21(7.44)	0.0629
Age of mother, mean (sd)	35.21(8.72)	27.16(5.68)	<0.0001	37.26(6.59)		30.98(5.49)	<0.0001	40.82(5.97)		34.68(4.94)	<0.0001
Age at first married , mean (sd)	23.95(5.06)	22.61(3.82)	<0.0001	21.77(3.44)		21.10(2.91)	0.0032	20.25(3.01)		19.48(1.80)	0.0333
Child age last birth , mean (sd)	10.14(7.41)	4.12(3.94)	<0.0001	9.92(6.56)		5.75(4.56)	<0.0001	10.82(6.608)		5.68(3.47)	<0.0001
Total number observation	1,502			2,965				1,144			

Note: na: not available

4.2. Empirical findings

Table 10 and table 11 show the results of our multivariate logistic regression models. Table 11 investigates women's fertility desire for the group with one child and the group with two or more children. Table 12 further divides the women with two or more children into two groups, those with exactly two children and those with three or more children.

Hypothesis 1 proposed that for each group of women (those with one child, those with two children, and those with three or more children), women with no son would be more likely to have higher fertility desire compared to women with at least one son. Our results support this hypothesis. In all groups, women without sons show higher odds of having a desire for additional children relative to those with sons. Specifically, among women with one child, those with one daughter have 1.5 times the odds of those with one son to desire more children. Similarly, in the group of women with two or more children, those with two daughters have 4.3 times the odds of women with two sons to desire additional children. Notably, women with equal gender composition of one son and one daughter do have lower odds of fertility desire relative to those with two sons but this relationship is not statistically significant. The highest odds of fertility desire is observed among women with three or more children, as those with all daughters have 7.2 times the odds of women with all sons to desire more children (table 12).

Table 9: Logistic regression odds ratios of women's fertility desire according to the number of current children (Group "one child" and group "two or more children")

	One Child	**Two or more children**
	O.R. (S.E.)	O.R. (S.E.)
Group 1: Women with one child (Ref. one son)		
1 daughter	1.486***	
	(0.212)	
Group 2: Women with 2 or more children (Ref. all sons)		
All current children are girls		4.294***
		(0.902)
Mix gender		0.857
		(0.181)
Sex ratio at birth at provincial level	1.030	0.998
	(0.0201)	(0.0155)
Living children		1.045
		(0.195)
Age of mother	0.900*	0.836***
	(0.0570)	(0.0506)
Age at first married	1.086**	1.071*
	(0.0454)	(0.0388)
Age group of mother at last birth (Ref 15-20)		
20-24	1.062	9.657**
	(0.345)	(10.89)
25-29	0.796	13.18**
	(0.407)	(15.83)
30-34	0.405	7.036
	(0.306)	(9.346)
35-39	0.196*	8.355
	(0.202)	(12.69)
40 up	0.118	
	(0.168)	
Living with a male partner (Ref. Not living with a male partner)	11.11***	4.740**
	(2.820)	(3.482)
Husband-wife gender equality attitude (Ref. disagree with violence)		
	1.155	0.619***
	(0.170)	(0.101)

Table 10: *Continued*

	One Child	**Two or more children**
	O.R. (S.E.)	O.R. (S.E.)
Education (Ref: Primary)		
Lower secondary	1.207	1.158
	(0.270)	(0.261)
Upper secondary	1.299	1.184
	(0.322)	(0.341)
Vocational school	1.486	0.697
	(0.523)	(0.343)
College/university & above	1.746*	1.139
	(0.522)	(0.435)
Religion (Ref. No religion)		
Buddhism	0.690*	0.748
	(0.139)	(0.236)
Christian	1.171	2.709***
	(0.310)	(0.685)
Other religion	0.485**	1.946
	(0.175)	(0.941)
Mass media access (Ref. No Mass media access)	0.978	0.766
	(0.602)	(0.474)
Region (Ref.South east)		
Red river delta	1.272	2.490***
	(0.357)	(0.781)
Northern midlands and mountain area	1.689**	1.451
	(0.431)	(0.464)
North central and central coastal area	1.332	1.873**
	(0.339)	(0.578)
Central highlands	1.439	1.040
	(0.358)	(0.324)
Mekong river delta	1.058	0.568
	(0.229)	(0.224)
Urban (Ref. Rural)	0.962	0.683*
	(0.158)	(0.134)
Wealth_index (Ref. poorest)		
Second	1.286	1.413
	(0.324)	(0.380)
Middle	1.523	1.496
	(0.395)	(0.408)
Fourth	0.991	0.920
	(0.256)	(0.285)
Richest	1.211	1.306
	(0.367)	(0.481)

Table 10: Continued

	One Child	**Two or more children**
	O.R. (S.E.)	O.R. (S.E.)
Employment (Ref: not working)	1.059	0.844
	(0.224)	(0.229)
Having elderly in the household	1.196	1.090
	(0.223)	(0.225)
Experiment child dead (Ref. Not Experiment child dead)	1.645	1.332
	(0.709)	(0.547)
Child age last birth	0.948	1.027
	(0.0613)	(0.0622)
Number observation	1502	4015
Pseudo R-sq	0.300	0.227

Notes: Standard errors in parentheses. *Ref.: Reference category.*
*Significance levels: * p<0.1, ** p<0.05, *** p<0.01.*

Our second interest lies in whether the number of sons shapes women's fertility desires. Hypothesis 2 proposed that there would be no difference in the fertility desire among women with at least one son compared to women with all sons. Our results partially support this hypothesis among women with exactly two children as there was no statistically significant difference in fertility desire among women with equal gender composition of children, both son and daughter, compared to women having all sons. Among women with three or more children, however, women who already have both son(s) and daughter(s) show lower odds of wanting additional children compared with those who have all sons (OR=0.21) (table 12).

Table 10: Logistic regression odds ratios of women's fertility desire according to the number of current children (Group "exactly two children" and group "three or more children").

	Two Children	**Three or more Children**
	O.R. (S.E.)	O.R. (S.E.)
Group 2: Women with 2 children (Ref. 2 sons)		
Two daughters	3.851***	-
	(0.864)	
1 son and 1 daughter	1.072	-
	(0.233)	
Group 3: Women with three or more children (Ref. All sons)		
All daughters	-	7.216**
		(5.619)
Mix gender	-	0.214*
		(0.169)
Sex ratio at birth at provincial level	0.993	1.084*
	(0.0171)	(0.0506)
Age of mother	0.833***	0.977
	(0.0554)	(0.159)
Age at first married	1.077*	0.946
	(0.0445)	(0.0912)
Age group of mother at last birth (Ref 15-20)		
20-24	8.836*	-
	(10.05)	
25-29	12.30**	0.870
	(15.06)	(0.874)
30-34	6.399	0.360
	(8.770)	(0.568)
35-39	5.119	0.295
	(8.399)	(0.667)
40 up	-	-
Living with a male partner (Ref. Not living with a male partner)	4.370**	-
	(3.248)	
Husband-wife gender equality attitude (Ref. disagree with violence)	0.586***	0.605
	(0.104)	(0.302)

Table 11: Continued

	Two Children	**Three Children**
	O.R. (S.E.)	O.R. (S.E.)
Education (Ref: Primary)		
Lower secondary	1.172	1.014
	(0.299)	(0.539)
Upper secondary	1.333	-
	(0.412)	
Vocational school	0.765	-
	(0.388)	
College/university & above	1.250	-
	(0.504)	
Religion (Ref. No religion)		
Buddhism	0.645	2.076
	(0.227)	(1.715)
Christian	3.051***	3.528*
	(0.854)	(2.630)
Other religion	1.655	37.18**
	(0.855)	(58.61)
Mass media access (Ref. No Mass media access)	0.603	-
	(0.383)	
Region (Ref.South east)		
Red river delta	2.443***	3.073
	(0.817)	(3.460)
Northern midlands and mountain area	1.378	2.395
	(0.465)	(2.835)
North central and central coastal area	1.820*	4.208
	(0.598)	(4.688)
Central highlands	1.068	1.801
	(0.360)	(1.892)
Mekong river delta	0.627	-
	(0.254)	
Urban (Ref. Rural)	0.724	0.306*
	(0.151)	(0.203)
Wealth_index (Ref. poorest)		
Second	1.545	0.762
	(0.465)	(0.528)
Middle	1.694*	0.565
	(0.512)	(0.454)
Fourth	0.853	1.592
	(0.297)	(1.227)
Richest	1.354	1.210
	(0.538)	(1.640)

Table 11: Continued

	Two Children	**Three Children**
	O.R. (S.E.)	O.R. (S.E.)
Working status (Ref: still working)	0.781	0.733
	(0.229)	(0.600)
Having elderly in the household	1.146	0.876
	(0.254)	(0.563)
Experiment child dead (Ref. Not Experiment child dead)	1.211	1.542
	(0.625)	(1.178)
Child age last birth	1.039	0.861
	(0.0691)	(0.140)
Number observation	2920	779
Pseudo R-sq	0.210	0.372

Notes: Standard errors in parentheses. *Ref.: Reference category.*
*Significance levels: * p<0.1, ** p<0.05, *** p<0.01.*

Our multivariate results also show that there are statistically significant associations between most control variables and women's fertility desire but with distinct patterns according to the number of current children. Among women with one and two child(ren), women's age and age at first marriage were negatively and positively associated, respectively, with women's fertility desire. Women's age at birth of their last child was also uniquely associated with fertility desire. Among women with one child, women ages 35-39 showed significantly lower odds of desire for additional children relative to younger women aged 15-20 years (table 11). Among those with exactly two children, the results showed an increasingly positive and significant association between fertility desire and age groups "20-24" and "25-29", relative to age group "15-20". Beyond age 29, the positive association is maintained, though lower, and the relationships are no longer statistically significant (table 12). Notably, women's educational attainment is positively associated with fertility desire among women with one

child, in particular among those with university education and above. In other words, for those with one child, women with higher education are more likely to want to have additional children compared to low educated women.

Partnership also shapes women's fertility desire but specifically among those with fewer children. Women with one and two child(ren) who lived with a male partner at the time of interview showed higher odds of fertility desire relative to those who did not live with a male partner. Likewise, gender norms regarding power relations within partnership, as measured by women's attitudes towards domestic violence, showed a strong relationship with women's desire for additional children, specifically among those with two children. Women who agree with violence from their husbands showed lower odds of fertility desire relative to those who agree with domestic violence in the group of women with two or more children and women with exactly two children.

In addition, socio-economic variables were found to be correlated with fertility desire. For religion, Buddhist women and those of other religion groups, with one child, tend to be less likely to have childbearing intention compared to those who reported no religion. Nevertheless, Christian women had 2.7 times higher odds of those who reported no religion to desire additional children in the groups of women with two or more children.

We explored whether material wealth was associated with women's fertility desires. The empirical findings show that the relationships between wealth index and fertility desire were statistically significant at 10% level among

women with exactly two children (table 11). Specifically, women in the middle wealth quintile tend to have higher fertility desire than those who are poorest. However, we also found that the wealth index variable was not statistically significant in the group of women with one child, the group with two or more children and the group of three or more children. It means that fertility desire for group with one child, group with two children and group with three or more children does not depend on wealth index.

Women's fertility desire also varies according to the broader regional economic context in which they live and the living children. Among women with one child, those in the Northern midlands and mountain showed higher odds of fertility desire (OR=1.7) relative to those in the Southeast. Among women with two children, women in the Red River Delta and North central and central coastal area show 2.4 times and 1.8 times the odds of those in the Southeast to desire additional children, respectively.

Furthermore, we consider the role of sex ratio at birth in the relationship with women's fertility desire. The provincial sex ratio at birth, as a proxy measure of local gender norms, would be positively associated with women's fertility desire. Our results in table 11 provide partial support for this statement. Net of the gender composition of children, and individual socio-economic and demographic characteristics, for women with three or more children, those living in provinces with higher average SRB have higher odds of wanting additional children. There was no statistically significant association between the provincial

sex ratio at birth and women's fertility desire among those with one and two child (ren). To better understand the differences in women's fertility desire according to sex ratio at birth at provincial level and sex composition of children, the interaction terms between SRB and gender of children for each group of women are presented in table A2 in the appendix. Recall that the fourth hypothesis of this study states that SRB will affect on women's fertility desire through sex composition of children or we expected that women with all daughters who live in high sex ratio at birth province would have higher fertility desire than women with at least one son. Results from table A2 in the appendix do not show any statistically significant differences by SRB at provincial level using the interaction terms between SRB and sex composition of children. In summaries, we find that the role of SRB in our model do not consistency. When we put SRB as control variable on our model, SRB shows statistical significance only for the group with three or more children. However, when we add interaction term SRB*SCC in our model, the results show no statistical significance. Thus, multiple logistic results in regression in table A2 do not support the fourth hypothesis.

CHAPTER 5: DISCUSSION, CONCLUSION AND IMPLICATIONS

5.1 Discussion

This study addresses a major gap in our current knowledge of fertility in Vietnam by investigating whether sex composition of current children, and the sex ratio at birth, are associated with women's fertility desires utilizing nationally representative data from the 2014 Vietnam Multiple Indicator Cluster Survey. This is the first study that documents the relationship between sex composition of current children and women's fertility desire.

Our results indicate that the sex composition of children had a strong and statistically significant positive association with women's desires for additional children, after controlling for demographic and socioeconomic factors, gender equality context within the household and social norms of fertility behavior. Regardless of the number of current children (one, two, three or more), having all daughters rather than all sons is associated with higher fertility desire among Vietnamese women of childbearing age. Importantly, women in the group of mothers with three or more children who have all daughters show the highest odds of fertility desire 9.0 relative to women with all sons. These findings suggest that the traditional cultural norms of son preference prevails in Vietnam.

These results are also consistent with existing studies in East and South Asian countries (Das Gupta et al., 2003) that are also characterized by strong son preference, namely China (Baochang et al., 2007; Morgan et al., 2009; Smith, Lei, Shen, & Zhou, 2018), South Korea (Chung & Das Gupta, 2007) and India

(Clark, 2000). This strong son preference signifies that women's value is underestimated compared to men both in the family and in society (Huong & Fry, 2004). This may be reinforced in the context of Vietnam's rapidly increasing older population, which is disproportionately female, and weak state support for the older population (Kham, 2014). Consequently, social support from children, particularly sons, and relatives, are the main resource for Vietnamese older people (account for 70 percent) (Institute of Social and Medical Studies, 2012). Thus, children's sex composition, particularly sons are more important in the women' decision to have more children. Sons are not only a form of old-age security in Vietnam, but also take on roles such as worshipping ancestors, continuing the family name, and raising the status of parents in society (Clark, 2000; Das Gupta et al., 2003; Guilmoto, 2012; Larsen et al., 1998).

Moreover, we find that women in Vietnam have a preference for mixed gender in the groups with three or more children. Similar results are also found in Indonesia, if the first two children are the same gender, Indonesian couples tend to have an additional child (Nguyen, 2019).

Another important finding is that the SRB at the provincial level, which we interpret as an indicator of prevailing localized gender norms, plays an important role in women's fertility desire but only among those with three or more children. The lack of statistical significance in the relationship between the SRB and women's fertility desire among women with fewer than three children may be attributed to variation in women's adherence to Vietnam's one-or-two-

child policy. This policy was born in 1989 and limited the number of children that couples can have at maximum of two children, except for ethnic minority women, which was also strictly enforced among those employed by government entities or Communist party members[5]. Although our data cannot identify women's party membership nor their specific occupation, it is possible that women who had one or two children adhered to the one-or-two child policy (voluntarily or involuntarily). Thus, if they already had two children, regardless of their children's sex composition and social norms at their communities, they may not be willing to risk breaking the law to have additional child. In contrast, women with three or more children may have a more relaxed attitude towards the law or live in communities where the law was not strictly enforced. This may allow more freedom of childbearing overall and potential persuasion by social norms to have more children regardless of the sex composition of their current children. Further analysis, not shown, indicates that women with three or more children were disproportionately resident in the mountain region, which may have had a more relaxed enforcement of the one-to-two child policy.

