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**ETHNIC MINORITIES AND FERTILITY IN VIETNAM:
KNOWLEDGE, ATTITUDE AND PRACTICE OF CONTRACEPTION**

A Thesis in

Rural Sociology and Demography

by

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ABSTRACT

Facing a rapid population growth very early in 1960s, Vietnam introduced various population and family planning programs which focus on fertility reduction through free provisions of contraception. Thanks to these early programs, its fertility reduction has been significant over the past few decades. However, substantial variations in fertility rates continue to cause concerns. Specifically, rates remain high among ethnic minority groups in Vietnam. It results from low contraceptive use among ethnic groups due to limited knowledge and less accessibility to contraceptives, as well as fears of side-effects. These ethnic minority groups are spread across mountainous hard-to-access areas, and often use different spoken languages. Little detailed information exists regarding their knowledge and attitudes towards contraception.

Using data obtained from the 2012 baseline survey of the Families and Communities in Transition research project, this thesis provides a better understanding on contraceptive knowledge and use among one specific ethnic group, the Thai people in Nghe An, as an representative example of the others. Two research questions shall be answered: (1) what are Thai males and females' knowledge, attitude and practice of contraceptive? , and (2) what factors are associated with use of contraceptive methods among Thai males and females? By answering these two questions correctly and completely, this thesis allows an extension of ways for ethnic people gradually to control births in the coming decades.

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Chapter 1 - Introduction

1.1 Introduction

Located on the Indochina Peninsular in Southeast Asia, Vietnam is a tropical country bordering China in the north, and Laos and Cambodia in the west. Its population was nearly 90 million people in 2012, making it the 13th most populous country in the world (General Statistics Office, 2012b). Vietnam is a multi-ethnic country, comprised of 54 different ethnic groups. The Viet Kinh (or Kinh), the majority group, accounts for 86 percent of the population and primarily lives in the fertile delta regions and along the coast. In contrast, ethnic minority groups inhabit mountainous regions bordering China and Laos.

Vietnam has a long history of family planning programs, a response to rapid population growth in the 1950s and 1960s. Thanks to these programs, the total fertility rates (TFR) declined from 6.3 to 2.05 between 1960-2012, and population growth rates declined from 3.4 percent to 1.06 percent during the same period (General Statistics Office, 2012b; Jones, 1982). Generally, Vietnam has achieved its quantitative goals in family limitation.

Although the extent and rapidity of Vietnam's fertility reduction has been significant, and while replacement level fertility has been achieved, substantial variations in fertility continue to cause concern. Specifically, TFR and annual average population growth rates remain high among ethnic minority groups. For instance, these two indicators were 2.2 children and 1.54 percent for the Thai people, or 5.0 children and 3.1 percent for the Mong, (Amin & Teerawichitchainan, 2009b; United Nations Population Fund, 2011). Population and family planning (hereafter called PFP) programs, therefore, remain a core component in the country's development strategy.

1.2 History of Vietnam's family planning programs

In the 1950s and 1960s, several international conferences were held to deal with rapid population growth in the developing countries. It was widely believed that rapid population growth resulted in reducing economic productivity, destroying natural resources, and degrading ecosystems around the world. Furthermore, rapid population growth was also associated with high infant and maternal mortality rates, unsafe induced abortions and other situations that poor countries were ill equipped to deal with. To some extent, people in the poor countries lost their human rights to regulate their fertility safely and effectively (Seltzer, 2002). Additionally, technological innovations, like the intrauterine device (IUD) and oral pill, were expected to provide effective solutions for managing fertility and avoiding unwanted pregnancy. In response, family planning programs were gradually introduced in poor countries in the early 1960s. These programs aimed at promoting large-scale provision of contraceptive methods to: (1) reduce birth rates and avoid unwanted pregnancy, (2) improve living standards and women's health, and (3) promote women's rights (Seltzer, 2002). The number of developing countries having family planning programs rose quickly from two in the early 1960s to 115 in the middle of 1990s (Department of Economic and Social Affairs-Population Division. United Nations, 2004). Population growth rates in developing countries dropped from 2.4 percent in the period 1970-1975 to 1.4 percent in the period 2005-2010. As a consequence, the world's TFR reduced from 4.3 children per woman to 2.7 children per woman at the same periods (Department of Economic and Social Affairs-Population Division. United Nations, 2010).

As a developing country facing rapid population growth, PFP programs were initiated in the 1960s in North Vietnam and centered on fertility reduction through free provision of

contraceptives(Goodkind, 1994; Jones, 1982; Ministry of Health, 2011). In correspondence to changes in national history events in general and population work in particular, the history of programs can be roughly divided into four stages from the initiation to the present.

The initiation stage of PFP programs happened before the country's unification in 1975. During this period, Vietnam was partitioned into two halves under the Geneva Accord in 1954. The Communist Democratic Republic of Vietnam ruled the North while the Western-backed Republic of Vietnam governed the South (Duiker, 1995). The PFP objectives differed significantly between the North and the South prior to reunification (Ministry of Health, 2011; United Nations. Department of Economics and Social Affairs. Population Division, 2001). For example, in the North efforts were targeted at women of childbearing age who already had several children. Population policy largely encouraged couples to have no more than 3 children with a 5-year birth spacing (Scornet, 2009). The goal was to reduce annual population growth from 3.5 percent to 2.5 percent (Ministry of Health, 2011). Contraceptive methods, most notably IUD and abortion services, were widely available and considered as an integral part of the basic healthcare provided by the public sector (Jones, 1982). Advances during this period were readily apparent - the total fertility rate (TFR) of North Vietnam declined from 6.3 to 5.25 children per woman and the population growth rate dropped from 3.8 percent to 2.4 percent in the period 1960-1975 (Ministry of Health, 2011).

In contrast, PFP programs in South Vietnam started in the late 1960s when the Population Council was established to deal with issues concerning maternal and infant mortality, as well as the increase in abortion (United Nations. Department of Economics and Social Affairs.

Population Division, 2001). The Catholic-based Southern government did not promote family planning (Goodkind, 1994). In the early 1970s, family planning services were mainly aimed at women having at least five children. It was not until the mid-1970s that women having only one child could access family planning services (United Nations. Department of Economics and Social Affairs. Population Division, 2001). With the assistance of the United States Agency for International Development and the United Nation Population Fund (UNFPA), a network of family planning services and mother protection was gradually established in southern provinces (Goodkind, 1994; Ministry of Health, 2011; Truong Minh & Yen-Tuan-Phong, 1974). FP programs of the South were not successful in abating rapid population growth (United Nations. Department of Economics and Social Affairs. Population Division, 2001) and the population growth rate remained high at about 3.0 percent in 1976 (Banister, 1985a; Ministry of Health, 2011; Truong Minh & Yen-Tuan-Phong, 1974).

The second stage of PFP programs lasted from the country's reunification in 1975 until the economic reform in 1986. After reunification, Vietnam's economy was devastated by decades of war, bad relationships with its Southeast Asian nations, and the lack of foreign aid from socialist countries (Banister, 1985a). Economic collectivization, already well underway in the North, was also applied to the South in an attempt to improve living standards (Duiker, 1995; Tran, 1998). FP programs remained an important national target program (United Nations. Department of Economics and Social Affairs. Population Division, 2001). For the first time in its development process, PFP programs were officially introduced nationwide.

This period was marked by the first national Population Census in 1979. This Census showed that Vietnam experienced rapid population growth in which the TFR was about 5 children per woman and the population growth rate was 2.6 percent. Population growth rates in the South remained high, about 3.3 percent in the period 1976-1979, compared with 1.7 percent in the period 1974-1979 in the North. This difference was probably due to the early application of FP programs in the North and mass migration from Northern to Southern provinces during 1974-1979 (Banister, 1985a). Fertility control was the primary objective of PFP programs, and contraceptive methods were free to all users (Banister, 1985a; Goodkind, 1994). Reducing the population growth rate to 1.7 percent was frequently carved into official documents of the Communist Party's Congress in 1976, 1982 (Banister, 1985a; Ministry of Health, 2011). However, this goal was not achieved until well after this period in 1997 (Ministry of Health, 2011).

Although Vietnam could initially produce condoms, the 1976-85 period was referred to as "one-method program", emphasizing the domination of IUDs over all other modern contraceptive methods (Knodel, Anh, Dung, & Vinh, 1995). The 1988 Demographic and Health Survey showed that IUDs accounted for 90 percent of contraception among currently married women aged 15-49 using modern contraceptive methods (Van Phai, Knodel, Van Cam, & Xuyen, 1996).

The third stage took place after the re-unified Government launched the Renovation reform in 1986 with the aim of transforming from a highly-centralized planned economy to a socialist-oriented market economy (Duiker, 1995). In contrast with the economic liberalization, during this period population policies were issued with the emphasis on tightening birth control.

Generally, the third stage could be considered as a maturity phase throughout the history of FPF programs. In 1988, the two-child policy was officially announced by the Government (Knudsen, 2006; Scornet, 2009). This policy stipulated that each couple had a maximum of two children. The target groups were political cadres, State workers and employees, armed forces, and families who lived in urban areas, industrial zones, the Red River and Mekong River deltas, the lowlands in the coastal provinces. For those in the target groups, reproductive age was at least 22 years for women, and 24 years for men. For other groups, minimum reproductive age was 19 for women, and 21 years for men. Birth space should be from 3 to 5 years. However, the family size limitation was less strictly applied to ethnic minorities living in mountainous provinces in the North and Central Highlands as they were allowed to have a maximum of three children per couple (The Council of Ministers, 1988). This was probably because the Government wanted to avoid any conflicts with ethnic groups that favored traditionally large-size families (Scornet, 2009).

Prior to the creation of the National Committee of Population and Family Planning (NCPFP) in 1984, the Ministry of Health was the only agency responsible for PFP programs. Un NCPFP many ministerial agencies participated reducing fertility (Ministry of Health, 2011). Information, Education, and Communication (IEC) campaigns with the utilization of television, radio, the press, speakers, posters, and drama were among the core component of FP programs (Knudsen, 2006). In 1992 a program of IEC campaigns for the period 1992-2000 was developed by the National Committee for Population and Family Planning which intensely advocated for a two-child family and the use of modern contraceptives (Ministry of Health, 2011; Scornet,

2009). “Stop at two children for a good education and rearing” was a key message in this propaganda program (Ministry of Health, 2011).

In 1991 the Party’s 7th Congress affirmed that PFP was an important component of the country’s development strategy and fertility reduction can help to improve the living standard of all citizens (Ministry of Health, 2011; Scornet, 2009). The first Population and Family Planning strategy towards 2000 was approved by the Premier dated June 3rd, 1993 which emphasized the concept of “small-size family”. The Party Congress in 1996 re-confirmed that “each couple should have one or two children, the population growth rate is below 1.8 percent by 2000, and the population size will be stabilized by the middle of the 21st century”(Ministry of Health, 2011, p. 29). Along with the introduction of tightening population policies, the Government increased resources to strengthen the organizational structure of PFP system at all levels. As a consequence, the TFR kept declining and was about 2.28 children per woman in 2000; and the contraceptive prevalence rate (CPR) increased from 53 percent in 1988 to 74 percent in 2001 (Ministry of Health, 2011).

The current period from 2001 up to present has seen some radical changes, especially the formulation of population policies (Ministry of Health, 2011; Pham, Hill, Hall, & Rao, 2012; Scornet, 2009). The Population Ordinance, the highest legal document on PFP, was approved by the National Assembly in 2003. Article 10 of this legal document acknowledged the reproductive rights by saying that “Each couple or individual shall have the rights to decide on the time to have babies, the number of children and the duration between child births suitable to their age, health, study, laboring or working conditions, incomes, and raise their children on

the basis of equality” (National Assembly of Vietnam, 2003, p. 5). This article implied the movement from quantitative to qualitative dimensions in FP programs (Pham et al., 2012). Some, however, argued that the Ordinance relaxed birth control which could consequently lead to an increase in fertility (Sjösten, 2014). Consequently, on December 27th, 2008 the National Assembly revised Article 10 of the Population Ordinance into “Rights and responsibilities of each couple and every individual in movements of PFP and reproductive health care are: (1) to decide birth timing and birth spacing; (2) to have one or two children, exceptional cases to be regulated by the Government” (National Assembly of Vietnam, 2008, p. 1). Legislation issued during this period implied that Vietnam has insisted on pursuing fertility control policy in the coming years. So far, Vietnam’s PFP programs have achieved remarkable results. Contraceptive method mix has become popular. More and more male users accepted condom, sterilization, pills (General Statistics Office, 2009). In 2010 the population growth rate was approximately 1.05 percent, TFR was 2 children per woman, and CPR was about 78 percent (General Statistics Office, 2012b).

