

Ethnic Fertility Differentials in Vietnam

Sajeda Amin
Population Council

And

Bussarawan Teerawichitchainan
Singapore Management University

Abstract

Vietnam's total fertility dropped from 3.6 in 1990 to 1.9 in 2005. The remarkable decline was reported to have a parallel in rising contraceptive use and abortion. Despite the overall fertility decline, current rates vary across the country's 54 ethnic groups. The majority Vietnamese and Chinese, who together account for 85 percent of Vietnam's total population and benefit the most from the country's economic development, have total fertility rates below the replacement level. Meanwhile, minority groups in Northern Uplands such as Dao and Hmong, who are predominantly poor, have the total fertility of 3.6 and 7.1 respectively. This study examines the ethnic fertility differentials using a new approach in ethnic classification. Drawing on the 2001 Vietnam National Health Survey, we examine proximate determinants of fertility across ethnic groups using the model proposed by Bongaarts (1978). We are particularly interested in addressing the roles of family planning and abortion in describing different fertility levels in a multi-ethnic setting like Vietnam.

Introduction

Many countries in East Asia experienced rapid economic growth and approached replacement fertility by the year 2000. When rapid economic growth brings demographic change and social and economic progress, the fertility behaviors of socially excluded groups typically become a cause for concern and divergent fertility behaviors by region and ethnicity come into sharper focus (Agadjanian, 1995; Fischer 2008). Vietnam is among the countries that reached below replacement fertility during a time of spectacular economic growth. The economy has sustained gross domestic product (GDP) growth rates of over 5% since 1990. The total fertility rate for the country as a whole declined from 3.6 births per woman in 1990 and reached 1.9 births in 2005 (World Bank, 2009). While the fertility of the majority Kinh population reached 1.5 births per woman, fertility remained higher among the 15% of Vietnam's population that are ethnic minority groups.

Fertility is one of a range of indicators depicting a complex situation of deprivation and social exclusion among minority communities (Baulch et al 2006; van de Walle and Gunawardena, 2001). Poverty levels in general are high among these same minority groups as are poor schooling and health indicators. While there is now some agreement that ethnic differences are not attributable to their residence in remote mountainous areas alone, there is less known about processes that lead to lower living standards and well-being among minority groups.

This paper explores proximate determinants of fertility across ethnic groups using a new classification system for ethnicity for Vietnam based on poverty indicators, location and degrees of assimilation of ethnic groups. We decompose components of fertility behavior to discuss factors that may affect variations by ethnic groups. We draw primarily on the 2001 Vietnam Health Survey data to estimate the influences of marriage timing, deliberate fertility control, infecundity and abortion. We conclude that it is important to differentiate among the minority groups. Fertility is substantially lower in only two of the five groups explored. For the groups that have higher fertility, earlier childbearing among minorities and lower rates of abortion due to strong ideological opposition are two major contributors to their higher fertility. In addition, evidence on the patterns of variation in contraceptive behaviors suggests a lesser role for contraceptive methods in explaining the observed variability. There is not much difference in levels of infecundity or breastfeeding behavior by ethnic group.

The analysis presented here suggests that population policies will need to extend beyond provision of contraception to address the question of early childbearing among minority groups. Policies that address a broad set of related issues such as expanded opportunities for young people to delay marriage need to become integral to population issues. Within health and family planning programs, expanding choice of options has potential for promoting a fertility regime that will promote wellbeing among minorities.

Background

Vietnam's overall fertility decline has been remarkable in terms of the rapid pace of decline and the low levels achieved at relatively early stages of economic development. In the early phase of fertility decline, demographic changes were attributed to the socialist government's continued support for subsidized health care and family planning services. In the later phase, these declines continued even as the economy underwent a transformation from a centrally planned to market economy which resulted in the weakening of government controls and cutbacks in health services. Since the mid-1990s, Vietnam has experienced accelerated economic growth and extensive poverty reduction, and fertility continued its downward trend reaching replacement levels. The sustained drop in fertility was accompanied by a parallel rise in contraceptive use and abortion prevalence (Houghton, 1997).

Despite this overall fertility decline, current rates vary significantly across the country's 54 ethnic minority groups (Figure 1). For example, the majority Vietnamese ("Kinh") and Chinese, who together account for 85 percent of Vietnam's 83 million total population and benefit the most from the country's poverty reduction, have total fertility rates of 1.9 and 1.5 births per woman respectively. Meanwhile, minority groups in Northern Uplands such as the Dao and Hmong, who are also considerably poorer, have total fertility rates of 3.6 and 7.1 births per woman respectively (Table 1).

In Vietnam the welfare of ethnic minority community has become the focus of programs on poverty both because they constitute a substantial portion of the population and because they bear a disproportionate poverty burden. Minority groups differ vastly from each other in terms of their levels of development and assimilation with the majority Kinh population (Baulch et al, 2004). Despite that, most studies tend to lump ethnic minorities together into one group (except the Chinese who are included with the Kinh because of their relatively high living standards). This is mainly because nationally representative survey samples do not adequately sample distinct minority groups to allow appropriate levels of disaggregation.

For historical reasons many if not most of the ethnic minority population live in isolated and hard to reach mountain regions and hence policy measures include improving connectedness and removing barriers to access to services. Roads, schools and health centers have been built in remote areas. A recent article exploring ethnic differences in remote areas found that the Kinh and non-Kinh differences remain and in some cases exacerbated during periods of economic growth (van de Walle and Gunawardena, 2001). The authors conclude that even with equally productive endowments and location returns these differences arise out of past discrimination or treatment in getting services. Differences in health and education may also be related to adaptive behaviors among minority groups to accommodate a presumption of continued discrimination. Ethnic minorities may have fertility behaviors that compensate in anticipatory ways. If labor markets discriminate against minorities, a complex of adaptive behavior choices including choosing traditional occupations that entail home- cultivation and may motivate

early childbearing. These same occupations may also require less education. Minority groups may also demonstrate a proclivity to engage in occupations such as ethnic tourism where they have exclusive access and that also allow minority groups to live in and close knit social groupings further reinforcing traditional family values and large families.