5.2 Limitation of the study and further studies

Our study is not without limitations. The lack of contextual variables that we cannot examine that may be important for a comprehensive assessment of fertility desires such as men's fertility desire, health of women, women's sibling,

[5] According to Decision No .09, people who work for public service having third child or more shall be disciplined or not be promoted and considered to be taken out of the leadership positions (Committee for Population - Family and Children in Vietnam, 2003).

characteristic of children, identify party membership and government cadres. In a patriarchal society as Vietnam, men with no sons perhaps have higher fertility desire because sons help solidify their position in society (Bélanger, 2002; Haughton & Haughton, 1995). As we mentioned above, the one-or-two child policy applies mostly for government cadres and communist party members. Within our secondary data set, however, we cannot identify this information to examine the impact of this policy on fertility behavior. In addition, MICS dataset did not collect information about internal migration, which affects our assumptions about the impact of social norms of women's residence on fertility desire because women's current residence may not be the place where women lived most of her life. Our study relies on cross-sectional data with five years average SRB in the provincial level as a proxy for social norms (son preference), meanwhile social norms are formed over a long period of time and become one of the community's standards and are accepted and followed by the community. Most individuals tend to follow social norms in their own communities because that is the pattern acknowledged by the majority. Thus, the absence of longitudinal data for social norms is one of the limitations of this study. These limitations provide directions for future researches.

5.3 Conclusion and implications

Despite these limitations, our study shows that traditional cultural norms regarding son preference is important to Vietnamese women’s fertility desires, and likely their reproductive behavior as women may use available reproductive

health technologies to pre-determine the gender of their children. We suggest that the government should continuously enforce policies to ban ultrasounds to detect fetal sex to reduce the feasibility of sex selective abortion, combined with education to enhance women's value to society, and creating conditions for women to promote their roles in the family and society. These ideological shifts in Vietnamese culture can lead to institutional change and create conditions to promote women's roles in society such as gender equality in mountain areas. The Vietnamese government has persistently tried to reduce son preference for years, and has predicted fertility desire in different regions, which in turn depend on son preference. Therefore, identifying the relationship between various factors and women's fertility desire could possibly be useful for new policy initiation.

In binary logistic regression, mass media variable shows no statistically significant relationship with women's fertility desire in all groups of women. The two possible reasons this variable is not significant as follows. On the one hand, access mass media variable is little variation; very high percentage of women in the data set has access to mass media (98.54% for the group with one child, 98.65% for the group with two children and 98.25% for the group with three or more children in table 7 on page 96). This may affect the results of the analysis model. On the other hand, the questionnaire asked about general "access to mass media". There is no information about the content of mass media such as kind of information in mass media or detail programs in mass media. Thus, however mass media variable shows no statistically significant relationship with women's

fertility desire; It might still be possible that mass media content aiming to improve the value of girls may contribute to the change in social norms.

In addition, reducing son preference or SRB is a difficult problem with the evidence that Vietnam, China, and India are still struggling to find solutions and have not yet achieved the expected results. A difficult question is whether high child sex ratios has an inverse relationship with the development of the country or not? Why while Vietnam and other countries are increasingly improving women's education, income and the proportion of women participating in the workforce, but SRB continues to rise over the years and there are no signs of stopping? A recent study of South Korean has demonstrated that the level of national development is not always inversely proportional to the SRB (Chung & Das Gupta, 2007). Countries with lower levels of development may still have lower SRB than those with higher levels of development. Within countries with son preferences, the change at the social level is key to helping to reduce the tendency to prefer boys rather than changes at the individual level.

A decline in SRB in general and a decrease in son preference in particular will be strongly impacted if there is a change across the society, not a change that occurs on the attributes of individuals such as improved education level or job. Chung and Das Gupta (2007)'s research about the role of development and public policy found that 75 percent of Koreans reduced son preference due to normative change contributions and only 25 percent is due to improved education and urbanization. Vietnam can take South Korean case as a lesson to

reduce the preference of boys for the context of Vietnam, especially when the culture of Vietnam is considered quite similar to Korea.

Based on our research results, we suggest some policy interventions for Vietnam as follows:

1. Increasing the proportion of women as leaders in public agencies.

   In 2012, Vietnam ranked 44th in the Alliance rankings World Parliament on the number of women delegates in the National Assembly (Anita Vandenbelt & Lý, 2012). The percentage of Vietnamese women attending parliament during the XIII term (2011-2016) is 24% (see Appendix figure A1). In order for women to have a real voice in parliament, the number of female parliamentary deputies must reach about 30% of the total number of delegates (Paxton, Hughes, & Green, 2006). If the number of women in parliament is low, it can lead to the situation where social problems such as education for girls, culture, health, families and children are not properly take care of by the Government. Vietnam is a country with a strong ideological and patriarchal ideology (Bryant, 2002), the percentage of women holding important positions in both the public and private sectors is low. In 2018, for the first time, the president of the parliament was female. Increasing the proportion of female leaders tend to change the image of women in the public and empower women in society, and this is the foundation for gender equality and son preference reduction in Vietnam.

2. Vietnam should continuously institute and enforce policies to ban ultrasounds to detect fetal sex to reduce the feasibility of sex-selective abortion.

Although according to the Population Ordinance 2003 and Decree 104/2003/NĐ-CP, it is forbidden to remove the fetus due to sex selection through abortion methods, providing and using chemicals, drugs or other measures (Bélanger & Hong, 1999), Vietnamese continue to have abortions at private clinics or by traditional treatments if they do not yet have a son (Binh, 2012). Banning ultrasound to detect fetal sex should be continuously stronger and more intense, especially in private clinics to prevent sex-selective abortion. The current level of penalties for doctors or health facilities performing an ultrasound on fetal sex and sex-selective abortion is very low, approximately from $21- $ 42 (Binh, 2012), we suggest raising the fine up to have enough social deterrence power. The penalty should be applied in cases where the ultrasound doctor uses "suggestive words" to disclose the sex of the fetus such as "like mother", "like father", "preparing the skirt for the child".

3. Nowadays, along with the rapid progress of science and technology, in vitro fertilization has become more popular with the diversity of sex selection methods at sperm level such as using the sperm sorting method or most recently method as using flow cytometry. We recommend that sex selection should be banned not only at the fetal level but also at the sperm level in Vietnam. Prohibit the selection of sperm gender when performing vitro fertilization in clinic and hospital is necessary to prevent an increase in SRB rates in Vietnam in the current period.

4. Allowing children to take the mother or father's surname. According to Decree 123/2015/ND-CP dated November 15, 2015 and Article 26 of the 2015 Civil

Code regulating the implementation of the Law on Civil Status stipulating the content of birth registration, when registering the birth of a child, the child is determined by agreement of father and mother. Thus, surname of children can take the mother or father's surname. However, according to traditional practices in Vietnam, most of the surname of children are taken by father's surname, including cases when parents divorce. Even in some parts of northern Vietnam, after getting married, the wife will lose her real name and be called by her husband's name (Marr, 1976). Naming the child after the mother's surname should be encouraged to become well accepted and generally practiced in society to lessen the need to have a son to keep the family name, then reducing son preference in the society.

5. Raising the value of girls or in other words, regaining the inherent values of women to change son preference in Vietnamese society by policies as follows.

In order to improve the value of girls, the first target needs to be changed that is the awareness of girls and women. It is women who have to realize the true value of themselves through education, increasing their awareness and self-esteem. The important policy to implement is to eliminate illiteracy for all the population, especially women and girls, to encourage women to participate in higher levels of education.

Furthermore, teaching gender equality to boys and girls in school is an important step to promote the value of girls in Vietnamese context. Therefore, it is necessary to establish a suitable gender equality education program for students

from the early education level. Providing important knowledge as gender equality from the early stages of life will be a potential foundation for pursuing bigger dreams later of girls and enable them to contribute strongly to changing their own society.

In addition, the application of strong public policies namely inheritance rights for both boys and girls, allowing women to still be members of the family after they get married, allowing women to take on the role of ancestor worship as men and have the same responsibility for supporting elderly parents will help Vietnam save time to drastically reduce son preference and SRB without having to wait until Vietnam reaches the same level of development as Korea to reduce son preference.

APPENDIX

Table A 1: Original variable of women's fertility desire

Women's fertility desire	**Observation**	**Percentage**
Have (a/another) child	2,890	31.94
No more / none	4,736	52.34
Says she cannot get pregnant	437	4.83
Undecided	975	10.78
Missing	10	0.11
Total	9,048	100

Note: for all women with 0 and more children

Table A 2: Logistic regression odds ratios for women's fertility desire showing interaction effects of sex composition of children and SRB

	One Child	**Two Children**	**Three Children**
	O.R. (S.E.)	O.R. (S.E.)	O.R. (S.E.)
Group 1: Women with one child (Ref. one son)			
1 daughter	10.84	-	-
	(39.39)		
Group 2: Women with 2 children (Ref. 2 sons)			
Two daughters		0.154	-
		(0.606)	
1 son and 1 daughter		0.0674	-
		(0.258)	
Group 3: Women with three or more children (Ref. All sons)			
All daughters	-	-	0.00000367
			(0.0000987)
Mix gender	-	-	2.17e-08
			(0.000000578)
Sex ratio at birth at provincial level	1.039	0.979	0.952
	(0.0255)	(0.0289)	(0.226)
SRB x one daughter	0.982		
	(0.0322)		
SRB x two daughters		1.029	
		(0.0360)	
SRB x 1 son and 1 daughter		1.025	
		(0.0347)	
SRB x all daughters			1.142
			(0.279)
SRB x mix gender			1.155
			(0.279)
Age of mother	0.896*	0.845**	1.031
	(0.0571)	(0.0557)	(0.171)
Age at first married	1.095**	1.072*	0.887
	(0.0464)	(0.0445)	(0.0882)

Table A 2 : *Continued*

	One Child	**Two Children**	**Three Children**
	O.R. (S.E.)	O.R. (S.E.)	O.R. (S.E.)
Age group of mother at last birth (Ref 15-20 ages)			
20-24 ages	1.076	8.761*	-
	(0.350)	(10.32)	
25-29 ages	0.774	9.895*	1.023
	(0.397)	(12.48)	(1.075)
30-34 ages	0.356	5.137	0.323
	(0.270)	(7.204)	(0.528)
35-39 ages	0.179*	3.852	0.199
	(0.185)	(6.420)	(0.472)
40 up	0.0986	-	-
	(0.141)		
Living with a male partner (Ref. Not living with a male partner)	15.47***	5.712**	-
	(4.432)	(4.373)	
Husband-wife gender equality attitude (Ref. disagree with violence)	1.184	0.635***	0.477
	(0.175)	(0.112)	(0.249)
Education (Ref: Primary)			
Lower secondary	1.238	1.138	1.080
	(0.278)	(0.284)	(0.615)
Upper secondary	1.334	1.351	-
	(0.331)	(0.413)	
Vocational school	1.513	0.548	-
	(0.535)	(0.304)	
College/university & above	1.793*	1.441	-
	(0.537)	(0.565)	

Table A 2: *Continued*

	One Child	**Two Children**	**Three Children**
	O.R. (S.E.)	O.R. (S.E.)	O.R. (S.E.)
Religion (Ref. No religion)			
Buddhism	0.701*	0.606	1.274
	(0.142)	(0.214)	(1.090)
Christian	1.171	3.079***	2.316
	(0.311)	(0.862)	(1.887)
Other religion	0.464**	1.457	13.14*
	(0.168)	(0.750)	(19.43)
Mass media access (Ref. No Mass media access)	1.310	0.717	-
	(0.764)	(0.463)	
Region (Ref.South east)			
Red river delta	1.255	2.042**	1.884
	(0.351)	(0.673)	(1.979)
Northern midlands and mountain area	1.704**	1.213	1.787
	(0.437)	(0.399)	(1.972)
North central and central coastal area	1.347	1.561	3.166
	(0.343)	(0.503)	(3.171)
Central highlands	1.413	0.888	1.067
	(0.352)	(0.298)	(1.055)
Mekong river delta	1.113	0.586	-
	(0.242)	(0.235)	
Urban (Ref. Rural)	0.979	0.734	0.482
	(0.161)	(0.153)	(0.319)
Wealth_index (Ref. poorest)			
Second	1.273	1.207	0.723
	(0.322)	(0.352)	(0.518)
Middle	1.493	1.377	0.404
	(0.390)	(0.409)	(0.329)
Fourth	0.970	0.765	1.230
	(0.252)	(0.262)	(0.966)
Richest	1.159	1.090	0.432
	(0.353)	(0.430)	(0.604)
Employment (Ref: Still working)	1.082	0.947	1.124

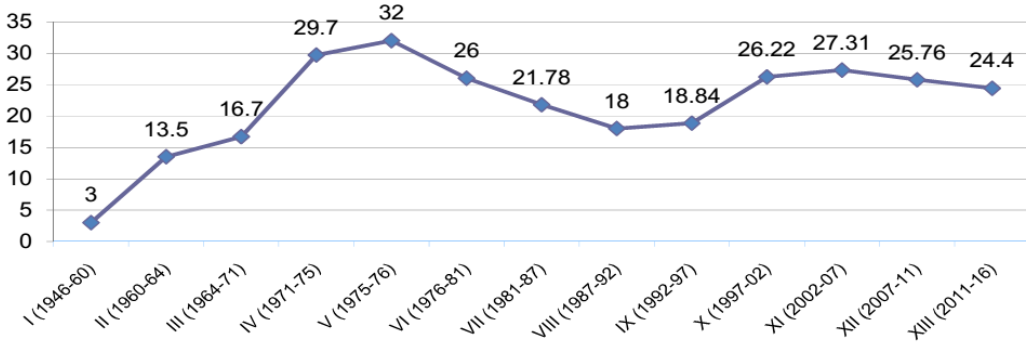
	(0.229)	(0.274)	(0.954)

Table A 2: *Continued*

	One Child	**Two Children**	**Three Children**
	O.R. (S.E.)	O.R. (S.E.)	O.R. (S.E.)
Having elderly in the household (ref. Yes)	1.163	0.927	0.881
	(0.216)	(0.209)	(0.611)
Experiment child dead (Ref. Not Experiment child dead)	1.634	1.258	2.040
	(0.712)	(0.646)	(1.557)
Child age last birth	0.947	1.027	0.833
	(0.0615)	(0.0681)	(0.138)
Number observation	1502	2935	798
Pseudo R-sq	0.304	0.212	0.391

Notes: Standard errors in parentheses. Ref.: Reference category. Significance levels: * p<0.1, ** p<0.05, *** p<0.01.

Figure A 1: Percentage of women in the National Assembly follows the term in Vietnam.



Source: (Anita Vandenbelt & Lý, 2012)

MICS QUESTIONNAIRE

MICS

QUESTIONNAIRE FOR INDIVIDUAL WOMEN

Viet Nam MICS 2014

WOMAN'S INFORMATION PANEL	WM

This questionnaire is to be administered to all women age 15 through 49 (see List of Household Members, column HL7). A separate questionnaire should be used for each eligible woman.