1.3 Family planning and ethnic minorities

Vietnam is home of 53 different ethnic minorities whose 2009 fertility rates vary greatly, from 1.89 children per woman for the Muong to 4.96 children per women for the Mong (General Statistics Office, 2011). In the early history of FP programs, ethnic minorities were seldom considered as the targeted population of fertility reduction movement. Some argued that ethnic minorities were even excluded from population and family planning movements due to political matters(Banister, 1985b). Propaganda campaigns on family planning often focused on certain groups such as State’s official, workers, communist cadres, and military officers, but not

ethnic minority groups and Catholics (Ministry of Health, 2011; Scornet, 2009). In the current period, communication campaigns pay more attention to improving knowledge and awareness on reproductive health among ethnic groups rather than to fertility reduction (Ministry of Health, 2011). The implementation of FP programs for ethnic minority communities experienced a variety of difficulties due to language differences, budget, cultural norms, transportation or geographic location (Målqvist, Hoa, Liem, Thorson, & Thomsen, 2013; United Nations Population Fund, 2008; Van Vo, Hoat, & Jan van Schie, 2004).

Compared to the Kinh, birth control regulations for ethnic minorities were less strict. In the context of strengthening the two child-policy during the 1980s and 1990s nationwide, ethnic minority couples living in mountainous provinces in the North and Central Highlands were allowed to have three children (Scornet, 2009). This was because the Government avoided conflicting with ethnic groups who traditionally favored large-sized families. Currently, couples from certain ethnic minority groups are allowed to have three children if at least one of the two parents is from an ethnic minority having either its size of under 10,000 or the shrinking population (Ministry of Health, 2011). Currently, there were 10 ethnic groups that are officially allowed to have up to three children per couple (General Statistics Office, 2010). In 2003, Population Ordinance, the highest legal document in terms of population policy, declared the State's overall responsibility of protecting ethnic minorities in relation to reproductive health and family planning (National Assembly of Vietnam, 2003). Yet again, the goal of family limitation was not specified for these groups in the document.

Although the country's overall fertility rate was below the replacement level, fertility reduction was not equal among all ethnicities. While fertility among the majority group, the Kinh group, dropped to below the replacement level, fertility remains about replacement level for most ethnic minority groups (Amin & Teerawichitchainan, 2009a; United Nations Population Fund, 2011). However, findings from three recent Censuses indicated the declining trend in fertility rates of large ethnic groups over time. For example, TFR of the Thai people was 5.70 in 1989, dropped to 2.56 in 1999, and reduced to 2.19 in 2009 while this rate of the Kinh group was 3.6, 1.87 and 1.95 respectively (General Statistics Office, 2011). It is argued that high fertility rates of ethnic minorities are associated with earlier marriage, low CPR, and low induced abortion rates (Amin & Teerawichitchainan, 2009a). Whether fertility rates can be soon stabilized in regions dominated by ethnic minority groups remains questionable.

What is known about ethnic minorities is their fertility is higher than that of the majority group, they have not been the focus of PFP programs, and that there is great variation among the different ethnic minority groups. Furthermore, higher fertility and lower contraceptive prevalence rates among ethnic minorities are thought to result from limited knowledge of and less accessibility to contraceptive as well as fears of side-effects (Amin & Teerawichitchainan, 2009b; United Nations Population Fund, 2008; Van Vo et al., 2004). Because ethnic minority groups are spread across mountainous, hard to access areas, and speak different languages, little detailed information exists on their knowledge and attitudes towards contraception. Most of the available information comes from national surveys that are conducted in Vietnamese, the language of the majority group (Baulch, 2010; Målqvist et al., 2013; Van Vo et al., 2004). However, ethnic minorities often speak a different language and their understanding of

Vietnamese is quite mixed(Taylor, 2008). In cases where translation occurs, surveys are translated on the fly as opposed to going through rigorous translation and back translation. Therefore, the reliability of information obtained may be questionable.

1.4 Literature review

As a proximate determinant of fertility, contraceptive use is determined by a set of different factors which include, but are not limited to, personal preferences, sociocultural and environmental factors, contraceptive suppliers, and technology and cost (Bongaarts, 1978; Bulatao, Palmore, & Ward, 1989). The scheme of the relationship between factors affecting contraception and fertility can be described as follows: indirect determinants (personal preferences, sociocultural and environmental factors, contraceptive suppliers, and technology and cost) can impact contraceptive use, which then influences fertility rates. Based on FP program experience in developing countries, Bulatao (1989) defined four components affecting the contraceptive choice as follows: contraceptive goals, contraceptive access, contraceptive competence, and contraceptive evaluation.

Central to Vietnam's FP programs is the provision of free-of-charge contraceptives, and mass propaganda programs that promoted the living standard norm of small family size(Ministry of Health, 2011; Scornet, 2009). These two approaches differentially influence goals, competence, access, and evaluation of contraceptive among users. The former, which mainly focuses on economic accessibility, allowed a large number of people in need to access family planning services. In 2012, the contraceptive prevalence rate of Vietnam was 76.2 percent in which the CPR of modern methods was 66.6 percent(General Statistics Office, 2012a). However, this rate

in remote areas where ethnic minorities constitute a numerical majority was lower due limited accessibility resulting from language, geographic location, transportation, culture, and the coverage of family planning network (General Statistics Office & United Nations Children's Fund, 2011; United Nations Population Fund, 2008; Van Vo et al., 2004). Compared with the Kinh, ethnic minorities have higher unmet need for contraception (General Statistics Office & United Nations Children's Fund, 2011). The reasons for not using contraceptives are mostly fears of side-effects and health issues of IUDs (Gammeltoft, 1999; United Nations Population Fund, 2008).

Other program factors both directly and indirectly influence contraceptive choice. Information-education-communication campaigns contribute creating cognitive accessibility and availability (Bulatao et al., 1989). In previous times, Vietnamese people highly valued large-size family because of traditional customs and its economic advantages in an agricultural-based economy (Gallup, 1995). Vietnam's mass propaganda which is formed based on mass media and a network of local staff at the grassroots level helped reduce the desired number of children (Scornet, 2009). The small-size family model became popular in the society. Consequently, the desire of having fewer children can likely encourage couples to utilize contraceptives. Supply of contraceptive information helped to form knowledge and attitude which favored family planning utilization over time (Ministry of Health, 2011; National Committee for Population Family and Children & ORC Macro, 2003; Nguyen Van Phai, Nguyen Minh Thang, & Cam, 1998). However, the coverage of communication campaigns and the family planning network in remote areas is inadequate with low quality (Ministry of Health, 2010). Thus, knowledge and awareness on family planning of minority groups can be limited.

Contraceptive use can be influenced by a variety of micro factors which include but not limited to socio-demographic characteristics such as age, education level, religion, marital duration, the number of children ever born, household income and size, and occupation (Bongaarts, Frank, & Lesthaeghe, 1984; Bulatao et al., 1989; Choe & Park, 1989; National Committee for Population Family and Children & ORC Macro, 2003). People at different ages have different contraception knowledge and fertility preference. Thus, they have different choices of what methods to choose, when to use, and where to obtain the methods. Young women who are just married are more likely not to use contraceptive methods because they want to give birth. However, older women are more likely to use contraceptives since they have reached their desired number of children (General Statistics Office & United Nations Children's Fund, 2011). It is evident that education is an important factor influencing contraceptive use (J. Bertrand et al., 1993; Bongaarts et al., 1984; Bulatao et al., 1989). Women with higher education levels are better informed and have better access to contraception than women with lower education; and therefore more likely to use family planning services -(Allman, Nhan, Thang, San, & Man, 1991; Bongaarts et al., 1984; National Committee for Population Family and Children & ORC Macro, 2003; Nguyen Van Phai et al., 1998). The number of children ever born is likely to influence the use of contraceptives because when reaching the desired number of children couples often want to stop giving births, which promotes contraceptive use(Bongaarts, 1978). Over the past few decades, the Government of Vietnam paid special attention to the development of ethnic minorities. A ministerial agency, the Committee for Ethnic Minorities, was established the main function of “to coordinate with the ministries, ministerial-level agencies and agencies attached to the Government in realizing specific policies and measures,

giving priorities to the all-sided development, political, economic, cultural, social, security and defense, in areas inhabited by ethnic minority people and mountainous areas; to prioritize the investment in the construction of infrastructures as well as programs and projects on socio-economic development and commodity economy development in areas inhabited by ethnic minority people, remote and deep-lying areas” (The Government of Vietnam, 2003, p. 1).

Specialized programs were implemented to target ethnic groups. For example, since 1998 the State-funded Program 135 with the total budget of nearly US\$ 1billion was initiated in 1,874 communes in 45 out of 64 provinces. This program aimed at developing production and basic infrastructure, improving education, educating local staff, and increasing people's knowledge and awareness for better life for ethnic minorities (Quan, 2009). However, compared with the Kinh, most ethnic groups are much poorer, have less access to basic living services such as education, healthcare, and employment (Baulch, 2010). Consequently, the implementation of FP programs in ethnic regions will be negatively affected.

1.5 Theoretical framework

As aforementioned, the decision to use contraception involves socioeconomic, cultural, environmental, psychological, and biological factors. Based on some conceptual frameworks used for examining factors influencing contraceptive use in developing countries (J. T. Bertrand, Magnani, & Knowles, 1994; Duze & Mohammed, 2007; Iman & Ghodrati, 2010; Ndaruhuye, Rutayisire, & Umubyeyi, 2013), a simple framework of factors affecting contraceptive use can be defined with three levels as follows (see figure 1 below). First, the macro level consists the specific context such as socioeconomic status, or poverty. This context is formed and governed by a variety of current policies in socio-economics, healthcare,

ethnic minority, ect. Second, the middle level cover of institutions and agencies that directly or indirectly impact the decision of a person to use contraceptive method. It could be household, community, family, family planning service centers. The miro level (human factor): refers to individual features such as socioeconomic or demographic fatorcs that are associated knowledge, attitude, and practice of contraception of each individual.

This paper will study how individual factors affect contraceptive use of ethnic minorities in Vietnam. Macro and micro levels can be used to provide specific inputs which help to explain more decision making in relation to contraceptive choice.

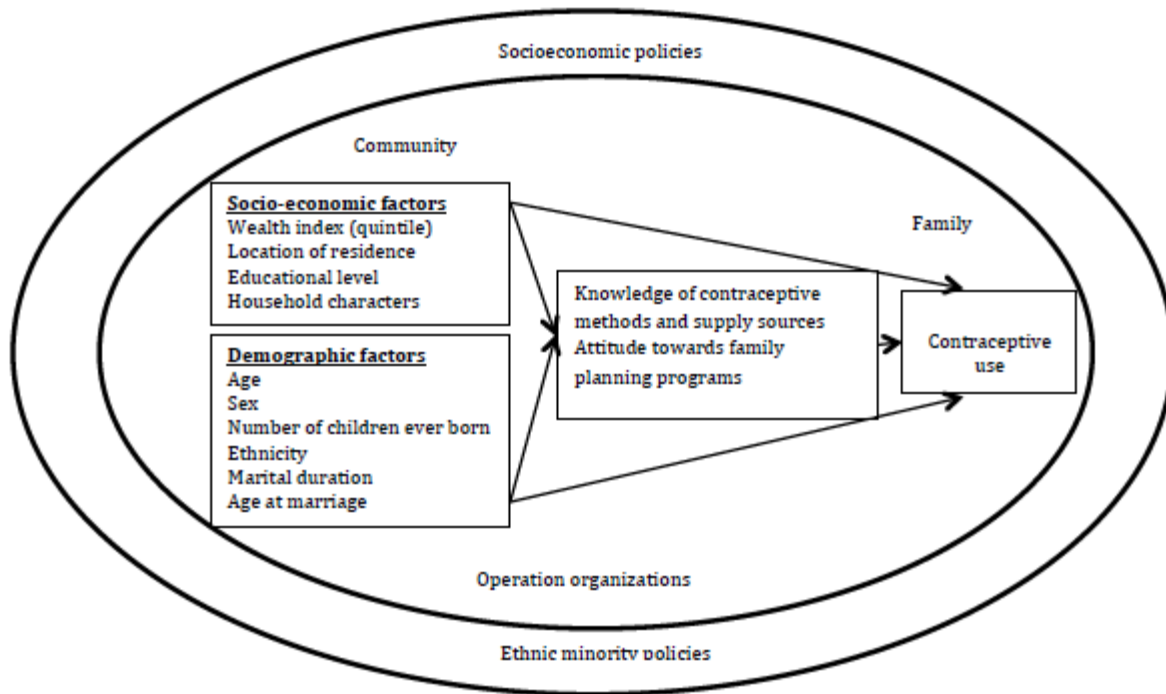


Figure 1. Factors affecting contraceptive use

1.6 Research objective

- To examine family planning knowledge and attitudes, and practice of contraceptive use among currently married Thai women aged 15-49 and Thai men having wife aged 15-49.

