Thailand

Demographic and Health Survey 1987

Institute of Population Studies
Chulalongkorn University

DHS

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THAILAND
DEMOGRAPHIC AND HEALTH SURVEY
1987

by

Napaporn Chayovan
Peerasit Kamnuansilpa
John Knodel

Institute of Population Studies
Chulalongkorn University
Bangkok, Thailand

Institute for Resource Development/Westinghouse
Columbia, Maryland
USA

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Preface

Since its founding in 1966, the Institute of Population Studies (IPS) has been responsible for a number of national surveys focusing on family planning and the demographic and socio-economic situation in Thailand. These surveys included the National Longitudinal Study of Social, Economic and Demographic Change conducted in 1969/70 and again in 1972/73, the Survey of Fertility in Thailand conducted in 1975 as part of the World Fertility Survey, and the National Survey on Family Planning Practices, Fertility and Mortality in 1979. The Thai Demographic and Health Survey (TDHS), conducted in 1987, represents a continuation of this tradition in survey taking at IPS. At the same time, however, the TDHS has also broadened the Institute's experience in several ways. Not only is it the largest survey in terms of the number of respondents undertaken so far by IPS, but it is the first large scale survey in Thailand to deal in significant detail with health topics including anthropometric measures of children under 3 years of age and their mothers. Because of the inclusion of health topics, the IPS staff has gained new experience and skills which should prove valuable in the future when new surveys are conducted.

The purpose of the TDHS is to provide current and accurate data on fertility, mortality, family planning and selected indicators of health status to be used for program assessment and guidance and for scientific analysis to further our understanding of the demographic and health situation in Thailand. We hope that this report makes a significant contribution to this goal. As comprehensive as the report is, however, it represents only a small portion of the potential information and analysis that can be derived from the data collected by the TDHS. In recognition of this, IPS will undertake two broad further analysis projects during the coming year, both funded by the Population Council. One project will focus on demographic and family planning topics while the other will be concerned with health topics. Each project consists of a set of separate analyses dealing with specific subtopics under the two general project rubrics. Together, the two projects will involve many staff members of IPS and will also draw on colleagues at other organizations with expertise in the relevant areas. Thus the current report should be viewed as just the beginning rather than as the final product of our effort to take full advantage of the valuable data collected by the TDHS.

As with any project as large as the TDHS, the skills and efforts of many qualified and dedicated persons had to be mobilized to carry it out successfully. A list of the TDHS staff is provided as an Appendix of this report and therefore there is no need to repeat their names here but rather to acknowledge with gratitude their collective effort. Special recognition, however, is due Dr. Napaporn Chayovan as the one person who on a daily and virtually full-time basis has guided the TDHS through all its stages from initial formulation to the printing of this report. IPS is indeed grateful to her for her tireless and dedicated efforts. Sincere appreciation is also extended to Prof. John Knodel who has provided valuable advice from the initial stage of the project and devoted a great deal of his effort working with Dr. Napaporn Chayovan on every stage of the project including the data analysis of the report.

Besides the official staff of the TDHS, many people and organizations have been helpful at various stages in providing assistance and advice. The biggest debt is owed to the Institute for Resource Development (IRD), Westinghouse for providing funding and technical assistance without which the TDHS would not have been carried out. A list of consultants, including those provided by IRD, is included in the Appendix along with the TDHS staff. Each consultant not only provided valuable guidance but did so in a professional and friendly way. We have learned much from them. In addition, we would like to thank the National Statistical Office and the Ministry of Interior for providing information necessary for implementing the sample design. The Division of Nutrition, Ministry of Public Health, kindly lent us equipment for weighing the children.

A number of individuals deserve mention for help provided in different aspects of the project. The staff of the USAID office in Bangkok (in particular Edwin McKeithen, Karoon Rugvanichje, and Narintr Tima) provided useful advice and encouragement throughout the course of the project. Mr. Art Wichienchareon at ESCAP helped in transferring the data from diskettes to computer tapes. Ansley Coale, Ronald Freedman, Carl Frisen, Robert Hanenberg, Chintana Petcharanonda, and Nicholas Wright provided useful information or comments that assisted in the writing of this report.

Last but not least, Ms. Porntip Sopon deserves our gratitude for patiently typing the many versions that this manuscript went through, often coming in on weekends or staying after hours to ensure that the report would be issued on time.

Bhassorn Limanonda, Ph.D.
Director
Institute of Population Studies
Chulalongkorn University
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Contents

List of Tables

Page

Page

		Page
A.2	Outcome of the sample of households	135
A.3	Comparison between sample distribution and "standard" distribution, by region and urban-rural status	137
A.4a	Derivation of "standard" distribution for total population	138
A.4b	Derivation of "standard" distribution of ever-married women	138
B.1	Percent distribution according to age, by sex, comparison of results from the TDHS household sample, the NESDB projected population, the Survey of Population Change (SPC) and the census	141
B.2	Percent distribution of ever-married women age 15-49 according to age-group, comparison of results from TDHS, the Survey of Population Change (SPC), and the census ...	143
B.3	The sex ratio (males per 100 females), by age, comparison of results from the TDHS household sample, the NESDB projected population, the Survey of Population Change (SPC) and the census	143
B.4	Percentage ever-married, by age and sex, comparison of results from TDHS, the Census and the Survey of Population Change (SPC)	145
B.5	Percent distribution of ever-married women aged 15-49 according to marital status, by age, comparison of results from TDHS, the Survey of Population Change (SPC) and the census	147
B.6	Percent distribution according to educational level, by age and sex, comparison of results from TDHS and the Survey of Population Change (SPC)	148
B.7	Mean number of children ever born, and percent surviving for ever-married women, by age of woman, comparison of results from TDHS, the Third Contraceptive Prevalence Survey (CPS3), Survey of Population Change (SPC) and the census	150
B.8	Total fertility rates to selected age, comparison of results from TDHS and selected other sources, 1970-1986	152
B.9	Mean number of children ever born according to whether alive or dead and whether living in the mother's household or elsewhere, by age of mother, comparison of results from TDHS and CPS3	155

List of Figure

Summary

The Thai Demographic and Health Survey (TDHS) was a nationally representative sample survey conducted from March through June 1988 to collect data on fertility, family planning, and child and maternal health. A total of 9,045 households and 6,775 ever-married women aged 15 to 49 were interviewed. The results indicate that the longer term decline in fertility that started two decades ago has been continuing during recent years. The very low recent total fertility rate of 2.21 estimated by the TDHS for the 24 month period preceding the survey, however, appears to be lower than evidence from most other sources would indicate and could reflect some understatement of births in the survey. The much higher cumulative fertility of women presently at the end of the reproductive ages, averaging 4.42 children ever born to ever-married women aged 40-49, underscores the recent and substantial nature of Thailand's fertility decline.

Age at first marriage, particularly among women, has been increasing moderately over the last two decades. The age by which half of all women are married increased from 19.7 to 21.1 between the cohort currently aged 45-49 and the cohort aged 25-29.

Breastfeeding is very common in Thailand and lasts on average almost 17 months. Nevertheless, the average duration of postpartum amenorrhea is only 7 months. Both breastfeeding and postpartum amenorrhea are considerably shorter in urban than rural areas. Postpartum abstinence is relatively short and differs little between urban and rural couples.

Contraceptive awareness is virtually universal in Thailand and almost every woman knows a source where modern contraceptive methods can be obtained. Over 80 percent of ever-married women have ever practiced contraception. Among currently married women aged 15-44, 67.5 percent were currently using a contraceptive method thus continuing the steady increase in contraceptive prevalence evidenced by previous surveys over the last two decades. Of women currently using contraception, fully 97 percent were practicing a modern method and over 40 percent were either sterilized or had a husband who was. Contraceptive prevalence is highest in the North (75 percent) and lowest in the South (52 percent). The most outstanding differential is by religion, with the Moslem minority characterized by a prevalence rate only half of that of the Buddhist majority. Among current users of modern contraception, at least 82 percent obtained their method from a government source.

Given the very high prevalence of contraception, it is not surprising that there does not appear to be a great deal of unmet need for family planning. Most non-pregnant, non-abstaining women who do not want to get pregnant but are not using contraception appear to be at low risk of pregnancy because they are in a state of postpartum amenorrhea, are subfecund or engage only infrequently in sex. Nevertheless, 14 percent of women who gave birth during the 12 months preceding the survey said the birth was unwanted at the time of pregnancy and 16 percent indicated the birth was mistimed (i.e. wanted but at a later time).

The preferred family size has fallen to the lowest level recorded since the first national survey collected such information almost two decades ago. Among all currently married women aged 15-49, the average preferred family

size is 2.8 children and among recently married women is only 2.3 children. Two thirds of currently married women say they want no more children.

Infant mortality during the preceding five years as calculated from the TDHS is only 35 per 1,000 births, down from 55 per 1,000 live births 10 to 14 years prior to the survey. The estimate for the recent period is low compared to other sources and may reflect some under-reporting of infant deaths.

Among children under age five, 6 percent experienced diarrhea during the preceding 24 hours and 16 percent experienced diarrhea during the preceding two weeks, of whom 40 percent received oral rehydration therapy. Approximately 85 percent of children aged 1-4 years received at least one immunization. Among the 26 percent of children aged 1-4 years for whom health record cards or booklets with immunization data were available, the vast majority received BCG, the third dose of DPT, and the third dose of polio vaccines. Only about half, however, have been immunized against measles. Mothers of 65 percent of the births during the last five years received tetanus toxoid injections, 77 percent received prenatal care, and 66 percent were assisted by medical professionals at the time of delivery.

Chapter 1

Background

1.1 Country Setting*

Thailand is a tropical country in the Indo-Chinese peninsula of southeast Asia bordered by Kampuchea and Laos on the east and northeast, by Burma on the west and northwest, and by Malaysia on the south. Thailand includes tropical rain forests, agriculturally rich plains, and forest-clad hills and mountains. The patterns of rivers and mountains divide Thailand into four natural regions: the mountainous north; the northeast, consisting primarily of the Korat plateau; the central region, consisting primarily of the Chao Phraya Basin; and the south, consisting of the long peninsular extension of Thailand south from the Chao Phraya Basin to the Malaysian frontier.

Unlike many other developing countries and all its southeast Asian neighbors, Thailand has never been colonized by a foreign power. There have been periodic invasions by Burmese and Khmers in the more distant past and a brief occupation by the Japanese during World War II, but by and large the country has been an independent nation throughout its history. A common religion is one of the most important factors contributing to the relative cultural homogeneity of the Thai population. The large majority of the population (95.9 percent in 1980) professes Buddhism as its religion. Most non-Buddhists adhere to Islam, which is practiced by about 4 percent of the population. Most Thai Muslims, about 80 percent, live in the south, where they constitute the majority of the population in the four southernmost provinces and make up one fourth of the total population of the south, despite their small percentage nationally. About half of the Muslims living outside the south reside in Bangkok and most of the rest are in the central region. Muslims are a negligible proportion of the populations of the north and northeast. In no region do Christians or members of other religions constitute as much as 1 percent of the population.