WM0A. Province/ City's name and number: Name _____ ___ ___	**WM0B**. District's name and number: Name_____ ___ ___ ___
WM0C.Commune/ Ward name and number: _____ ___ ___ ___ ___ ___	
WM1. EA's name and number: Name _____ ___ ___ ___	**WM2**. Household number: ___ ___
WM3. Woman's name: Name_____	**WM4**. Woman's line number: ___ ___
WM5. Interviewer's name and number: Name_____ ___ ___	**WM6**. Day / Month / Year of interview: ___ ___/___ ___/ 2 0 1 ___

Repeat greeting if not already read to this woman:	*If greeting at the beginning of the household questionnaire has already been read to this woman, then read the following:*
MY NAME IS [...]. WE ARE FROM THE GENERAL STATISTICS OFFICE. WE ARE CONDUCTING A SURVEY ABOUT THE SITUATION OF CHILDREN, WOMEN AND HOUSEHOLDS. I WOULD LIKE TO TALK TO YOU ABOUT THESE SUBJECTS. THE INTERVIEW WILL TAKE ABOUT 50 MINUTES. ALL THE INFORMATION WE OBTAIN WILL REMAIN STRICTLY CONFIDENTIAL AND ANONYMOUS.	NOW I WOULD LIKE TO TALK TO YOU MORE ABOUT YOUR HEALTH AND OTHER TOPICS. THIS INTERVIEW WILL TAKE ABOUT 50 MINUTES. AGAIN, ALL THE INFORMATION WE OBTAIN WILL REMAIN STRICTLY CONFIDENTIAL AND ANONYMOUS.

MAY I START NOW?

☐ *Yes, permission is given ⇨ Go to WM10 to record the time and then begin the interview.*

☐ *No, permission is not given ⇨ Circle '03' in WM7. Discuss this result with your supervisor.*

WM7. Result of woman's interview	Completed ..... 01 Not at home ..... 02 Refused ..... 03 Partly completed ..... 04 Incapacitated ..... 05 Other (*specify*)_____ 96

WM8. Field editor's name and number: Name_____ __ __ __	**WM9**. Main data entry clerk's name and number: Name_____ __ __

WM10. *Record the time.*	Hour and minutes ..... __ __ : __ __	

WOMAN'S BACKGROUND		**WB**
WB1. IN WHAT MONTH AND YEAR WERE YOU BORN?	Date of birth Month ..... __ __ DK month ..... 98 Year ..... __ __ __ __ DK year 9998	
WB2. HOW OLD ARE YOU? *Probe:* HOW OLD WERE YOU AT YOUR LAST BIRTHDAY? *Compare and correct WB1 and/or WB2 if inconsistent*	Age (in completed years) ..... __ __	
WB3. HAVE YOU EVER ATTENDED SCHOOL OR PRESCHOOL?	Yes..... 1 No 2	2⇨WB7
WB4. WHAT IS THE HIGHEST LEVEL OF SCHOOL YOU ATTENDED?	Preschool ..... 0 Primary..... 1 Lower Secondary ..... 2 Upper Secondary ..... 3 Professional School ..... 4 College/ University & above 5	0⇨WB7 4 ⇨ Next Module 5 ⇨ Next Module
WB5. WHAT IS THE HIGHEST GRADE YOU COMPLETED AT THAT LEVEL? *If grade 1 is not completed at this level, enter "00"*	Grade ..... __ __	
WB6. *Check WB4:* ☐ *Lower or upper secondary ⇨ Go to Next Module* ☐ *Primary (WB4=1) ⇨ Continue with WB7*		
WB7. NOW I WOULD LIKE YOU TO READ THIS SENTENCE TO ME. *Show sentence on the card to the respondent.* *If respondent cannot read whole sentence, probe:* CAN YOU READ PART OF THE SENTENCE TO ME?	Cannot read at all..... 1 Able to read only parts of sentence ..... 2 Able to read whole sentence ..... 3 No sentence in required language _____ 4 *(specify language)* Blind / visually impaired..... 5	

ACCESS TO MASS MEDIA AND USE OF INFORMATION/COMMUNICATION TECHNOLOGY		MT
MT0. DO YOU OWN A MOBILE PHONE OR USE ONE AS IF IT YOURS?	Yes..... 1 No 2	
MT1. *Check WB7:* ☐ *Question left blank (Respondent has secondary or higher education) ⇨ Continue with MT1A* ☐ *Able to read or no sentence in required language (WB7 = 2, 3 or 4) ⇨ Continue with MT1A* ☐ *Cannot read at all or blind/visually impaired (WB7 = 1 or 5) ⇨ Go to MT3* **MT1A.** *Check MT0:* ☐ *Yes ⇨ Continue with MT1B* ☐ *No ⇨ Continue with MT2*		
MT1B. HAVE YOU EVER USED YOUR MOBILE PHONE TO READ OR WRITE SMS MESSAGES?	Yes..... 1 No 2	2⇨MT2
MT1C. DURING THE LAST ONE MONTH, HOW OFTEN DID YOU READ OR WRITE SMS MESSAGES: ALMOST EVERY DAY, AT LEAST ONCE A WEEK, LESS THAN ONCE A WEEK OR NOT AT ALL?	Almost every day..... 1 At least once a week..... 2 Less than once a week ..... 3 Not at all..... 4	
MT2. HOW OFTEN DO YOU READ A NEWSPAPER OR MAGAZINE: ALMOST EVERY DAY, AT LEAST ONCE A WEEK, LESS THAN ONCE A WEEK OR NOT AT ALL?	Almost every day..... 1 At least once a week..... 2 Less than once a week ..... 3 Not at all..... 4	
MT3. DO YOU LISTEN TO THE RADIO ALMOST EVERY DAY, AT LEAST ONCE A WEEK, LESS THAN ONCE A WEEK OR NOT AT ALL?	Almost every day..... 1 At least once a week..... 2 Less than once a week ..... 3 Not at all..... 4	
MT4. HOW OFTEN DO YOU WATCH TELEVISION: WOULD YOU SAY THAT YOU WATCH ALMOST EVERY DAY, AT LEAST ONCE A WEEK, LESS THAN ONCE A WEEK OR NOT AT ALL?	Almost every day..... 1 At least once a week..... 2 Less than once a week ..... 3 Not at all..... 4	
MT5. *Check WB2: Age of respondent?* ☐ *Age 15-24 ⇨ Continue with MT6* ☐ *Age 25-49 ⇨ Go to Next Module*		
MT6. HAVE YOU EVER USED A COMPUTER?	Yes..... 1 No 2	2⇨MT9
MT7. HAVE YOU USED A COMPUTER FROM ANY LOCATION IN THE LAST 12 MONTHS?	Yes..... 1 No 2	2⇨MT9
MT8. DURING THE LAST ONE MONTH, HOW OFTEN DID YOU USE A COMPUTER: ALMOST EVERY DAY, AT LEAST ONCE A WEEK, LESS THAN ONCE A WEEK OR NOT AT ALL?	Almost every day..... 1 At least once a week..... 2 Less than once a week ..... 3 Not at all..... 4	
MT9. HAVE YOU EVER USED THE INTERNET?	Yes..... 1 No 2	2⇨Next Module
MT10. IN THE LAST 12 MONTHS, HAVE YOU USED THE INTERNET? *If necessary, probe for use from any location, with any device.*	Yes..... 1 No 2	2⇨ Next Module
MT11. DURING THE LAST ONE MONTH, HOW OFTEN DID YOU USE THE INTERNET: ALMOST EVERY DAY, AT LEAST ONCE A WEEK, LESS THAN ONCE A WEEK OR NOT AT ALL?	Almost every day..... 1 At least once a week..... 2 Less than once a week ..... 3 Not at all..... 4	

FERTILITY/BIRTH HISTORY		CM
CM1. NOW I WOULD LIKE TO ASK ABOUT ALL THE BIRTHS YOU HAVE HAD DURING YOUR LIFE. HAVE YOU EVER GIVEN BIRTH?	Yes ..... 1 No 2	2⇨CM8
CM4. DO YOU HAVE ANY SONS OR DAUGHTERS TO WHOM YOU HAVE GIVEN BIRTH WHO ARE NOW LIVING WITH YOU?	Yes ..... 1 No 2	2⇨CM6
CM5. HOW MANY SONS LIVE WITH YOU? HOW MANY DAUGHTERS LIVE WITH YOU? *If none, record '00'.*	Sons at home ..... __ __ Daughters at home ..... __ __	
CM6. DO YOU HAVE ANY SONS OR DAUGHTERS TO WHOM YOU HAVE GIVEN BIRTH WHO ARE ALIVE BUT DO NOT LIVE WITH YOU?	Yes ..... 1 No 2	2⇨CM8
CM7. HOW MANY SONS ARE ALIVE BUT DO NOT LIVE WITH YOU? HOW MANY DAUGHTERS ARE ALIVE BUT DO NOT LIVE WITH YOU? *If none, record '00'.*	Sons elsewhere ..... __ __ Daughters elsewhere ..... __ __	
CM8. HAVE YOU EVER GIVEN BIRTH TO A BOY OR GIRL WHO WAS BORN ALIVE BUT LATER DIED? *If "No" probe by asking:* I MEAN, TO A CHILD WHO EVER BREATHED OR CRIED OR SHOWED OTHER SIGNS OF LIFE – EVEN IF HE OR SHE LIVED ONLY A FEW MINUTES OR HOURS?	Yes ..... 1 No 2	2⇨CM10
CM9. HOW MANY BOYS HAVE DIED? HOW MANY GIRLS HAVE DIED? *If none, record '00'.*	Boys dead ..... __ __ Girls dead ..... __ __	
CM10. *Sum answers to CM5, CM7, and CM9.*	Sum	

CM11. JUST TO MAKE SURE THAT I HAVE THIS RIGHT, YOU HAVE HAD IN TOTAL (*total number in CM10*) LIVE BIRTHS DURING YOUR LIFE. IS THIS CORRECT?

☐ *Yes. Check below:*

☐ *No live births ⇨ Go to ILLNESS SYMPTOMS Module*

☐ *One or more live births ⇨ Continue with the BIRTH HISTORY module*

☐ *No. ⇨ Check responses to CM1-CM10 and make corrections as necessary before proceeding to the BIRTH HISTORY Module or ILLNESS SYMPTOMS Module*

BIRTH HISTORY — BH

NOW I WOULD LIKE TO RECORD THE NAMES OF ALL OF YOUR BIRTHS, WHETHER STILL ALIVE OR NOT, STARTING WITH THE FIRST ONE YOU HAD.
Record names of all of the births in BH1.Record twins and triplets on separate lines. If there are more than 14 births, use an additional questionnaire.

BH Line No.	**BH1.** WHAT NAME WAS GIVEN TO YOUR (*first/next*) BABY?	**BH2.** WERE ANY OF THESE BIRTHS TWINS? 1 Single 2 Multiple	**BH3.** IS (*name*) A BOY OR A GIRL? 1 Boy 2 Girl	**BH4.** IN WHAT MONTH AND YEAR WAS (*name*) BORN? *Probe*: WHAT IS HIS/HER BIRTHDAY?		**BH5.** IS (*name*) STILL ALIVE? 1 Yes 2 No	**BH6.** HOW OLD WAS (*name*) AT HIS/HER LAST BIRTHDAY? *Record age in completed years.*	**BH7.** IS (*name*) LIVING WITH YOU? 1 Yes 2 No	**BH8.** *Record household line number of child (from HL1)* *Record "00" if child is not listed.*	**BH9.** *If dead:* HOW OLD WAS (*name*) WHEN HE/SHE DIED? *If "1 year", probe:* HOW MANY MONTHS OLD WAS (*name*)? *Record days if less than 1 month; record months if less than 2 years; or years*		**BH10.** WERE THERE ANY OTHER LIVE BIRTHS BETWEEN (*name of previous birth*) AND (*name*), INCLUDING ANY CHILDREN WHO DIED AFTER BIRTH? 1 Yes 2 No
Line	Name	S M	B G	Month	Year	Y N	Age	Y N	Line No	Unit	Number	Y N
01		1 2	1 2	__ __	__ __ __ __	1 2 ⇨ BH9	__ __	1 2	__ __ ⇨ Next Line	Days ..... 1 Months..... 2 Years 3	__ __	
02		1 2	1 2	__ __	__ __ __ __	1 2 ⇨ BH9	__ __	1 2	__ __ ⇨ BH10	Days ..... 1 Months..... 2 Years 3	__ __	1 Add Birth 2 Next Birth
03		1 2	1 2	__ __	__ __ __ __	1 2 ⇨ BH9	__ __	1 2	__ __ ⇨ BH10	Days ..... 1 Months..... 2 Years 3	__ __	1 Add Birth 2 Next Birth
04		1 2	1 2	__ __	__ __ __ __	1 2 ⇨ BH9	__ __	1 2	__ __ ⇨ BH10	Days ..... 1 Months..... 2 Years 3	__ __	1 Add Birth 2 Next Birth
05		1 2	1 2	__ __	__ __ __ __	1 2 ⇨ BH9	__ __	1 2	__ __ ⇨ BH10	Days ..... 1 Months..... 2 Years 3	__ __	1 Add Birth 2 Next Birth
06		1 2	1 2	__ __	__ __ __ __	1 2 ⇨ BH9	__ __	1 2	__ __ ⇨ BH10	Days ..... 1 Months..... 2 Years 3	__ __	1 Add Birth 2 Next Birth
07		1 2	1 2	__ __	__ __ __ __	1 2 ⇨ BH9	__ __	1 2	__ __ ⇨ BH10	Days ..... 1 Months..... 2 Years 3	__ __	1 Add Birth 2 Next Birth

BH Line No.	**BH1.** WHAT NAME WAS GIVEN TO YOUR (*first/next*) BABY?	**BH2.** WERE ANY OF THESE BIRTHS TWINS? 1 Single 2 Multiple	**BH3.** IS (*name*) A BOY OR A GIRL? 1 Boy 2 Girl	**BH4.** IN WHAT MONTH AND YEAR WAS (*name*) BORN? *Probe*: WHAT IS HIS/HER BIRTHDAY?		**BH5.** IS (*name*) STILL ALIVE? 1 Yes 2 No	**BH6.** HOW OLD WAS (*name*) AT HIS/HER LAST BIRTHDAY? *Record age in completed years.*	**BH7.** IS (*name*) LIVING WITH YOU? 1 Yes 2 No	**BH8.** *Record household line number of child (from HL1)* *Record "00" if child is not listed.*	**BH9.** *If dead:* HOW OLD WAS (*name*) WHEN HE/SHE DIED? *If "1 year", probe:* HOW MANY MONTHS OLD WAS (*name*)? *Record days if less than 1 month; record months if less than 2 years; or years*		**BH10.** WERE THERE ANY OTHER LIVE BIRTHS BETWEEN (*name of previous birth*) AND (*name*), INCLUDING ANY CHILDREN WHO DIED AFTER BIRTH? 1 Yes 2 No
08		1 2	1 2	___ ___	___ ___ ___ ___	1 2 ⇨ BH9	___ ___	1 2	___ ___ ⇨ BH10	Days ..... 1 Months ..... 2 Years 3	___ ___	1 2 Add Birth Next Birth
09		1 2	1 2	___ ___	___ ___ ___ ___	1 2 ⇨ BH9	___ ___	1 2	___ ___ ⇨ BH10	Days ..... 1 Months ..... 2 Years 3	___ ___	1 2 Add Birth Next Birth
10		1 2	1 2	___ ___	___ ___ ___ ___	1 2 ⇨ BH9	___ ___	1 2	___ ___ ⇨ BH10	Days ..... 1 Months ..... 2 Years 3	___ ___	1 2 Add Birth Next Birth
11		1 2	1 2	___ ___	___ ___ ___ ___	1 2 ⇨ BH9	___ ___	1 2	___ ___ ⇨ BH10	Days ..... 1 Months ..... 2 Years 3	___ ___	1 2 Add Birth Next Birth
12		1 2	1 2	___ ___	___ ___ ___ ___	1 2 ⇨ BH9	___ ___	1 2	___ ___ ⇨ BH10	Days ..... 1 Months ..... 2 Years 3	___ ___	1 2 Add Birth Next Birth
13		1 2	1 2	___ ___	___ ___ ___ ___	1 2 ⇨ BH9	___ ___	1 2	___ ___ ⇨ BH10	Days ..... 1 Months ..... 2 Years 3	___ ___	1 2 Add Birth Next Birth
14		1 2	1 2	___ ___	___ ___ ___ ___	1 2 ⇨ BH9	___ ___	1 2	___ ___ ⇨ BH10	Days ..... 1 Months ..... 2 Years 3	___ ___	1 2 Add Birth Next Birth

BH11. HAVE YOU HAD ANY LIVE BIRTHS SINCE THE BIRTH OF (*name of last birth in BIRTH HISTORY Module*)?	Yes.....1 No 2	1⇨Record birth(s) in Birth History

CM12A. *Compare number in CM10 with number of births in the BIRTH HISTORY Module above and check:*

☐ *Numbers are same ⇨ Continue with CM13*

☐ *Numbers are different ⇨ Probe and reconcile*

CM13. *Check BH4 in BIRTH HISTORY Module: Last birth occurred within the last 2 years, that is, since (month of interview) in* ***2011/2012*** *(if the month of interview and the month of birth are the same, and the year of birth is* ***2011/2012****, consider this as a birth within the last 2 years)*

☐ *No live birth in last 2 years. ⇨ Go to ILLNESS SYMPTOMS Module.*

☐ *One or more live births in last 2 years. ⇨ Record name of last born child and continue with Next Module*

*Name of last-born child*_____

If child has died, take special care when referring to this child by name in the following modules.