1.7 Research questions

- What are Thai males and females' knowledge, attitude and practice of contraceptive?
- What factors are associated with use of contraceptive methods among Thai males and females?

Chapter 2 - Data and Methods

2.1 Data

This paper uses data obtained from the 2012 baseline survey of the Families and Communities in Transition research project (hereafter called FACT) which focused on examining the nature of social changes and how social change impacts communities, families, and individuals of the Thai people. There are different names for the Thai people in Vietnam such as Tay Thanh, Tay Muong, or Tho. Historically, the Thai people migrated to Vietnam from other Southeast Asian countries centuries ago (Cam Trong, 2007). The Thai have their ancient style which was based on the Mon-Khmer. However, in Vietnam now their language is taught orally. Only a very small number of Thai people know how to write in their own language. (An, 1996; Lã Văn Lô, 1968; Trong, 2005; Van Dang, Chu, & Luu, 1984). According to the 2009 Vietnam Population and Housing Census, the Thai are the third largest ethnicity in Vietnam with nearly 1.55 million people. Nearly 96 percent of them settled in seven provinces which include Nghe An (295,132 people), Son La (572,441 people), Thanh Hoa (225,336 people), Lai Chau (119,805 people), Yen Bai (53,104 people), Hoa Binh (31,386 people), and Dien Bien (186,276 people) (General Statistics Office, 2010).

FACT conducted its baseline survey covering all households located in the 16 villages in Nghe An province, Vietnam. Face-to-face interviews were used to collect information from all individuals aged 15 and above. The majority of interviews were conducted in Thai language by Thai native speaking interviewers. The surveys were translated into Thai from Vietnamese by research staff fluent in both Vietnamese and Thai. Translations were specific to the Thai dialect spoken in

Nghe An and were checked by native speaking Thai interview staff who were also fluent in Vietnamese. Respondents provided information on the following topics:

- Respondent's demographic information
- Household information (only applied for household head)
- Social interaction
- Marriage and family
- Health
- Family planning, and
- Opinions

Of 3,912 eligible respondents aged 15 and above listed in the household roster, 3,351 were successfully interviewed, yielding a response rate of 86 percent. The data collection was conducted from July to August, 2012. Each enumerator was required to conduct four interviews per day. Each interview might last from 30 minutes to 2 hours 10 minutes depending on different factors such as interviewing skills, respondents' competence and the number of questions applied to each type of respondents. On average, an interview is about of 1 hour 40 minutes.

The study focused on people at reproductive ages who were the targeted group in family planning programs in Vietnam. Since contraceptive practice was a central focus of the study, women currently pregnant or men having a pregnant wife were excluded because those persons would certainly not use contraceptive methods. The present study, therefore, was based on 939 currently married Thai women aged 15-49 (mean = 33.6, SD = 8.7), and 891 Thai

men having wife aged 15-49 (mean = 34.7, and SD = 8.9). The sample size of data analysis is 1,830 observations.

2.2 Measurement

Central to this study are personal and household features that were collected through interviewing with respondents at the baselines survey in 2012 in Nghe An province. These features allowed establishing a variety of both dependent and independent variables at individual and household levels as the following:

Sex: This is a binary variable with two responses in which 0 is for males, and 1 for females.

Marriage cohort: Most people in the 2012 baseline survey were questioned about their marital status and then the year of marriage for those currently married. In this paper, the year of marriage of all the respondents was from 1976 to 2012. In accordance with specific population periods of Vietnam, all respondents were divided into three marriage cohorts. The first included those married before 1986. The second included those married from 1986 to 1999. The third included those married after 2000.

Since marriage cohort and the respondent's age were strongly correlated (Person correlation = -0.82 with the p-value <0.01); compared to model with respondent's age, the model having respondent's age has some tolerance values < 0.25; and population policies mainly focused on married people, marriage cohort shall be used as a predictor instead of the respondent's age for further data analysis in this paper.

Education level: People were questioned of what highest grades that they completed. These people were categorized into four subgroups: illiterate means never go to school; primary school consists of people having highest completed grade from 1 to 5, secondary school indicates people with highest completed grade from 6 to 9, and high school and above covered all people at least completed grade 10.

Communication capacity in Vietnamese: Enumerators were requested to evaluate the capacity of each respondent to speak Vietnamese based on their interaction with interviewee during interview. Communication capacity in Vietnamese was divided into five levels from: cannot speak at all, poor, average, fair, and fluent.

Ethnicity: In this study, almost all respondents were Thai people. In regarding to culture, food habit, or costumes, all the respondents were divided into two subgroups: Black Thai, and White Thai.

Household size: Based on the number of members living in every household, households are divided into three types: having 1-4 members, having 5-6 members, and having 7 members and above. It is noted that it will be treated as a continuous variable in the logistic regression model.

Household quintile: A key informant, who was the household head, was selected to provide household information such as types of land, livestock, and living conditions. Based on these collected inputs, the Principal Components Analysis (PCA) were deployed to develop the 5-level wealth index (or household quintile) ranging from poorest, poor, average, rich, to richest

groups. Please refer to Appendix A for more detailed information on the development of this variable.

Knowledge variable: Contraceptive knowledge was measured with two questions in the survey which indicated (1) whether or not the respondents heard of several specific modern contraceptive methods such as pill, IUD, male condom, female condom, male sterilization, female sterilization, implant, injection, and diaphragm/foam/jelly; and (2) whether or not the respondents knew the supply sources of contraception such as village health worker, population and family planning collaborator, commune health clinic, mobile clinic, pharmacy, district family planning center, district health center or hospital, private health centers, and others. Two measures were constructed to represent personal contraceptive knowledge: the number of modern contraceptives, and the number of supply sources of modern contraceptives that the respondent knew. Both were used as continuous predictors in the logistic regression model.

Attitude variable towards family planning: The respondents were questioned about their expected number of ideal family size and small-sized family. It was assumed that people having the expected number of ideal family and small-sized family equal to two children represented their positive attitude towards current family planning programs.

Practice variable: Contraceptive use was formed based on personal experience regardless of contraceptive usage of their spouse. Specifically, a currently married woman aged 15-49 was ranked as a current user if she applied at least one of the modern contraceptive methods at the time point of the survey regardless of their husband's status of contraceptive use. These methods include pill, IUD, injection, implant, female condom, female sterilization, and

diaphragm/foam/jelly. Similarly, men having wife aged 15-49 was considered as a current user if they applied at least one of the modern contraceptive methods, including condom and male sterilization, regardless of their wife's status of contraceptive use. "Current modern contraceptive use" was as a binary variable in which 0 means currently not using any modern contraceptive method; and 1 means currently using modern contraceptive method.

2.3 Analytical strategy

This paper used simple statistical techniques to examine factors associated with modern contraceptive use. First, I conducted descriptive analysis of both individual and household characteristics that may be associated with contraceptive use. Second, I examined the status of knowledge, attitude, and practice of contraception of each sex: current married women aged 15-49, and men having wife aged 15-49. Finally, I conducted the binary logistic regression to evaluate factors associated with the likelihood that the respondents use modern contraceptives.

Chapter 3 - Results

3.1 Socio and demographic of households and the respondents

This section provides a description of all the respondents which are based on individual and household characteristics. Table 1 presents socio-demographic features for each sex.

Table 1
Social and Demographic Characteristics

	Men		Women		Total	
	N	%	N	%	N	%
Marriage cohort						
Before 1986	76	8.5	79	8.4	155	8.5
1986 - 1999	371	41.6	405	43.1	776	42.4
After 2000	444	49.8	455	48.5	899	49.1
Education level						
Illiterate	119	13.4	303	32.3	422	23.1
Primary school	298	33.5	293	31.2	591	32.3
Secondary school	319	35.8	257	27.4	576	31.5
High school or more	154	17.3	85	9.1	239	13.1
Ethnicity						
Black Thai	449	50.4	473	50.6	922	50.5
White Thai	441	49.6	462	49.4	903	49.5
Vietnamese capacity						
Cannot at all	30	3.4	189	20.2	219	12.0
Poor	91	10.2	183	19.6	274	15.0
Average	267	30.0	273	29.2	540	29.6
Fair	269	30.2	165	17.6	434	23.8
Fluent	234	26.3	126	13.5	360	19.7

Table 1 shows that most respondents (49.1 percent) married from 2000 to present; and only a small percentage (8.5 percent) married before 1986. This pattern was similar for both men and women. For instance, the largest percentage of women (48.5 percent) belonged to the third cohort; and only a little number of them (8.4 percent) belonged to the first cohort. Looking further shows the mean age at marriage of men was 21.2 years. It was from 19.2 years for those married before 1986, increased to 20.7 years for those married in 1986-99, and up to 21.9 years for those married in 2000-12. Furthermore, these differences were statistically significant (see tables 16 & 17 in the Appendix B). The similar results were found for the female respondents. The mean ages at marriage of the females increased over time. These differences were statistically significant (see tables 18 & 19 in the Appendix B).

Education level varied greatly. The largest percentage of the respondents (32.4 percent) obtained primary school. The smallest percentage of the respondents (13.0 percent) achieved high school or more. Remarkably, about a quarter of the respondents (23.1 percent) had no schooling. The male group had higher much notably education than the female group. The illiteracy rate among women was twice as large as that among men, 32.3 percent and 13.4 percent respectively. There were only 9.1 percent of women reaching high school or more which was equal to half that rate of men. Furthermore, the majority of men were those having secondary school (35.8 percent) while the majority of women were those with no schooling (32.3 percent).

Communication capacity in Vietnamese was widely diversified. The largest percentage of the respondents (29.6 percent) communicated in Vietnamese at an average level. There was up to

12 percent who cannot speak Vietnamese at all. Only one fifth of interviewees could communicate in Vietnamese fluently. Males were much better than females in terms of communicating in Vietnamese. The percentage of women unable to speak Vietnamese was six times as large as that of men. About 13.5 percent of women able to speak Vietnamese fluently was about half of that of men. The respondents were evenly divided in terms of ethnicity. About 50.5 percent of the respondents were Black Thai, and 49.5 percent were White Thai.

Table 2 below presents the household-related characteristics of all the respondents which include household quintile, and size.

Table 2
Household Characteristics

	Men		Women		Total	
	N	%	N	%	N	%
Household quintile						
Poorest	135	15.3	153	16.6	288	15.9
Poor	173	19.5	179	19.4	352	19.5
Medium	193	21.8	196	21.3	389	21.5
Rich	193	21.8	198	21.5	391	21.6
Richest	191	21.6	196	21.3	387	21.4
Household size						
1 - 4	432	48.5	477	50.8	909	49.7
5 - 6	324	36.4	328	34.9	652	35.6
7+	135	15.2	134	14.3	269	14.7

The respondents came from different household contexts. In regards to wealth index, the smallest percentage of people belonged to poorest-level households, 15.9 percent. The highest

percentage of people was those in rich-level households, 21.6 percent. The distribution by household quintile between men and women respondents was fairly similar. For example, the percentage of the respondents living in poorest households was 16.6 percent for men, and 15.3 percent for women. The percentage in richest households was 21.6 percent for men, and 21.3 percent for women.

The majority of the respondents lived in households with 1-4 members (49.7 percent), followed those in households with 5-6 members (35.6 percent), and those in households having 7 and more members (14.7 percent). This pattern was found unchanged for both the male and female respondents. For example, most men lived in households with 1-4 members (48.5 percent), followed those in households with 5-6 members (36.4 percent), and those in households having 7 and more members (15.2 percent).

3.2 Knowledge, and attitude of modern contraception

3.2.1. Attitude towards family planning

In the 2012 baseline survey, all respondents were asked about their opinion of small-sized family and the ideal number of children for a couple which are presented in table 3. This information represents attitude towards current family planning programs: the two-child policy.

It was evident that the model of the two-child family became popular among the Thai people. Nearly 94 percent of the respondents reported that the small-sized family meant having less than 2 children in which 7.9 percent people chose to have 1 child only, and up to 86.0 percent chose to have 2 children. Only 6.2 percent said the small-sized family meant having 3 and more

children. This pattern of the small-sized family was similarly repeated within both the female and male respondent group. Most men and women wanted to have about two children.