Administratively, Thailand is currently divided into seventy-three provinces (changwat), one of which is the Bangkok metropolis. Each province is further subdivided into districts (amphur), townships (tambol), and villages (muban). Some areas are also designated as municipalities, including all provincial capitals. Economically and politically the country is dominated by Bangkok, the only major urban area. Although it is located geographically within the central region, for most purposes the Bangkok metropolis is usefully considered a distinct region on its own because its population differs considerably in many characteristics from the remainder of the central region.

In socioeconomic terms, Thailand's features are typical of the developing world. Like many other Third World nations, Thailand has been experiencing rapid and fundamental social and economic change as it undergoes

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*This section is based largely on Knodel, Chamratrithirong and Debavalya, 1987, Chapter 3 with some updating of statistical indices based on World Bank, 1987.

the process of modernization and development and becomes increasingly enmeshed in the world economic system. GNP per capita, was $800 in 1985, according to the World Bank, placing it squarely in the middle-range among those developing countries classified as being lower-middle-income. Thailand's rate of economic growth in recent decades, however, has been well above the average for developing countries generally. Despite increasing proportions of the population living in urban areas and engaging in non-agricultural pursuits, the country remains predominately rural and agrarian. According to World Bank statistics, 82 percent of the population lived outside areas classified as urban in 1985 and 71 percent of the labor force was engaged in agriculture in 1980.

With respect to several key health indicators, Thailand's situation appears relatively favorable for a developing country. For example, life expectancy at birth for 1985 was estimated as 64 years which is distinctly better than the average for other lower-middle-income developing countries. In this connection it is notable that the health-service system in Thailand is a complex mixture of public and private providers. In urban areas, private health services are very important. In addition, the Ministry of Interior administers a variety of public-health facilities in Bangkok and other municipalities. For the large rural population, however, the major source of service is the Ministry of Public Health, operating through an extensive network of outlets including regional health centers, provincial and district hospitals, and local health stations at the township level. The public health system has expanded considerably in the last two decades. For example, the number of government health stations, which are virtually all located in rural areas, more than tripled between 1965 and 1985, at which time there were over 7,000 such stations. In addition, the number of government hospitals more than doubled to over 500 units during the same period, with the increase almost entirely at the district level.

In the present report, the most important background variables employed in the tabulations are rural-urban residence, region, education and religion. The religious distribution of the population was discussed above. Each of the other three characteristics are now considered in some detail.

1.1a Rural-Urban Distribution

There is no question that Thailand has been and continues to be a predominantly rural society and is relatively so even within the context of the developing world in general. Defining precisely what is to be considered as urban and rural areas, however, is not entirely straightforward. There is no official definition of rural and urban in Thailand. The usual practice is to define the officially designated municipal areas, including the entire Bangkok metropolis, as urban, and the remainder of the country as rural. This definition is increasingly being criticized as unrealistically narrow and most observers agree that it results in an underestimation of the "true" urban population.

The basic problem with a definition based only on municipal areas (including Bangkok) is that it is becoming increasingly out of date. There has been almost no change in the number of officially designated municipalities over the last several decades even though the nature of many places in the nonmunicipal category has changed considerably, including places both on the fringe of municipal areas and elsewhere. Instead, localities that achieve a minimum population size and density and develop some urban characteristics are frequently designated as "sanitary districts." As such, they remain in the rural category when rural is defined exclusively in terms of municipalities. (In 1980, 17.0 percent of Thailand's total population lived in municipal areas, including the Bangkok metropolis, 6.6 percent in large sanitary districts, and 2.7 percent in small sanitary districts.) In addition, there has been insufficient redefinition of the boundaries of existing municipal areas to allow for their defacto expansion.

One partial remedy is to include officially designated sanitary districts, or at least the larger ones, as urban. In the present report, however, analyses in subsequent chapters utilize the usual, more limited definition of urban based only on municipal areas to maintain comparability with previous studies.

1.1b Regional Variation

In many important respects, the Thai population is relatively homogeneous. The vast majority adhere to Buddhism, are ethnic Thais, and speak some version of the Thai language. Moreover, the official central Thai language is understood virtually everywhere. There is generally a sense of national identity reinforced by a widespread allegiance to the monarchy, which serves as an effective symbol of national unity. Nevertheless, to varying extents, cultural and socioeconomic differences characterize the four major regions. The most obvious cultural difference relate to regional dialects. Distinctive dialects are spoken in the north, the northeast, and the south, each of which differs from the standard Thai spoken in the central region. In addition, among Moslems in three of the four southernmost provinces Malay is common.

Bangkok, with 11 percent of Thailand's population is typically in a class of its own with respect to most socio-economic indicators. Of the four major regions excluding Bangkok, the central region, with 21 percent of the population, generally ranks the highest in socioeconomic terms. It is also the cultural center of the nation, closest in physical and psychic distance to the Bangkok metropolis. The central plain is the heartland of rice cash crop in a country where rice is the mainstay of the economy. Substantial parts of the Chao Phraya Basin have benefited recently from a major irrigation project that has opened up wide expanses of land to the possibility of rice double-cropping.

The poorest region is the northeast, which contains 35 percent of the total Thai population. It is the driest region and suffers from periodic droughts combined with a lack of a well developed irrigation system. Although lower primary education is close to universal in all regions, discrepancies still exist with respect to the percentage of children who continue their education beyond this level. For example, the northeast ranks lowest in the percentage of young adults who continued beyond primary education.

The north is the second poorest region and contains 21 percent of the total population. Because of its mountainous terrain, rice farming in many areas is concentrated in densely settled narrow valleys and involves particularly intensive agricultural practices. Communally run, small-scale water control systems are common and perhaps are part of the reason why social commitment to the structural organization of the valley community is generally judged to be greater in the north than elsewhere.

The smallest region in terms of both land area and population is the south, which contains 12 percent of the population and tends to rank higher on most socioeconomic indexes than either the north or the northeast. It is the region of heaviest rainfall and is least dependent on rice as either a subsistence or export crop. Tin mining, rubber planting, and coastal fishing are important contributors to the local economy.

1.1c Education

Universal compulsory education in Thailand was enacted into law in 1921. Implementation has been a gradual process but by 1980 was virtually complete. Government efforts have focused mainly on primary education, and until recently the highly educated segment of Thai society consisted almost exclusively of a small elite in Bangkok. This has changed to some extent in recent decades, especially since the establishment of a large open-admissions university in Bangkok, and the opening of regional universities. In the last few decades, education has been a vital government activity representing a critical part of the overall effort to accelerate social development. Nevertheless, advancing through the educational system is still a long and difficult task, especially for rural Thais. After finishing primary education (presently six years) in a village school, a student would typically have to enter a secondary school in a district or provincial center located a considerable distance away. After completing grade 9 or 12, depending on whether vocational or university education was sought, a student often would need to move to Bangkok or at least to a regional center to study further.

Until recently, school attendance was compulsory only through the first four grades, known as "lower primary" education. During the 1970s, as part of a reform of the educational system, primary education was reduced from seven to six grades and the distinction between lower and upper primary levels eliminated. Compulsory attendance has also been extended and now covers the entire six primary years. Implementation of the increase in the number of years of compulsory education has been an ongoing process rather than a sudden universal change, but by the mid-1980s was largely in effect. Since the change is quite recent, it is only starting to have a major impact on the educational distribution of the adult population. In 1980, the majority (59 percent) of Thais aged 15 or over had exactly a fourth-grade education and only 21 percent had attended more than fourth grade. Among women in the major reproductive ages 20-44, 17 percent had more than a fourth-grade education in 1980 compared to 70 percent who had exactly a fourth-grade education.

1.2 Population

According to recent population projections by Thailand's National Economic and Social Development Board (NESDB), Thailand's population was 54 million in 1987. This represents more than a sixfold increase since 1911, when the population was only 8 million according to the first census. As in many developing countries, population growth, particularly since World War II, has been relatively rapid. Although the intercensal rates of growth can be considered as only approximate due to uncertainties about the completeness of the census enumerations, it seems likely that the rate of growth peaked at over 3 percent per year during the 1950s and the early 1960s. By the first half of the 1980s, according to the recent NESDB estimates, the population growth rate had declined to below 2 percent. This reduction in the growth rate reflects a rapid and substantial decline in fertility over the last two decades.

1.3 Population and Family Planning Policies and Program

During most of the present century, Thailand's official stance on population was pronatalist. Following a report by a World Bank economic mission in 1959 recommending that the government seriously consider the adverse effects of high population growth on economic development, officials started to reconsider the government's position. This culminated with the declaration in 1970 by the Thai Cabinet of an official policy to reduce population growth and the National Family Planning Program was formally established under the auspices of the Ministry of Public Health. A number of steps had been taken prior to 1970, however, that in effect constituted the beginning of a government-sponsored program to promote family planning. Since family planning activities under the jurisdiction of the Ministry of Public Health are integrated into child and maternal health services, the program was able to take advantage of the existing extensive infrastructure available for government health services in general.

1.4 Health Priorities and Programs

The Ministry of Public Health is responsible for the provision of health care services, disease prevention and control, and other welfare services related to the health of the population. It has been the policy of the government to expand and provide medical services to cover the population at all levels of administration. The current Sixth Five Year Plan emphasizes the quality of life for all through the fulfillment of basic minimum needs. The targets for meeting these basic minimum needs during the current Five year Plan are: 1) Family members consume sufficient nutrition and safe food; 2) Every family member has appropriate shelter and environmental conditions; 3) People have the opportunity to receive basic services essential for daily living; and 4) Seventy-five percent of married women in reproductive years practice family planning and child spacing while the two-child family norm is promoted.

The current national health development programs include health administration, health services, community participation in primary health care, technology development for disease control, and health promotion and consumer protection. These programs are designed to achieve the basic minimum need targets, reduce mortality, morbidity and incidence rate of diseases identified as major health problems, reduce the population growth rate to 1.3 percent by 1991, and expand and promote health personnel and infrastructure. Emphasis is also given to lower morbidity of vaccine preventable diseases common among new born babies such as diphtheria, tetanus, pertussis, polio and measles.

1.5 Survey Objectives

The Thai Demographic and Health Survey (TDHS) was undertaken for the main purpose of providing data concerning fertility, family planning and maternal and child health to program managers and policy makers to facilitate their evaluation and planning of programs, and to population and health researchers to assist in their efforts to document and analyze the demographic and health situation. It is intended to provide information both on topics for which comparable data is not available from previous nationally representative surveys as well as to update trends with respect to a number of indicators available from previous surveys, in particular the Longitudinal Study of Social Economic and Demographic Change in 1969-73, the Survey of Fertility in Thailand in 1975, the National Survey of Family Planning Practices, Fertility and Mortality in 1979, and the three Contraceptive Prevalence Surveys in 1978/79, 1981 and 1984.