DESIRE FOR LAST BIRTH		**DB**
This module is to be administered to all women with a live birth in the 2 years preceding the date of interview. Record name of last-born child from CM13 here _____. *Use this child's name in the following questions, where indicated.*		
DB1. WHEN YOU GOT PREGNANT WITH (*name*), DID YOU WANT TO GET PREGNANT AT THAT TIME?	Yes ..... 1 No 2	1⇨Next Module
DB2. DID YOU WANT TO HAVE A BABY LATER ON, OR DID YOU NOT WANT ANY (MORE) CHILDREN?	Later ..... 1 No more 2	2⇨Next Module
DB3. HOW MUCH LONGER DID YOU WANT TO WAIT? *Record the answer as stated by respondent.*	Months ..... 1 __ __ Years ..... 2 __ __ DK 998	

MATERNAL AND NEWBORN HEALTH		MN
This module is to be administered to all women with a live birth in the 2 years preceding the date of interview. Record name of last-born child from CM13 here _____. Use this child's name in the following questions, where indicated.		
MN1. DID YOU SEE ANYONE FOR ANTENATAL CARE DURING YOUR PREGNANCY WITH (*name*)?	Yes ..... 1 No 2	2⇨MN4E
MN2. WHOM DID YOU SEE? *Probe:* ANYONE ELSE? *Probe for the type of person seen and circle all answers given.*	Health professional: Doctor ..... A Nurse/midwife ..... B Other person Traditional birth attendant ..... F Village health worker ..... G Other (*specify*)_____ X	
MN2A. HOW MANY WEEKS OR MONTHS PREGNANT WERE YOU WHEN YOU FIRST RECEIVED ANTENATAL CARE FOR THIS PREGNANCY? *Record the answer as stated by respondent.*	Weeks ..... 1 __ __ Months ..... 2 0 __ DK 998	
MN3. HOW MANY TIMES DID YOU RECEIVE ANTENATAL CARE DURING THIS PREGNANCY? *Probe to identify the number of times antenatal care was received. If a range is given, record the minimum number of times antenatal care received.*	Number of times ..... __ __ DK 98	
MN4. AS PART OF YOUR ANTENATAL CARE DURING THIS PREGNANCY, WERE ANY OF THE FOLLOWING DONE AT LEAST ONCE: [A] WAS YOUR BLOOD PRESSURE MEASURED? [B] DID YOU GIVE A URINE SAMPLE? [C] DID YOU GIVE A BLOOD SAMPLE? [D] WERE YOU ADVISED TO TAKE IRON FOLIC SUPPLEMENTS (OR IRON TABLETS OR MULTIPLE MICRO-NUTRIENT (MMN) SUPPLEMENTS)?	Yes No Blood pressure ..... 1 2 Urine sample ..... 1 2 Blood sample ..... 1 2 Iron Folic Supplements 1 2	
MN4E. DURING THIS PREGNANCY, DID YOU TAKE ANY IRON FOLIC SUPPLEMENTS (OR IRON TABLETS OR MULTIPLE MICRO-NUTRIENT (MMN) SUPPLEMENTS) SUCH AS THESE? *Show sample pictures*	Yes ..... 1 No 2	2⇨MN5
MN4F. DURING THIS WHOLE PREGNANCY, FOR HOW MANY MONTHS DID YOU TAKE THE TABLETS (SUPPLEMENTS)? *If a range is given, record the minimum number of months mentioned. If less than 1 month record '0'.*	Number of months ..... 0 __ DK 98	

MN5. DO YOU HAVE A CARD OR OTHER DOCUMENT WITH YOUR OWN IMMUNIZATIONS LISTED? MAY I SEE IT PLEASE? *If a card is presented, use it to assist with answers to the following questions.*	Yes (card seen) ..... 1 Yes (card not seen) ..... 2 No ..... 3 DK 8	
MN6. WHEN YOU WERE PREGNANT WITH (*name*), DID YOU RECEIVE ANY INJECTION IN THE ARM OR SHOULDER TO PREVENT THE BABY FROM GETTING TETANUS, THAT IS CONVULSIONS AFTER BIRTH?	Yes ..... 1 No ..... 2 DK 8	 2⇨MN9 8⇨MN9
MN7. HOW MANY TIMES DID YOU RECEIVE THIS TETANUS INJECTION DURING YOUR PREGNANCY WITH (*name*)?	Number of times ..... __ DK 8	 8⇨MN9

MN8. *How many tetanus injections during last pregnancy were reported in MN7?* ☐ *At least two tetanus injections during last pregnancy. ⇨ Go to MN17* ☐ *Only one tetanus injection during last pregnancy. ⇨ Continue with MN9*		
MN9. DID YOU RECEIVE ANY TETANUS INJECTION AT ANY TIME BEFORE YOUR PREGNANCY WITH (*name*), EITHER TO PROTECT YOURSELF OR ANOTHER BABY?	Yes ..... 1 No ..... 2 DK 8	 2⇨MN17 8⇨MN17
MN10. HOW MANY TIMES DID YOU RECEIVE A TETANUS INJECTION BEFORE YOUR PREGNANCY WITH (*name*)? *If 7 or more times, record '7'.*	Number of times ..... __ DK 8	 8⇨MN17
MN11. HOW MANY YEARS AGO DID YOU RECEIVE THE LAST TETANUS INJECTION BEFORE YOUR PREGNANCY WITH (*name*)? *If less than 1 year, record '00'.*	Years ago ..... __ __	
MN17. WHO ASSISTED WITH THE DELIVERY OF (*name*)? *Probe:* ANYONE ELSE? *Probe for the type of person assisting and circle all answers given.* *If respondent says no one assisted, probe to determine whether any adults were present at the delivery.*	Health professional: Doctor ..... A Nurse/midwife ..... B Other person Traditional birth attendant ..... F Village health worker ..... G Relative / Friend ..... H Other (*specify*)_____ X No one ..... Y	

MN18. WHERE DID YOU GIVE BIRTH TO (*name*)? *Probe to identify the type of source.* *If unable to determine whether public or private, write the name of the place.* _____ *(Name of place)*	Home Your home ..... 11 Other home ..... 12 Public sector Government hospital ..... 21 Commune health centre ..... 22 Sectoral hospital (army, police) ..... 24 Policlinic ..... 25 Other public (*specify*) _____ 26 Private Medical Sector Private hospital ..... 31 Private clinic ..... 32 Private maternity home ..... 33 Other private medical (*specify*) _____ 36 Other (*specify*) _____ 96	11⇨MN20 12⇨MN20 96⇨MN20
MN19. WAS (*name*) DELIVERED BY CAESAREAN SECTION? THAT IS, DID THEY CUT YOUR BELLY OPEN TO TAKE THE BABY OUT?	Yes ..... 1 No 2	 2⇨MN20
MN19A. WHEN WAS THE DECISION MADE TO HAVE THE CAESAREAN SECTION? WAS IT BEFORE OR AFTER YOUR LABOUR PAINS STARTED?	Before ..... 1 After 2	
MN20. WHEN (*name*) WAS BORN, WAS HE/SHE VERY LARGE, LARGER THAN AVERAGE, AVERAGE, SMALLER THAN AVERAGE, OR VERY SMALL?	Very large ..... 1 Larger than average ..... 2 Average ..... 3 Smaller than average ..... 4 Very small ..... 5 DK 8	
MN21. WAS (*name*) WEIGHED AT BIRTH?	Yes ..... 1 No ..... 2 DK 8	 2⇨MN23 8⇨MN23
MN22. HOW MUCH DID (*name*) WEIGH? *If a card is available, record weight from card.*	From card ..... 1 (kg) __ . __ __ __ From recall ..... 2 (kg) __ . __ __ __ DK 99998	
MN23. HAS YOUR MENSTRUAL PERIOD RETURNED SINCE THE BIRTH OF (*name*)?	Yes ..... 1 No 2	
MN24. DID YOU EVER BREASTFEED (*name*)?	Yes ..... 1 No 2	 2⇨Next Module

MN25. HOW LONG AFTER BIRTH DID YOU FIRST PUT (*name*) TO THE BREAST? *If less than 1 hour, record '00' hours.* *If less than 24 hours, record hours.* *Otherwise, record days.*	Immediately .....000 Hours .....1 __ __ Days .....2 __ __ DK / Don't remember 998	
MN26. IN THE FIRST THREE DAYS AFTER DELIVERY, WAS (*name*) GIVEN ANYTHING TO DRINK OTHER THAN BREAST MILK?	Yes .....1 No 2	2⇨Next Module
MN27. WHAT WAS (*name*) GIVEN TO DRINK? *Probe:* ANYTHING ELSE?	Milk (other than breast milk).....A Plain water .....B Sugar or glucose water .....C Gripe water .....D Sugar-salt-water solution .....E Fruit juice .....F Infant formula.....G Tea / Infusions .....H Honey .....I Rice soup.....J Other (*specify*)_____X	

POST-NATAL HEALTH CHECKS — PN

This module is to be administered to all women with a live birth in the 2 years preceding the date of interview.
Record name of last-born child from CM13 here _____.
Use this child's name in the following questions, where indicated.

PN1. *Check MN18: Was the child delivered in a health facility?*

☐ *Yes, the child was delivered in a health facility (MN18=21-26 or 31-36) ⇨ Continue with PN2*

☐ *No, the child was not delivered in a health facility (MN18=11-12 or 96) ⇨ Go to PN6*

PN2. NOW I WOULD LIKE TO ASK YOU SOME QUESTIONS ABOUT WHAT HAPPENED IN THE HOURS AND DAYS AFTER THE BIRTH OF (*name*). YOU HAVE SAID THAT YOU GAVE BIRTH IN (*name or type of facility in MN18*). HOW LONG DID YOU STAY THERE AFTER THE DELIVERY? *If less than one day, record hours.* *If less than one week, record days.* *Otherwise, record weeks.*	Hours .....1 __ __ Days .....2 __ __ Weeks.....3 __ __ DK / Don't remember 998	
PN3. I WOULD LIKE TO TALK TO YOU ABOUT CHECKS ON (*name*)'S HEALTH AFTER DELIVERY – FOR EXAMPLE, SOMEONE EXAMINING (*name*), CHECKING THE CORD, OR SEEING IF (*name*) IS OK. BEFORE YOU LEFT THE (*name or type of facility in MN18*), DID ANYONE CHECK ON (*name*)'S HEALTH?	Yes .....1 No 2	
PN4. AND WHAT ABOUT CHECKS ON <u>YOUR</u> HEALTH – I MEAN, SOMEONE ASSESSING YOUR HEALTH, FOR EXAMPLE ASKING QUESTIONS ABOUT YOUR HEALTH OR EXAMINING YOU? DID ANYONE CHECK ON <u>YOUR</u> HEALTH BEFORE YOU LEFT (*name or type or facility in MN18*)?	Yes .....1 No 2	
PN5. NOW I WOULD LIKE TO TALK TO YOU ABOUT WHAT HAPPENED AFTER YOU LEFT (*name or type of facility in MN18*). DID ANYONE CHECK ON (*name*)'S HEALTH AFTER YOU LEFT (*name or type of facility in MN18*)?	Yes .....1 No 2	1⇨PN11 2⇨PN16

PN6. *Check MN17: Did a health professional, traditional birth attendant, or community health worker assist with the delivery?*

☐ *Yes, delivery assisted by a health professional, traditional birth attendant, or community health worker (MN17=A-G) ⇨ Continue with PN7*

☐ *No, delivery not assisted by a health professional, traditional birth attendant, or community health worker (A-G not circled in MN17) ⇨ Go to PN10*

PN7. YOU HAVE ALREADY SAID THAT (*person or persons in MN17*) ASSISTED WITH THE BIRTH. NOW I WOULD LIKE TO TALK TO YOU ABOUT CHECKS ON (*name*)'S HEALTH AFTER DELIVERY, FOR EXAMPLE EXAMINING (*name*), CHECKING THE CORD, OR SEEING IF (*name*) IS OK. AFTER THE DELIVERY WAS OVER AND BEFORE (*person or persons in MN17*) LEFT YOU, DID (*person or persons in MN17*) CHECK ON (*name*)'S HEALTH?	Yes .....1 No 2	
PN8. AND DID (*person or persons in MN17*) CHECK ON YOUR HEALTH BEFORE LEAVING? BY CHECK ON YOUR HEALTH, I MEAN ASSESSING YOUR HEALTH, FOR EXAMPLE ASKING QUESTIONS ABOUT YOUR HEALTH OR EXAMINING YOU.	Yes .....1 No 2	
PN9. AFTER THE (*person or persons in MN17*) LEFT YOU, DID ANYONE CHECK ON THE HEALTH OF (*name*)?	Yes .....1 No 2	1⇨PN11 2⇨PN18
PN10. I WOULD LIKE TO TALK TO YOU ABOUT CHECKS ON (*name*)'S HEALTH AFTER DELIVERY – FOR EXAMPLE, SOMEONE EXAMINING (*name*), CHECKING THE CORD, OR SEEING IF THE BABY IS OK. AFTER (*name*) WAS DELIVERED, DID ANYONE CHECK ON HIS/HER HEALTH?	Yes .....1 No 2	2⇨PN19
PN11. DID SUCH A CHECK HAPPEN ONLY ONCE, OR MORE THAN ONCE?	Once .....1 More than once 2	1⇨PN12A 2⇨PN12B
PN12A. HOW LONG AFTER DELIVERY DID THAT CHECK HAPPEN? **PN12B**. HOW LONG AFTER DELIVERY DID THE FIRST OF THESE CHECKS HAPPEN? *If less than one day, record hours.* *If less than one week, record days.* *Otherwise, record weeks.*	Hours .....1 __ __ Days .....2 __ __ Weeks .....3 __ __ DK / Don't remember 998	