The current situation of ethnic differences may also be partially related to a large scale population resettlement policy enacted by the Vietnamese government. In 1976 an ambitious plan was undertaken to relocate approximately 20 percent of the population away from the densely populated urban areas and the Red River Delta to the more sparsely populated regions (Desbarats,2007). Another part of the resettlement plan was to settle 1.5 million minority people from the inaccessible mountainous regions to the lowlands that were more amenable to infrastructural development called “New Economic Zones”. Because the ambitious resettlement plans had the multiple purpose of national reunification and resettlement of refugees displaced by war, these zones were often a mix of ethnic minorities, refugees, resettled residents of Saigon and ethnic Khmer refugees from Cambodia (Desbarats, 2007, p. 55). Under a specific policy for the settlement of nomads, lowland populations from the north were brought in. In some parts of the country, these relocations included allotments of commercial agricultural land. A full exploration of factors explaining ethnic differentials needs to assess factors that influence broad ranging conditions affecting fertility as well as programmatic factors that influence access to health and family planning services. In particular there is a need to assess the relative contributions of factors affecting patterns of childbearing such as the age of onset and patterns of breastfeeding as well as patterns of fertility limitation within marriage.

Data and analytical approach

This study is based primarily on the 2001 Vietnam National Health Survey collected by the Ministry of Health and the General Statistical office. The large sample size, survey design oversampling minority populations, and high-quality nationally representative data permit examination of ethnic diversity in Vietnam in a way not allowed by previous survey designs.

We use qualitative data from the 2006 Ethnic Minority Youth and Family (EMYF) Study to generate hypotheses of why certain ethnic minorities have higher fertility levels than Kinh and other minority groups. The EMYF study was carried out by the authors in collaboration with Thai Nguyen Medical University in two remote mountainous communes in Vietnam's Northern Uplands. One of the primary objectives of this study is to assess knowledge, attitudes, and practices of sexual and reproductive health among Kinh, Dao, and Hmong people ages 15-29 in comparison with their parental generation. We recognize the varying levels of socioeconomic assimilation, economic development among ethnic minorities in different geographic locations.

Our ethnic classification scheme attempts to address such ethnic diversity. Baulch and colleagues (2004) classified Vietnam's population into five ethnic groups: Kinh, Chinese, minorities in the South, Central Highland minorities, and Northern Upland minorities using criteria such as poverty headcount and per-capita household expenditure (See Table 1). In this study, we slightly modify the Baulch et al. approach. We categorize the population into five groups including:

- 1) Kinh-Chinese;
- 2) Tay, Thai Muong, Nung (TTMN);
- 3) Minorities in the South;
- 4) Minorities in Northern Uplands;
- 5) Minorities in Central and Central Highlands.

The main modification is to disaggregate the minorities in the Northern Uplands based upon our observations from a study in Thai Nguyen Province described below. The Tay, Thai, Muong, and Nung (TTMN) group resides predominantly in Vietnam's Northern Uplands. They are more economically assimilated to the Kinh than other minority counterparts (e.g., Dao and Hmong) from the same region. Based on one of our key data sources – the 2001 Vietnam National Health Survey, Table 2 shows the distribution of married women ages 15-49 by the five major ethnic groups. The number appears to be adequate for further analyses of ethnic fertility differentials.

The purpose of this analysis is to assess the relative contributions to overall fertility of marriage, contraception and abortion, for each of the ethnic classifications 1) Kinh-Chinese; 2) Tay, Thai, Muong, Nung; 3) Minorities-South; 4) Minorities-Northern Uplands; 5) Minorities-Central and Central Highlands. Further, we will also determine whether the observed total fertility based on the 2001 Survey is consistent with the

predicted rates based on the Bongaarts model. From there, we will evaluate the values of the proximate influences, such as contraceptive use and abortion rates and their contribution to the ethnic fertility differentials.

A parsimonious models such as the one proposed by Bongaarts (1978) is appropriate for our research questions and data at hand. As mentioned earlier, there are few large scale data sources that allow a full disaggregation by ethnicity. The modest data requirements of the Bongaarts model allow us to explore a fairly large range of complex factors while maintaining an informative level of disaggregation. In the section below we discuss the results of the decomposition followed by a more detailed discussion about the factors lying behind each of the proximate determinants of fertility. Conclusions and policy recommendations follow.

The data also allow us to explore determinants of contraceptive use in detail. We use multinomial logistic regression models to explore factors associated with modern and traditional contraception as opposed to none use of contraception. Individual and community level determinants such as the access to and quality of services are explored.

Results

We begin our analysis by exploring ethnic differences in age patterns of fertility shown in Figure 1 (in addition to the broad ethnic groups the Hmong are shown separately). In general all the ethnic groups have higher fertility at every age relative to the majority Kinh and Chinese. The fertility differentials are driven by large differences in the highest fertility age group beginning with the 20 and 24 age group. At younger ages fertility differences are negligible but differentials that emerge for the 20-24 age group. However, the age patterns and the levels of fertility varies considerably among the ethnic minorities as well suggesting that there is considerable variation among the minority groups that bear further examination.

Table 4 summarized results of our decomposition exercise described in further detail in the Appendix. The decomposition exercise allows us to parse out relative contribution of marriage timing, contraception behavior, abortion and biological subfecundity (driven primarily by breastfeeding). The last two columns show predicted fertility from the model compared to actual fertility from the data showing the model fits well and predicts actual fertility closely for all except one group. These data confirm, first, the considerable differences in fertility among minority groups observed in age specific fertility patterns shown in Figure 1. While the TTMN and Ethnic Minorities in the South have fertility levels below replacement levels and only marginally different from the majority, the other ethnic minorities in the Northern Uplands and Central Highland groups have considerably higher fertility. The Hmong having the highest levels reported among all minority groups.

Marriage Timing

There is considerable variation in the age pattern of marriage for women by ethnic group (Figure 2 and Appendix Table A1). While the Kinh, Chinese and the TTMN minorities tend to marry relatively late, marriage patterns of the other minority groups are early with more than 60% of them married in the 20 to 24 age group. Among the Hmong the pattern is particularly early with 85 percent married by this age group. Age differences in marriage are typically small and marriage age is relatively early for men as well in these communities (data not shown).