1.6 Organization of the Survey

Thai Demographic and Health Survey (TDHS) is carried out by the Institute of Population Studies (IPS) of Chulalongkorn University with the financial support from USAID through the Institute for Resource Development (IRD) at Westinghouse. The Institute of Population Studies was responsible for the overall implementation of the survey including sample design, preparation of field work, data collection and processing, and analysis of data. IPS has made available its personnel and office facilities to the project throughout the project duration. It serves as the headquarters for the survey. Figure 1.1 shows the organizational structure of the survey and Figure 1.2 shows the detailed work plan.

Figure 1.1 The organizational structure of the survey

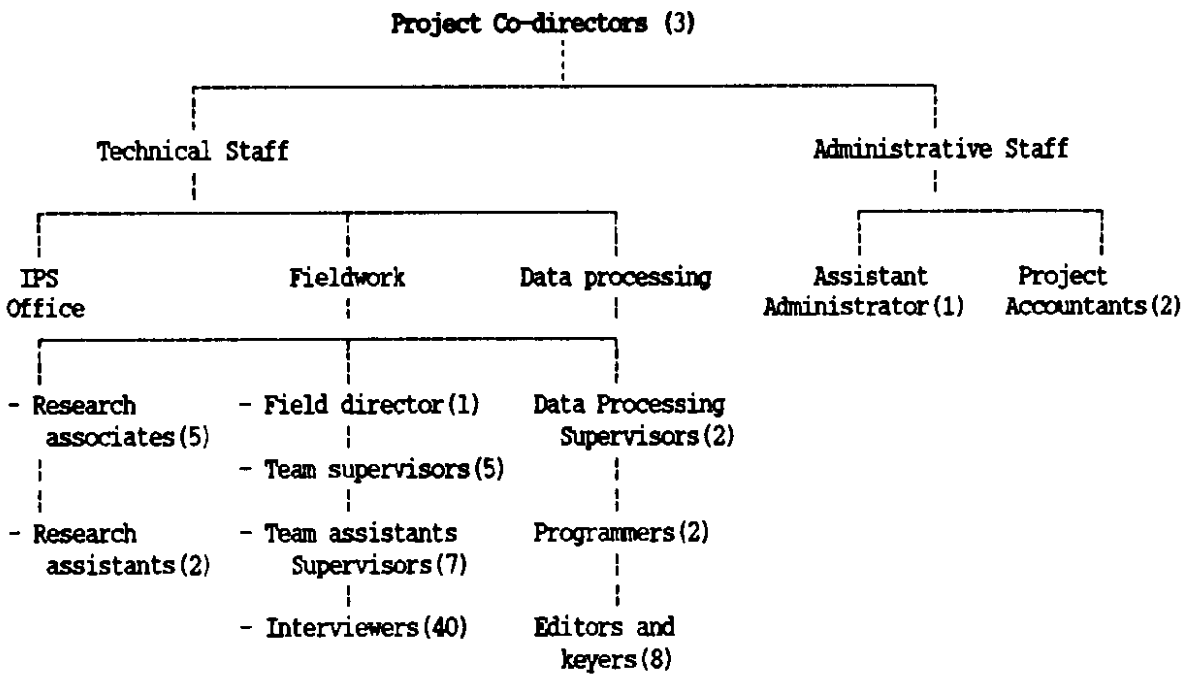


Figure 1.2 Work plan and actual performance schedule

	Activities	Planned	Actual
(1)	Preparation of the survey		
	1.1 Translation of questionnaires 1.2 Preparation of supervisors' and interviewers' manuals 1.3 Sample design 1.4 Printing of the questionnaires 1.5 Recruitment of project assistants	Nov. 1986- Feb. 1987	Nov. 1986- Feb. 1987
(2)	Pretest		
	2.1 Supervisors and assistants' training	-	12-13 and 19-23 Jan. 1987
	2.2 Pretest on the questionnaires	Jan. 1987	14-16 and 24-25 Jan. 1987
(3)	Recruitment of field staff	Feb. 1987	Feb. 1987
(4)	Training of field staff		
	Supervisor's and assistants'	-	23 Feb.- 6 March 1987
	Interviewers	March 2nd- 3rd week	7-18 March 1987
(5)	Implementation of fieldwork	4th week of March-Mid June 1987	19 March-28 June 1987
(6)	Editing, data entry and consistency check	July-Nov. 1987	July 1987-Jan. 1988
(7)	Tabulation and analysis	Dec. 1987-Feb. 1988	Jan-Feb. 1988
(8)	Report writing	March-April 1988	Feb.-April 1988
(9)	Report production	May 1988	May-June 1988
(10)	Seminar presenting results	June 1988	July 1988

a) Sample Design

The TDHS is based on a national sample designed to provide independent estimates for the four major regions of the country plus the Bangkok Metropolitan Area as well as for the urban and rural populations. To achieve this, the population was divided into six separate sampling domains: the Bangkok Metropolitan Area, all provincial urban areas, and the rural areas in each of the four regions. Provincial urban areas are defined as all administratively defined municipal areas outside of Bangkok. The total urban category consists of Bangkok plus provincial urban areas. The sample design and weighting procedures are described in detail in Appendix A. A brief description of it is as follows.

In Bangkok, households were selected in two stage. First a systematic sample of 48 blocks was selected with probability proportional to population size (PPS). Thereafter, households within selected blocks were listed just before the survey and selected so as to obtain a sample with a reasonably uniform overall selection rate for households. All ever-married women aged 15-49 who were in a sample household the night before the interviewer's visit were eligible for the detailed interview (de facto coverage).

In other domains, the sample was selected in three stages: selection of 24 districts per domain with PPS; selection of 2 villages/blocks per district; and finally, listing and systematic selection of households within villages/blocks. Again, the objective was to obtain a sample with reasonably uniform selection probabilities for households within each domain.

The selection procedure described yields the total number of 288 ultimate area units in the sample. The sample districts are shown in Figure 1.3. Of these 288 selected sample units, 9,423 households were identified as the target. The target number of households and eligible women by reporting domain are shown in Table 1.1 (see below under response rates). All estimates from the survey have been computed after appropriately weighting the sample cases reflecting the sampling design used.

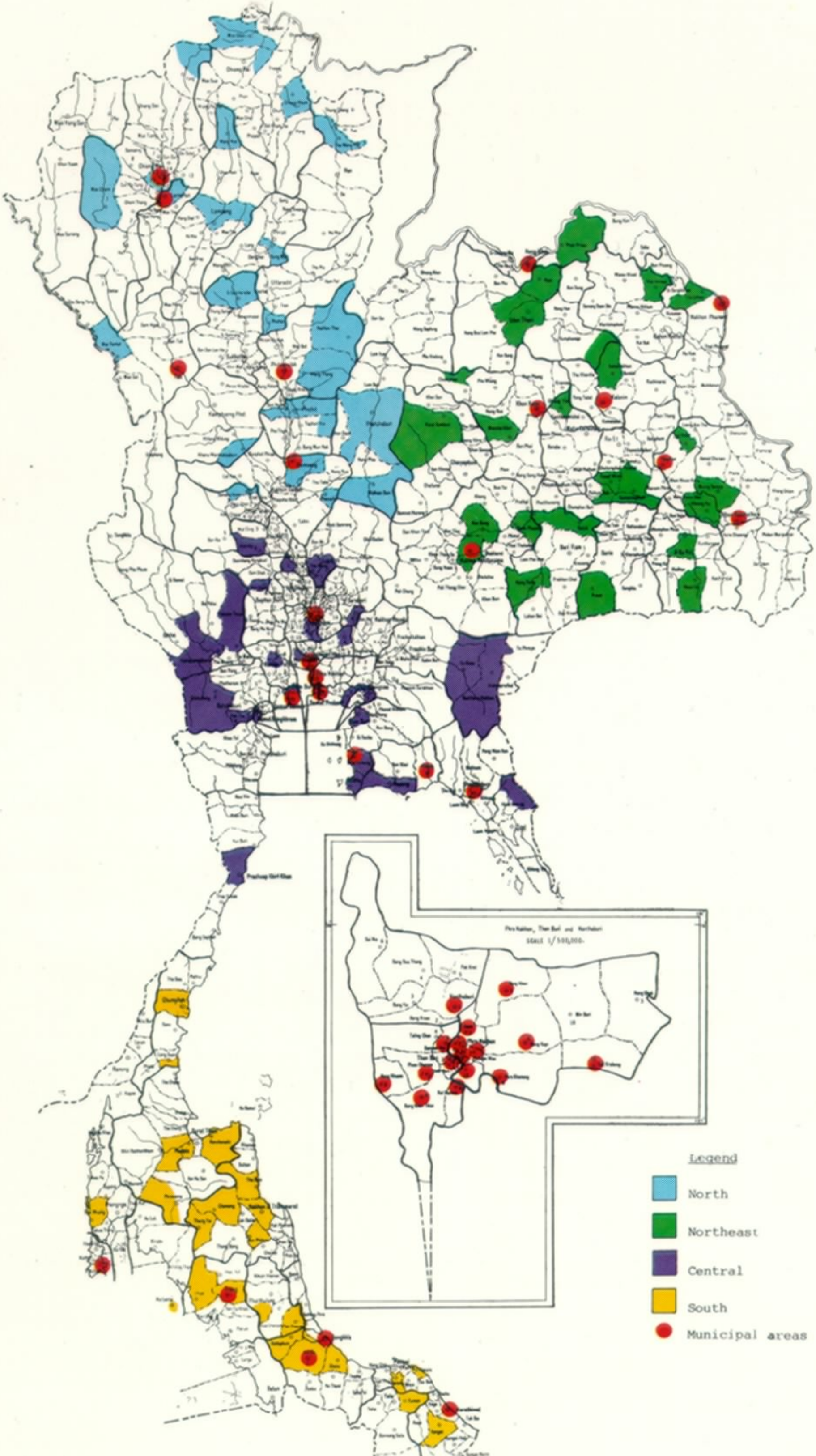
b) Questionnaire Translation and Modification

The DHS core questionnaires (Household, Eligible Women Respondent, and Community) were translated into Thai. A number of modifications were made largely to adapt them for use with an ever- married woman sample and to add a number of questions in areas that are of special interest to the Thai investigators but which were not covered in the standard core. Examples of such modifications included adding marital status and educational attainment to the household schedule, elaboration on questions in the individual questionnaire on educational attainment to take account of changes in the educational system during recent years, elaboration on questions on postnuptial residence, and adaptation of the questionnaire to take into account that only ever-married women are being interviewed rather than all women. More generally, attention was given to the wording of questions in Thai to ensure that the intent of the original English-language version was preserved.