PN13. WHO CHECKED ON (*name*)'S HEALTH AT THAT TIME?	Health professional Doctor ..... A Nurse / Midwife ..... B Other person Traditional birth attendant ..... F Village health worker..... G Relative / Friend..... H Other (*specify*)_____ X	
PN14. WHERE DID THIS CHECK TAKE PLACE? *Probe to identify the type of source.* *If unable to determine whether public or private, write the name of the place.* _____ *(Name of place)*	Home Your home ..... 11 Other home..... 12 Public sector Government hospital..... 21 Commune health centre..... 22 Sectoral hospital (army, police) ..... 24 Policlinic..... 25 Other public (*specify*) _____ 26 Private Medical Sector Private hospital ..... 31 Private clinic..... 32 Private maternity home ..... 33 Other private medical (*specify*) _____ 36 Other (*specify*)_____ 96	
PN15. *Check MN18: Was the child delivered in a health facility?* ☐ *Yes, the child was delivered in a health facility (MN18=21-26 or 31-36) ⇨ Continue with PN16* ☐ *No, the child was not delivered in a health facility (MN18=11-12 or 96) ⇨ Go to PN17*		
PN16. AFTER YOU LEFT (*name or type of facility in MN18*), DID ANYONE CHECK ON YOUR HEALTH?	Yes ..... 1 No..... 2	1⇨PN20 2⇨Next Module
PN17. *Check MN17: Did a health professional, traditional birth attendant, or community health worker assist with the delivery?* ☐ *Yes, delivery assisted by a health professional, traditional birth attendant, or community health worker (MN17=A-G) ⇨ Continue with PN18* ☐ *No, delivery not assisted by a health professional, traditional birth attendant, or community health worker (A-G not circled in MN17) ⇨ Go to PN19*		
PN18. AFTER THE DELIVERY WAS OVER AND (*person or persons in MN17*) LEFT, DID ANYONE CHECK ON YOUR HEALTH?	Yes ..... 1 No..... 2	1⇨PN20 2⇨Next Module

PN19. AFTER THE BIRTH OF (*name*), DID ANYONE CHECK ON YOUR HEALTH? I MEAN SOMEONE ASSESSING YOUR HEALTH, FOR EXAMPLE ASKING QUESTIONS ABOUT YOUR HEALTH OR EXAMINING YOU.	Yes .....1 No 2	2⇨Next Module
PN20. DID SUCH A CHECK HAPPEN ONLY ONCE, OR MORE THAN ONCE?	Once .....1 More than once 2	1⇨PN21A 2⇨PN21B
PN21A. HOW LONG AFTER DELIVERY DID THAT CHECK HAPPEN? **PN21B**. HOW LONG AFTER DELIVERY DID THE FIRST OF THESE CHECKS HAPPEN? *If less than one day, record hours.* *If less than one week, record days.* *Otherwise, record weeks.*	Hours .....1 __ __ Days .....2 __ __ Weeks .....3 __ __ DK / Don't remember 998	
PN22. WHO CHECKED ON YOUR HEALTH AT THAT TIME?	Health professional Doctor ..... A Nurse / Midwife ..... B Other person Traditional birth attendant ..... F Village health worker ..... G Relative / Friend ..... H Other (*specify*)_____ X	
PN23. WHERE DID THIS CHECK TAKE PLACE? *Probe to identify the type of source.* *If unable to determine whether public or private, write the name of the place.* _____ *(Name of place)*	Home Your home .....11 Other home .....12 Public sector Government hospital .....21 Commune health centre .....22 Sectoral hospital (army, police) .....24 Policlinic .....25 Other public (*specify*) _____ 26 Private Medical Sector Private hospital .....31 Private clinic .....32 Private maternity home .....33 Other private medical (*specify*) _____ 36 Other (*specify*)_____ 96	

ILLNESS SYMPTOMS		IS
IS1. *Check List of Household Members, columns HL7B and HL15* *Is the respondent the mother or caretaker of any child under age 5?* ☐ *Yes ⇨ Continue with IS2.* ☐ *No ⇨ Go to Next Module.*		
IS2. SOMETIMES CHILDREN HAVE SEVERE ILLNESSES AND SHOULD BE TAKEN IMMEDIATELY TO A HEALTH FACILITY. WHAT TYPES OF SYMPTOMS WOULD CAUSE YOU TO TAKE A CHILD UNDER THE AGE OF 5 TO A HEALTH FACILITY RIGHT AWAY? *Probe:* ANY OTHER SYMPTOMS? *Keep asking for more signs or symptoms until the mother/caretaker cannot recall any additional symptoms.* *Circle all symptoms mentioned, but do not prompt with any suggestions*	Child not able to drink or breastfeed.....A Child becomes sicker.....B Child develops a fever.....C Child has fast breathing.....D Child has difficulty breathing.....E Child has blood in stool.....F Child is drinking poorly.....G Child vomiting.....H Child choked.....I Other (*specify*) _____ X Other (*specify*) _____ Y Other (*specify*) _____ Z	

CONTRACEPTION		CP
CP1. I WOULD LIKE TO TALK WITH YOU ABOUT ANOTHER SUBJECT – FAMILY PLANNING. ARE YOU PREGNANT NOW?	Yes, currently pregnant..... 1 No..... 2 Unsure or DK..... 8	1⇨CP2A
CP2. COUPLES USE VARIOUS WAYS OR METHODS TO DELAY OR AVOID A PREGNANCY. ARE YOU CURRENTLY DOING SOMETHING OR USING ANY METHOD TO DELAY OR AVOID GETTING PREGNANT?	Yes..... 1 No..... 2	1⇨CP3
CP2A. HAVE YOU EVER DONE SOMETHING OR USED ANY METHOD TO DELAY OR AVOID GETTING PREGNANT?	Yes..... 1 No..... 2	1⇨Next Module 2⇨Next Module
CP3. WHAT ARE YOU DOING TO DELAY OR AVOID A PREGNANCY? *Do not prompt.* *If more than one method is mentioned, circle each one.*	Female sterilization.....A Male sterilization.....B IUD.....C Injectables.....D Implants.....E Pill.....F Male condom.....G Female condom.....H Diaphragm.....I Foam / Jelly.....J Periodic abstinence / Rhythm.....L Withdrawal.....M Other (*specify*)_____X	

UNMET NEED		UN
UN1. *Check CP1. Currently pregnant?* ☐ *Yes, currently pregnant ⇨ Continue with UN2* ☐ *No, unsure or DK ⇨ Go to UN5*		
UN2. NOW I WOULD LIKE TO TALK TO YOU ABOUT YOUR CURRENT PREGNANCY. WHEN YOU GOT PREGNANT, DID YOU WANT TO GET PREGNANT AT THAT TIME?	Yes ..... 1 No 2	1⇨UN4
UN3. DID YOU WANT TO HAVE A BABY LATER ON OR DID YOU NOT WANT ANY (MORE) CHILDREN?	Later ..... 1 No more 2	
UN4. NOW I WOULD LIKE TO ASK SOME QUESTIONS ABOUT THE FUTURE. AFTER THE CHILD YOU ARE NOW EXPECTING, WOULD YOU LIKE TO HAVE ANOTHER CHILD, OR WOULD YOU PREFER NOT TO HAVE ANY MORE CHILDREN?	Have another child ..... 1 No more / None ..... 2 Undecided / DK 8	1⇨UN7 2⇨UN13 8⇨UN13
UN5. *Check CP3. Currently using "Female sterilization"?* ☐ *Yes ⇨ Go to UN13* ☐ *No ⇨ Continue with UN6*		
UN6. NOW I WOULD LIKE TO ASK YOU SOME QUESTIONS ABOUT THE FUTURE. WOULD YOU LIKE TO HAVE (A/ANOTHER) CHILD, OR WOULD YOU PREFER NOT TO HAVE ANY (MORE) CHILDREN?	Have (a/another) child ..... 1 No more / None ..... 2 Says she cannot get pregnant ..... 3 Undecided / DK 8	 2⇨UN9 3⇨UN11 8⇨UN9
UN7. HOW LONG WOULD YOU LIKE TO WAIT BEFORE THE BIRTH OF (A/ANOTHER) CHILD? *Record the answer as stated by respondent.*	Months ..... 1 __ __ Years ..... 2 __ __ Does not want to wait (soon/now) ..... 993 Says she cannot get pregnant ..... 994 After marriage ..... 995 Other ..... 996 DK 998	 994⇨UN11
UN8. *Check CP1. Currently pregnant?* ☐ *Yes, currently pregnant ⇨ Go to UN13* ☐ *No, unsure or DK ⇨ Continue with UN9*		

UN9. *Check CP2. Currently using a method?* ☐ *Yes ⇨ Go to UN13* ☐ *No ⇨ Continue with UN10*		
UN10. DO YOU THINK YOU ARE PHYSICALLY ABLE TO GET PREGNANT AT THIS TIME?	Yes ..... 1 No ..... 2 DK 8	1 ⇨UN13 8 ⇨UN13
UN11. WHY DO YOU THINK YOU ARE NOT PHYSICALLY ABLE TO GET PREGNANT? *If the respondent gives more than one answer, circle each one.*	Infrequent sex / No sex ..... A Menopausal ..... B Never menstruated ..... C Hysterectomy (surgical removal of uterus) ..... D Has been trying to get pregnant for 2 years or more without result ..... E Postpartum amenorrheic ..... F Breastfeeding ..... G Too old ..... H Fatalistic ..... I Other (*specify*) _____ X DK ..... Z	
UN12. *Check UN11. "Never menstruated" mentioned?* ☐ *Mentioned ⇨ Go to Next Module* ☐ *Not mentioned ⇨ Continue with UN13*		
UN13. WHEN DID YOUR LAST MENSTRUAL PERIOD START? *Record the answer using the same unit stated by the respondent*	Days ago ..... 1 __ __ Weeks ago ..... 2 __ __ Months ago ..... 3 __ __ Years ago ..... 4 __ __ In menopause / Has had hysterectomy ..... 994 Before last birth ..... 995 Never menstruated 996	

ATTITUDES TOWARD DOMESTIC VIOLENCE					DV
DV1. SOMETIMES A HUSBAND IS ANNOYED OR ANGERED BY THINGS THAT HIS WIFE DOES. IN YOUR OPINION, IS A HUSBAND JUSTIFIED IN HITTING OR BEATING HIS WIFE IN THE FOLLOWING SITUATIONS:		Yes	No	DK	
[A] IF SHE GOES OUT WITHOUT TELLING HIM?	Goes out without telling	1	2	8	
[B] IF SHE NEGLECTS THE CHILDREN?	Neglects children.....	1	2	8	
[C] IF SHE ARGUES WITH HIM?	Argues with him.....	1	2	8	
[D] IF SHE REFUSES TO HAVE SEX WITH HIM?	Refuses sex	1	2	8	
[E] IF SHE BURNS THE FOOD?	Burned the food.....	1	2	8	
[F] IF SHE DOES NOT COMPLETE HER HOUSE WORK TO HIS SATISFACTION?	Incompleted house works.....	1	2	8	
[G] IF SHE IS DOUBTED ABOUT HER BEING FAITHFUL?	Doubted of her faithful	1	2	8	
[H]IF SHE ISDISCLOSED THAT SHE WAS UNFAITHFUL ?	Disclosed about her unfaithful ..	1	2	8	

MARRIAGE/UNION		MA
MA1. ARE YOU CURRENTLY MARRIED OR LIVING TOGETHER WITH A MAN AS IF MARRIED?	Yes, currently married ..... 1 Yes, living with a man..... 2 No, not in union 3	 3⇨MA5
MA2. HOW OLD IS YOUR HUSBAND/PARTNER? *Probe*: HOW OLD WAS YOUR HUSBAND/PARTNER ON HIS LAST BIRTHDAY?	Age in years ..... __ __ DK 98	
MA3. BESIDES YOURSELF, DOES YOUR HUSBAND/PARTNER HAVE ANY OTHER WIVES OR PARTNERS OR DOES HE LIVE WITH OTHER WOMEN AS IF MARRIED?	Yes ..... 1 No 2	 2⇨MA7
MA4. HOW MANY OTHER WIVES OR PARTNERS DOES HE HAVE?	Number ..... __ __ DK 98	⇨MA7 98⇨MA7
MA5. HAVE YOU EVER BEEN MARRIED OR LIVED TOGETHER WITH A MAN AS IF MARRIED?	Yes, formerly married ..... 1 Yes, formerly lived with a man..... 2 No 3	 3 ⇨Next Module
MA6. WHAT IS YOUR MARITAL STATUS NOW: ARE YOU WIDOWED, DIVORCED OR SEPARATED?	Widowed ..... 1 Divorced ..... 2 Separated 3	
MA7. HAVE YOU BEEN MARRIED OR LIVED WITH A MAN ONLY ONCE OR MORE THAN ONCE?	Only once ..... 1 More than once 2	1 ⇨MA8A 2 ⇨MA8B
MA8A. IN WHAT MONTH AND YEAR DID YOU MARRY OR START LIVING WITH A MAN AS IF MARRIED? **MA8B**. IN WHAT MONTH AND YEAR DID YOU FIRST MARRY OR START LIVING WITH A MAN AS IF MARRIED?	Date of (first) marriage Month ..... __ __ DK month ..... 98 Year ..... __ __ __ __ DK year 9998	 ⇨Next Module
MA9. HOW OLD WERE YOU WHEN YOU FIRST STARTED LIVING WITH YOUR (FIRST) HUSBAND/PARTNER?	Age in years ..... __ __	

HIV/AIDS		HA
HA1. NOW I WOULD LIKE TO TALK WITH YOU ABOUT SOMETHING ELSE. HAVE YOU EVER HEARD OF AN ILLNESS CALLED AIDS?	Yes ..... 1 No 2	 2 ⇨Next Module
HA2. CAN PEOPLE REDUCE THEIR CHANCE OF GETTING THE HIV VIRUS BY HAVING JUST ONE UNINFECTED SEX PARTNER WHO HAS NO OTHER SEX PARTNERS?	Yes ..... 1 No ..... 2 DK 8	
HA3. CAN PEOPLE GET THE HIV VIRUS BECAUSE OF WITCHCRAFT OR OTHER SUPERNATURAL MEANS?	Yes ..... 1 No ..... 2 DK 8	
HA4. CAN PEOPLE REDUCE THEIR CHANCE OF GETTING THE HIV VIRUS BY USING A CONDOM EVERY TIME THEY HAVE SEX?	Yes ..... 1 No ..... 2 DK 8	
HA5. CAN PEOPLE GET THE HIV VIRUS FROM MOSQUITO BITES?	Yes ..... 1 No ..... 2 DK 8	
HA6. CAN PEOPLE GET THE HIV VIRUS BY SHARING FOOD WITH A PERSON WHO HAS THE AIDS VIRUS?	Yes ..... 1 No ..... 2 DK 8	
HA7. IS IT POSSIBLE FOR A HEALTHY-LOOKING PERSON TO HAVE THE HIV VIRUS?	Yes ..... 1 No ..... 2 DK 8	
HA8. CAN THE VIRUS THAT CAUSES HIV BE TRANSMITTED FROM A MOTHER TO HER BABY: [A] DURING PREGNANCY? [B] DURING DELIVERY? [C] BY BREASTFEEDING?	Yes No DK During pregnancy ..... 1 2 8 During delivery ..... 1 2 8 By breastfeeding 1 2 8	
HA9. IN YOUR OPINION, IF A FEMALE TEACHER HAS THE HIV VIRUS BUT IS NOT SICK, SHOULD SHE BE ALLOWED TO CONTINUE TEACHING IN SCHOOL?	Yes ..... 1 No ..... 2 DK / Not sure / Depends 8	
HA9A. IN YOUR OPINION, SHOULD A CHILD THAT HAS THE HIV VIRUS, BUT IS NOT SICK BE ALLOWED TO CONTINUE GOING TO HIS/HER SCHOOL?	Yes ..... 1 No ..... 2 DK / Not sure / Depends 8	
HA9B. IN YOUR OPINION, SHOULD A CHILD WHOSE MOTHER OR FATHER HAS THE HIV VIRUS, BE ALLOWED TO CONTINUE GOING TO HIS/HER SCHOOL?	Yes ..... 1 No ..... 2 DK / Not sure / Depends 8	
HA10. WOULD YOU BUY FRESH VEGETABLES FROM A SHOPKEEPER OR VENDOR IF YOU KNEW THAT THIS PERSON HAD THE HIV VIRUS?	Yes ..... 1 No ..... 2 DK / Not sure / Depends 8	