To assess the impact of marriage timing on fertility we compare the marriage index (Cm) which shows that marriage timing is particularly important as a determinant of overall fertility among the ethnic minorities in the North as well as the Hmong with relatively little fertility depressing implications (Table 3). For the majority Kinh, Chinese as well as the TTMN on the other hand, delaying marriage has a substantial fertility depressing impact overall. Fertility outside marriage is not socially acceptable and hence occurs rarely¹. On average ethnic minority girls and boys marry at young ages relative to the Kinh but the pattern of ethnic minorities in the South is comparable to the Kinh (Figure 2). While marriage occurs relatively late among the Kinh and Chinese, it is universal. Thus the marriage index is consequential for fertility in the early years of childbearing and particularly at the peak ages of fecundity.

Our qualitative and quantitative data from a Northern Upland community study confirms the general contrast between the TTMN, who have later marrying patterns like the Kinh, and the Hmong and Dao who marry early. The Hmong marry early both because it is a cultural preference and also because their occupational patterns and lifestyles enable such a marriage regime. Studies comparing Asian ethnic populations living in the United States have documented that relative to other ethnic groups such as the Lao or Khmer, Hmong communities tend to continue following family building patterns characterized by early marriage and child bearing. (Hutchison and McNall, 1994) but are able to reconcile these patterns with high educational aspirations for girls. Even when girls got married they continued education with support from extended families at home. Early marriage has direct implications to exposure to childbearing that can lead to cumulative fertility impact over the lifespan.

Contraceptive Use

Contraceptive use is generally high but varies by ethnic group. Table 5 shows overall contraception rates are higher than 60% for all ethnic groups. These rates are among the

¹ Our indepth interviews and village level observation showed that while out of wedlock births are uncommon there are circumstances under which such childbearing is tolerated. In one of our study villages, a woman who had a relationship with a married man, who did not want to leave his wife and get married to her, decided to have a child by him. The woman and her child were accepted in the community mainly because being childless is considered more problematic than have an illegitimate birth and this woman was old enough so that waiting any longer would mean a childless existence for her.

highest in the world and reported levels are high enough to have raised some skepticism about data quality (Houghton, 1997). Contraceptive use is dominated by IUD use and accounts for the majority for all ethnic groups. Table 6 and 7 show variable distributions and results from a multivariate analysis of contraceptive behavior. These models allow us to explore whether ethnic variations in contraceptive use remains after controlling for geography and various health access variables. After controlling for these individual and service availability related differences, there are significant differences in patterns of contraceptive behavior in modern as well as traditional method use. In models that control for household poverty, education, health care access, the table shows variations in contraceptive behavior where the Kinh, Chinese and TTMN minorities are much more likely to report modern as well as traditional methods of contraception. The TTMN have more of their fertility controlled by effective contraception than the Kinh and Chinese. The other ethnic groups have significantly lower rates of modern and traditional method use.

Education strongly influences contraceptive use with modern and traditional methods both going up with increasing levels of education. However, poverty differentials are greater for traditional methods than for modern methods. The quality and accessibility of health services have important implications for modern contraceptive use, but as may be expected, relatively little impact of traditional method use.

In our study villages in the Northern Uplands married women can get contraceptives free of cost from a population volunteer who lives in the village. The population volunteer receives her supplies from the commune health center and is required to keep a complete roster of all households in her village indicating their use status and intensity. In addition to providing supplies, usually birth control pills and condoms, she is also required to advice her clients on proper use and motivate those who are not users. Although labeled volunteers they receive a small monthly stipend for their services. They are usually married, female and have a few years of education. An important recruitment criterion is that they have to reside in the village where they work. For some ethnic minority communes where adults have little of no education, the volunteers are younger and may be unmarried and are sometimes male, because there are no educated women to fill the job. The program has been in existence since the 1990s.

Prior to the implementation of this relatively new program the main method in use in the study villages was the IUD inserted by teams of traveling health workers. Women had the option of traveling to Thai Nguyen city, now about two hours away by car, but seldom did so because there were no proper roads and the terrain was rough. Some of the elders estimate walking to the city took about eight hours. The elders reported that prior to modern methods such as the Pill, condoms and the IUD, they were still motivated to limit and space the number of children. Before the advent of these methods it was common to try ways such as the rhythm method, withdrawal and medicinal herbs.

Although in the initial years when modern methods first became available there was some resistance to and suspicion of modern contraception, such resistance appears to have largely dissipated in the study area. The IUD remains the most common method—

most women have their inserted at the local commune health center. In addition to the supplies from volunteers, other methods are now commonly available at drug stores within the commune. The methods in use, IUD and pill, are commonly associated with significant side effects compelling women to switch out of the method or to stop. Women who stop using birth control have the option of getting an abortion. In the past abortions were performed at the commune level. Currently cases of abortion are referred to the district hospital in Dinh Ca.

Population volunteers report that condoms are not popular in their communities. Even when men are aware of significant side effects suffered by their partners they are unwilling to use because birth control is considered a woman's responsibility. Such resistance appears to be stronger among ethnic minority groups than among the Kinh. Another factor that appears to have emerged as a deterrent of condom use for family planning is its promotion as a form of protection from sexually transmitted diseases. Some men and women think that using a condom is tantamount to confessing infidelity and prostitution.

Abortion

The index of abortion suggests that, relatively speaking, abortion has the strongest influence on the fertility of the majority Kinh and Chinese group and is negligible in influence for ethnic minorities in the Northern Uplands and Central Highlands. Qualitative data suggest that there is considerable variation in attitudes and acceptance of abortion with these ethnic minorities generally being reluctant to practice abortion to terminate a pregnancy.

The survey shows that traditional method users reported a higher rate of unwanted pregnancies with almost one in three women who were currently using a traditional method reporting they had an unwanted pregnancy in five years prior to the survey. Teerawichitchainan and Amin (2009) argue that variation in reports on unwantedness by ethnicity may be driven by differences in the practice of abortion. It is unlikely that the use of modern method is independent of attitudes towards abortion (Bongaarts and Westoff, 2000). Ethnic groups that are more strongly opposed to abortion and equally motivated to limit births may be more motivated to use modern methods such as the IUD and the pill.

Our field work suggests that while family planning is widely accepted and easily accessible for both Kinh and ethnic minorities in the study area, their attitudes towards induced abortion are quite different. In the event of unwanted pregnancy, Kinh are more likely to resort to induced abortion, particularly because of economic necessity. Follows are selected quotes illustrating this point.

If I get pregnant for the third time, I will go to Dinh Ca Hospital to get an abortion. Our livelihoods will be very difficult if we have three children. The whole family will suffer.

-Kinh ethnic, Female, Age 22, married with two children.