Table 3

Small-Sized Family And the Ideal Number Of Children Per Couple

	Men		Women		Total	
	N	%	N	%	N	%
Small-sized family						
1	78	8.8	66	7.0	144	7.9
2	757	85.0	816	86.9	1573	86.0
3	40	4.5	40	4.3	80	4.4
4+	16	1.8	17	1.8	33	1.8
Ideal number of children						
1	6	0.7	7	0.7	13	0.7
2	814	91.5	823	87.6	1637	89.5
3	56	6.3	80	8.5	136	7.4
4+	14	1.6	29	3.1	43	2.4

The majority of the respondents (89.5 percent) said that nowadays the ideal number of children per couple was about two children. Only a small percentage of them (9.8 percent) thought that this number would be larger than 3 children. This pattern was found unchanged for both men and women. For example, 91.5 percent of the male and 87.6 percent of the female said the ideal number was 2 children. Only 6.3 percent of the male and 6.1 percent of the female said the ideal number was 3 and more children. However, independent-samples t-tests show that the differences in both small family size and ideal family size between males and females were not statistically significant.

3.2.2. Contraceptive knowledge

In this paper, contraceptive knowledge refers to two dimensions: the number of contraceptive methods, and the number of supply sources that the respondents were aware of. Table 4 presents the first dimension for each sex.

Table 4

Number Of Modern Contraceptive Methods Known

	0	1	2	3	4	5	6	7	8+	Total
Male	3.4	3.4	4.7	15.0	25.1	19.6	13.7	11.0	4.0	100.0
Female	1.0	2.0	4.0	11.0	22.7	22.8	16.1	14.7	5.8	100.0
Total	2.1	2.7	4.4	13.0	23.9	21.3	14.9	12.9	4.9	100.0

The majority of all respondents (97.9 percent) knew at least one modern contraceptive method. Among those knowing at least one modern method, the highest percentage was those reported knowing four types of methods (23.9 percent). Furthermore, the smallest percentage was those reported knowing one method only (2.7 percent). Generally, up to 77.9 percent of the respondents said that they knew at least four types of modern contraceptive methods.

An independent-samples t-test was conducted to compare the mean number of contraceptive methods known between male and female. Results are presented in table 5

Table 5

Results of t-test for the Number of Contraceptive Methods Known by Sex

	Male			Female			t	df
	M	SD	n	M	SD	n		
Number of contraceptive known	4.49	1.84	891	4.90	1.71	939	-5.40***	1798

Note. Satterthwaite approximation employed due to unequal group variances. ***p < .001.

There was a significant difference in number of contraceptives known by males (M=4.5, SD=1.84) and by females (M=4.9, SD=1.71); $t(1798)=-5.40$, $p = 0.000$ These results suggest that women were actually more aware of modern contraceptives than men. That women are less well-educated makes their greater knowledge of contraceptive methods all the more remarkable.

One-way ANOVA tests were employed to explore the differences in men's contraceptive knowledge by some characteristics. Table 6 presents the description of the average number of modern contraceptives that men were aware of by some characteristics.

Table 6
Descriptive Of the Number Of Modern Contraceptive Methods Known for Men

	N	Mean	SD	Std. error	95 % C.I for mean	
					Lower bound	Upper bound
Marriage cohort						
Before 1986	76	4.6	2.0	0.2338	4.2	5.1
1986 - 1999	371	4.5	1.9	0.1000	4.3	4.7
After 2000	444	4.4	1.7	0.0824	4.3	4.6
Education level						
Illiterate	119	3.5	1.8	0.1627	3.1	3.8
Primary school	298	4.2	1.8	0.1056	4.0	4.4
Secondary school	319	4.7	1.7	0.0978	4.5	4.9
High school or more	154	5.3	1.6	0.1319	5.1	5.6
Ethnicity						
Black Thai	449	4.5	1.9	0.0887	4.3	4.6
White Thai	441	4.5	1.8	0.0861	4.3	4.7
Vietnamese capacity						
Cannot at all	30	3.9	2.0	0.3599	3.2	4.6
Poor	91	3.8	1.8	0.1854	3.4	4.1
Average	267	4.0	1.8	0.1112	3.8	4.3
Fair	269	4.5	1.8	0.1114	4.3	4.7
Fluent	234	5.3	1.6	0.1043	5.1	5.5

Men's understanding varied greatly by education level and Vietnamese capacity, but not for ethnicity and cohort. Men with a higher education or better communication capacity in Vietnamese knew more contraceptives. For instance, on average illiterate men heard about 3.5 methods, increased to 4.2 for those with primary school, 4.7 for those with secondary school, and 5.3 for those with high school or more. Furthermore, this difference was statistically significant with f-test =29.4 and the p-value < the 0.05 level. Similarly, on average men who didn't speak any Vietnamese were aware of only 3.9 methods, compared with 5.3 methods for men who spoke Vietnamese fluently. This difference was statistically significant with f-test = 21.01, the p-value < the 0.05 level. However, table 7 does not show the statistical differences in the contraceptive understanding by marriage cohort and ethnicity among male respondents.

Table 7
ANOVA Of The Number Of Modern Contraceptives Known for Men

		Sum of Squares	df	Mean Square	F	Sig.
Marriage cohort	Between Groups	4.020	2	2.010	.690	.502
	Within Groups	2726.398	936	2.913		
	Total	2730.417	938			
Education	Between Groups	272.898	3	90.966	29.442	.000
	Within Groups	2737.412	886	3.090		
	Total	3010.310	889			
Ethnicity	Between Groups	.322	1	.322	.095	.758
	Within Groups	3020.106	888	3.401		
	Total	3020.428	889			
Vietnamese capacity	Between Groups	261.877	4	65.469	21.011	.000
	Within Groups	2760.772	886	3.116		
	Total	3022.649	890			

ANOVA tests were applied to contrast the difference in contraceptive knowledge of women by some characteristics. Table 8 presents the description of contraceptive knowledge of the female respondents by some characteristics.

Table 8

Descriptive Of the Number Of Contraceptives Known by Some Characteristics for Women

	N	Mean	SD	Std. error	95 % CI for mean	
					Lower bound	Upper bound
Marriage cohort						
Before 1986	79	4.7	1.8	0.20199	4.3	5.1
1986 - 1999	405	4.9	1.7	0.08366	4.8	5.1
After 2000	455	5.0	1.7	0.08023	4.8	5.1
Education level						
Illiterate	303	4.5	1.8	0.1022	4.3	4.7
Primary school	293	5.1	1.6	0.0930	4.9	5.3
Secondary school	257	5.0	1.6	0.1005	4.8	5.2
High school or more	85	5.9	1.6	0.1720	5.6	6.2
Ethnicity						
Black Thai	473	4.6	1.6	0.0742	4.5	4.7
White Thai	462	5.3	1.7	0.0804	5.1	5.5
Vietnamese capacity						
Cannot at all	189	4.5	1.7	0.1259	4.2	4.7
Poor	183	4.9	1.7	0.1227	4.6	5.1
Average	273	4.9	1.6	0.0987	4.7	5.1
Fair	165	5.2	1.7	0.1336	4.9	5.4
Fluent	126	5.5	1.7	0.1515	5.2	5.8

Table 8 shows that women’s understanding varied greatly by education level, ethnicity and Vietnamese capacity, but not for marriage cohort. Those with higher education or better communication capacity in Vietnamese or White Thai were aware of more modern contraceptives. For instance, on average illiterate women heard about 4.5 methods. It went up 5.1 for primary school women, 5.0 for secondary school women, and 5.9 for women with high school and more. Similarly, on average Black Thai women knew about 4.6 modern methods, compared with 5.3 methods for White Thai women. The differences were found to be statistically significant by education level, ethnicity and Vietnamese capacity, but not by marriage cohort (see table 9).

Table 9

ANOVA Of the Number Of Modern Contraceptives Known by Some Characteristics for Women

		Sum of Squares	df	Mean Square	F	Sig.
Marriage cohort	Between Groups	4.020	2	2.010	.690	.502
	Within Groups	2726.398	936	2.913		
	Total	2730.417	938			
Education	Between Groups	158.892	3	52.964	19.237	.000
	Within Groups	2571.521	934	2.753		
	Total	2730.414	937			
Ethnicity	Between Groups	113.926	1	113.926	40.790	.000
	Within Groups	2605.839	933	2.793		
	Total	2719.765	934			
Vietnamese capacity	Between Groups	92.207	4	23.052	8.154	.000
	Within Groups	2631.947	931	2.827		
	Total	2724.154	935			

Figure 2 presents knowledge of specific modern contraceptive methods by between the male and female respondents.

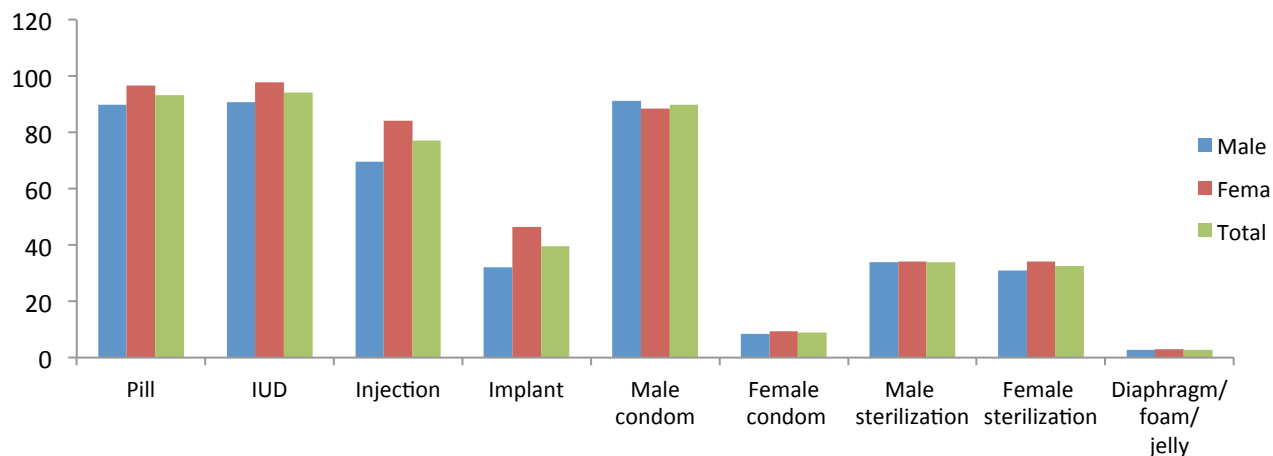


Figure 2. Knowledge of specific modern contraceptive methods by gender

Figure 2 indicates that contraceptive knowledge by specific types varied greatly. Generally, the best known method was IUD (94.2 percent), followed by pill (93.3 percent), male condom (89.8 percent). A very limited number of the respondents mentioned about diaphragm/foam/jelly, about 2.8 percent. The knowledge gap between males and females across specific methods was not large, except for injection, and implant. In regards to injection, 69.6 percent of the male knew this method compared with 84.1 percent of the female. For implant, this rate was 32.1 percent for the male group and 46.5 percent for the female group.

In addition to knowledge on modern contraceptive methods, the respondents were also questioned about where they can obtain modern methods. Table 10 below presents the number of sources of supply that the respondents were aware of by sex.

Table 10

Knowledge of Supply Sources By Sex

	0	1	2	3	4	5+	Total
Male	24.3	27.5	23.8	16.4	4.2	2.5	100.0
Female	5.1	34.1	34.1	18.0	6.5	1.0	100.0
Total	14.5	30.9	29.1	17.2	5.4	3.0	100.0

Generally, most respondents (85.5 percent) knew where to obtain modern contraceptives. The highest percentage was those who knew one source only (30.9 percent). Only a small percentage (5.7 percent) reported to know more than 4 sources of supplies. Remarkably, only 5.1 percent of women did not know any sources, while for men this frequency rose to 24.3 percent. The majority of each sex often was aware of one source only. This was 27.5 percent for men, 34.1 percent for women.

An independent-samples t-test was conducted to compare the mean number of supply sources between male and female. Results are presented in table 11. There was a significant difference in number of contraceptives known by men ($M=1.61$, $SD=1.38$) and by women ($M=1.93$, $SD=1.11$); $t(1716)=-5.16$, $p = 0.000$. These results suggest that women were more aware of supply sources than men.

Table 11

Results of t-test for the Number of Supply Sources Known by Sex

	Male			Female			t	df
	M	SD	N	M	SD	N		
Number of supply sources known	1.61	1.38	891	1.93	1.12	939	-5.16***	1716

Note. Satterthwaite approximation employed due to unequal group variances. *** $p < .001$.

A one-way ANOVA test was calculated to contrast the difference in knowledge of supply sources by education level. Tables 12 and 13 below show the results for the male respondents.