HA11. IF A MEMBER OF YOUR FAMILY GOT INFECTED WITH THE HIV VIRUS, WOULD YOU WANT IT TO REMAIN A SECRET?	Yes .....1 No .....2 DK / Not sure / Depends 8	
HA12. IF A MEMBER OF YOUR FAMILY BECAME SICK WITH HIV, WOULD YOU BE WILLING TO CARE FOR HER OR HIM IN YOUR OWN HOUSEHOLD?	Yes .....1 No .....2 DK / Not sure / Depends 8	
HA13. *Check CM13: Any live birth in last 2 years?* ☐ *No live birth in last 2 years (CM13="No" or blank) ⇨ Go to HA24* ☐ *One or more live births in last 2 years ⇨ Continue with HA14*		
HA14. *Check MN1: Received antenatal care?* ☐ *Received antenatal care ⇨ Continue with HA15* ☐ *Did not receive antenatal care ⇨ Go to HA24*		
HA15. DURING ANY OF THE ANTENATAL VISITS FOR YOUR PREGNANCY WITH (*name*), WERE YOU GIVEN ANY INFORMATION ABOUT:	Y N DK	
[A] BABIES GETTING THE HIV VIRUS FROM THEIR MOTHER?	AIDS from mother 1 2 8	
[B] THINGS THAT YOU CAN DO TO PREVENT GETTING THE HIV VIRUS?	Things to do 1 2 8	
[C] GETTING TESTED FOR THE HIV VIRUS?	Tested for AIDS 1 2 8	
WERE YOU: [D] OFFERED A TEST FOR THE HIV VIRUS?	Offered a test 1 2 8	
HA16. I DON'T WANT TO KNOW THE RESULTS, BUT WERE YOU TESTED FOR THE HIV VIRUS AS PART OF YOUR ANTENATAL CARE?	Yes ..... 1 No ..... 2 DK..... 8	 2⇨HA19 8⇨HA19
HA17. I DON'T WANT TO KNOW THE RESULTS, BUT DID YOU GET THE RESULTS OF THE TEST?	Yes ..... 1 No ..... 2 DK..... 8	 2⇨HA22 8⇨HA22
HA18. REGARDLESS OF THE RESULT, ALL WOMEN WHO ARE TESTED ARE SUPPOSED TO RECEIVE COUNSELLING AFTER GETTING THE RESULT. AFTER YOU WERE TESTED, DID YOU RECEIVE COUNSELLING?	Yes ..... 1 No ..... 2 DK..... 8	1⇨HA22 2⇨HA22 8⇨HA22
HA19. *Check MN17: Birth delivered by health professional (A, B or C)?* ☐ *Yes, birth delivered by health professional (MN17 = A, B or C) ⇨ Continue with HA20* ☐ *No, birth not delivered by health professional (MN17 = else) ⇨ Go to HA24*		

HA20. I DON'T WANT TO KNOW THE RESULTS, BUT WERE YOU TESTED FOR THE HIV VIRUS BETWEEN THE TIME YOU WENT FOR DELIVERY BUT BEFORE THE BABY WAS BORN?	Yes ..... 1 No 2	2⇨HA24
HA21. I DON'T WANT TO KNOW THE RESULTS, BUT DID YOU GET THE RESULTS OF THE TEST?	Yes ..... 1 No 2	
HA22. HAVE YOU BEEN TESTED FOR THE HIV VIRUS SINCE THAT TIME YOU WERE TESTED DURING YOUR PREGNANCY?	Yes ..... 1 No 2	1⇨HA25
HA23. WHEN WAS THE MOST RECENT TIME YOU WERE TESTED FOR THE HIV VIRUS?	Less than 12 months ago ..... 1 12-23 months ago ..... 2 2 or more years ago 3	1 ⇨Next Module 2 ⇨Next Module 3 ⇨Next Module
HA24. I DON'T WANT TO KNOW THE RESULTS, BUT HAVE YOU EVER BEEN TESTED TO SEE IF YOU HAVE THE HIV VIRUS?	Yes ..... 1 No 2	2⇨HA27
HA25. WHEN WAS THE MOST RECENT TIME YOU WERE TESTED?	Less than 12 months ago ..... 1 12-23 months ago ..... 2 2 or more years ago 3	
HA26. I DON'T WANT TO KNOW THE RESULTS, BUT DID YOU GET THE RESULTS OF THE TEST?	Yes ..... 1 No ..... 2 DK 8	1 ⇨Next Module 2 ⇨Next Module 8 ⇨Next Module
HA27. DO YOU KNOW OF A PLACE WHERE PEOPLE CAN GO TO GET TESTED FOR THE HIV VIRUS?	Yes ..... 1 No 2	

WM11. *Record the time.*	Hour and minutes ..... __ __ : __ __	

WM12. *Check List of Household Members, columns HL7B and HL15.*
Is the respondent the mother or caretaker of any child age 0-4 living in this household?

☐ *Yes ⇨ Proceed to complete the cover page (WM7, then go to QUESTIONNAIRE FOR CHILDREN UNDER FIVE for that child and start the interview with this respondent.*

☐ *No ⇨ End the interview with this respondent by thanking her for her cooperation and proceed to complete the cover page*

THANK YOU VERY MUCH FOR ANSWERING THE QUESTIONS. COULD YOU PLEASE GIVE US YOUR TELEPHONE NUMBER IN CASE WE MIGHT NEED SOME MORE INFORMATION?

WE DO NOT USE OR SHARE YOUR NUMBER FOR ANY OTHER PURPOSES.

Telephone number: _____

Interviewer's Observations

Field Editor's Observations

Supervisor's Observations

MICS

HOUSEHOLD QUESTIONNAIRE

Viet Nam MICS 2014

HOUSEHOLD INFORMATION PANEL	HH
HH0A. Province/ City's name and number: Name _____ ___ ___	**HH0B**. District's name and number: Name _____ ___ ___ ___
HH0C. Commune/ Ward name and number: _____ ___ ___ ___ ___ ___	
HH1. Cluster's name and number: Name _____ ___ ___ ___	**HH2**. Household number: ___ ___
HH3. Interviewer's name and number: Name _____ ___ ___ ___	**HH4**. Team leader's name and number: Name _____ ___ ___ ___
HH5. Day / Month / Year of interview: ___ ___ / ___ ___ / 2 0 1 ___	**HH7**. Region: Red River Delta ..... 1 Northern Midlands and Mountain area ..... 2 North Central and Central Coastal area ..... 3 Central Highlands ..... 4 South East ..... 5 Mekong River Delta 6
HH6. Area: Urban ..... 1 Rural 2	

MY NAME IS [...] WE ARE FROM THE GENERAL STATISTICS OFFICE. WE ARE CONDUCTING A SURVEY ABOUT THE SITUATION OF CHILDREN, WOMEN AND HOUSEHOLDS. I WOULD LIKE TO TALK TO YOU ABOUT THESE SUBJECTS. THE INTERVIEW WILL TAKE ABOUT **40** MINUTES. ALL THE INFORMATION WE OBTAIN WILL REMAIN STRICTLY CONFIDENTIAL AND ANONYMOUS. MAY I START NOW?

☐ *Yes, permission is given ⇨ Go to HH18 to record the time and then begin the interview.*

☐ *No, permission is not given ⇨ Circle 04 in HH9. Discuss this result with your supervisor.*

HH9. Result of household interview:

Completed 01
No household member or no competent respondent at home at time of visit 02
Entire household absent for extended period of time 03
Refused 04
Dwelling vacant / Address not a dwelling 05
Dwelling destroyed 06
Dwelling not found 07
Other (*specify*) _____ 96

After the household questionnaire has been completed, fill in the following information:	*After all questionnaires for the household have been completed, fill in the following information:*
HH10. Respondent to Household Questionnaire: Name _____ ___ ___	
HH11. Total number of household members: ___ ___	
HH12. Number of women age 15-49 years: ___ ___	**HH13**. Number of women's questionnaires completed: ___ ___
HH14. Number of children under age 5: ___ ___	**HH15**. Number of under-5 questionnaires completed: ___ ___
HH16. Field editor's name and number: Name _____ ___ ___ ___	**HH17**. Main data entry clerk's name and number: Name _____ ___ ___

HH18. *Record the time.*

Hour ..... __ __

Minutes ..... __ __

LIST OF HOUSEHOLD MEMBERS — HL

FIRST, PLEASE TELL ME THE NAME OF EACH PERSON WHO USUALLY LIVES HERE, STARTING WITH THE HEAD OF THE HOUSEHOLD.

List the head of the household in line 01. List all household members (HL2), their relationship to the household head (HL3), and their sex (HL4)

Then ask: ARE THERE ANY OTHERS WHO LIVE HERE, EVEN IF THEY ARE NOT AT HOME NOW?

If yes, complete listing for questions HL2-HL4. Then, ask questions starting with HL5 for each person at a time.

Use an additional questionnaire if all rows in the List of Household Members have been used.

							For women age **15-49**	*For children age* **0-4**	*For children age* **0-17** *years*						*For children age* **0-14**
HL1. *Line no.*	**HL2.** *Name*	**HL3.** WHAT IS THE RELATION-SHIP OF (*name*) TO THE HEAD OF HOUSE-HOLD?	**HL4.** IS (*name*) MALE OR FEMALE? 1 Male 2 Female	**HL5.** WHAT IS (*name*)'S DATE OF BIRTH ACCORDING TO WESTERN CALENDAR? *Record the date according to western calendar. Use the lunar-western transformation table if necessary.* 98 DK 9998 DK		**HL6.** HOW OLD IS (*name*)? *Record in completed years. If age is 95 or above, record '95'*	**HL7.** *Circle line no. if woman age* **15-49**	**HL7B.** *Circle line no. if age* **0-4**	**HL11.** IS (*name*)'S NATURAL MOTHER ALIVE? 1 Yes 2 No ⇨ HL13 8 DK ⇨ HL13	**HL12.** DOES (*name*)'S NATURAL MOTHER LIVE IN THIS HOUSE-HOLD? *If "Yes" Record line no. of mother and go to HL13 Record 00 for "No"*	**HL12A.** WHERE DOES (*name*)'S NATURAL MOTHER LIVE? 1 In another household in this country 2 Institution in this country 3 Abroad 8 DK	**HL13.** IS (*name*)'S NATURAL FATHER ALIVE? 1 Yes 2 No ⇨ HL15 8 DK ⇨ HL15	**HL14.** DOES (*name*)'S NATURAL FATHER LIVE IN THIS HOUSE-HOLD? *If "Yes" Record line no. of father and go to HL15 Record 00 for "No"*	**HL14A.** WHERE DOES (*name*)'S NATURAL FATHER LIVE? 1 In another household in this country 2 Institution in this country 3 Abroad 8 DK	**HL15.** *Record line no. of mother from HL12 if indicated. If HL12 is blank, or "00" ask:* WHO IS THE PRIMARY CARETAKER OF (*name*)?
Line	Name	Relation*	M F	Month	Year	Age	15-49	0-4	Y N DK	Mother		Y N DK	Father		Mother
01		**0 1**	1 2	__ __	__ __ __ __	__ __	01	01	1 2 8	__ __	1 2 3 8	1 2 8	__ __	1 2 3 8	__ __
02		__ __	1 2	__ __	__ __ __ __	__ __	02	02	1 2 8	__ __	1 2 3 8	1 2 8	__ __	1 2 3 8	__ __
03		__ __	1 2	__ __	__ __ __ __	__ __	03	03	1 2 8	__ __	1 2 3 8	1 2 8	__ __	1 2 3 8	__ __
04		__ __	1 2	__ __	__ __ __ __	__ __	04	04	1 2 8	__ __	1 2 3 8	1 2 8	__ __	1 2 3 8	__ __
05		__ __	1 2	__ __	__ __ __ __	__ __	05	05	1 2 8	__ __	1 2 3 8	1 2 8	__ __	1 2 3 8	__ __
06		__ __	1 2	__ __	__ __ __ __	__ __	06	06	1 2 8	__ __	1 2 3 8	1 2 8	__ __	1 2 3 8	__ __
07		__ __	1 2	__ __	__ __ __ __	__ __	07	07	1 2 8	__ __	1 2 3 8	1 2 8	__ __	1 2 3 8	__ __
08		__ __	1 2	__ __	__ __ __ __	__ __	08	08	1 2 8	__ __	1 2 3 8	1 2 8	__ __	1 2 3 8	__ __
09		__ __	1 2	__ __	__ __ __ __	__ __	09	09	1 2 8	__ __	1 2 3 8	1 2 8	__ __	1 2 3 8	__ __
10		__ __	1 2	__ __	__ __ __ __	__ __	10	10	1 2 8	__ __	1 2 3 8	1 2 8	__ __	1 2 3 8	__ __

							For women age **15-49**	For children age **0-4**	For children age **0-17** years						For children age **0-14**
HL1. *Line no.*	**HL2.** *Name*	**HL3.** WHAT IS THE RELATION-SHIP OF (*name*) TO THE HEAD OF HOUSE-HOLD?	**HL4.** IS (*name*) MALE OR FEMALE? 1 Male 2 Female	**HL5.** WHAT IS (*name*)'S DATE OF BIRTH ACCORDING TO WESTERN CALENDAR? *Record the date according to western calendar. Use the lunar-western transformation table if necessary.* 98 DK 9998 DK		**HL6.** HOW OLD IS (*name*)? *Record in completed years. If age is 95 or above, record '95'*	**HL7.** *Circle line no. if woman age* **15-49**	**HL7B.** *Circle line no. if age* **0-4**	**HL11.** IS (*name*)'S NATURAL MOTHER ALIVE? 1 Yes 2 No ↘ HL13 8 DK ↘ HL13	**HL12.** DOES (*name*)'S NATURAL MOTHER LIVE IN THIS HOUSE-HOLD? *If "Yes" Record line no. of mother and go to HL13 Record 00 for "No"*	**HL12A.** WHERE DOES (*name*)'S NATURAL MOTHER LIVE? 1 In another household in this country 2 Institution in this country 3 Abroad 8 DK	**HL13.** IS (*name*)'S NATURAL FATHER ALIVE? 1 Yes 2 No ↘ HL15 8 DK ↘ HL15	**HL14.** DOES (*name*)'S NATURAL FATHER LIVE IN THIS HOUSE-HOLD? *If "Yes" Record line no. of father and go to HL15 Record 00 for "No"*	**HL14A.** WHERE DOES (*name*)'S NATURAL FATHER LIVE? 1 In another household in this country 2 Institution in this country 3 Abroad 8 DK	**HL15.** *Record line no. of mother from HL12 if indicated. If HL12 is blank, or "00" ask:* WHO IS THE PRIMARY CARETAKER OF (*name*)?
Line	Name	Relation*	M F	Month	Year	Age	15-49	0-4	Y N DK	Mother		Y N DK	Father		Mother
11		__ __	1 2	__ __	__ __ __ __	__ __	11	11	1 2 8	__ __	1 2 3 8	1 2 8	__ __	1 2 3 8	__ __
12		__ __	1 2	__ __	__ __ __ __	__ __	12	12	1 2 8	__ __	1 2 3 8	1 2 8	__ __	1 2 3 8	__ __
13		__ __	1 2	__ __	__ __ __ __	__ __	13	13	1 2 8	__ __	1 2 3 8	1 2 8	__ __	1 2 3 8	__ __
14		__ __	1 2	__ __	__ __ __ __	__ __	14	14	1 2 8	__ __	1 2 3 8	1 2 8	__ __	1 2 3 8	__ __
15		__ __	1 2	__ __	__ __ __ __	__ __	15	15	1 2 8	__ __	1 2 3 8	1 2 8	__ __	1 2 3 8	__ __

Tick here if additional questionnaire used ☐

Probe for additional household members.
Probe especially for any infants or small children not listed, and others who may not be members of the family (such as servants, friends) but who usually live in the household.
Insert names of additional members in the household list and complete form accordingly.