I think abortion is bad and illegal. I won't allow my wife to have an abortion even if she is pregnant with our 10th child!

-Hmong, Male, Age 22, married with one son.

I never had an intention to get an abortion. If a child is born, you just have to feed them. Why would you kill them? I don't know clearly about abortion but I never had an intention to kill my baby.

-Hmong ethnic, Female, Age 54, married with 12 children.

Conclusions

This analysis shows that there are important patterns of variation between ethnic minority groups that warrant exploring determinants to better focus population policy. These patterns of difference follow the general differences in poverty by ethnic group, but there are some distinctive and exceptional patterns in the proximate determinants of fertility. Most noteworthy is the fact that observed fertility patterns among two of the larger groups the Tay, Thai, Muong and Nung (TTMN) and the minorities in the South, are rapidly approaching the levels observed among the Kinh and Chinese. These are the more assimilated groups in the North and the South. The influence of marriage on fertility is similar with a relatively late pattern of marriage observed in these groups as among the majority Kinh and Chinese. Contraceptive levels are high with the some of the minorities being even more likely to use modern contraception than the majority Kinh. This is reflected in lower age specific fertility in older ages which then compensates for their slightly earlier childbearing.

Fertility levels are highest among other (non TTMN) ethnic minorities in the North and in the Central Highlands. For both these groups higher fertility is attributable to earlier marriage, low rates of abortion and, to some extent to the non-use of contraception. Although contraceptive is low relative to the TTMN and the majority, reported overall levels of contraceptive use here is high by global standards. Reported IUD use is particularly high and traditional method use is low. It is possible that there is some level of overreporting and that use effectiveness even among users of modern methods is low because of high rates of discontinuation. Relative to the rest of Vietnam where abortion is common the low rates of abortion in these ethnic groups are striking. Also striking are the early rates of marriage and childbearing. The qualitative data show that there is considerable aversion to abortion among the Hmong who also happen to have the highest fertility rates. Thus, population policies that aim to address fertility behaviors need to address a range of issues that can effectively address motivations for early marriage and childbearing as well as access to services. Of late, attempts to address ethnic minority populations have emphasized the special needs of young people (UNFPA, 2008) calling for health care services to cater to minority youth who may lack appropriate knowledge

about accessing services. In addition to such reorientation of the target group within the health sector, a broadening of population policy should also take into account the substantially earlier marriage patterns which determine exposure to childbearing and will not be addressed by policies to increase access to services. Factors that influence early marriage are education and occupational opportunities. There is considerably evidence that these opportunities are severely lacking among the minority groups that have higher fertility.

To conclude, it is useful to review ethnic differentials in the context of overall fertility in Vietnam. A comparison of proximate determinants of fertility in Vietnam to other populations with similar fertility levels shows that Vietnam's low levels of fertility are obtained by a combination of relatively late marriage, high contraception, high abortion and long durations of breastfeeding (Table 8). Vietnam's marriage index is comparable to that of the US in 1967 at similar fertility levels. Contraceptive use in Vietnam is even higher than the US and Europe although it is likely over-reported; the abortion index is similar to the highest abortion prevalence settings of Hungary and Yugoslavia; and the index of subfecundity is comparable to much higher fertility regimes of mid 1970s Bangladesh and Pakistan. This combination of factors yields below replacement fertility among the majority as well as some of the significant minority groups. The only exceptions are minorities in the Central Highlands and the non-TTMN group in the Northern Uplands. This analysis suggests that a targeted set of policies, particularly ones that address the patterns of early marriage might be the most effective way of addressing population policy in these groups. To accommodate the strong resistance to abortion, health services can emphasize a wider range of contraceptive choice as well as more effective counseling among the low prevalence groups within these ethnic minorities.

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Table 1. Differential in total fertility by selected ethnic groups, 1989-1999

| Ethnic Groups | Total Fertility Rates | |
|---------------|-----------------------|------|
| | 1989 | 1999 |
| Kinh | 3.6 | 1.9 |
| Chinese | 2.9 | 1.5 |
| Tay | 4.3 | 2.1 |
| Thai | 5.7 | 2.6 |
| Muong | 4.4 | 2.0 |
| Nung | 5.1 | 2.9 |
| Khmer | 5.3 | 2.3 |
| Dao | 6.9 | 3.6 |
| Hmong | 9.3 | 7.1 |
| Gia Rai | 5.5 | 5.3 |

Source: Census 1999, adapted from General Statistics Office (2001)

Table 2. Key indicators for major minority groups, 1993 and 1998, based on Vietnam Living Standards Surveys

| | Poverty headcount | | Expenditure/capita, '000 | | Household size | | % of pop. |
|-----------------------------------|-------------------|------|--------------------------|-------|----------------|------|-----------|
| | (% of people) | | dong, 1998 prices | | 1993 | 1998 | |
| | 1993 | 1998 | 1993 | 1998 | | | |
| Kinh | 52 | 30 | 2,105 | 2,899 | 4.86 | 5.36 | 83.9 |
| Chinese | 11 | 8 | 3,843 | 5,119 | 6.55 | 6.12 | 2.0 |
| Minorities in the southern region | 70 | 57 | 1,521 | 1,882 | 5.44 | 6.17 | 2.0 |
| Central Highland Minorities | 92 | 91 | 1,021 | 1,090 | 6.28 | 6.68 | 2.8 |
| Northern Upland Minorities | 84 | 73 | 1,323 | 1,594 | 5.33 | 5.88 | 9.3 |

Notes: 1. Central Highland minorities: Ba-Na, Co-Ho, E-De, Gie-Tieng, Hre, Ma, Ra Glai, Xo-Dang.