Table 12

Descriptive Of the Number Of Supply Sources Known By Education Level for Men

	N	Mean	Std. Deviation	Std. Error	95% CI for Mean	
					Lower Bound	Upper Bound
Illiterate	119	1.1	1.3	0.1209	0.8	1.3
Primary school	298	1.4	1.3	0.0759	1.3	1.6
Secondary school	319	1.7	1.3	0.0724	1.6	1.9
High school or more	154	2.2	1.5	0.1225	1.9	2.4
Total	890	1.6	1.4	0.0464	1.5	1.7

Table 13

Analysis Of Variance Of the Number Of Supply Sources Known for Men

		Sum of Squares	df	Mean Square	F	Sig.
Education level	Between Groups	101.719	3	33.906	18.774	.000
	Within Groups	1600.157	886	1.806		
	Total	1701.875	889			

The obtained results show that men with higher education knew more supply sources. On average men were aware of 1.6 sources which ranged from 1.1 for illiterate men, 1.4 for primary school men, 1.7 for secondary school men, and to 2.2 for men with high school or more (see table 12). Table 13 shows that the analysis was significant, $F(3, 886) = 18.8$, $p = 0.000$ which means that the differences in supply sources by education levels was statistically significant.

The similar results were found for the female group. On average women knew about 1.9 sources which ranged from 1.8 for illiterate women to 2.7 of women with high school or more.

The differences in knowledge of supply sources by education levels were significant at the 0.05 level (please see tables 20 and 21 in Appendix B).

Figure 3 presents their understanding of specific sources of contraceptives where people can go to obtain.

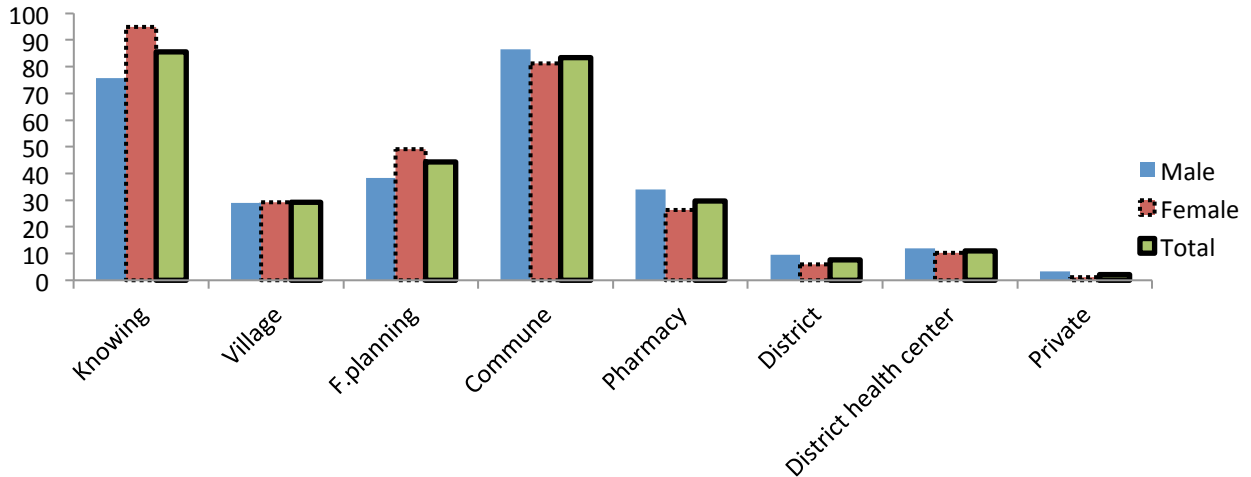


Figure 3. Knowing the sources of contraceptive supply

It is noted that generally most respondents (85.5 percent) knew where to obtain modern contraceptives. However, the female respondents had better understanding than the male respondents, 94.9 percent and 75.6 percent respectively. The most popular source was commune health center (83.5 percent), followed by family planning collaborator (44.4 percent), pharmacy (29.6 percent), village health workers (29.2 percent), district health center (11.0 percent), district family planning center (7.5 percent), and private health center (2.1 percent). Thus, there existed a large knowledge gap in contraceptive sources among respondents. The difference between males and females by specific source was not large, except for population

and family planning collaborator in which 49.0 percent of the female respondents knew this source compared with 38.3 percent of the male group.

3.2.3 Current use of modern contraceptive

Both men and women were questioned to report their current contraceptive use. As aforementioned a person who did apply any methods at the time of the study shall be counted as a current user regardless of the use of their spouse. Traditional contraceptive usage, which includes withdrawal and periodic abstinence that was below 0.5 percent, was not covered in this study. Figure 4 below outlines modern contraceptive use by sex and the most popular methods for each sex.

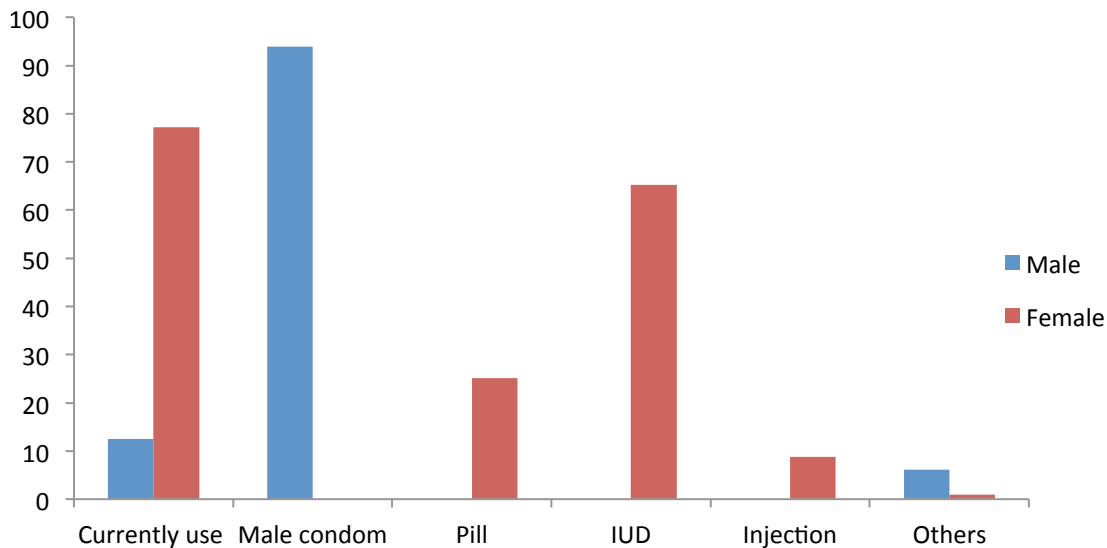


Figure 4. Current use of modern contraceptives

There was a big gap in modern contraceptive use between males and females. There were about 12.5 percent of the males using modern contraceptives at the time of the study, compared with nearly 77.2 percent of the females. Thus, the contraceptive usage in women

was 6 times higher than in men. Among current male users the most selected methods was condom, up to 93.9 percent. Only 6.1 percent of the male group selected male sterilization. Female users had various contraceptive choices. Their most applied method was IUD (65.2 percent), followed by pill (25.1 percent), and injection (8.8 percent). Less than one percent of the female respondents used other modern contraceptives such as female condom, female sterilization, diaphragm/foam/jelly, and implant.

Previous analysis indicated the pattern of contraceptive knowledge by education level and sex. Thus, the next continues examining modern contraceptive use by education level and sex which is presented in Figure 5.

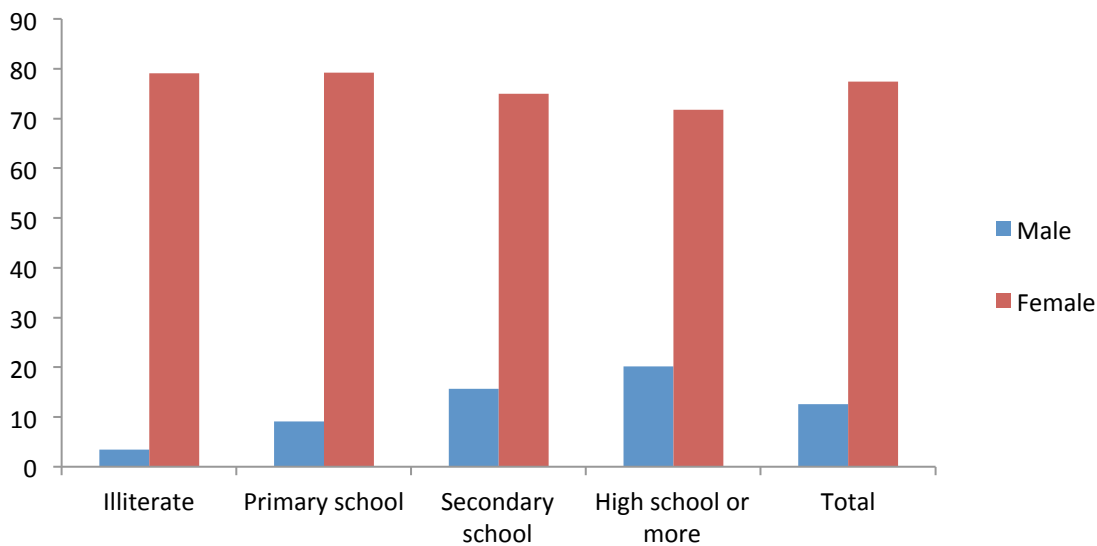


Figure 5. Current use of modern contraceptive by sex and education level

The patterns of contraceptive usage by education level of between women and men were fairly different. Women with higher education levels had lower contraceptive use rates. This was 79.1 percent for illiterate women, dropped to 75.0 percent for secondary school women, and 71.8

percent for those with high school or more. However, men with higher education levels had higher contraceptive use rates. It was 3.4 percent for illiterate men, increased to 9.1 percent for secondary school men, 15.6 percent for secondary school men, and up 20.1 percent for those with high school or more.

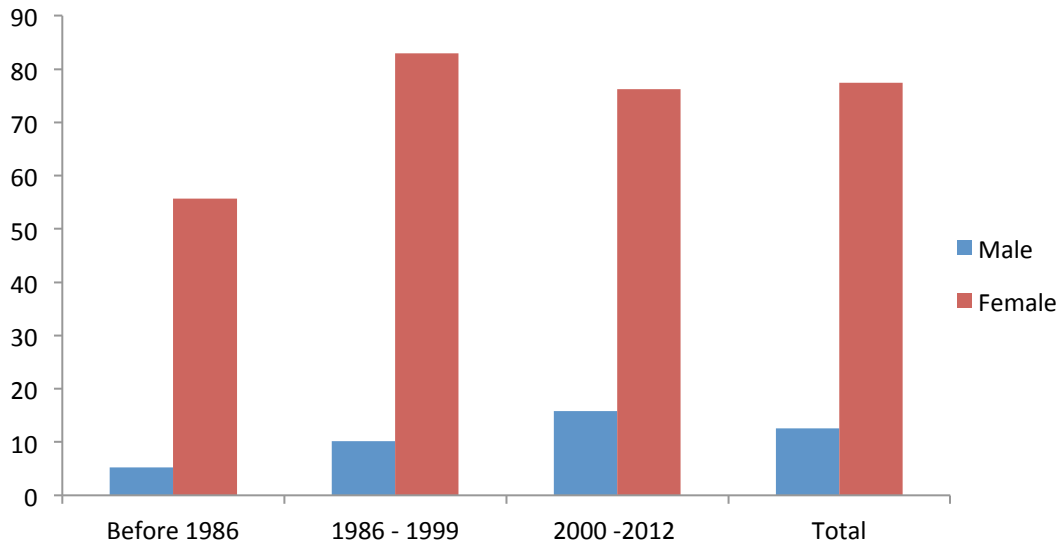


Figure 6. Current use of modern contraceptive by sex and marriage cohort

Contraceptive use patterns by marriage cohort were relatively different between women and men. Men recently married had higher contraceptive use. It was 3.4 percent for men married before 1986, increase to 10.1 percent for those married 1986-1999, and 15.8 percent for those married after 2000. Women contraceptive use pattern was not clear. Only 55.7 percent of those married before 1986 currently applied contraceptive. It, then, increased to 82.9 percent for those married 1986-1999, and then decreased to 76.2 percent for those married after 2000.

There was a variety of reasons for people not using modern contraceptive methods such as side effects, wanting to have more children, health concerns, or spouse is currently using a method.

Figure 7 shows the main reason why people did not use any contraceptive methods at the time point of the survey.