The three questionnaires employed in the TDHS (household, individual and community) are reproduced in Appendix D.

Figure 1.3

TDHS Sample Districts



1. Household questionnaire

The household questionnaire was used to list every member of the household who usually lives in the household and as well as visitors who slept in the household the night before the interviewer's visit. Information contained in the household questionnaire are age, sex, marital status, and education for each member (the last two items were asked only to members aged 13 and over). The head of the household or the spouse of the head of the household was the preferred respondent for the household questionnaire. However, if neither was available for interview, any adult member of the household was accepted as the respondent. Information from the household questionnaire was used to identify eligible women for the individual interview. To be eligible, a respondent had to be an ever-married woman aged 15-49 years old who had slept in the household 'the previous night'.

Prior evidence has indicated that when asked about current age, Thais are as likely to report age at next birthday as age at last birthday (the usual demographic definition of age). Since the birth date of each household number was not asked in the household questionnaire, it was not possible to calculate age at last birthday from the birthdate. Therefore a special procedure was followed to ensure that eligible women just under the higher boundary for eligible ages (i.e. 49 years old) were not mistakenly excluded from the eligible woman sample because of an overstated age. Ever-married women whose reported age was between 50-52 years old and who slept in the household the night before the visit were also identified in the household questionnaire as potential candidates for the eligible woman sample and interviews were initiated with them. If in the course of the individual interview, which asked about the birthdate of the woman, it was discovered that these women (or any others being interviewed) were not actually within the eligible age range of 15-49, the interview was terminated and the case disqualified. This attempt recovered 69 eligible women who otherwise would have been missed because their reported age was over 50 years old or over.

2. Individual questionnaire

The questionnaire administered to eligible women was based on the DHS Model A Questionnaire for high contraceptive prevalence countries.

The individual questionnaire has 8 sections:

1. Respondent's background
2. Reproduction
3. Contraception
4. Health and breastfeeding
5. Marriage
6. Fertility preference
7. Husband's background and woman's work
8. Heights and weights of children and mothers

The questionnaire was modified to suit the Thai context. As noted above, several questions were added to the standard DHS core questionnaire not only to meet the interest of IPS researchers but also because of their relevance to the current demographic situation in Thailand. The supplemental questions are marked with an asterisk in the individual questionnaire (see Appendix D).

Questions concerning the following items were added in the individual questionnaire:

Did the respondent ever experience a miscarriage or abortion? If so, how many?
Educational attainment and expectations for each of respondent's living children age 6 or above.

Did the respondent ever use contraception subsequent to marriage and prior to first pregnancy? If so, how long after marriage did she first use contraception?

Information on whether or not users of oral contraceptives forgot to take the pill any time during the last month and if so, how many times.

Information on the type and timing of first contraceptive method used since last birth including a probe on whether contraceptive use was initiated prior to or subsequent to the return of menses

The place of the respondent's last delivery.

Whether the respondent's marriage was registered; whether the marriage was marked by a ceremony.

Did the couple live with any set of parents following marriage? If so, with whose parents did the couple reside following marriage?

Does the respondent consider a lower high school education sufficient for young people nowadays?

Secondary occupation of husband.

Information on respondent's current work, employment status and type of payment.

Height and weight of mothers of children 3-36 months of age.

3. Community questionnaire

TDHS community questionnaire was based on the model DHS community questionnaire. Again it was modified to suit the situation in Thailand. The community survey was conducted in all 192 sample clusters (villages) of rural areas but not in urban areas. The community questionnaire focuses on information on village characteristics, accessibility to health and family planning services, and availability to public services nearest to the cluster.

The community was defined according to official administrative boundaries. A group interview was used as the mode of data collection for the community survey. The interview was conducted by the team supervisor. The respondents were a group of community leaders (typically 3-5 persons). Persons qualifying as respondents included current or former village headmen, or their assistants, village health volunteers, village health communicators, members of existing associations (groups) in the village, and other village leaders who have been residing in the community for five years or more. Visits were also made to all government health and family planning service outlets within a 30 kilometer radius from the cluster to collect information from the personnel about services.

c) Supervisors' Training

Most team supervisors of TDHS fieldwork were IPS research associates with extensive fieldwork experience. Training of supervisors and assistants was conducted by the field director and project technical staff. The training of supervisor and assistants was divided into 2 phases. The first phase started with a two day briefing which focused on the content of the household and individual questionnaire. Since it was essential for the supervisors and assistants to understand the questionnaires thoroughly, given their role as field editors, after the initial briefing sessions, the supervisors conducted interviews in the field as part of the questionnaire pretest. This was then followed one week later by a special one-day seminar to discuss lessons from the first pretest and by an additional day of practice interviews in a slum area of Bangkok.

The second phase of the training took place from February 23 to March 6, 1987 and included five days on anthropometric measurement. The anthropometric training was conducted by a specialist provided by DHS headquarters. The second phase also included a week of additional training concerning the household and individual questionnaires. At the same time the supervisors were also trained to administer the community questionnaire. Further training of supervisors and assistants concerned fieldwork procedures such as the updating of lists of households, selection of sample households, and visits to health and family planning service outlets.

d) Pretest

The draft questionnaires were pretested in both rural and urban areas of Kanchanaburi province, about 100 kilometers from Bangkok, and in a slum area in Bangkok. The pretest was carried out by five supervisors and their assistants. Results from the pretests were used as basis for revising the questionnaires.

As part of the questionnaire pretest, a separate short questionnaire was administered which was designed to illuminate the nature of age and birth date reporting by mothers for young children. Based on the results, it was decided to instruct interviewers to request to see documentation of birth dates of all live born children, either in the form of birth registration certificates or household registration forms. The pretest indicated that substantial numbers of mothers would be able to do this and that it would eliminate most of the ambiguities associated with age and date reporting that otherwise arise.

e) Pretest Results

Based on the pretest, it was found that there were difficulties with questions 304 and 305. These questions deal with knowledge of sources and potential problems of methods known to the respondent in the core questionnaire. Women who were currently using a contraceptive method (the majority of eligible respondents in Thailand) had particular difficulty answering the questions. These two questions took a long time to ask given that most respondents knew all modern methods and therefore had to be asked about each one. Some respondents showed impatience with being repeatedly asked a question that made little sense to her. It was also obvious from the pretest that question 227 on knowledge of the period of risk of conception during the menstrual cycle was problematic. Nevertheless, on advice from DHS headquarters, these questions were retained.

The pretest also made it evident that the weight and height measurement component demanded both great effort and well organized implementation. Pretest results generally indicated that supervisors and assistants would have to make considerable effort and be very efficient in order to complete all the tasks assigned to them.

f) Interviewer Recruitment

Announcements of positions for interviewers for TDHS were made and over 100 applicants from the student body of Chulalongkorn University were screened. Ability to speak local dialects and fieldwork experience were the two main criteria for selecting the interviewers. A total of 35 interviewers were hired.

g) Interviewers' Training

The training of interviewers took place during March 7-18. The training consisted of a detailed, item by item explanation of the household and individual questionnaires, role playing, mock interviews, field interview practice and a seminar to discuss experiences and problems. The field interview practice was done in both rural and urban areas. Five villages in Pathum Thani Province and non-sample blocks of Bangkok were selected for field interview practice. The training went well. Most interviewers showed enthusiasm and competence in their work.

h) Fieldwork and Supervision

A total of 5 teams were formed for data collection, each consisting of one supervisor, one or two assistant supervisors, seven female interviewers and one driver. The names of the field staff are shown in Appendix E.

The teams were formed according to regions, namely north, northeast, central, south, and the Bangkok Metropolis. Interviewers in each regional team were able to speak the major regional dialect.

In urban areas, sample blocks were updated by the supervisor and assistants before selecting the sample households using maps provided by the

National Statistical Office (NSO). In rural areas, household lists of the sample villages were obtained at the district office. The lists were later updated through consultation with the village headman. In the updating process, supervisors were instructed to probe for structures without a registered number and vacant households. For both urban and rural areas fixed number of sample households for each cluster was systematically selected.

The fieldwork was largely carried out between March and June 1987. The data collection was divided into two main phases. The first phase was from March 17 - April 10 and the second phase from April 17 - June 6, 1987. All teams returned to Bangkok after the completion of the first phase of fieldwork. A two-day seminar was held to discuss problems that arose during the fieldwork and solutions were advised. Extension of data collection to the end of June was required for some sampling clusters in the central region and Bangkok Metropolis. At the end of the originally scheduled second phase of the fieldwork a concluding seminar was held to give feedback to the investigators and the IPS technical staff both for improving future surveys and for interpreting results of the TDHS.

The interviews usually took place between 7 am. and 7 pm. The average duration of interviews for household and individual questionnaires was 4.5 minutes and 30.9 minutes respectively.

All supervisors and assistants were instructed to closely observe and supervise the interviewers particularly during the first few days of the fieldwork. This procedure was enforced strictly so that any misunderstanding in the questionnaires and errors made could be detected and corrected at an early stage. The field director also visited the teams to help with any problems each team had as well as to deliver any supplies each team needed and bring back completed questionnaires.

Completed questionnaires were submitted to the supervisor or assistant immediately following interview. The questionnaires were edited in the field to the extent feasible. If possible, inconsistencies and errors were clarified and corrected and re-interviews on the questions for which answers were omitted or inconsistent were made.

The interviewers were instructed to make their best attempt to visit and interview the sample households. Usually three call-backs were made for households with no adult or with no one at all at home. To ensure high response rates, sometimes more than three call-backs were made.

The task load of supervisors and assistants was very heavy in the fieldwork. They were responsible not only for the overall management of the team, which included making all contacts, assigning the households to the interviewers, editing the questionnaires, and planning daily work, but they were also assigned to do the anthropometric measurements and the community survey including the visits to the health and family planning service outlets. In retrospect, this workload was excessive. To improve fieldwork quality, it would have been advisable to have had a separate team carry out the time consuming community survey component. One result of the this excessive workload was that it became impossible for the supervisor and assistants to fully edit all the completed questionnaires in a timely manner in the field.

i) Response Rates

Table 1.1 shows the number of households and women selected and successfully interviewed by region. Although equal sample sizes for each domain were originally intended, due to population growth, particularly in urban areas, the number of households selected varied slightly by region. The total number of target households is highest in the central region followed by Bangkok, the north, south and northeast.

In general the response rates of both household and individual interviews in the TDHS were relatively high. For the country as a whole, 96 percent of the selected households were successfully interviewed. The main reason for non-response in the household survey is that either no one at all or no adult was at home. The household response rates vary by region being highest in the northeast (99 percent) and lowest in Bangkok (92 percent). However the total number of households interviewed was greatest in the central region and lowest in the south.