2. Northern Upland minorities: Dao, Hmong, Muong, Nung, Tay, Thai, San Diu, Dan Chay, Tho..

3. 132 households coded as belonging to "Other" ethnic minorities in VLSS93 and 39 households belong to the other category in VLSS98 have been sub-divided between the last two groups in this table using the regional and religion variables. Details are available from the authors on request. The categories may not be strictly comparable between

4. Minorities in the southern region are Khmer and Cham.

Sources: Adapted from Baulch et al. (2004)

Table 3. Distribution of married women ages 15-49 by their ethnic groups

| Ethnic groups | Percent | N |
|--|----------------|----------|
| Total | 100% | 27418 |
| Kinh Chinese | 84.7 | 23225 |
| Tay, Thai, Muong, Nung | 7.6 | 2096 |
| Minorities - South | 1.6 | 432 |
| Minorities - Northern Uplands | 3.5 | 961 |
| Minorities - Central & Central Highlands | 2.6 | 704 |

Source; 2001 Vietnam National Health Survey

Table 4: Ethnic Differences in Proximate Determinants of Fertility Using Bongaarts Model, VNHS 2001

| | Index of Marriage (Cm) | Index of Contraception (Cc) | Index of Abortion (Ca) | Index of infecundity (Ci) | Total Fertility (TF) | Predicted TFR | Actual TFR |
|--------------|------------------------|-----------------------------|------------------------|---------------------------|----------------------|---------------|------------|
| All women | 0.59 | 0.34 | 0.77 | 0.68 | 15.3 | 1.60 | 1.59 |
| Kinh-Chinese | 0.60 | 0.33 | 0.77 | 0.68 | 15.3 | 1.60 | 1.54 |
| TTMN | 0.64 | 0.32 | 0.74 | 0.66 | 15.3 | 1.53 | 1.62 |
| EM-South | 0.67 | 0.39 | 0.84 | 0.67 | 15.3 | 2.27 | 1.74 |
| EM-North | 0.82 | 0.48 | 0.89 | 0.65 | 15.3 | 3.45 | 2.63 |
| EM-Central | 0.73 | 0.46 | 0.94 | 0.59 | 15.3 | 2.85 | 2.80 |
| Hmong | 0.87 | 0.60 | 0.96 | 0.66 | 15.3 | 5.04 | |

Table 5. Current prevalence of contraceptive use and current type of primary method of contraception by ethnic group among currently married women ages 15-49, 2001-2.

| Methods | Ethnic groups | | | | |
|---------------------------------|----------------------------|-------------------|---------------------|--------------------------------|---|
| | Kinh-Chinese (N=22,969) | TTMN (N=2,076) | EM-South (N=418) | EM-Northern Uplands (N=946) | EM-Central & Central Highlands (N=688) |
| % Any modern method | 59 | 70 | 56 | 54 | 55 |
| <i>IUD</i> | 35 | 48 | 35 | 42 | 24 |
| <i>Condom</i> | 9 | 4 | 3 | 1 | 3 |
| <i>Pill</i> | 7 | 7 | 10 | 7 | 14 |
| <i>Female sterilization</i> | 6 | 8 | 7 | 3 | 10 |
| <i>Other</i> | 1 | 2 | 2 | 1 | 4 |
| % Any traditional method | 21 | 10 | 17 | 8 | 10 |
| <i>Withdrawal</i> | 8 | 2 | 9 | 3 | 5 |
| <i>Periodic abstinence</i> | 13 | 8 | 7 | 6 | 5 |
| % Non-use | 20 | 19 | 27 | 38 | 36 |

Source: VNHS 2001-2

Note: TTNM denotes Tay, Thai, Muong, Nung ethnic groups.

Ethnic minorities in the South include Khmer, Cham, Xtieng, and Cho-ro ethnic groups.

Ethnic minorities in Northern Uplands include Hmong, Dao, Ngai, San Chay, San Diu, Giay, Kho-mu, Khang, Xinh-mun, Ha Nhi, Lao, La Chi, La Ha, Phu La, La Hu, Lu, Lo Lo, Mang, Pa Then, Co Lao, Cong, Bo Y, Si La, and Pu Peo.

Minorities in Central and Central Highlands include Gia-rai, Ede, Ba na, Xo-dang, Co ho, Mnong, Gie Trieng, Ma, Chu ru, Brau, Ro mam, Hre, Ra-glai, Bru Van Kieu, Tho, Cotu, Co, Ta-oi, Chut, and O-du.

Table 6. Distribution of currently married women ages 15-49 for each ethnic group by their individual and household characteristics and by the quality of their access to CHC and family planning services.

| | Ethnic groups | | | | | |
|-----------------------------------|-------------------------|----------------------------|-------------------|---------------------|--------------------------------|---|
| | All women (N=27,097) | Kinh-Chinese (N=22,969) | TTMN (N=2,076) | EM-South (N=418) | EM-Northern Uplands (N=946) | EM-Central & Central Highlands (N=688) |
| Individual characteristics | - | | | | | |
| Age | | | | | | |
| 15-19 | 2 | 1 | 4 | 2 | 7 | 6 |
| 20-24 | 12 | 12 | 16 | 12 | 18 | 23 |
| 25-29 | 20 | 20 | 20 | 21 | 21 | 20 |
| 30-34 | 20 | 20 | 20 | 20 | 18 | 17 |
| 35-39 | 19 | 20 | 19 | 18 | 18 | 13 |
| 40-44 | 15 | 16 | 14 | 15 | 11 | 13 |

| | | | | | | |
|----------------------------|----|----|----|----|----|----|
| 45-59 | 11 | 11 | 8 | 11 | 6 | 9 |
| Education | | | | | | |
| Illiterate | 8 | 4 | 16 | 38 | 66 | 56 |
| Primary | 44 | 44 | 49 | 55 | 29 | 38 |
| Lower secondary | 31 | 33 | 24 | 5 | 4 | 4 |
| Upper secondary and higher | 18 | 19 | 11 | 2 | 1 | 2 |
| Number of Living Children | | | | | | |
| None | 7 | 6 | 7 | 8 | 10 | 9 |
| One | 21 | 22 | 18 | 16 | 14 | 14 |
| Two | 36 | 37 | 34 | 26 | 23 | 19 |
| 3-5 | 33 | 32 | 37 | 40 | 42 | 44 |
| 6+ | 4 | 3 | 3 | 11 | 11 | 15 |

Household characteristics

| | | | | | | |
|---------------------------|----|----|----|----|----|-----|
| Geographic location | | | | | | |
| Lowlands | 72 | 81 | 3 | 81 | 2 | 0.3 |
| Low Mountainous | 14 | 12 | 32 | 18 | 13 | 14 |
| High Mountainous | 14 | 7 | 65 | 1 | 85 | 85 |
| Household economic status | | | | | | |
| Poor | 19 | 13 | 51 | 34 | 78 | 92 |
| Less-Poor | 81 | 87 | 49 | 66 | 22 | 8 |