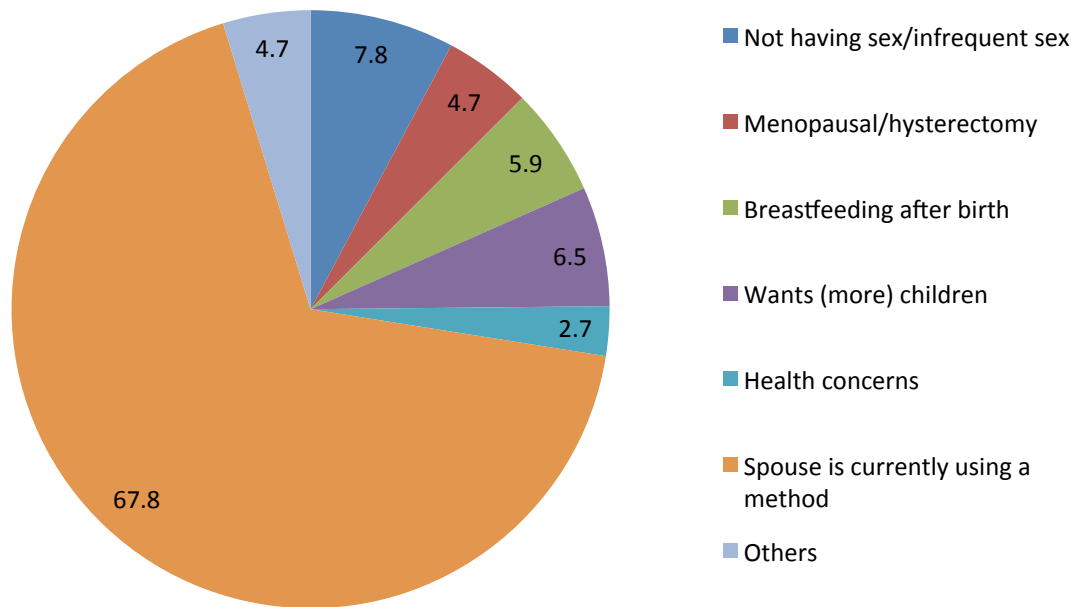


Figure 7. Main reason for not using contraceptive method

Of all non-user respondents, nearly 68 percent said that the main reason for not using contraceptives was their spouse is currently using a method. Looking further at this group, the majority of them were men (80.4 percent). The other main reasons were not having sex or infrequent sex (7.8 percent), wants more children (6.5 percent), breastfeeding after birth (5.9 percent), menopausal/hysterectomy (4.7 percent), health concerns, (2.7 percent), and other 4.7 (percent). If the reason of “spouse is currently using a method” was excluded, the most popular reason was not having sex or infrequent sex (nearly 8 percent).

3.3 Factors affecting modern contraceptive use

Binary logistic regression was executed to predict the possibility that the respondents use modern contraceptive. In the model, the dependent variable was a binary variable in which YES is equal to 1 if the respondent uses a modern contraceptive method; and 0 otherwise. Since both women and men have their own contraceptive methods, thus I applied separate regression models for each sex. Continuous variables: household size, the number of modern contraceptive methods and the number of sources of modern contraceptive supply that the respondent knew, the expected number of children for small-sized family, the ideal number of children per couple. Categorical variables that were represented by dummy variables includes: marriage cohort, education level, ethnicity, communication capacity in Vietnamese, and household quintile.

Table 14 below presents results of the binary logistic regression for the male respondents. It is noted that the “Model fit statistics” shows that -2Log Likelihood of the module with “Intercept and covariates” is 612.12, much smaller than that of the model with “intercept only”. This confirms that the former actually improved the model fit. Furthermore, the likelihood ratio chi-square of 55.52 with the p-value of $<.0001$ means that we can say that the log-odds of at least one predictor was not 0. The c-value is 0.72, greater than the 0.7 level, indicating that the model is reasonable.

Table 14

Binary Logistic Regression Analysis Of Modern Contraceptives Use For Men

Parameter	Point Estimate	95% Wald Confidence Limits	Pr > ChiSq	
Marriage cohort (Reference group = before 1986)				
Marriage cohort 1986-99	2.420	0.814 7.193	0.112	
Marriage cohort after 2000	2.962	1.002 8.753	0.0495	
Education level (Reference group = illiterate)				
Primary school	3.434	1.057 11.155	0.0402	
Secondary school	5.521	1.671 18.241	0.0051	
High school or more	4.892	1.344 17.809	0.016	
Ethnicity (Reference group = Black Thai)				
White Thai	0.595	0.388 0.913	0.0174	
Number of modern methods known	1.001	0.877 1.142	0.9885	
Number of supply sources known	1.203	1.037 1.395	0.0148	
Number of children for small-sized family	0.803	0.489 1.316	0.3833	
Ideal number of children per couple	1.079	0.763 1.527	0.6667	
Communication capacity in Vietnamese (Reference group = cannot at all)				
Poor	0.408	0.085 1.968	0.2641	
Average	0.400	0.096 1.667	0.2085	
Fair	0.343	0.081 1.455	0.1467	
Fluent	0.596	0.139 2.548	0.4848	
Household quintile (Reference group = Poorest)				
Poor	2.042	0.906 4.601	0.0851	
Medium	1.713	0.750 3.912	0.2012	
Rich	2.036	0.888 4.671	0.0932	
Richest	1.506	0.623 3.644	0.3635	
Household size	0.992	0.859 1.145	0.9106	

Holding all other predictors unchanged, it can be concluded that there is no statistical difference in between the odds of contraceptive use of the marriage cohort 1986-99 with that of marriage cohort before 1986. Marriage cohort after 2000 has almost three times greater odds of contraceptive use compared to marriage cohort before 1986. Education was a statistically significant predictor in this model of the male respondents. Having a higher education level was significantly associated with the increased odds of being a modern contraceptive user. For example, primary school men have three times greater odds to use contraceptive method compared with illiterate men. Ethnicity was also a significant predictor. Compared with the Black Thai, the White Thai has about 40 percent lower odds of using modern contraceptives. Of the two contraceptive knowledge measures, only the number of sources of modern contraceptive was significantly associated with the increased odds of contraceptive use (with the odds ratio = 1.203 and the p-value = 0.0148). In regards to attitude toward family planning, both measures are not significant predictors. The remaining predictors, which include household size, quintile, attitude to family planning programs, and communication capacity in Vietnamese, did not significantly contribute to the model.

Table 15 below presents the estimation of factors that predict contraceptive use of the female respondents. It is noted that the "Model fit statistics" shows that -2Log Likelihood of the module with "Intercept and covariates" is 937.107, much smaller than that of the model with "intercept only". This confirms that the former actually improved the model fit. Furthermore, the likelihood ratio chi-square of 64.94 with df= 19 and the p-value of <.0001 means that we can say that the log-odds of at least one predictor was not 0. The C-value is 0.68, nearly equal to the 0.7 level, indicating that the model can be said to be reasonable.

Table 15

Binary Logistic Regression Analysis Of Modern Contraceptives Use For Women

Parameters	Point Estimate	95% Wald Confidence Limits	Pr > ChiSq
Marriage cohort (Reference group = before 1986)			
Marriage cohort 1986-99	4.000	2.348 6.814	<.0001
Marriage cohort after 2000	2.644	1.527 4.579	0.0005
Education level (Reference group = illiterate)			
Primary school	0.857	0.543 1.352	0.5065
Secondary school	0.647	0.375 1.116	0.1178
High school or more	0.407	0.186 0.893	0.0249
Ethnicity (Reference group = Black Thai)			
White Thai	1.293	0.919 1.819	0.1402
Number of modern methods known	1.110	1.004 1.226	0.0406
Number of supply sources known	1.206	1.034 1.407	0.0168
Number of children for small-sized family	0.774	0.538 1.113	0.1664
Ideal number of children per couple	0.759	0.563 1.022	0.0691
Communication capacity in Vietnamese (Reference group = cannot at all)			
Poor	1.169	0.677 2.020	0.5755
Average	1.017	0.595 1.739	0.9505
Fair	1.420	0.733 2.753	0.2988
Fluent	1.021	0.486 2.143	0.9563
Household quintile (Reference group = Poorest)			
Poor	1.386	0.775 2.479	0.2707
Medium	0.626	0.368 1.065	0.0837
Rich	0.827	0.475 1.438	0.4998
Richest	0.773	0.434 1.378	0.3829
Household size	1.038	0.929 1.159	0.512

Marriage cohort was a significant predictor in the model. The dummy variables that represent marriage cohort were statistically correlated with contraceptive use. Compared to those married before 1986, those married 1986-99 have about four times greater odds of using modern contraceptive. Similarly, compared to those married before 1986, those married after 2000 have about 2.6 times greater odds of contraceptive use. Among dummy variables that represent educational level, only women with high school or more were statistically associated with contraceptive use. Compared with illiterate women, women with high school or more have about 59.3 percent lower odds of contraceptive use. Ethnicity was not a significant predictor.

Both contraceptive knowledge variables were significantly associated with contraceptive use. For instance, each additional method known is significantly associated with 11 percent greater odds of contraceptive use. Additionally, each additional supply source known is significantly associated with 20.6 percent greater odds of contraceptive use. The remaining other predictors such as attitude towards family planning, household size, wealth index, and communication capacity in Vietnamese did not show any significant impact on the odds of contraceptive use.

Chapter 4 - Discussion

4.1 Major findings and discussion

Ethnic minorities accounts for 14 percent of the country's population. Thus, their high fertility certainly impacts the objective of fertility reduction of PFP programs in Vietnam. Although current population regulations towards ethnic minorities tend to focus on reproductive health rather than family limitation, great efforts were made to help them to control their fertility at local levels. This is because the Government of Vietnam believed that having too many children was among the major factors reducing the living standards of ethnic minorities (Ministry of Health, 2011). The small-sized family should be the living norm not only for the Kinh, but also for all ethnic minorities in Vietnam.

One of the major findings was that the model of the one-or-two child family was pervasive among the Thai people. This was consistent with the main target objectives of FP programs, which were strongly advocated by a system with specialized agencies, mass media and a network of nearly 130,000 family planning collaborators at grassroots level over the past few decades (Ministry of Health, 2011; Scornet, 2009). In this study, the majority of the respondents (94 percent) reported that a small-sized family meant having one or two children per couple. Furthermore, most respondents (89.5 percent) said that the ideal number of children per couple was two children. The prevailing one-or-child-model was widely documented in the ethnographic reports conducted by FACT project in Nghe An province in 2013. However, many

villagers would want to have at least one male offspring who could carry on the family's tradition.

Contraceptive knowledge, a precondition for contraceptive use, was extremely high. Almost all, 98 percent of the respondents, were aware of at least one modern contraceptive method. On average, men knew about 4.5 methods and women knew about 4.9 methods. These results were much higher than what obtained from an earlier 2005 survey conducted by UNFPA in Vietnam for ethnic minorities (United Nations Population Fund, 2007). Additionally, their understanding varied substantially by contraceptive methods. The best known method was IUD (94.2 percent), followed by pill (92.3 percent), and male condom (89.8 percent). Other methods such as female condom or diaphragm/foam/jelly were less popular, under 10 percent.

Furthermore, the majority of the respondents (86 percent) knew the supply sources of these methods. This rate was 94.9 percent for the female and 75.6 percent for the male. Knowledge was greatly different by type of supply source. The most popular source was community health center (83.5 percent), followed by family planning collaborator (44.4 percent), pharmacy (29.6 percent), village health workers (29.2 percent), district health center (11.0 percent), district family planning center (7.5 percent), and finally private health center (2.1 percent).

Contraceptive knowledge of the Thai people consistently reflected the current situation of the provision of family planning at the research's location. At villages, these clients are provided with free or often very low-cost and reliable contraceptives through two main channels. The first is family planning collaborators who are mainly in-charge-of distribution of pills, and male

condoms. The second is community health centers where clients can obtain most contraceptive methods. The private sector's involvement in family planning services was rather limited.

Another important finding was that modern contraceptive use was found to be relatively high among Thai people. It was about 77.2 percent for women, and 12.5 percent for men. The 2012 national Population Change and Family Planning of Vietnam (the 2012 PCFP) survey pointed out that these rates were 56.8 percent and 7.0 percent in Nghe An province respectively for women and men. The national survey also showed that the most selected method was IUD for women and condom for men in the province (General Statistics Office, 2012b). Comparison between the provincial results and findings obtained from this study brought about several conclusions. *First*, women were the main actors responsible for using contraceptives. *Second*, the percentage of men using modern contraceptive was still relatively low. The percentage of women using contraceptive was about six times as large as that of men. *Third*, IUD was the most popular method among users.