The overall TDHS response rate is 90 percent. As expected Bangkok yielded the lowest success rate while the north and northeast had the highest success rate. The response rate for the eligible woman sample is lower than the household response rate. About 94 percent of eligible women identified were successfully interviewed. The main reasons for non-response in the eligible women survey were that the targeted respondent was not at home and/or refused to be interviewed. Regional differences in the response rates of the individual interviews were similar to the household interviews. The highest response rate for eligible women was in the north (98 percent) and the lowest in Bangkok (87 percent).

The generally high response rates for both household and women interviews were due mainly to the strict enforcement of the rule to revisit the originally selected household if no one was at home initially. No substitution of the originally selected households was allowed. Interviewers were instructed to make at least 3 call-backs if contact with the household or eligible woman had not been made or the interview was incomplete. In many instances revisits were made until the team had moved out of the province.

The survey indicates a low ratio of the number of eligible women per household. On the average there are about 80 eligible women per 100 households interviewed. This is much lower than found in SOFT, conducted in 1975, where the ratio was 96 per 100 households. At least in part this could be attributable to the increasing age at marriage (see Chapter 2). There is some regional variation in terms of number of eligible women per household. The ratio is highest in the northeast (83 per 100) and lowest in the south (75 per 100). This lower ratio of number of eligible women per 100 households explains why the total number of eligible women interviewed was lower than the number targeted (6,775 versus 7,000).

Table 1.1 Number of households and women selected and successfully interviewed, by reporting domain

Reporting domain	Households			Eligible Women			Overall response rate(%)	Eligible women per 100 hh.
	Selected (1)	Successfully interviewed (2)	Response rate (%) (3)=(2)/(1)	Selected (4)	Successfully interviewed (5)	Response rate (%) (6)=(5)/(4)	(7)=(3)x(6)	(8)=(4)/(2)x100
Bangkok	1,913	1,762	92.1	1,441	1,248	86.6	79.8	81.8
North	1,889	1,857	98.3	1,476	1,448	98.1	96.4	79.5
Northeast	1,730	1,708	98.7	1,419	1,384	97.5	96.2	83.1
Central	2,125	2,014	94.7	1,585	1,469	92.7	87.8	78.7
South	1,766	1,704	96.5	1,280	1,226	95.8	92.4	75.1
Total	**9,423**	**9,045**	**96.0**	**7,201**	**6,775**	**94.1**	**90.2**	**79.6**

j) Office Editing and Data Entry

All completed questionnaires have been sent to IPS for office editing. It was originally planned that the team supervisors and some assistants would be retained as office editors and keyers. Unfortunately, most of the temporary team supervisors and assistants left the project at the end of the fieldwork. Therefore, five new editors and keyers had to be hired. These new editors and keyers are graduates from various universities in Thailand with a bachelor degree in social science or a related field. They received intensive training on the content and logic of the questionnaire. To further improve their ability to edit the questionnaires, they conducted interviews with households of the sample clusters that required revisits in Bangkok and the central region.

Office editing of questionnaires was supervised by the field director and two IPS research associates who had also been TDHS team supervisors. The editing was done by the five new editors/keyers, two project assistants, and two IPS permanent research assistants who had also served as team assistants. All questionnaires were given numbers and sorted by sample cluster number. The questionnaires were checked for completeness, internal consistencies and appropriate codes, particularly of the open-ended questions.

The data entry of TDHS started in early July, 1988. The data were directly transferred from the questionnaires to micro-computers, using the ISSA program developed by DHS. Two programmers from DHS were sent to IPS to help set up the ISSA program and train IPS data processing staff on how to work with the program. Office editing and data entry were completed by the first week of January 1988. The tabulations for the preliminary and country report were then prepared with the assistance of the DHS programmer.

1.7 Background Characteristics of the Surveyed Women

The Thai Demographic and Health Survey interviewed 6,775 eligible women (aged 15-49). The description of the characteristics of the surveyed women provides a background for interpretation of survey findings presented in Chapters 2 to 6. A discussion of the associations among some of these background variables is useful for the understanding of the data. The background characteristics of the ever-married women respondents in the TDHS survey are shown in Tables 1.2 and 1.3.

Table 1.2 presents the percent distribution of ever-married women according to selected background characteristics along with the actual and weighted number of eligible women interviewed. The weighting is necessary to compensate for slight differences in the selection probabilities and response rates and to make the regional and rural-urban distribution of the sample correspond to that expected from official sources. The weights are determined in such a way that the total weighted cases equal the total actual cases. Therefore for most of the sample, the weighted number of cases can serve as a rough guide to the actual numbers. The main exceptions arise when the results are tabulated by the criteria used to define the sampling domains, namely region or urban-rural residence, or any characteristics strongly associated with region or urban-rural residence. All results presented in this report are weighted and only weighted number of cases are shown (to allow readers to properly combine categories if so desired).

Table 1.2 Percent distribution of ever-married women according to selected background characteristics

Background characteristic	Percentage (weighted)	Weighted number of women	Unweighted number of women
Age			
15-19	5.0	342	308
20-24	14.8	1,004	1,017
25-29	19.3	1,309	1,320
30-34	19.6	1,328	1,341
35-39	16.4	1,110	1,137
40-44	12.9	877	871
45-49	11.9	805	781
Urban-rural residence			
Urban	18.2	1,233	2,423
Rural	81.8	5,542	4,352
Region			
North	20.6	1,396	1,448
Northeast	34.9	2,365	1,384
Central	21.4	1,450	1,469
South	12.3	833	1,226
Bangkok	10.8	732	1,248
Religion			
Buddhist	92.6	6,275	6,199
Islam	5.3	359	474
Other	2.0	137	97
Not stated	0.1	4	5
Living children			
0	10.4	707	771
1	21.6	1,463	1,503
2	26.1	1,768	1,795
3	16.8	1,138	1,149
4 +	25.1	1,698	1,557
Total	100	6,775	6,775

The selected background characteristics discussed include age, regional and rural-urban residence, religion and number of living children of the sample women. The age of interviewed eligible women in this study is derived from reported birthdates. For those whose year of birth is not known, age is obtained directly from the stated age. However, most women interviewed in this survey were able to give their birth year and/or birth month. Among all interviewed eligible women, 89 percent could report both a month and year of birth, 10 percent reported year but not month of birth, and only one percent could not report year of birth. This high proportion of respondents knowing their birth year stems from the importance of knowing one's animal year of birth within the Thai cultural context. Thus ages in the TDHS can be calculated relatively accurately. The data show that almost two-fifths of the sample women are in the age-groups 25-29 and 30-34. The low percent of women interviewed in the age-group 15-19 is a result of the fact that the sample covers only ever-married women and a minority of women are married before age 20 in Thailand.

As discussed earlier the weighted distribution of sampled women by regional and urban-rural residence conforms to an expected standard distribution (the 1987 projected distribution) used in the calculation of weights. About 82 percent of ever-married women reside in rural areas and 18 percent in urban areas. Of the total sample women, 35 percent are in the northeast, 21 percent each in the north and the central region, 12 percent in the south, and 11 percent in Bangkok.

The majority of the sampled women (93 percent) are Buddhists. Only 5 percent are Moslems. This closely reflects the national distribution. The other religious category includes mostly Christians but also anamists, those with no religion, and any others. They constitute about 2 percent of the sampled women. Only 0.1 percent of the sampled women (or 4 unweighted cases) did not report their religion.

Almost half of the sampled women have one or two living children. About 10 percent have no living children and 42 percent have more than three living children.

The association between each of the background characteristics and educational attainment is shown in Table 1.3 for the eligible woman sample. As described in section 1.1c, the government implemented compulsory education only about 6 decades ago. Before that period, education was largely in the form of Buddhist schooling and restricted to males.

It is important to mention that it is not possible to classify a person in terms of educational level in this report by a uniform conversion from number of years of schooling since several changes in the educational system have occurred over the recent past.* Women of reproductive ages can fall into any one of three different systems of education. Each system divided the number of years of schooling constituting the basic levels slightly differently. Moreover some women might fall into two different systems due to the transition. In general, women aged 40 years and over are likely to be under the first system, women between 20 and 40 years of age are mostly under the second system, and women under 20 tend to fall under the present system. In this study, education of women is classified according to the system to which their cohort belonged.

Although education of women in Thailand has been increasing, only 12 percent have a secondary or higher education. The majority (79%) of ever-married women in the reproductive ages still have only primary education. The remaining 10 percent have no formal education, although some of them may be able to read and/or write.

The percent of women according to education by different age cohorts reflect an increase of education among Thai women. The percent of women with secondary or higher education declines with increasing age except for women in the younger age-groups for which censoring affects the results, i.e. not all of these women have reached the age necessary to complete secondary or higher than secondary educational levels.

As expected, urban women are better educated than their rural counterparts. Regional variation in educational level still remains. Although the majority of women in all regions have only a primary education, the proportion is the highest for the northeast. Women in Bangkok stand out in terms the proportion with higher education.

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*Since the Second World War there have been three systems of formal education before entering college or university in Thailand. The systems differ in terms of the number of primary and secondary school grades involved. These can be represented in terms of three digits in which the first digit refers to the number of years required to complete primary level and the second and the third digits are number of years required to complete lower and upper secondary levels respectively. The first system, 4:6:2, was in effect until 1959. The second system, 7:3:2, was implemented during 1960-1977. The present system, 6:3:3 has been used since 1978. It is important to note that during the second system, the seven years of primary school were divided into lower and upper levels and that it was common to leave school after completing the first 4 years which constituted lower primary school. Graduates of upper secondary school (or their equivalents) usually spend another four years to complete the bachelor's degree from a university or college. Those who have a lower secondary certificate have in the past been qualified to go to vocational colleges such as technical, teachers, and nursing schools, or to police and military academies. However, over time the requirements for entering some of these institutions have been raised. In addition some vocational colleges have been upgraded to university status.

Table 1.3 Percent distribution of ever-married women according to education, by selected background characteristics

Background characteristic	No education	Primary	Secondary	Higher than secondary	Total	Weighted number of women
Age						
15-19	7.5	83.3	9.1	0.1	100	342
20-24	5.9	79.8	11.2	3.1	100	1,004
25-29	6.9	76.0	11.6	5.5	100	1,309
30-34	7.1	81.3	5.9	5.8	100	1,328
35-39	9.4	80.2	6.1	4.3	100	1,110
40-44	13.4	76.5	5.9	4.1	100	877
45-49	20.8	73.8	3.4	2.0	100	805
Urban-rural residence						
Urban	6.0	58.2	23.3	12.5	100	1,233
Rural	10.5	83.0	4.2	2.3	100	5,542
Region						
North	18.2	73.7	5.3	2.9	100	1,396
Northeast	4.8	89.4	3.6	2.2	100	2,365
Central	9.5	77.9	8.4	4.2	100	1,450
South	12.2	73.0	9.4	5.4	100	833
Bangkok	6.8	59.9	22.0	11.3	100	732
Religion*						
Buddhist	8.2	80.1	7.7	4.1	100	6,275
Islam	19.5	69.6	7.8	3.1	100	359
Other	54.0	30.0	6.5	9.5	100	137
Total	9.7	78.5	7.7	4.2	100	6,775

*Excludes a small number of cases for whom religion is not stated

The data also show differences in education by religion. Moslem women have substantially less education than Buddhist women. The percent of women with no education among Moslems is more than double that of Buddhists (20% versus 8%). Buddhist women are more likely to have completed each of the other three educational levels than Moslem women. Educational composition of women in the other religious category reflects the mixed nature of this group. Compared to Buddhist and Moslem women, these women have both a higher percent with no education and a higher percent with more than secondary education. In the remainder of this report, when results are presented according to religion, only Buddhists and Moslems are shown because of the small number and heterogeneous nature of the remainder of the sample.