Now for each woman age 15-49 years, write her name and line number and other identifying information in the information panel of a separate Individual Women's Questionnaire.
For each child under age 5, write his/her name and line number AND the line number of his/her mother or caretaker in the information panel of a separate Under-5 Questionnaire.
You should now have a separate questionnaire for each eligible woman, each eligible man, and each child under five in the household.

** Codes for **HL3**: Relationship to head of household:*

01 Head
02 Spouse/Partner
03 Son / Daughter
04 Son-In-Law / Daughter-In-Law
05 Grandchild
06 Parent
07 Parent-In-Law
08 Brother / Sister
09 Brother-In-Law / Sister-In-Law
10 Uncle / Aunt
11 Niece / Nephew
12 Other relative
13 Adopted / Foster/ Stepchild
14 Servant (Live-in)
96 Other (Not related)
98 DK

EDUCATION **ED**

			For household members age **5 and above**			*For household members age* **5-24** *years*							
ED1. *Line number*	**ED2.** *Name and age* *Copy from HL2 and HL6*		**ED3.** HAS (*name*) EVER ATTENDED SCHOOL OR PRE-SCHOOL? 1 Yes 2 No ⇨ Next Line	**ED4A.** WHAT IS THE HIGHEST LEVEL OF SCHOOL (*name*) HAS ATTENDED? Level: 0 Preschool 1 Primary 2 Lower Secondary 3 Upper Secondary 4 Professional School 5 College/ University & above 8 DK *If level=0,4,5 skip to ED5*	**ED4B.** WHAT IS THE HIGHEST GRADE (*name*) COMPLETED AT THIS LEVEL? Grade: 98 DK *If less than 1 grade at this level, enter 00.*	**ED5.** DURING THE 2013-2014 SCHOOL YEAR, DID (*name*) ATTEND SCHOOL OR PRESCHOOL AT ANY TIME? 1 Yes 2 No ⇨ ED7	**ED6.** DURING THIS/THAT SCHOOL YEAR, WHICH LEVEL AND GRADE IS/WAS (*name*) ATTENDING? Level: 0 Preschool 1 Primary 2 Lower Secondary 3 Upper Secondary 4 Professional School 5 College/ University & above 8 DK *If level=0,4,5 skip to ED7*	Grade: 98 DK	**ED7.** DURING THE PREVIOUS SCHOOL YEAR, THAT IS 2012-2013, DID (*name*) ATTEND SCHOOL OR PRESCHOOL AT ANY TIME? 1 Yes 2 No ⇨ Next Line 8 DK ⇨ Next Line	**ED8.** DURING THAT PREVIOUS SCHOOL YEAR, WHICH LEVEL AND GRADE DID (*name*) ATTEND? Level: 0 Preschool 1 Primary 2 Lower Secondary 3 Upper Secondary 4 Professional School 5 College/ University & above 8 DK *If level=0,4,5 go to next person*	Grade: 98 DK
Line	Name	Age	Yes No	Level	Grade	Ye No	Level	Grade	Y N DK	Level	Grade		
01		___ ___	1 2	0 1 2 3 4 5 8	___ ___	1 2	0 1 2 3 4 5 8	___ ___	1 2 8	0 1 2 3 4 5 8	___ ___		
02		___ ___	1 2	0 1 2 3 4 5 8	___ ___	1 2	0 1 2 3 4 5 8	___ ___	1 2 8	0 1 2 3 4 5 8	___ ___		
03		___ ___	1 2	0 1 2 3 4 5 8	___ ___	1 2	0 1 2 3 4 5 8	___ ___	1 2 8	0 1 2 3 4 5 8	___ ___		
04		___ ___	1 2	0 1 2 3 4 5 8	___ ___	1 2	0 1 2 3 4 5 8	___ ___	1 2 8	0 1 2 3 4 5 8	___ ___		
05		___ ___	1 2	0 1 2 3 4 5 8	___ ___	1 2	0 1 2 3 4 5 8	___ ___	1 2 8	0 1 2 3 4 5 8	___ ___		
06		___ ___	1 2	0 1 2 3 4 5 8	___ ___	1 2	0 1 2 3 4 5 8	___ ___	1 2 8	0 1 2 3 4 5 8	___ ___		
07		___ ___	1 2	0 1 2 3 4 5 8	___ ___	1 2	0 1 2 3 4 5 8	___ ___	1 2 8	0 1 2 3 4 5 8	___ ___		
08		___ ___	1 2	0 1 2 3 4 5 8	___ ___	1 2	0 1 2 3 4 5 8	___ ___	1 2 8	0 1 2 3 4 5 8	___ ___		
09		___ ___	1 2	0 1 2 3 4 5 8	___ ___	1 2	0 1 2 3 4 5 8	___ ___	1 2 8	0 1 2 3 4 5 8	___ ___		
10		___ ___	1 2	0 1 2 3 4 5 8	___ ___	1 2	0 1 2 3 4 5 8	___ ___	1 2 8	0 1 2 3 4 5 8	___ ___		
11		___ ___	1 2	0 1 2 3 4 5 8	___ ___	1 2	0 1 2 3 4 5 8	___ ___	1 2 8	0 1 2 3 4 5 8	___ ___		
12		___ ___	1 2	0 1 2 3 4 5 8	___ ___	1 2	0 1 2 3 4 5 8	___ ___	1 2 8	0 1 2 3 4 5 8	___ ___		
13		___ ___	1 2	0 1 2 3 4 5 8	___ ___	1 2	0 1 2 3 4 5 8	___ ___	1 2 8	0 1 2 3 4 5 8	___ ___		
14		___ ___	1 2	0 1 2 3 4 5 8	___ ___	1 2	0 1 2 3 4 5 8	___ ___	1 2 8	0 1 2 3 4 5 8	___ ___		
15		___ ___	1 2	0 1 2 3 4 5 8	___ ___	1 2	0 1 2 3 4 5 8	___ ___	1 2 8	0 1 2 3 4 5 8	___ ___		

SELECTION OF ONE CHILD FOR CHILD LABOUR/CHILD DISCIPLINE **SL**

SL1. *Check HL6 in the List of Household Members and write the total number of children age 1-17 years.*

Total number ..... __

SL2. *Check the number of children age 1-17 years in SL1:*

☐ *Zero ⇨ Go to HOUSEHOLD CHARACTERISTICS module*

☐ *One ⇨ Go to SL9 and record the rank number as '1', enter the line number (HL1), child's name (HL2) and age (HL6)*

☐ *Two or more ⇨ Continue with SL2A*

SL2A. *List each of the children age 1-17 years below in the order they appear in the List of Household Members. Do not include other household members outside of the age range 1-17 years. Record the line number, name, sex, and age for each child.*

SL3. *Rank number*	**SL4.** *Line number from HL1*	**SL5.** *Name from HL2*	**SL6.** *Sex from HL4*	**SL7.** *Age from HL6*
Rank	Line	Name	M F	Age
1	__ __		1 2	__ __
2	__ __		1 2	__ __
3	__ __		1 2	__ __
4	__ __		1 2	__ __
5	__ __		1 2	__ __
6	__ __		1 2	__ __
7	__ __		1 2	__ __
8	__ __		1 2	__ __

SL8. *Check the last digit of the household number (HH2) from the cover page. This is the number of the row you should go to in the table below.*

Check the total number of children age 1-17 years in SL1 above. This is the number of the column you should go to in the table below

Find the box where the row and the column meet and circle the number that appears in the box. This is the rank number (SL3) of the selected child.

Last Digit of Household Number (from HH2)	**Total Number of Eligible Children in the Household (from SL1)**						
	2	***3***	***4***	***5***	***6***	***7***	***8+***
0	2	2	4	3	6	5	4
1	1	3	1	4	1	6	5
2	2	1	2	5	2	7	6
3	1	2	3	1	3	1	7
4	2	3	4	2	4	2	8
5	1	1	1	3	5	3	1
6	2	2	2	4	6	4	2
7	1	3	3	5	1	5	3
8	2	1	4	1	2	6	4
9	1	2	1	2	3	7	5

SL9. *Record the rank number (SL3), line number (SL4), name (SL5) and age (SL7) of the selected child*

Rank number ..... __

Line number ..... __ __

Name_____

Age ..... __ __

CHILD LABOUR		CL
CL1. *Check selected child's age from SL9:* ☐ *1-4 years ⇨ Go to Next Module* ☐ *5-17 years ⇨ Continue with CL2*		
CL2. NOW I WOULD LIKE TO ASK ABOUT ANY WORK CHILDREN IN THIS HOUSEHOLD MAY DO. SINCE LAST (*day of the week*), DID (*name*) DO ANY OF THE FOLLOWING ACTIVITIES, EVEN FOR ONLY ONE HOUR? [A] DID (*name*) DO ANY WORK OR HELP ON HIS/HER OWN OR THE HOUSEHOLD'S PLOT/FARM/FOOD GARDEN OR LOOKED AFTER ANIMALS? FOR EXAMPLE, GROWING FARM PRODUCE, HARVESTING, OR FEEDING, GRAZING, MILKING ANIMALS? [B] DID (*name*) HELP IN FAMILY BUSINESS OR RELATIVE'S BUSINESS WITH OR WITHOUT PAY, OR RUN HIS/HER OWN BUSINESS? [C] DID (*name*) PRODUCE OR SELL ARTICLES, HANDICRAFTS, CLOTHES, FOOD OR AGRICULTURAL PRODUCTS? [D] SINCE LAST (*day of the week*), DID (*name*) ENGAGE IN ANY OTHER ACTIVITY IN RETURN FOR INCOME IN CASH OR IN KIND, EVEN FOR ONLY ONE HOUR? *If "No", Probe:* PLEASE INCLUDE ANY ACTIVITY (*name*) PERFORMED AS A REGULAR OR CASUAL EMPLOYEE, SELF-EMPLOYED OR EMPLOYER; OR AS AN UNPAID FAMILY WORKER HELPING OUT IN HOUSEHOLD BUSINESS OR FARM.	Yes No Worked on plot / farm / food garden / looked after animals .....1 2 Helped in family / relative's business/ran own business .....1 2 Produce / sell articles / handicrafts / clothes / food or agricultural products .....1 2 Any other activity 1 2	
CL3. *Check CL2, A to D* ☐ *There is at least one 'Yes' ⇨ continue with CL4* ☐ *All answers are 'No ⇨ Go to CL8*		
CL4. SINCE LAST (*day of the week*) ABOUT HOW MANY HOURS DID (*name*) ENGAGE IN THIS ACTIVITY/THESE ACTIVITIES, IN TOTAL? *If less than one hour, record "00"*	Number of hours ..... __ __	
CL5. DOES THE ACTIVITY/DO THESE ACTIVITIES REQUIRE CARRYING HEAVY LOADS?	Yes..... 1 No 2	1⇨ CL8
CL6. DOES THE ACTIVITY/DO THESE ACTIVITIES REQUIRE WORKING WITH DANGEROUS TOOLS (KNIVES ETC.) OR OPERATING HEAVY MACHINERY?	Yes..... 1 No 2	1⇨ CL8

CL7. How would you describe the work environment of (*name*)?		
[A] Is (*name*) exposed to dust, fumes or gas?	Yes ..... 1 No 2	1⇨ CL8
[B] Is (*name*) exposed to extreme cold, heat or humidity?	Yes ..... 1 No 2	1⇨ CL8
[C] Is (*name*) exposed to loud noise or vibration?	Yes ..... 1 No 2	1⇨ CL8
[D] Is (*name*) required to work at heights?	Yes ..... 1 No 2	1⇨ CL8
[E] Is (*name*) required to work with chemicals (pesticides, glues, etc.) or explosives?	Yes ..... 1 No 2	1⇨ CL8
[F] Is (*name*) exposed to other things, processes or conditions bad for (*name*)'s health or safety?	Yes ..... 1 No 2	
CL8. Since last (*day of the week*), did (*name*) fetch water or collect firewood for household use?	Yes ..... 1 No 2	2⇨ CL10
CL9. In total, how many hours did (*name*) spend on fetching water or collecting firewood for household use, since last (*day of the week*)? *If less than one hour, record "00"*	Number of hours ..... __ __	
CL10. Since last (*day of the week*), did (*name*) do any of the following for this household?	Yes No	
[A] Shopping for household?	Shopping for household 1 2	
[B] Repair any household equipment?	Repair household equipment 1 2	
[C] Cooking or cleaning utensils or the house?	Cooking / cleaning utensils /house ... 1 2	
[D] Washing clothes?	Washing clothes 1 2	
[E] Caring for children?	Caring for children 1 2	
[F] Caring for the old or sick?	Caring for old / sick 1 2	
[G] Other household tasks?	Other household tasks 1 2	
CL11. *Check CL10, A to G* ☐ *There is at least one 'Yes' ⇨ Continue with CL12* ☐ *All answers are 'No' ⇨ Go to Next Module*		
CL12. Since last (*day of the week*), about how many hours did (*name*) engage in this activity/these activities, in total? *If less than one hour, record "00"*	Number of hours ..... __ __	

CHILD DISCIPLINE	_____	CD
CD1. *Check selected child's age from SL9:* ☐ *1-14 years ⇨ Continue with CD2* ☐ *15-17 years ⇨ Go to Next Module*		
CD2. *Write the line number and name of the child from SL9.*	Line number .....__ __ Name _____	
CD3. ADULTS USE CERTAIN WAYS TO TEACH CHILDREN THE RIGHT BEHAVIOUR OR TO ADDRESS A BEHAVIOUR PROBLEM. I WILL READ VARIOUS METHODS THAT ARE USED. PLEASE TELL ME IF YOU OR ANYONE ELSE IN YOUR HOUSEHOLD HAS USED THIS METHOD WITH *(name)* IN THE PAST MONTH.	Yes No	
[A] TOOK AWAY PRIVILEGES, FORBADE SOMETHING (*name*) LIKED OR DID NOT ALLOW HIM/HER TO LEAVE THE HOUSE.	Took away privileges 1 2	
[B] EXPLAINED WHY (*name*)'S BEHAVIOUR WAS WRONG.	Explained wrong behaviour.....1 2	
[C] SHOOK HIM/HER.	Shook him/her 1 2	
[D] SHOUTED, YELLED AT OR SCREAMED AT HIM/HER.	Shouted, yelled, screamed 1 2	
[E] GAVE HIM/HER SOMETHING ELSE TO DO.	Gave something else to do 1 2	
[F] SPANKED, HIT OR SLAPPED HIM/HER ON THE BOTTOM WITH BARE HAND.	Spanked, hit, slapped on bottom with bare hand 1 2	
[G] HIT HIM/HER ON THE BOTTOM OR ELSEWHERE ON THE BODY WITH SOMETHING LIKE A BELT, HAIRBRUSH, STICK OR OTHER HARD OBJECT.	Hit with belt, hairbrush, stick, or other hard object 1 2	
[H] CALLED HIM/HER DUMB, LAZY, OR ANOTHER NAME LIKE THAT.	Called dumb, lazy, or another name 1 2	
[I] HIT OR SLAPPED HIM/HER ON THE FACE, HEAD OR EARS.	Hit / slapped on the face, head or ears 1 2	
[J] HIT OR SLAPPED HIM/HER ON THE HAND, ARM, OR LEG.	Hit / slapped on hand, arm or leg 1 2	
[K] BEAT HIM/HER UP, THAT IS HIT HIM/HER OVER AND OVER AS HARD AS ONE COULD.	Beat up, hit over and over as hard as one could.....1 2	
CD4. DO YOU BELIEVE THAT IN ORDER TO BRING UP, RAISE, OR EDUCATE A CHILD PROPERLY, THE CHILD NEEDS TO BE PHYSICALLY PUNISHED?	Yes ..... 1 No ..... 2 DK / No opinion..... 8	