FACT's field reports noted that despite that the fact mostly clients were freely provided with condoms, and pills from local family planning collaborators, many couples would prefer IUDs to other methods. There were some reasons behind this choice. The first reason was that IUD being a long-lasting and highly effective method can be used up to several years. IUD-related cost was very low, under \$1 which was affordable for even poor people. It was also a relatively easy method to use compared to the others such as condoms or pills. Here are some popular opinions about these modern contraceptives:

“Using condoms is quite complicated and unfamiliar. I must come to visit family planning collaborators every month to get condoms. Thus, I feel quite ashamed. Moreover, my husband doesn’t like using condom” (Woman, 38 years old, Na Ba village, Quy Chau district).

“The women’s top choice of method is IUDs because they can utilize this method easily, just one time usage has the effects for several years (Woman, 41 years old, Lim village, Quy Chau district).

“The most popular method is IUDs, and they (women) change to other methods only when their physical body cannot adapt with it” (Woman, 30 years old, family planning collaborator, Lim village, Quy Chau district).

“Only when other methods cannot be utilized, people should consider using condoms. Using condoms is much more complicated” (Woman, 40 years old, Lim village, Quy Chau district).

Despite the fact that men’s contraceptive knowledge was quite high, their utilization was relatively low. Thai men’s participation in family planning services was actually limited. One qualitative study showed that Thai men commonly viewed family planning as women’s business. Additionally, they often refused talking about this topic and did not at all want to participate at communal family planning campaigns.

“We, my wife and I, don’t talk with each other on this topic (family planning). She should look at and does similarly as other women in the village”. (Man, 23 years old, Lim village, Quy Chau district)

“Listening to family planning is women’s responsibility. My wife feels suitable to any method, we will use that one. I don’t interfere with her decision much”. (Man, 31 years old, Na Ba village, Quy Chau)

Together with China, Vietnam was among the countries where population regulations have been enforced with “financial penalties”. Article 38 of the Population Ordinance, the highest legal document in population and family planning policy in Vietnam, stipulated “people who violate the provisions of the Ordinance and other law provisions related to the population work shall, depending on the nature and seriousness of their violations, be disciplined, administratively sanctioned or examined for penal liability; if causing any damage, they must pay compensation therefore according to law provisions.” (National Assembly of Vietnam, 2003). Nevertheless, this legal document actually does not specify any monetary penalty to those violating family planning related regulations. However, every province in Vietnam issues its own resolution to manage birth control in its administrative region. For example, in Nghe An province, article 2 in Resolution No 52/2012/ND-HDND dated on July 13, 2012 issued by Nghe An People’s Council, the constitutional arm at provincial level, states that anyone violates the current population regulations shall “contribute” an amount of from VND 1,000,000 to VND 2,000,000 to communal committee for population and family planning. The specific amount of money applied to each case shall be defined by the local authorities.

It is well documented that Thai’s couples having the third child and more faced financial penalties. Prior to 2013, a couple having a third child would carry a VND 500,000 fine (roughly equal to \$20). Since 2013 on, the penalties increased to VND 1,700,000 VND (equal \$80) for the

third child and VND 2,000,000 VND (equal \$95) for the fourth or fifth. Since the research's site belonged to a list of poor administrative units which were promulgated by the Government of Vietnam (The Government of Vietnam, 2014), these penalties were big amounts to almost all the people living in the area. Thus, many couples may be sooner or later forced to accept contraceptive methods to prevent unwanted births when having enough two children.

This study indicated that individual factors were significantly associated with contraceptive use, but not household factors. Among contraceptive knowledge variables, only the knowledge of supply sources was a significant predictor of contraceptive use for both sexes. This implied that the knowledge of supply sources was more meaningful to the respondents than the knowledge of specific contraceptive. The people, who were more aware of supply sources, would be more likely to be clients to family planning services.

The most interesting predictor was education. This study discovered a very positive and significant association between men's education and contraceptive use. This finding was similar to what have been documented in other developing countries (Tuloro, Deressa, Ali, & Davey, 2009). More educated men would more likely take the shared responsibility of reproductive behavior with their wife. However, the thesis did not find a statistically significant association between female's education and contraceptive use. This result seemed to run contrary to widely-documented understanding that education is statistically significant associated with modern contraceptive utilization (Bbaale & Mpuga, 2011). A possible explanation for the contrary findings could be traced back to the definition of contraception users. Since this study considered a currently married woman aged 15-49 as a current user if she applied at least of

one of the modern contraceptive methods at the time point of the survey regardless of her husband's contraceptive use status. Most knowledge, attitude, and practice (KAP) studies defined a currently married woman aged 15-49 as a user if either she or her husband applied at least of one of the modern contraceptive methods at the time point of the survey. However, these studies' lack of data availability did not allow further examination of this relationship based on the latter definition.

In contrast with some previous studies on reproductive health in Vietnam, there was no evidence to conclude that a limited communication capacity in Vietnamese ethnic people shall result into less contraceptive use. This thesis also found no significant relationship between household characteristics with the use of contraceptive.

4.2 Policy implications

This study showed that male's participation in family planning was rather limited compared with women. In order to promote more effective family planning, men should take more responsibility in this matter. It is widely acknowledged that since 1994 the United Nations called for "men's shared responsibility and promote their active involvement in responsible parenthood, sexual and reproductive behavior, including family planning" as a key solution to improve reproductive health and promote reproductive rights globally.

In the context of this study, it is recommended that more efforts should be made to increase men's knowledge and motivation to family planning. Family planning should be couples' business, not solely women's. In the scope of work of this paper, I would emphasize some general suggestions to improve men's involvement in family planning as follows. First, it is

necessary to improve men's education remain as effective method to increase men's contraceptive utilization. Family planning related agencies shall organize Information-Education-Communication campaigns targeting at men with more information about contraception, especially user-friendly supply sources. It should mobilize and train Thai's communal leaders to become advocates of family planning at grassroots level. This will help create sustainable male involvement in reproductive matters. Training courses/counseling services should be provided for women in order to improve their communication skills and involvement of their husbands to family planning issues. Finally, the local authorities can consider giving financial incentives for men's utilization of birth control. Incentives can take the form of either cash or in-kind. Incentives should be presented at new male clients who possibly accept male sterilization, or at least one-year condom utilization, for instance.

4.3 Limitations of the study

There existed several limitations in regard of this study. First of all, it was the scope and boundaries of the research. With the focus on currently married people, the findings did not consider a large group of sexually active people. These could be any person being unmarried, divorced, widowed, or else who are currently cohabiting. Second, this study approached the client's perspective on knowledge, attitude, and practice of contraceptive, but not service providers and policy makers. It is documented that the understanding and attitude to population issues in general and family planning in particular of the latter have influential impact on the society. Third, some factors possibly affecting contraceptive use were not being collected in the survey such as history of contraceptive use, communication between husband and wife on family planning, or decision makers of contraceptive use. Fourth, this study did not

take into account the knowledge of the Thai people in Vietnam. However, with its relatively-small sample size, the findings cannot be generalized to a large community of the Thai people in Vietnam.

4.4 Suggestions for future research

Some of the directions for future research can be suggested which have already been mentioned in previous discussion above. An obvious area of future research, following from the previous section, would be to focus on the unmet need for contraceptive. It is widely acknowledged that several ethnic groups such as the Thai people have had high contraceptive use rate. Still, why TFRs remained so high needs to be answered. In this paper, Thai's TFR was 2.32 children per woman. There are several unclear questions about this situation. Whether the need of contraceptive methods in Vietnam is met? If not, which groups should be mostly focused on? What is the effectiveness of modern contraceptives being used? Remarkably, a recent study indicated that the unmet need was relatively high for women in their early 20s in Vietnam (General Statistics Office & United Nations Children's Fund, 2011). What are the reasons behind this fact? Is it due to client or the service providers? Another important aspect should be addressed in the future is that why men contraceptive use rate is low. What are the main factors influencing their contraceptive use? Should the Government of Vietnam continue providing free contraceptive methods to all ethnic minorities? The fact that Vietnam has had an increasing number of women at reproductive age can worry many policy makers. The total number of female population age 15-49 was 24.5million in 2012 compared with less than 11.8 million in 1979(General Statistics Office, 2012b). How can these women access to family planning services regardless their location, their

ethnicity and ability to pay? Should clients be encouraged to share their financial burden with the Government? Thus, the research questions may focus on: (1) what is the current ability to pay for family planning services among people?; (2) what factors are associated with family service use?; (3) what would be possible scenarios of demographic transition in Vietnam if the family planning programs were mainly managed by social marketing programs. In short, maintaining TFRs at replacement level will remain a challenge for Vietnam in the coming years.

References

- Allman, J., Nhan, V. Q., Thang, N. M., San, P. B., & Man, V. D. (1991). Fertility and family planning in Vietnam. *Stud Fam Plann*, 308-317. doi: 10.2307/1966685
- Amin, S., & Teerawichitchainan, B. (2009a). Ethnic fertility differentials in Vietnam and their proximate determinants.
- Amin, S., & Teerawichitchainan, B. (2009b). Ethnic fertility differentials in Vietnam and their proximate determinants. *Poverty, Gender, and Youth*. Retrieved January 26, 2015, 2015, from <http://www.popcouncil.org/uploads/pdfs/wp/pgy/018.pdf>
- An, V. V. (1996). Some ideas about the social structure and land tenure system of Thai people in the region of Highway 7 in Nghe An province. Paper presented at the 6th International Conference on Thai Studies, Chiang Mai, Thailand. Retrieved Feb 11, 2015, from <http://www.columbia.edu/cu/china/Vi.html>
- Banister, J. (1985a). The Population of Vietnam *International Population Reports*. Washington, DC US Department of Commerce, Bureau of the Census.
- Banister, J. (1985b). *The Population of Vietnam*: US Department of Commerce, Bureau of the Census.
- Baulch, B. (2010). Ethnic minority poverty in Vietnam. *Chronic Poverty Research Centre Working Paper*, (169), 69.
doi:http://www.chronicpoverty.org/uploads/publication_files/WP169%20Baulch%20eta1.pdf
- Bbaale, E., & Mpuga, P. (2011). Female education, contraceptive use, and fertility: Evidence from Uganda. *Consilience: The Journal of Sustainable Development*, 6(1), 20-47.

- Bertrand, J., Bauni, E., Lesthaeghe, R., Montgomery, M., Tambashe, O., & Wawer, M. (1993). Factors affecting contraceptive use in Sub-Saharan Africa. *Population dynamics of sub-Saharan Africa. National Research Council: National Academy Press.*
- Bertrand, J. T., Magnani, R. J., & Knowles, J. C. (1994). Handbook of indicators for family planning program evaluation.
- Bongaarts, J. (1978). A framework for analyzing the proximate determinants of fertility. *Population and Development Review*, 105-132. doi: 10.2307/1972149
- Bongaarts, J., Frank, O., & Lesthaeghe, R. (1984). The proximate determinants of fertility in sub-Saharan Africa. *Population and Development Review*, 511-537.
- Bulatao, R. A., Palmore, J. A., & Ward, S. E. (1989). *Choosing a contraceptive: method choice in Asia and the United States*. Honolulu: HA: Westview Press.
- Cam Trong. (2007). *The Thái Ethnic Community in Vietnam*. Hanoi: Vietnam: The gioi Publishers.
- Choe, M. K., & Park, I. H. (1989). Patterns and covariates of contraceptive method choice in the Republic of Korea. In R. A. Bulatao, J. A. Palmore & S. E. Ward (Eds.), *Choosing a Contraceptive Method Choice in Asia and the United States* (pp. 105-125): Westview Press.
- Department of Economic and Social Affairs-Population Division. United Nations. (2004). *World Population Policies 2003*. New York: United Nations.
- Department of Economic and Social Affairs-Population Division. United Nations. (2010). *World Population Policies 2009*. New York: United Nations.
- Duiker, W. J. (1995). *Vietnam: Revolution in transition*. Boulder, CO: Westview Press.