Chapter 2

Nuptiality and Other Proximate Determinants

This chapter is concerned with nuptiality and other key proximate determinants of fertility. While nuptiality is a phenomenon of considerable social interest in itself, its demographic significance derives from the fact that marriage is a primary indication of the exposure of women to the risk of pregnancy and, therefore, is critical for the understanding of fertility. This is particularly true in a country like Thailand where childbearing is largely confined to marital unions. This chapter therefore begins with a consideration of recent nuptiality patterns and trends. Also considered in this chapter are measures of several other proximate determinants of fertility which influence exposure to risk of pregnancy: breastfeeding, postpartum amenorrhea, and postpartum abstinence.

2.1 Nuptiality Patterns and Trends

Data on the marital status of all household members (assuming those under age 13 are all single) were collected through the household questionnaire. The eligible woman questionnaire, from which most of the data presented in this report are based, was administered only to ever-married women aged 15-49. It is useful, however, to include never-married women in the denominator for certain measures presented so that these measures refer to all women even though the information on which the numerators are based come from the eligible woman questionnaire.

The number of never-married women listed in the household questionnaire can not be directly added to the number of eligible women respondents to form the denominator of total women for two reasons. First, not all ever-married women in interviewed households were actually interviewed themselves as indicated in the discussion of the response rate in the previous chapter. Thus simply to add all never-married women listed in interviewed households would disproportionately represent those who were never-married. Second, ages as coded in the household and eligible woman files are not strictly comparable. In the household questionnaire, age is available only from direct statements of age and is provided for all household members by whomever was the respondent for the household. Ever-married women interviewed for the eligible woman sample, however, were asked not only directly their own age but were also asked their birthdate. Whenever possible, ages of eligible women for the purpose of analyses based on the eligible women file are determined from the birthdate. Since in practice stated age in Thailand often to refers to the age at next birthday rather than to the age at last birthday, recorded ages of a substantial proportion of women in the household listing are a year older than their true age at last birthday while ages of women in the eligible women file are generally correct.

Despite these problems, it is possible to derive an appropriate multiplication factor based on the household schedule to apply to interviewed ever-married women in order to expand the denominator so that it represents all women. Based on weighted data from the household questionnaire, the ratio of all women (i.e. including never-married) to ever-married women at each single year of age as reported in the household questionnaire has been calculated. If results are to be presented for separate categories of the population (e.g. by region or educational level), the ratio of all women to ever-married women at each single year of age is calculated separately for each reporting category. The denominators for the measures are expanded by multiplying through by these ratios. Thus each ever-married woman respondent, at each single year of age as reported in the household questionnaire, is multiplied by the ratio of all women to ever-married women at that age listed in the sample households in the same reporting category. Results are then reported by corrected age. The numerators of these measures remain as reported by the eligible respondents.

Table 2.1 presents the percent distribution of ever-married women and all women according to their current marital status. No distinction is made between couples who legally registered their marriage and those who did not since this is not a socially meaningful distinction in Thailand. In the case of all women, the number of never-married is determined in the manner referred to above and thus the results are not strictly comparable to those based directly on the household sample and presented in Appendix A. As can be seen for the ever-married woman sample, the large majority at all ages are currently married although the percent declines systematically with age. Among ever-married women who are not currently married, divorce and separation account for the majority at the younger reproductive ages while widowhood accounts for the majority at the older ages. For all groups, separation is more common than divorce, in part reflecting the substantial proportion of marriages that were not legally registered in the first place (and thus did not require divorce to terminate).

When the marital status distribution is expanded to refer to all women, the proportion who never married is seen to decline rapidly with age. By the end of the reproductive ages, very few Thai women have never married as indicated by the fact only 4 percent of women aged 45-49 are in this category. Nevertheless, substantial proportions of women in the young reproductive ages remain unmarried: almost half of women aged 20-24 and almost one fourth of those aged 25-29 are still single.

Cohort trends in age at marriage can be described by comparing the distribution for successive age groups, although the data for the oldest cohorts should be interpreted cautiously. Older women may not recall marriage dates or ages with accuracy particularly when unions are not registered. Indeed, many respondents including younger ones, did not recall with precision their date of marriage and frequently the date of marriage had to be determined indirectly by deducing it from the date of first birth. These caveats notwithstanding, the proportion married at successive ages can be derived by cumulating across age of marriage categories. Based on this information, the median age of marriage, defined here as the exact age by which 50 percent of an entire cohort has experienced marriage, can be calculated. The median is preferred over the mean as a measure of central tendency, because, unlike the mean, it can be estimated for any cohort for which at least half of the women are ever-married at the time of the survey.

Table 2.1 Percent distribution of ever-married and all women according to current marital status, by current age

Current age	Never married	Currently married	Widowed	Divorced	Separated	No answer	Total percent	Weighted number of women
				Ever married women				
15-19	-	97.5	0.1	0.0	1.8	0.6	100	342
20-24	-	95.4	0.5	0.4	3.5	0.2	100	1,004
25-29	-	95.0	0.8	1.3	2.7	0.1	100	1,309
30-34	-	94.1	1.3	1.2	3.4	0.0	100	1,328
35-39	-	91.8	3.6	1.4	3.0	0.2	100	1,110
40-44	-	86.4	7.1	1.6	4.7	0.2	100	877
45-49	-	83.9	9.3	1.2	5.4	0.2	100	805
All ages	**-**	**92.0**	**3.1**	**1.1**	**3.6**	**0.2**	**100**	**6,775**
				All women*				
15-19	83.2	16.4	0.0	0.0	0.3	0.1	100	-
20-24	47.8	49.8	0.3	0.2	1.8	0.1	100	-
25-29	23.8	72.4	0.6	1.0	2.1	0.1	100	-
30-34	13.3	81.6	1.1	1.0	2.9	0.0	100	-
35-39	9.1	83.4	3.3	1.2	2.7	0.2	100	-
40-44	6.4	80.9	6.6	1.5	4.4	0.2	100	-
45-49	3.7	80.9	8.9	1.1	5.2	0.2	100	-
Total	**33.6**	**61.1**	**2.1**	**0.8**	**2.4**	**0.1**	**100**	**-**

*Derived by applying a multiplication factor based on the household questionnaire to the eligible women sample and thus differs from age and marital status distribution based only on the household questionnaire as presented in Appendix A. The weighted number of women is not presented for the tabulation referring to all women because it is influenced by this multiplication factor. See text for explanation.

The percent distribution of women by age at first marriage (including the category "never married") and the median age at first marriage are presented in Table 2.2 for different age cohorts. No median age is provided for women aged 15-19 since less than 50 percent have married or for women age 20-24 since the median falls within this age group and thus would be influenced by censoring. The results reveal a steady decline in the median age at marriage for each successive age cohort from 25-29 to 45-49 indicating a trend towards an increasing age at marriage during the past several decades. Such a trend is

Table 2.2 Percent distribution of all women according to age at first marriage (including those reported in household as never married) and median age at first marriage, by current age

Current age	Never married*	<15	15-17	18-19	20-21	22-24	25-27	28-29	30+	Total percent	Median**
15-19	83.2	1.9	10.6	4.3	-	-	-	-	-	100	-
20-24	47.8	2.2	18.2	16.7	10.5	4.6	-	-	-	100	-
25-29	23.8	2.1	20.5	17.8	17.1	12.7	5.4	0.6	0.0	100	21.1
30-34	13.3	2.3	22.0	19.3	15.9	15.3	8.3	2.1	1.6	100	20.7
35-39	9.1	2.9	22.1	20.5	15.7	14.1	9.1	2.8	3.6	100	20.5
40-44	6.4	3.1	21.4	22.5	17.5	14.1	7.0	2.7	5.2	100	20.3
45-49	3.9	4.3	24.5	25.0	17.6	12.5	7.8	1.5	3.0	100	19.7

*Derived by applying a multiplication factor based on the household questionnaire to the eligible women sample. See text for explanation.

**Median in this table is defined as the exact age by which 50 percent of an entire cohort has experienced marriage.

consistent with previous analyses of trends in the age of marriage based on censuses and other surveys (Knodel, et al., 1984).

Table 2.3 presents the median age at first marriage for age cohorts from ages 25-29 to 45-49 according to urban-rural residence, region and educational level. Age at marriage is distinctly older for urban women compared to rural women. Regional differences are modest except for the distinctly older median age at marriage for Bangkok women. Age at marriage is positively associated with educational level, being nine years older on average for women with higher than a secondary school education compared to women with no education.

For most categories of the population shown in Table 2.3, age at marriage has been increasing as indicated by the inverse association between current age and median age at marriage. The major exceptions are women with secondary or with higher than secondary education, for whom age of marriage is relatively late but for whom little trend across age cohorts is evident.

Table 2.3 Median age at first marriage among all women aged 25-49 years (including those reported in the household as never married), by current age and selected background characteristics

Background characteristic	Current age 25-29	30-34	35-39	40-44	45-49	Total
Urban-rural residence						
Urban	24.5	23.5	23.9	22.9	21.9	23.6
Rural	20.5	20.3	19.9	19.9	19.3	20.0
Region						
North	20.3	19.7	19.1	19.3	18.9	19.6
Northeast	20.4	20.0	20.3	20.1	19.4	20.1
Central	21.6	21.7	21.1	20.6	19.8	21.0
South	21.1	20.3	19.0	19.8	20.2	20.1
Bangkok	25.3	24.3	24.9	23.5	21.9	24.2
Education						
No education	20.1	19.1	18.4	18.9	18.3	18.7
Primary	20.1	20.2	20.3	20.3	19.7	20.1
Secondary	23.4	24.1	24.0	23.4	23.6	23.6
Higher	-	26.6	27.6	26.4	27.4	27.9
Total	**21.1**	**20.7**	**20.5**	**20.3**	**19.7**	**20.5**

Note: See definition of median in Table 2.2

2.2 Breastfeeding and Postpartum Insusceptibility

Postpartum protection from conception can be prolonged by breastfeeding which can lengthen the duration of amenorrhea and/or by the delayed resumption of sexual relations. The percentage of women still breastfeeding, and still postpartum amenorrhea, abstaining, and insusceptible are presented in Table 2.4 and serve as the basis for estimates of the median length of breastfeeding and amenorrhea as well as estimates of the length of postpartum abstinence which are shown at the bottom of the table. The joint impact of amenorrhea and abstinence is the length of postpartum insusceptibility, defined as the elapsed time between birth and resumption of both menstruation and sexual intercourse, or the later of the two events. This definition assumes that the period of postpartum amenorrhea coincides with the duration of anovulation following childbirth. While this is not strictly true, the two are probably quite closely related.