Quality of CHC and Family Planning Services

| | | | | | | |
|---|----|----|----|----|----|----|
| Index of quality of CHC infrastructure (full score = 3) | | | | | | |
| Scoring less than 2 | 11 | 8 | 25 | 18 | 38 | 42 |
| Two | 42 | 41 | 49 | 66 | 42 | 47 |
| Three | 47 | 51 | 25 | 16 | 19 | 11 |
| index of equipment availability (full score = 28) | | | | | | |
| Scoring below the 50th percentile | 33 | 29 | 57 | 27 | 69 | 65 |
| 50th -75th percentile | 33 | 34 | 27 | 42 | 23 | 14 |
| Above 75th percentile | 34 | 37 | 15 | 31 | 7 | 21 |
| Index of availability of essential medicine (full score = 20) | | | | | | |
| Scoring below the 50th percentile | 36 | 32 | 62 | 31 | 76 | 84 |
| 50th -75th percentile | 31 | 32 | 22 | 30 | 20 | 6 |
| Above 75th percentile | 34 | 36 | 16 | 39 | 5 | 10 |
| Frequency of CHC implementation of family planning | | | | | | |
| None or rarely | 3 | 2 | 12 | 1 | 8 | 6 |
| Twice a year | 5 | 4 | 12 | 1 | 17 | 14 |
| Once every 2-4 months | 4 | 3 | 12 | 5 | 16 | 14 |
| Monthly | 22 | 22 | 16 | 24 | 16 | 23 |
| Regularly | 65 | 68 | 47 | 68 | 43 | 42 |

Quality of village health workers
in family planning activities

| | | | | | | |
|------------------------------|----|----|----|----|----|----|
| No VHW or VHW not promoting | 29 | 32 | 6 | 12 | 5 | 2 |
| Skills not updated/promoting | 17 | 15 | 35 | 14 | 38 | 26 |
| Skills updated/promoting | 55 | 54 | 59 | 74 | 56 | 73 |

Source: 2001-2 VNHS

Table 7. Maximum-likelihood multinomial logistic regression, Type of current contraceptive use among currently married women ages 15-49.

| | Type of contraceptive use ^a | | | |
|--|--|----------|--------------------|----------|
| | Modern method | | Traditional method | |
| | Odds ratio | Std. Err | Odds ratio | Std. Err |
| <u>Individual characteristics</u> | | | | |
| Ethnic groups (Kinh-Chinese=ref) | | | | |
| TTMN | 1.77 | *** | 0.15 | 0.83 † |
| EM-South | 0.81 | † | 0.11 | 0.78 |
| EM-Northern Uplands | 0.75 | *** | 0.08 | 0.36 *** |
| EM-Central & Central highlands | 0.64 | *** | 0.07 | 0.41 *** |
| Age (40-49=ref) | | | | |
| 15-24 | 1.65 | *** | 0.12 | 0.63 *** |
| 25-29 | 2.20 | *** | 0.13 | 1.03 |
| 30-34 | 2.50 | *** | 0.14 | 1.34 *** |
| 35-39 | 3.15 | *** | 0.18 | 2.07 *** |
| Education (Secondary=ref) | | | | |
| Illiterate | 0.47 | *** | 0.03 | 0.41 *** |
| Primary | 0.76 | *** | 0.03 | 0.83 *** |
| Number of Living Children (Two=ref) | | | | |
| None | 0.01 | *** | 0.00 | 0.03 *** |
| One | 0.30 | *** | 0.02 | 0.40 *** |
| 3+ | 1.00 | | 0.05 | 0.81 *** |
| <u>Household characteristics</u> | | | | |
| Geographic location (Lowlands=ref) | | | | |
| Low Mountainous | 0.96 | | 0.05 | 1.12 † |
| High Mountainous | 0.98 | | 0.07 | 1.12 |
| Less poor (Poor=ref) | 1.19 | *** | 0.06 | 1.50 *** |
| <u>Quality of CHC and Family Planning Activities</u> | | | | |
| CHC infrastructure (Scoring less than 2=ref) | | | | |
| Two | 1.16 | ** | 0.07 | 1.11 |
| Three | 1.09 | | 0.06 | 1.08 |
| CHC availability of equipment (Scoring below the 50th percentile=ref) | | | | |
| 50th -75th percentile | 0.91 | * | 0.04 | 0.99 |
| Above 75th percentile | 1.03 | | 0.05 | 1.06 |
| CHC availability of essential medicine, Highest=20 (Scoring below the 50th percentile=ref) | | | | |
| 50th -75th percentile | 1.01 | | 0.05 | 1.06 |
| Above 75th percentile | 1.01 | | 0.05 | 0.92 |
| CHC freq in FP implementation (Less than quarterly=ref) | | | | |
| Quarterly | 1.16 | † | 0.11 | 0.95 |
| Monthly | 1.21 | ** | 0.08 | 1.06 |
| Regularly | 1.26 | *** | 0.08 | 1.06 |
| Village health workers' FP outreach (No VHW or No outreach activity=ref) | | | | |

| | | | | |
|--|------|------|------|----|
| VHW outreach without updated knowledge | 1.05 | 0.06 | 1.03 | |
| VHW outreach with updated knowledge | 0.99 | 0.04 | 0.88 | ** |

Total number = 27,097

† significant at p<0.1, * significant at p<0.05, ** significant at p<0.01, *** significant at p<0.001

^aThe reference category for the equation is non contraeptive use.

Source: VNHS 2001-2

Table 8: Proximate Determinants of Fertility in Selected Countries

| Country (year) | Index of marriage | Index of contraception | Index of abortion | Index of infecundity | Total fertility rate |
|--------------------|-------------------|------------------------|-------------------|----------------------|----------------------|
| Vietnam 2001 | 0.59 | 0.34 | 0.77 | 0.68 | 1.59 |
| Hungary 1966 | 0.62 | 0.33 | 0.56 | 0.93 | 1.62 |
| United states 1967 | 0.63 | 0.25 | 0.99 | 0.93 | 2.27 |
| Yugoslavia 1970 | 0.57 | 0.36 | 0.75 | 0.93 | 2.22 |
| | | | | | |
| Bangladesh 1975 | 0.85 | 0.93 | 1.0 | 0.53 | 6.54 |
| Pakistan 1975 | 0.78 | 0.96 | 1 | 0.64 | 7.37 |

Source: Data for non-Vietnam from Menken (1987) and Bongaarts (1982)

APPENDIX

We use the model of proximate determinants (Bongaarts 1978) to decompose fertility rates for each of Vietnam's five major ethnic groups. This section describes how we derive data for each index and how we evaluate our findings.

$$\text{TFR} = \text{Cm} * \text{Cc} * \text{Ca} * \text{Ci} * \text{TF}$$

in which *Cm* is an index of marriage

Cc is an index of contraception

Ca is an index of induced abortion

Ci is an index of post-partum infecundability.