- Duze, M. C., & Mohammed, I. Z. (2007). Male knowledge, attitude, and family planning practices in Northern Nigeria. *African Journal of reproductive health*, 10(3), 53-65.
- Gallup, J. L. (1995). *The Economic Value of Children in Vietnam*. Paper presented at the a Seminar on Aging, Development, and Population, North Conference Facility, Institutes of Economics and Sociology, Hanoi, December.
- Gammeltoft, T. (1999). *Women's Bodies Women's Worries: Health and Family Planning in a Vietnamese Rural Commune*. Richmon: UK: Cruzon Press.
- General Statistics Office. (2009). *The 2008 population change, labour force and family planning survey : major findings*. Hanoi: General Statistics Office.
- General Statistics Office. (2010). *The 2009 Vietnam Population and Housing Census: Completed Results*. Hanoi: Vietnam: Statistical Publishing House.
- General Statistics Office. (2011). *The 2009 Vietnam Population and Housing Census: Fertility and Mortality in Viet Nam: Patterns, Trends and Differentials*. Hanoi: Vietnam: General Statistic Office.
- General Statistics Office. (2012a). *The 2012 population change and family planning survey : major findings*. Hanoi: Statistical Form Publishment Company.
- General Statistics Office. (2012b). *The 2012 population change and family planning survey : major findings*. Hanoi: General Statistics Office.
- General Statistics Office, & United Nations Children's Fund. (2011). Multiple Indicator Cluster Survey 2011: Final Report (pp. 330). Hanoi: Vietnam.
- Goodkind, D. (1994). Abortion in Vietnam: measurements, puzzles, and concerns. *Stud Fam Plann*, 25, 342-352. doi: 10.2307/2137878

- Iman, M., & Ghodrati, S. (2010). A Study of Relationship between Socio-economic Factors and Satisfaction with Family Planning Services in Iran. *Sociation Today*, 8(1).
- Jones, G. W. (1982). Population trends and policies in Vietnam. *Population and Development Review*, 8(4), 783-810.
- Knodel, J., Anh, P. T., Dung, T. V., & Vinh, D. X. (1995). Why is oral contraceptive use in Vietnam so low? *International Family Planning Perspectives*, 11-18.
- Knudsen, L. (2006). *Reproductive Rights in a Global Context*. Nashville: TN: Vanderbilt University Press
- Lã Văn Lô, Đ. N. V. (1968). Sơ lược giới thiệu các nhóm dân tộc Tày, Nùng, Thái ở Việt Nam: NXB Khoa học xã hội, Hà Nội.
- Målqvist, M., Hoa, D. T. P., Liem, N. T., Thorson, A., & Thomsen, S. (2013). Ethnic minority health in Vietnam: a review exposing horizontal inequity. *Global health action*, 6, 1-19.
doi: 10.3402/gha.v6i0.19803
- Ministry of Health. (2010). Five-year health sector development plan 2011-2015 Retrieved Feb 2, 2015, from http://www.wpro.who.int/health_services/VTN_2011-2015.pdf
- Ministry of Health. (2011). *Population of Family Planning Work of Vietnam: 50 years of history and development (1961-2011)*. Hanoi: Transportation Publishing House.
- Population Ordinance, 06/2003/PL-UBTVQH11 C.F.R. (2003).
- Revision of Article 10 of the Population Ordinance 08/2008/PL-UBTVQH12 C.F.R. (2008).
- National Committee for Population Family and Children, & ORC Macro. (2003). *Vietnam Demographic and Health Survey 2002*. Hanoi.

- Ndaruhuye, D. M., Rutayisire, P. C., & Umubyeyi, A. (2013). Measuring the Success of Family Planning Initiatives in Rwanda: A Multivariate Decomposition Analysis: DHS Working Papers.
- Nguyen Van Phai, Nguyen Minh Thang, & Cam, M. V. (1998). Knowledge, Attitude, and Practice of Family Planning in Vietnam (pp. 98).
- Pham, B. N., Hill, P. S., Hall, W., & Rao, C. (2012). The Evolution of Population Policy in Vietnam. *Asia-Pacific Population Journal*, 27(2), 41-56.
- Quan, H. V. (2009). Programme 135-Sharing lessons on poverty reduction and development schemes for ethnic minorities in Vietnam. 2015, from <http://www.un.org/esa/socdev/egms/docs/2009/Ghana/Quan.pdf>
- Scornet, C. (2009). State and the family: reproductive policies and practices. In D. Bélanger & M. Barbieri (Eds.), *Reconfiguring Families in Contemporary Vietnam* (pp. 47-74). Stanford, CA: Stanford University Press.
- Seltzer, J. R. (2002). The origins and evolution of family planning programs in developing countries (pp. 185). Santa Monica, CA: RAND.
- Sjösten, C. (2014). *A minor field study on abortion legislation and practice in Vietnam*. (Master thesis), Lund University.
- Taylor, P. (2008). Minorities at large: new approaches to minority ethnicity in Vietnam. *Journal of Vietnamese Studies*, 3(3), 3-43. doi: 10.1525/vs.2008.3.3.3
- QUYẾT ĐỊNH CỦA HỘI ĐỒNG BỘ TRƯỞNG SỐ 162/HĐBT NGÀY 18-10-1988 VỀ MỘT SỐ CHÍNH SÁCH DÂN SỐ VÀ KẾ HOẠCH HOÁ GIA ĐÌNH

[The Council Ministers' Decision 162 concerning Population and Family Planning Policies],
162/HĐBT C.F.R. (1988).

Decree no. 51/2003/ND-CP of May 16, 2003 prescribing the functions, tasks, powers and
organizational structure of the committee for nationalities the government,
51/2003/ND-CP C.F.R. (2003).

List of administrative units in the areas with difficult socio - economic conditions, 1049/QĐ-TTg
C.F.R. (2014).

Tran, T. Q. (1998). *Vietnam's agriculture: The challenges and achievements*. Singapore: Institute
of Southeast Asian Studies.

Trong, C. (2005). *Những hiểu biết về người Thái ở Việt Nam*. Hanoi: NXB Chính trị Quốc gia.

Truong Minh, C., & Yen-Tuan-Phong, N. (1974). East Asia Review, 1973. 10. Vietnam (South).
Stud Fam Plann, 5(5), 172-174.

Tuloro, T., Deressa, W., Ali, A., & Davey, G. (2009). The role of men in contraceptive use and
fertility preference in Hossana Town, southern Ethiopia. *Ethiopian Journal of Health
Development*, 20(3).

United Nations Population Fund. (2007). Knowledge and Behaviour of Ethnic Minorities on
Reproductive Health (pp. 30). Hanoi: Vietnam.

United Nations Population Fund. (2008). Reproductive health of H'mong people in ha Giang
province. Retrieved February 1, 2015, from

http://vietnam.unfpa.org/webdav/site/vietnam/shared/RH_HMong_HaGiang_Eng.pdf

United Nations Population Fund. (2011). Ethnic Groups in Vietnam: An analysis of key indicators
from the 2009 Viet Nam Population and Housing Census. Retrieved January 18, 2015,

from

[http://vietnam.unfpa.org/webdav/site/vietnam/shared/Publications%202011/Ethnic Group_ENG.pdf](http://vietnam.unfpa.org/webdav/site/vietnam/shared/Publications%202011/Ethnic_Group_ENG.pdf)

United Nations. Department of Economics and Social Affairs. Population Division. (2001).

Abortion Policies: A Global Review (Vol. 3). New York: United Nations Publications.

Van Dang, N., Chu, T. S., & Luu, H. (1984). *The Ethnic Minorities in Vietnam*. Hanoi: Foreign languages publishing house.

Van Phai, N., Knodel, J., Van Cam, M., & Xuyen, H. (1996). Fertility and family planning in Vietnam: Evidence from the 1994 Inter-censal Demographic Survey. *Stud Fam Plann*, 27(1), 1-17.

Van Vo, T., Hoat, L., & Jan van Schie, T. (2004). Situation of the Kinh poor and minority women and their use of the maternal care and family planning service in Nam Dong mountainous district, Thuathien-Hue province, Vietnam. *Rural Remote Heal*, 4(4), 255.

Appendix A - Household wealth index

This section below outlines the basic steps to create variable *Quintile* in Stata by using the Principal Components Analysis (PCA) procedure. There are four steps to develop this variable as the following: select and recode variables, execute the PCA procedure, assign wealth index scores, and create variable quintile.

Step 1:Select and recode variables

In the 2012 baseline survey, household information was provided by household heads, meaning any observation in the data set having question A21 = 1. All variables used for creating Quintile belonging to Section A "Household information" were checked and cleaned to ensure that these variables were suitable for utilization. In this study, variables used for developing household wealth index were as follows:

- Types of household lands (Question A28): agricultural land, forestry, and fishing/aquaculture land.
- Household livestock (question A29): buffalo, cow, pig, chicken, and duck.
- All assets owned by a household (question A33): cart, boat, bicycle, motorbike/motor scooter, car, telephone set, cell phone, color T.V set, black and white T.V set, T.V parabol antenna/ digital T.V converter box, cable T.V , multi-tier stereos/ stereo equipment, video cassette recorder, video game, radio/cassette player, radio receiver, computer, camera, camcorder, refrigerator/freezer, air-conditioner, electric fan, gas cooker, electric cooker, rice cooker, pressurized cooker,

electric rice grinder, mechanical ploughing machine, power generator, mechanical and water pump.

- Household characteristics: clean water (question A37) electricity for lighting (question A42), toilet (question A40).

After having had the list of variables needed, it was then requested that every variable be carefully checked missing values and recoded if necessary.

- Binary variables such as household assets and continuous variables such land areas or the number of livestock: Missing values were then recoded to 0.
- Categorical variables such as clean water, electricity for lighting, toilet were coded into appropriate binary variables.
 - For example, question A40: What kind of toilet does your household have? This question has 6 responses. This six-response question then were recoded into a two-response variable: having no toilet = 0 which includes no toilet, toilet directly over the water, and other; and having toilet which includes flush toilet with septic tank/sewage pipes, suilabh, and compost latrine.

Step 2: Execute the PCA procedure

It is noted that when running the PCA procedure, STATA software present two tables. One should focus on the table PRINCIPAL COMPONENTS (EIGENVECTORS) which provides us the components for each variable. Only the first component (Comp1) will be used for the next step.

After running the PCA command, each variable included in the PCA has a factor weight associated with it. After this step, we can assign a wealth index score to each respondent in the survey based on their assets and household characteristics.

```
Command: pca a28a a28b a28c a29a a29b a29c a29d a29e cleanwater ///  
toilet electricity a33a a33b a33c a33d a33e a33f a33g a33h a33i a33j a33k ///  
a33l a33m a33n a33o a33p a33q a33r a33s a33t a33u a33v a33w a33x a33y a33z
```

Step 3: Assign wealth index scores

Assign wealth index score to each respondent: *predict wealthscore*. This command helped to create a variable called wealthscore which has wealth index score for each respondent.

Step 4: Create variable quintile

Create variable Quintile: *xtile quintile = wealthscore, nq(5)*. This command helped to create a variable quintile into five groups based on the wealth index scores above. Quintile ranged from 1 to 5 in which 1 = poorest, 2 = poor, 3 = average, 4 = rich, 5 = richest.

Appendix B– Analysis of Variance Tests

Table 16

Descriptive Of the Age at Marriage for Men

	N	Mean	Std. Deviation	Std. Error	95% CI for Mean Lower Bound	Upper Bound
Before 1986	76	19.2	3.323	0.381	18.4	19.9
From 1986 to 1999	371	20.7	3.577	0.186	20.4	21.1
From 2000 to present	444	21.9	4.219	0.2	21.5	22.3
Total	891	21.2	3.973	0.133	20.9	21.4

Table 17

Analysis Of Variance Of the Age at Marriage for Men

		Sum of Squares	df	Mean Square	F	Sig.
Marriage cohort	Between Groups	599.658	2	299.829	19.802	.000
	Within Groups	13445.745	888	15.142		
	Total	14045.403	890			

Table 18

Descriptive Of the Age at Marriage for Women

	N	Mean	Std. Deviation	Std. Error	95% CI for Mean Lower Bound	Upper Bound
Before 1986	79	18.2	2.013	0.227	17.7	18.6
From 1986 to 1999	405	19.5	3.073	0.153	19.2	19.8
From 2000 to present	455	20.3	3.847	0.18	19.9	20.6
Total	939	19.8	3.453	0.113	19.6	20

Table 19

Analysis Of Variance Of the Age at Marriage for Women

		Sum of		Mean		
		Squares	df	Square	F	Sig.
Marriage cohort	Between Groups	337.588	2	168.794	14.563	.000
	Within Groups	10848.548	936	11.590		
	Total	11186.136	938			

Table 20

Descriptive Of the Number Of Supply Sources Known By Education Level for Women

	N	Mean	Std. Deviation	Std. Error	95% ClofMean Lower Bound	Upper Bound
Illiterate	303	1.8	1.1	0.06318	1.6	1.9
Primary school	293	1.9	1.0	0.06005	1.7	2.0
Secondary school	257	2.0	1.0	0.065	1.9	2.1
High school or more	85	2.7	1.4	0.15685	2.4	3.0
Total	938	1.9	1.1	0.03677	1.9	2.0

Table 21

Analysis Of Variance Of the Number Of Supply Sources Known for Women

		Sum of		Mean		
		Squares	df	Square	F	Sig.
Education level	Between Groups	60.594	3	20.198	16.733	.000
	Within Groups	1127.411	934	1.207		
	Total	1188.005	937			