The tabulation presented in Table 2.4 is birth-based rather than woman-based, i.e., any woman who within the 3 years preceding the survey had more than two live births (counting twins as a single birth for the purpose of this tabulation) will be included in the table as many times as she had births. The distributions of the proportion of births by the month of birth of the child are analogous to the lx column of a synthetic life table. Note, however, that only the mother's current status is considered and retrospective information about how long a particular status lasted, if that status has been terminated, is ignored. In any real cohort, the proportions in any particular status (such as breastfeeding or amenorrheic) could only decline with time since birth. However, since the results in Table 2.5 are crossectional rather than representing the experience of any actual cohort and because of fluctuations associated with small numbers of cases, it is possible for irregularities to appear in the association between the percent in a given status and the time since birth.

Table 2.4 Percentage of births in the last 3 years whose mothers are still breastfeeding, still postpartum amenorrheic, still abstaining, and insusceptible, by months since birth

Months since birth	Breastfeeding	Amenorrheic	Abstaining	Insusceptible*	Weighted number of births
Less than 2	89.6	97.6	86.4	99.0	84
2-3	88.0	66.9	41.0	76.9	113
4-5	83.5	56.4	11.2	59.6	107
6-7	75.2	38.3	5.0	41.6	128
8-9	75.5	46.5	1.3	47.8	105
10-11	68.3	22.1	10.2	29.2	124
12-13	65.0	13.4	5.9	18.5	131
14-15	50.2	14.8	3.3	18.1	141
16-17	38.7	5.4	1.2	6.6	139
18-19	38.1	7.8	3.3	11.1	126
20-21	39.5	6.4	0.0	6.4	140
22-23	22.8	3.5	5.0	8.2	112
24-25	30.7	2.7	3.6	6.4	151
26-27	21.3	4.6	4.5	9.2	130
28-29	15.2	1.5	0.0	1.5	129
30-31	13.7	1.7	2.3	4.0	100
32-33	10.3	2.5	0.5	3.1	123
34-35	5.4	0.6	2.5	3.1	84
Total	**45.6**	**19.8**	**8.9**	**23.5**	**2,168**
Median**	**14.5**	**5.3**	**2.1**	**5.6**	-

Note: Women who are pregnant are not counted as amenorrheic regardless of whether or not menses returned since their most recent birth

* Either amenorrheic or abstaining
** Calculated from 3 month moving averages based on percentages tabulated by single months

For the purpose of providing some stability to the percentages, the birth data are grouped in two month intervals. Even so, some reversals are apparent. For example, the percentage of children still being breastfed among those born 22-23 months prior to the survey is less than the percent still being breastfed among those born 24-25 months prior to the survey. Nevertheless, the percentages still in the various statuses shown generally decline with each successive duration since birth. In order to calculate medians, three month moving averages were computed based on a comparable set of tabulations by single months since birth (see appendix Table 2A.1). For each of the statuses shown in Table 2.4, it was possible to identify a unique median, i.e. a number of exact months by which 50 percent of mothers had terminated the indicated status.

The results show a median duration of breastfeeding of 14.5 months, a median duration of postpartum amenorrhea of 5.3 months, and a median duration of abstinence following childbirth of 2.1 months. The median duration of insusceptibility, 5.6 months, is only slightly longer than the median duration of amenorrhea because few couples abstain longer than the amenorrheic period. The TDHS is the first survey to provide systematic evidence on postpartum abstinence. The short median duration of abstention is quite consistent, however, with previous qualitative assessments (Knodel, Havanon, and Pramualrathana, 1984).

The large majority of Thai mothers breastfeed their children as evident from the high proportion of children still being breastfed among those born in the months just prior to the survey. For example, 90 percent of children born less than two months prior to the survey and 88 percent of those born 2 or 3 months prior to the survey were still being breastfed. Considerable proportions are also breastfed for substantial durations as indicated by the fact that almost two-thirds of children born about a year earlier were still being breastfed at the time of the survey.

The average duration of postpartum amenorrhea, during which most women are anovulatory and hence not at risk of becoming pregnant, depends largely on the duration and nature of breastfeeding, although a mother's nutritional level and physiological condition may also have some influence. The considerably shorter median duration of postpartum amenorrhea among Thai women in comparison with the duration of breastfeeding may reflect the common practice in Thailand of introducing supplementary food into the diet of breastfed children at a very early age. This could reduce the impact of lactation on suppressing the resumption of ovulation and return of menses associated with it (Knodel, Kamnuansilpa, and Chamratrithirong, 1985).

Given the short duration of abstaining from sexual relations following childbirth and the only moderate duration of postpartum amenorrhea, Thai women become exposed to the risk of pregnancy fairly rapidly following childbirth. According to the definition of insusceptibility used in this analysis, almost one fourth of women would be at risk of pregnancy if they did not practice contraception by 2-3 months following childbirth and 80 percent would be at risk by just over one year.

An alternative procedure for computing average durations of breastfeeding and postpartum amenorrhea, abstinence and insusceptibility based on current status data is the "prevalence/incidence" method borrowed from epidemiology. In epidemiology, the mean duration of an illness can be estimated by dividing its prevalence by its incidence. In this case, the event of concern is not illness but rather breastfeeding (amenorrhea, etc.). Prevalence is defined as the number of children whose mothers are breastfeeding (amenorrheic, etc.) at the time of the survey. Ignoring the slight discrepancy caused by multiple births, the number of children being breastfed is the same as the number of breastfeeding mothers.

Incidence is defined as the average number of births per month. This average is estimated by summing the number of births over the last 36 months to overcome problems of seasonality and fluctuations associated with small numbers of births during short periods of time. For example, a simple division of the number of mothers breastfeeding, at the time of the survey, by the average number of births per month provides an estimate of the mean duration in months of breastfeeding. One major advantage of the prevalence/incidence method over the calculation of the medians from current status data is that it does not require tabulating data for separate months since birth and hence is not dependent on stability in the monthly estimates of proportions in a given status.

Results of the prevalence/incidence estimates of breastfeeding and aspects of postpartum insusceptibility are presented in Table 2.5 according to selected background characteristics. Note that the resulting estimates are means, not medians, as in the previous table. Thus the two sets of estimates are not comparable given the different procedures used to derive them and the different measure of central tendency that they yield.

Very little difference in the mean duration of breastfeeding or the mean of the two components of insusceptibility is evident between older and younger mothers. Urban-rural differences, however, are pronounced except in the case of postpartum abstinence. Urban mothers breastfeed considerably less than rural mothers and, not surprisingly, experience substantially shorter postpartum amenorrhea and hence shorter durations of insusceptibility.

Regionally, Bangkok stands out in terms of the short durations of breastfeeding, postpartum amenorrhea and insusceptibility. The northeast is characterized by unusually long durations of breastfeeding but not especially long amenorrhea. This finding is consistent with previous surveys and is probably attributable to the very early introduction of supplemental food for infants there (Knodel, Kamnuansilpa and Chamratrithirong, 1985). The duration of breastfeeding shows a strong association with educational level. Women with a primary education or less breastfeed for longer durations on average than women with secondary or higher education. Postpartum amenorrhea also lasts noticeably longer among lesser educated women. Finally, religious differentials are also evident although not expecially pronounced. Moslems appear to breastfeed somewhat longer than Buddhists, experience longer amenorrhea, and abstain for longer periods following a birth. Overall Moslems remain insusceptible for approximately two months longer than do Buddhists.

Based on the data presented here, little can be said about recent trends in breastfeeding or the components of postpartum insusceptibility. Although previous surveys have collected data on breastfeeding and postpartum amenorrhea, the procedures used to estimate the average duration are different, thus preventing direct comparisons.

Table 2.5 Prevalence/incidence estimates of mean number of months of breastfeeding, postpartum amenorrhea and postpartum abstinence, by selected background characteristics

Background characteristic	Breastfeeding	Amenorrheic	Abstaining	Insusceptible*	Weighted number of births
Age					
<30	16.5	7.0	3.3	8.5	1,474
30+	16.7	7.4	4.0	9.0	737
Urban-rural residence					
Urban	9.8	4.6	3.6	6.6	388
Rural	18.0	7.7	3.5	9.1	1,823
Region					
North	14.0	7.7	3.6	9.8	435
Northeast	22.2	7.8	2.9	8.8	766
Central	12.5	6.2	3.6	7.8	414
South	16.9	7.8	4.6	9.4	356
Bangkok	9.8	4.8	3.9	6.7	240
Education					
No education	18.7	7.3	4.4	9.2	222
Primary	17.9	7.7	3.5	9.1	1,682
Secondary	7.4	3.4	4.1	6.5	202
Higher	7.9	5.0	2.3	5.4	105
Religion**					
Buddhist	16.2	7.1	3.4	8.6	1,951
Islam	19.1	8.3	4.7	10.5	182
Total	**16.6**	**7.2**	**3.5**	**8.7**	**2,211**

Note: Amenorrheic and insusceptible categories exclude pregnant women

* Either amenorrheic or abstaining
** Excludes cases whose religion is other than Buddhism or Islam or is not stated

Table 2A.1 Percentage of births in the last 3 years whose mothers are still breastfeeding, and still postpartum amenorrheic, abstaining, and insusceptible, by single months since birth

Months since birth	Breastfeeding	Amenorrheic	Abstaining	Insusceptible*	Weighted number of births
0	92.5	100.0	100.0	100.0	21
1	88.7	96.8	81.9	98.6	63
2	87.4	66.8	55.4	80.9	64
3	88.8	67.0	22.3	71.8	49
4	84.7	63.2	15.1	67.6	54
5	82.2	49.6	7.3	51.5	53
6	68.9	48.7	2.5	51.1	64
7	81.5	28.1	7.6	32.3	65
8	75.3	52.7	3.0	55.7	46
9	75.6	41.7	0.0	41.7	59
10	72.8	21.9	12.2	34.1	64
11	63.6	22.3	8.0	23.9	60
12	67.4	19.8	8.5	26.8	64
13	62.8	7.2	3.4	10.5	67
14	51.9	17.6	1.7	19.3	73
15	48.4	12.0	4.9	16.9	69
16	29.6	9.3	1.2	7.6	84
17	52.3	4.1	1.2	5.3	56
18	47.1	14.9	6.2	21.1	60
19	30.0	1.4	0.7	2.2	66
20	32.5	3.2	0.0	3.2	68
21	46.0	9.3	0.0	9.3	72
22	30.0	5.6	2.3	7.8	56
23	15.5	1.3	7.7	8.5	56
24	23.2	0.6	9.7	10.3	57
25	35.1	4.0	0.0	4.0	94
26	22.0	7.8	4.2	11.9	56
27	20.9	2.2	4.8	7.0	73
28	19.0	2.8	0.0	2.8	67
29	11.0	0.0	0.0	0.0	62
30	10.4	1.1	2.6	3.7	44
31	16.4	2.2	2.1	4.3	56
32	15.5	1.4	1.0	2.4	63
33	5.0	3.7	0.0	3.7	61
34	5.0	1.2	3.3	4.4	42
35	5.8	0.0	1.7	1.7	42
Total	**45.6**	**19.8**	**8.9**	**23.5**	**2,168**

Note: Amenorrheic and insusceptible categories exclude pregnant women.