TF is the total fecundity rate

Index of marriage (Cm)

$$\text{Cm} = \sum m(a)g(a) / \sum g(a) = \text{TFR}/\text{TM}$$

Here *m(a)* equals age-specific proportion married, whereas *g(a)* equals age-specific marital fertility rates. In this study, *m(a)* is derived from the 1999 census and *g(a)* from the 2001 VNHS. The VNHS asked married women of reproductive age (ages 15-49) how many children she gave birth to over the last five years (i.e., 1997-2001).

The following table presents age-specific proportion married by ethnic groups based on census data.

Table A1: Proportions Married by Ethnic group and Age, Census 1999

| Age group | All Women | Kinh-Chinese | TTMN | EM South | EM Northern Uplands | EM Central Highlands |
|--------------|-------------|--------------|-------------|-------------|---------------------|----------------------|
| 15-19 | 0.08 | 0.07 | 0.10 | 0.12 | 0.31 | 0.20 |
| 20-24 | 0.51 | 0.49 | 0.62 | 0.53 | 0.78 | 0.68 |
| 25-29 | 0.80 | 0.79 | 0.86 | 0.77 | 0.92 | 0.85 |
| 30-34 | 0.87 | 0.86 | 0.91 | 0.84 | 0.96 | 0.89 |
| 35-39 | 0.87 | 0.86 | 0.92 | 0.87 | 0.92 | 0.90 |
| 40-44 | 0.84 | 0.84 | 0.89 | 0.83 | 0.91 | 0.84 |
| 45-49 | 0.80 | 0.80 | 0.85 | 0.80 | 0.88 | 0.81 |
| 15-49 | 0.64 | 0.63 | 0.68 | 0.62 | 0.75 | 0.66 |

Source: Census 1999

Table A2: Age-specific marital fertility rates and total marital fertility rates by ethnic groups, VNHS 2001

| Age group | All women | Kinh-Chinese | TTMN | EM South | EM Northern Uplands | EM Central Highlands |
|------------------|------------------|---------------------|-------------|-----------------|----------------------------|-----------------------------|
| 15-19 | 0.67 | 0.44 | 0.50 | 0.27 | 0.38 | 0.58 |
| 20-24 | 0.92 | 0.75 | 0.81 | 0.74 | 0.92 | 0.84 |
| 25-29 | 0.79 | 0.68 | 0.66 | 0.78 | 0.63 | 0.80 |
| 30-34 | 0.48 | 0.43 | 0.32 | 0.49 | 0.51 | 0.65 |
| 35-39 | 0.27 | 0.23 | 0.12 | 0.32 | 0.37 | 0.56 |
| 40-44 | 0.11 | 0.09 | 0.05 | 0.19 | 0.39 | 0.40 |
| 45-49 | 0.04 | 0.03 | 0.03 | 0.06 | 0.27 | 0.21 |
| TMFR | 3.28 | 2.64 | 2.50 | 2.84 | 3.47 | 4.04 |

Index of contraception (Cc)

$$C_c = 1 - 1.18 * e * u$$

u is the prevalence of current contraceptive use (including male methods and sterilization) among currently married women. The estimates can be derived from the VNHS, which asked married women if she and her spouse practiced any contraception during the time of survey and what the main contraceptive method they used was. The table presented below shows age-specific rates of contraceptive use (any methods).

Table A3: Age Specific Method of Contraceptive Use (Any Method) by Ethnic Group, VNHS, 2001

| Age group | All Women | Kinh-Chinese | TTMN | EM South | EM Northern Uplands | EM Central Highlands |
|--------------|-------------|--------------|-------------|-------------|---------------------|----------------------|
| 15-19 | 0.27 | 0.29 | 0.27 | 0.32 | 0.12 | 0.27 |
| 20-24 | 0.57 | 0.58 | 0.59 | 0.37 | 0.34 | 0.57 |
| 25-29 | 0.78 | 0.78 | 0.81 | 0.79 | 0.67 | 0.69 |
| 30-34 | 0.86 | 0.86 | 0.94 | 0.77 | 0.76 | 0.78 |
| 35-39 | 0.91 | 0.91 | 0.94 | 0.87 | 0.82 | 0.77 |
| 40-44 | 0.89 | 0.89 | 0.90 | 0.83 | 0.78 | 0.70 |
| 45-49 | 0.69 | 0.69 | 0.71 | 0.66 | 0.55 | 0.46 |
| 15-49 | 0.79 | 0.80 | 0.81 | 0.73 | 0.62 | 0.64 |

Here e, which equals the average use-effectiveness of contraception, is taken to be the same as those used by Bongaarts (1982) and Haughton (1997) and are as follows:

| <u>Contraceptive method</u> | <u>Estimated use-effectiveness (e)</u> |
|-----------------------------|--|
| Sterilization | 1.00 |
| Pill | 0.90 |
| IUD | 0.95 |
| Other | 0.70 |

Where women used more than one method of contraception, we will use the highest applicable value of e.

Index of induced abortion (Ca)

$$Ca = TFR / [TFR + 0.4 * (1+u) * TA]$$

For each ethnic group, total fertility rate (TFR) can be calculated using the age-specific fertility rates derived from the VNHS which asked women of reproductive ages (ages 15-49) in the sample about the number of children she had over the past 5 years. Here u is the proportion of married women of reproductive age who use contraception.

TA equals the total abortion rate (including only abortions among married women). We calculated the rate using data from the 2001 VNHS. The survey asked married women of reproductive age whether they had an abortion or menstrual regulation (MR) in the past 5 years and how many times in the past 5 years they had abortions or MRs. Age-specific abortion rates and total abortion rates by ethnic groups are presented below.