HOUSEHOLD CHARACTERISTICS		HC
HC1A. WHAT IS THE RELIGION OF THE HEAD OF THIS HOUSEHOLD?	Buddhism ..... 01 Muslim ..... 02 Cao Dai ..... 03 Hoa Hao ..... 04 Christian Catholic ..... 05 Christian Protestant ..... 06 Other religion (*specify*) _____ 96 No religion 97	
HC1C. TO WHAT ETHNIC GROUP DOES THE HEAD OF THIS HOUSEHOLD BELONG?	Kinh ..... 01 Tay ..... 02 Thai ..... 03 Muong ..... 04 Khmer ..... 05 Chinese ..... 06 Nung ..... 07 Mong ..... 08 Gia Rai ..... 09 Ê đê ..... 10 Ba na ..... 11 Other ethnic group (*specify*) _____ 96	
HC2. HOW MANY ROOMS IN THIS HOUSEHOLD ARE USED FOR SLEEPING?	Number of rooms ..... __ __	
HC3. *Main material of the dwelling floor.* *Record observation.*	Natural floor Earth / Sand ..... 11 Rudimentary floor Wood planks ..... 21 Palm / Bamboo ..... 22 Finished floor Parquet or polished wood ..... 31 Vinyl or asphalt strips ..... 32 Ceramic tiles ..... 33 Cement ..... 34 Carpet ..... 35 Enamelled tiles/ marble ..... 36 Other (*specify*) _____ 96	
HC4. *Main material of the roof.* *Record observation.*	Natural roofing No Roof ..... 11 Thatch / Palm leaf ..... 12 Rudimentary roofing Palm / Bamboo ..... 22 Wood planks ..... 23 Cardboard ..... 24 Finished roofing Metal / Tin ..... 31 Wood ..... 32 Calamine / Cement fibre ..... 33 Ceramic tiles ..... 34 Cement ..... 35 Stone slates ..... 37 Asphalt sheets ..... 38 Other (*specify*) _____ 96	

HC5. *Main material of the exterior walls.* *Record observation.*	Natural walls No walls ..... 11 Cane / Palm / Trunks ..... 12 Dirt ..... 13 Reed ..... 14 Rudimentary walls Bamboo with mud ..... 21 Stone with mud ..... 22 Uncovered adobe ..... 23 Plywood ..... 24 Cardboard ..... 25 Reused wood ..... 26 Finished walls Cement ..... 31 Stone with lime / cement ..... 32 Bricks ..... 33 Cement blocks ..... 34 Covered adobe ..... 35 Wood planks / shingles ..... 36 Other (*specify*) _____ 96	
HC6. WHAT TYPE OF FUEL DOES YOUR HOUSEHOLD MAINLY USE FOR COOKING?	Electricity ..... 01 Liquefied Petroleum Gas (LPG) ..... 02 Natural gas ..... 03 Biogas ..... 04 Kerosene ..... 05 Coal / Lignite ..... 06 Charcoal ..... 07 Wood ..... 08 Straw / Shrubs / Grass ..... 09 Animal dung ..... 10 Agricultural crop residue ..... 11 No food cooked in household ..... 95 Other (*specify*) _____ 96	01⇨HC8 02⇨HC8 03⇨HC8 04⇨HC8 05⇨HC8 95⇨HC8
HC7. IS THE COOKING USUALLY DONE IN THE HOUSE, IN A SEPARATE BUILDING, OR OUTDOORS? *If 'In the house', probe*: IS IT DONE IN A SEPARATE ROOM USED AS A KITCHEN?	In the house In a separate room used as kitchen ..... 1 Elsewhere in the house ..... 2 In a separate building ..... 3 Outdoors ..... 4 Other (*specify*) _____ 6	

HC8. DOES YOUR HOUSEHOLD HAVE:	Yes No	
[A] ELECTRICITY?	Electricity 1 2	
[B] A RADIO?	Radio 1 2	
[C] A TELEVISION?	Television 1 2	
[D] A FIXED TELEPHONE?	Fixed telephone 1 2	
[E] A REFRIGERATOR?	Refrigerator 1 2	
[F] A BED?	Bed 1 2	
[G] A TABLE AND CHAIR SET?	Table and chair set 1 2	
[H] SOFA?	Sofa 1 2	
[I] A FAN?	Fan 1 2	
[J] A COMPUTER?	Computer 1 2	
[K] AN AIRCONDITIONER?	Airconditioner 1 2	
[L] A GAS COOKER?	Gas cooker 1 2	
[M] AN ELECTRIC COOKER?	Electric cooker 1 2	
[N] A WASHING MACHINE?	Washing machine 1 2	
[O] A TRACTOR?	Tractor 1 2	
[P] A CAR OR TRUCK?	Car 1 2	
[Q] A SHIP OR BOAT WITH A MOTOR?	Ship and boat with a motor 1 2	
HC9. DOES ANY MEMBER OF YOUR HOUSEHOLD OWN:	Yes No	
[B] A MOBILE TELEPHONE?	Mobile telephone 1 2	
[C] A BICYCLE?	Bicycle 1 2	
[D] A MOTORCYCLE OR SCOOTER?	Motorcycle / Scooter 1 2	
HC10. DO YOU OR SOMEONE LIVING IN THIS HOUSEHOLD OWN THIS DWELLING? *If "No", then ask:* DO YOU RENT THIS DWELLING FROM SOMEONE NOT LIVING IN THIS HOUSEHOLD? *If "Rented from someone else", circle "2". For other responses, circle "6".*	Own ..... 1 Rent ..... 2 Other (*specify*) _____ 6	
HC11. DOES ANY MEMBER OF THIS HOUSEHOLD OWN OR HAVE USER RIGHTS FOR ANY LAND THAT CAN BE USED FOR AGRICULTURE?	Yes ..... 1 No 2	2⇨HC12A
HC12. HOW MANY METERS SQUARE (M^2) OF AGRICULTURAL LAND DO MEMBERS OF THIS		

HOUSEHOLD OWN OR HAVE USER RIGHTS FOR? *If 99995 or more, record '99995'. If unknown, record '99998'*	M² ..... ___ ___ ___ ___ ___	
HC12A. DOES ANY MEMBER OF THIS HOUSEHOLD OWN OR HAVE USER RIGHTS FOR ANY WATER SURFACE AREA THAT CAN BE USED FOR AQUACULTURE?	Yes .....1 No.....2	2⇨HC12C
HC12B. HOW MANY METERS SQUARE (M²) OF WATER SURFACE AREA DO MEMBERS OF THIS HOUSEHOLD OWN OR HAVE USER RIGHTS FOR? *If 99995 or more, record '99995'. If unknown, record '99998'.*	M² ..... ___ ___ ___ ___ ___	
HC12C. DOES ANY MEMBER OF THIS HOUSEHOLD OWN OR HAVE RIGHTS FOR ANY FORESTRY LAND?	Yes .....1 No.....2	2⇨HC13
HC12D. HOW MANY METERS SQUARE (M²) OF FORESTRY LAND DO MEMBERS OF THIS HOUSEHOLD OWN OR HAVE RIGHTS FOR? *If 99995 or more, record '99995'. If unknown, record '99998''.*	M² ..... ___ ___ ___ ___ ___	
HC13. DOES THIS HOUSEHOLD OWN ANY LIVESTOCK, HERDS, OTHER FARM ANIMALS, OR POULTRY?	Yes .....1 No.....2	2⇨HC15
HC14. HOW MANY OF THE FOLLOWING ANIMALS DOES THIS HOUSEHOLD HAVE? [A] CATTLE, MILK COWS, OR BULLS? [B] HORSES, DONKEYS, OR MULES? [C] GOATS? [E] CHICKEN? [F] PIGS? [G] DUCK, GEESE OR SWANS? *If none, record '00'. If 95 or more, record '95'. If unknown, record '98'.*	Cattle, milk cows, or bulls .....___ ___ Horses, donkeys, or mules .....___ ___ Goats.....___ ___ Chicken .....___ ___ Pigs .....___ ___ Duck, Geese or swans.....___ ___	
HC15. DOES ANY MEMBER OF THIS HOUSEHOLD HAVE A BANK ACCOUNT? *Not including Deposit certificate*	Yes .....1 No.....2	

WATER AND SANITATION		WS
WS1. WHAT IS THE MAIN SOURCE OF DRINKING WATER FOR MEMBERS OF YOUR HOUSEHOLD?	Piped water Piped into dwelling ..... 11 Piped into compound, yard or plot..... 12 Piped to neighbour ..... 13 Public tap / standpipe ..... 14 Tube Well, Borehole..... 21 Dug well Protected well..... 31 Unprotected well ..... 32 Water from spring Protected spring ..... 41 Unprotected spring..... 42 Rainwater collection ..... 51 Surface water (river, stream, dam, lake, pond, canal, irrigation channel) ..... 81 Bottled water..... 91 Other (*specify*) _____ 96	 11⇨WS6 12⇨WS6 13⇨WS6 14⇨WS3 21⇨WS3 31⇨WS3 32⇨WS3 41⇨WS3 42⇨WS3 51⇨WS3 81⇨WS3 96⇨WS3
WS2. WHAT IS THE MAIN SOURCE OF WATER USED BY YOUR HOUSEHOLD FOR OTHER PURPOSES SUCH AS COOKING AND HANDWASHING?	Piped water Piped into dwelling ..... 11 Piped into compound, yard or plot..... 12 Piped to neighbour ..... 13 Public tap / standpipe ..... 14 Tube Well, Borehole..... 21 Dug well Protected well..... 31 Unprotected well ..... 32 Water from spring Protected spring ..... 41 Unprotected spring..... 42 Rainwater collection ..... 51 Surface water (river, stream, dam, lake, pond, canal, irrigation channel) ..... 81 Other (*specify*) _____ 96	 11⇨WS6 12⇨WS6 13⇨WS6
WS3. WHERE IS THAT WATER SOURCE LOCATED?	In own dwelling ..... 1 In own yard / plot..... 2 Elsewhere 3	1⇨WS6 2⇨WS6
WS4. HOW LONG DOES IT TAKE TO GO THERE, GET WATER, AND COME BACK?	Number of minutes..... __ __ __ DK..... 998	

WS5. WHO USUALLY GOES TO THIS SOURCE TO COLLECT THE WATER FOR YOUR HOUSEHOLD? *Probe:* IS THIS PERSON UNDER AGE 15? WHAT SEX?	Adult woman (age 15+ years) ......1 Adult man (age 15+ years) ......2 Female child (under 15) ......3 Male child (under 15) ......4 DK 8	
WS6. DO YOU DO ANYTHING TO THE WATER TO MAKE IT SAFER TO DRINK?	Yes ......1 No ......2 DK 8	 2⇨WS8 8⇨WS8
WS7. WHAT DO YOU USUALLY DO TO MAKE THE WATER SAFER TO DRINK? *Probe:* ANYTHING ELSE? *Record all items mentioned.*	Boil ...... A Add bleach / chlorine ...... B Strain it through a cloth ...... C Use water filter (ceramic, sand, composite, etc.) ...... D Solar disinfection ...... E Let it stand and settle ......F Other (*specify*) ______________ X DK ......Z	
WS8. WHAT KIND OF TOILET FACILITY DO MEMBERS OF YOUR HOUSEHOLD USUALLY USE? *If "flush" or "pour flush", probe:* WHERE DOES IT FLUSH TO? *If not possible to determine, ask permission to observe the facility.*	Flush / Pour flush Flush to piped sewer system ......11 Flush to septic tank ......12 Flush to pit (latrine) ......13 Flush to somewhere else ......14 Flush to unknown place / Not sure / DK where ......15 Pit latrine Ventilated Improved Pit latrine (VIP) ....21 Pit latrine with slab ......22 Pit latrine without slab / Open pit ......23 Composting toilet ......31 Bucket ......41 Hanging toilet, Hanging latrine ......51 No facility, Bush, Field ......95 Other (*specify*) ______________ 96	 95⇨Next Module
WS9. DO YOU SHARE THIS FACILITY WITH OTHERS WHO ARE NOT MEMBERS OF YOUR HOUSEHOLD?	Yes ......1 No 2	 2⇨Next Module
WS10. DO YOU SHARE THIS FACILITY ONLY WITH MEMBERS OF OTHER HOUSEHOLDS THAT YOU KNOW, OR IS THE FACILITY OPEN TO THE USE OF THE GENERAL PUBLIC?	Other households only (not public) ......1 Public facility 2	 2⇨Next Module
WS11. HOW MANY HOUSEHOLDS IN TOTAL USE THIS TOILET FACILITY, INCLUDING YOUR OWN HOUSEHOLD?	Number of households (if less than 10) 0 __ Ten or more households ......10 DK 98	

HANDWASHING		HW
HW1. WE WOULD LIKE TO LEARN ABOUT THE PLACES THAT HOUSEHOLDS USE TO WASH THEIR HANDS. CAN YOU PLEASE SHOW ME WHERE MEMBERS OF YOUR HOUSEHOLD MOST OFTEN WASH THEIR HANDS?	Observed ..... 1 Not observed Not in dwelling / plot / yard ..... 2 No permission to see ..... 3 Other reason (*specify*) _____ 6	 2 ⇨HW4 3 ⇨HW4 6 ⇨HW4
HW2. *Observe presence of water at the place for handwashing.* *Verify by checking the tap/pump, or basin, bucket, water container or similar objects for presence of water.*	Water is available ..... 1 Water is not available 2	
HW3A. *Is soap, detergent present at the place for handwashing?*	Yes, present ..... 1 No, not present 2	 2⇨HW4
HW3B. *Record your observation.* *Circle all that apply.*	Bar soap ..... A Detergent (Powder / Liquid / Paste) ..... B Liquid soap C	A⇨HH19 B⇨HH19 C⇨HH19
HW4. DO YOU HAVE ANY SOAP OR DETERGENT IN YOUR HOUSE FOR WASHING HANDS?	Yes ..... 1 No 2	 2⇨HH19
HW5A. CAN YOU PLEASE SHOW IT TO ME?	Yes, shown ..... 1 No, not shown 2	 2⇨HH19
HW5B. *Record your observation.* *Circle all that apply.*	Bar soap ..... A Detergent (Powder / Liquid / Paste) ..... B Liquid soap C	

HH19. *Record the time.*	Hour and minutes..... __ __ : __ __	

HH20. *Thank the respondent for his/her cooperation and check the List of Household Members:*

☐ *A separate QUESTIONNAIRE FOR INDIVIDUAL WOMEN has been issued for each woman age 15-49 years in the List of Household Members (HL7)*

☐ *A separate QUESTIONNAIRE FOR CHILDREN UNDER FIVE has been issued for each child under age 5 years in the List of Household Members (HL7B)*

Return to the cover page and make sure that all information is entered, including the number of eligible women (HH12) and under-5s (HH14)

Make arrangements for the administration of the remaining questionnaire(s) in this household.

THANK YOU VERY MUCH FOR ANSWERING THE QUESTIONS. COULD YOU PLEASE GIVE US YOUR TELEPHONE NUMBER IN CASE WE MIGHT NEED SOME MORE INFORMATION?

WE DO NOT USE OR SHARE YOUR NUMBER FOR ANY OTHER PURPOSES.

Telephone number: _____

Interviewer's Observations

Field Editor's Observations

Supervisor's Observations

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