Table A4: Age Specific Abortion Rates by Ethnic Group, VNHS 2001

| Age | All women | Kinh-Chinese | TTMN | EM South | EM Northern Uplands | EM Central Highlands |
|-----------|-------------|--------------|-------------|-------------|---------------------|----------------------|
| 15-19 | 0.01 | 0.01 | 0.00 | 0.00 | 0.01 | 0.00 |
| 20-24 | 0.08 | 0.08 | 0.09 | 0.00 | 0.03 | 0.02 |
| 25-29 | 0.14 | 0.14 | 0.20 | 0.09 | 0.13 | 0.05 |
| 30-34 | 0.15 | 0.16 | 0.18 | 0.15 | 0.08 | 0.03 |
| 35-39 | 0.14 | 0.14 | 0.13 | 0.10 | 0.13 | 0.02 |
| 40-44 | 0.11 | 0.11 | 0.13 | 0.12 | 0.07 | 0.18 |
| 45-49 | 0.05 | 0.05 | 0.07 | 0.04 | 0.04 | 0.00 |
| TA | 0.67 | 0.68 | 0.80 | 0.49 | 0.49 | 0.30 |

Source: VNHS 2001

A wide gap between the number of abortions reported by the Ministry of Health and the number reported by women who are interviewed has been recognized in past studies (Haughton 1997).

The total abortion rate of 0.67 based on the VNHS is much lower than the total abortion rate of 2.5 per woman reported in 1992 (Goodkind 1994) and the rates reported in Haughton (1997). The discrepancy is likely to come from the fact that these prior studies calculated their abortion rates based on surveys of women seeking pregnancy termination, whereas our estimates are based on a population-based survey.

Index of post-partum infecundability (Ci)

$$Ci = 20 / (18.5 + i)$$

i is the mean duration of postpartum infecundability. We calculated an approximate value of *i* from the mean duration of breast feeding (*B*), which we obtained from the 2001 VNHS. The survey asked all women in the sample who had children under age 5 about the length of breastfeeding for their youngest child. Bongaarts (1982) proposed that

$$i = 1.753 \exp (0.1396 * B - 0.001872 * B^2)$$

Based on the analysis of the VNHS, the mean durations of breastfeeding (unit=month) for women in each ethnic group is given in Table A5.

Table A 5: Duration of Breastfeeding by Ethnic Group, VNHS 2001

| Ethnic groups | Mean | S.D. |
|----------------------|-------------|-------------|
| All women | 17.1 | 5.6 |
| Kinh-Chinese | 16.9 | 5.4 |
| TTMN | 18.1 | 6.0 |
| EM South | 17.3 | 5.7 |
| EM Northern Uplands | 18.7 | 6.2 |
| EM Central Highlands | 22.2 | 7.3 |
| Hmong only | 18.1 | 5.4 |

Source: VNHS 2001

Past studies show that the mean duration of breastfeeding in Vietnam ranges from 14.5 months based on the 1988 DHS to 13.8 months in the 1992-3 Vietnam Living Standards Survey. Mean durations of breastfeeding found in the 2001 VNHS were longer than earlier estimates. The Kinh-Chinese had the shortest duration, whereas ethnic minorities in the Central Highlands reported the lengthiest breastfeeding period.

Total fecundity rate (TF)

TF represents the maximum potential number of births per woman, after adjusting for miscarriages, stillbirths, and natural sterility. Following Bongaarts (1982), we use a value of 15.3.

Figure 1: Age Specific Fertility Rates 1997-2001 by Ethnic Group

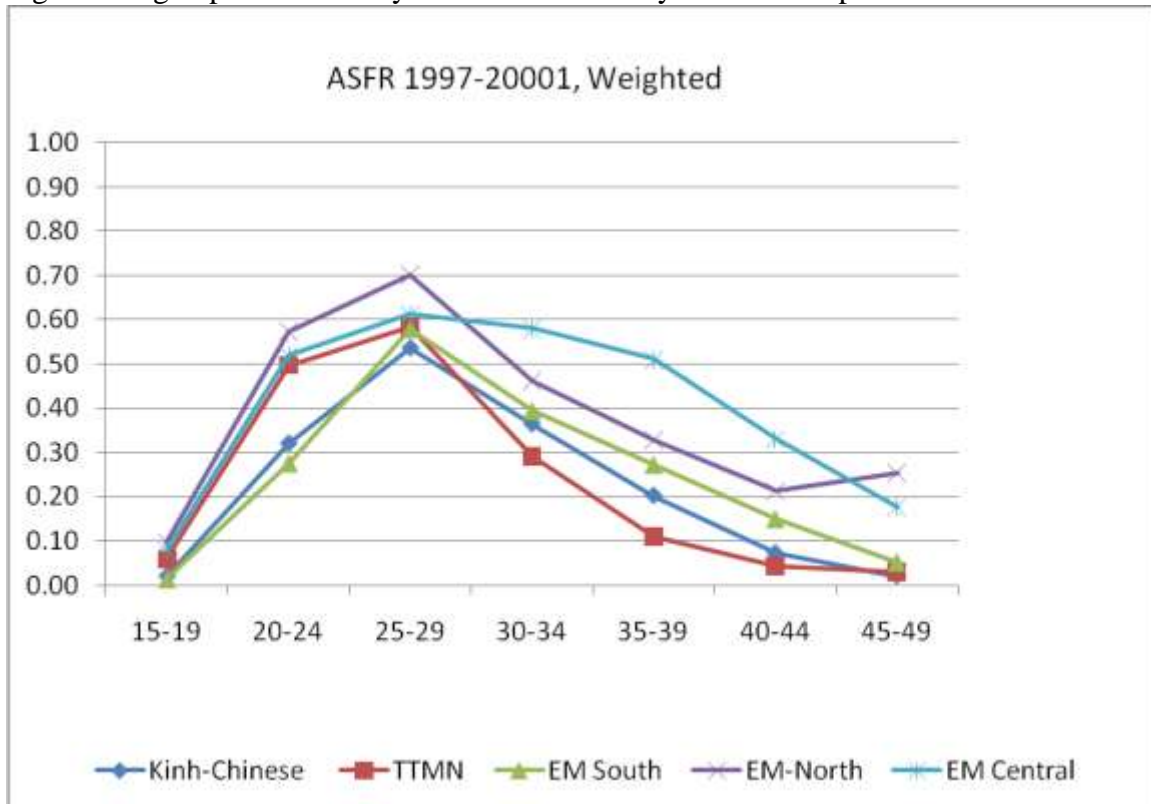


Figure 2: Proportions Women Married by Ethnic Group,