CHAPTER 3

FERTILITY

In the TDHS, information on current, past and cumulative fertility was collected. The eligible woman questionnaire contains questions on the total number of live births and surviving children the woman had over her lifetime as well as a detailed birth history. One innovative feature of the TDHS with respect to eliciting the birth history, as noted in Chapter 1, was to ask respondents, once all the live births were listed by name, to show documentary evidence in the form of birth certificates or household registration forms in order to improve the accuracy and completeness of the reporting of birth dates by reducing reliance on the respondent's memory for such information. Respondents were able to provide documentation of the birth dates for about half (52 percent) of all the births reported. The percentage for which documentation was provided does not vary much according to the birth year. For example, documentation of birth dates are provided for 52 percent of the births reported as occurring during the first five years preceding the interview compared to 55 percent of the births reported as occurring during the second preceding five year period. For all births occurring during the first five years preceding the survey, both the month and year of birth are known for 97 percent either from documentation or from the mother's report. In only 1 percent of the cases, did both month and year of birth have to be imputed.

Although the TDHS collected birth histories only from ever married women, it is possible to calculate fertility measures relating to all women regardless of marital status by assuming that women who were reported as having never married had no children. To the extent non-marital fertility is missed by the survey, however, the assumption of no births to women reported as unmarried will necessarily result in an underestimate of the level of fertility.

Unfortunately there is very little systematic evidence on the extent of non-marital childbearing in Thailand. Since marital status is not recorded when births are registered, information on non-marital births is not available from the vital statistics reports and there has been little research on the topic. Nevertheless, while some births undoubtedly occur outside of marital unions, most observers agree that the level of non-marital fertility is likely to be quite low. Moreover, if an unmarried woman is living with her child in a sample household, she might well have been reported as married in the course of eliciting the household listing and be included as an eligible woman. A check of a sample of 500 TDHS households questionnaires (100 from each region plus Bangkok) to see if in the listings of household residents there was evidence of children living with unmarried mothers yielded no unambiguous cases of illegitimate children and very few cases which seemed likely to be so.

3.1 Current Fertility Levels and Trends

Current fertility levels as reflected in the age specific fertility rates and in the summary total fertility rate (TFR) are presented in Table 3.1. Rates are given for three alternative time periods spanning the preceding 12, 24 and 60 months respectively. The longer the period covered, the greater is the amount of fertility experience taken into account and hence the less subject the rates are to random fluctuation. Note should be made of the fact that since these rates are based on retrospective reports of births during the past, and only women up through age 49 were interviewed, the fertility experience of women in the 45-49 age group presented in Table 3.1 is censored to varying degrees depending on the length of the time period covered. For example, births three years prior to the survey to women who were aged 47, 48 or 49 at that time of giving birth will not be available from the birth history data because these women would have been 50 or over at the time of the survey and hence excluded from the sample. For this reason, TFR's are presented both up to age 44 only (since censoring does not affect rates up to this age for the five year period preceding the survey) as well as to age 49 (the more conventional age span covered by the TFR). In any event, given the very low level of fertility of women 45-49 in Thailand, censoring has little effect on the value of the overall TFR for the periods shown.

Fertility appears to have continued to decline during the five year period preceding the survey judging from a comparison of the TFR for the three alternative time spans. The 12 month TFR is lower than the 24 month TFR which in turn is lower than the 60 month TFR. Note that the TFR for each successively longer period is inclusive of the preceding shorter period and thus minimizes the appearance of change which is examined more directly in the following two tables.

The most striking feature of Table 3.1 is the very low level of recent fertility indicated by the TDHS. For the 12 month period preceding the survey, the TFR indicated is only 2.11 live births per woman. This is below the replacement level for Thailand (which is about 2.25) given current mortality conditions. For the 24 month period preceding the survey, the TFR of 2.21 is just about at the replacement level and for the full 60 month period, the TFR of 2.36 is only slightly above replacement. These rates are low in comparison to other estimates of recent fertility levels, such as from the most recent Contraceptive Prevalence Survey and the Survey of Population Change, and therefore require some comment. A detailed comparison of TDHS fertility rates with those from other sources covering the period between 1970 and 1986 is provided in Appendix B. The general conclusion from the comparison is that the TDHS probably understates the true fertility level by a modest but unknown degree.

The most compelling evidence that the recent levels of fertility are probably higher than indicated from the TDHS is provided by a comparison with fertility rates calculated from registered births. It is widely acknowledged that births are underregistered in Thailand. For example, the most recent Survey of Population Change indicates that birth registration is 88 percent complete. Yet if the TFR is calculated from registered births as reported by the Ministry of Public Health without any adjustment for underregistration, the rates for recent years are quite close to those indicated by the TDHS. For example, for the 5 year calendar period from 1982 to 1986, the TFR as indicated by TDHS is only one percent higher than the TFR based on registered births unadjusted for underregistration.

Table 3.1 Fertility rates for 12, 24 and 60 months preceding the survey, for all women (including never-married women), by age of women at time of childbirth

Maternal age at childbirth	Fertility rates for preceding 12 months	24 months	60 months
15-19	0.049	0.056	0.052
20-24	0.124	0.124	0.132
25-29	0.110	0.131	0.129
30-34	0.065	0.070	0.079
35-39	0.042	0.041	0.052
40-44	0.026	0.017	0.022
45-49	0.006	0.004	0.007
15-49	**2.11**	**2.21**	**2.36**
15-44 only	**2.08**	**2.20**	**2.32**

Notes: The preceding time periods to which the fertility rates refer exclude the month of interview. The total for fertility rates represents the total fertility rate (TFR) for women aged 15-49 and 15-44 respectively. Since women aged 45-49 are progressively censored as one moves back in time from the time of interview to five years preceding the survey, total fertility rates are presented both including and excluding women in this age group.

Table 3.2 presents recent estimates of fertility for selected periods according to various background characteristics. In addition, the average number of children ever born to women aged 40-49. is shown and serves as a convenient measure of cumulative fertility for women close to the end of the childbearing span. To indicate recent trends in fertility, the TFR (based on women aged 15-44 rather than 15-49 to eliminate the influence of censoring) is shown for the calendar year period 1981-83 and 1984 through the time of the survey in 1987. In addition, for examining differentials in recent fertility levels according to background characteristics, the TFR is shown for the 60 month period preceding the survey (both including and excluding women 45-49) and for the 24 month period prior to the survey (based on women 15-49).

The decline in fertility in Thailand over the last two decades is reflected in the large difference for the total sample between current fertility as measured by the TFR and the cumulative fertility of women currently at the end of the childbearing ages, as represented by the mean number of children ever born to women aged 40-49. This latter measure reflects the fertility levels prevailing in the past when these women passed through the reproductive ages. At 4.4 births per woman, cumulative fertility is twice as high as the most recent TFR of 2.2 for the 24 months preceding the survey. The results also indicate that fertility has continued to decline during recent years as evident from the finding that the fertility rate during the 1984-87 period is 16 percent lower than the rate for the 1981-83 period. The recent continuation of a declining trend is confirmed by data on registered births. While the total number of births are likely to be under registered as noted above, there is no evident reason to suspect that the extent of underregistration has deteriorated during the last few years and thus that registered data would indicate a spurious decline. The fact that the TFR based on registered births (with the number of women from the latest NESDB population projections as the denominator), declined by 20 percent between 1981-83 and 1984-86 is supportive evidence that the decline observed in the TDHS data is genuine.

A number of differentials in the level and extent of recent decline in the TFR are evident according to selected background characteristics shown. Recent fertility is distinctly lower for urban than for rural women. Lower urban than rural fertility has been a persistent feature of the Thai demographic situation for at least several decades (Knodel, Chamratrithirong, and Debavalya, 1987) and is also indicated by the forthcoming results of the recent Survey of Population Change (SPC) which refers to the period from mid-1985 to mid-1986. However, the TDHS results indicate that during the six years preceding the survey, the extent of decline was greater among rural than urban women suggesting that the urban-rural differential in fertility is narrowing.

Regionally, recent fertility is lowest in Bangkok, followed by the central region and then the North. The highest TFR is found in the south followed by the northeast. These regional differentials are similar in ranking to those found in the recent SPC, except that the TFR for the north according to the SPC is lower than that for the central region. Judging from a comparison of the rates for 1981-83 and 1984-87 from the TDHS results, fertility has declined during recent years in all regions, although the decline is quite modest in Bangkok where fertility was already extremely low for the 1981-83 period. The largest absolute decline is found in the northeast, where the TFR (through age 44) declined by almost seven tenths of a child, followed by the central region where the TFR declined by half a child.

Table 3.2 Mean number of children ever born to all women (including never-married) aged 40-49 and total fertility rates for selected periods and for 60 and 24 months preceding the survey, by selected background characteristics

Background characteristic	Children ever born to women 40-49	Total fertility rates for women 15-44			Total fertility rates for women 15-49 months prior to survey	
		1984-87*	1981-83	60 months prior to survey	60	24
Urban-rural residence						
Urban	3.13	1.62	1.73	1.64	1.68	1.65
Rural	4.69	2.42	2.93	2.53	2.57	2.40
Region						
North	4.49	2.23	2.41	2.27	2.28	2.17
Northeast	4.80	2.47	3.14	2.62	2.65	2.46
Central	4.09	1.90	2.40	1.99	2.04	1.88
South	4.81	3.03	3.43	3.16	3.21	3.06
Bangkok	3.22	1.60	1.68	1.60	1.64	1.65
Education						
No education	5.64	3.66	3.40	3.44	3.52	3.72
Primary	4.40	2.35	2.86	2.47	2.49	2.34
Secondary	2.51	1.60	1.78	1.65	1.65	1.68
Higher	1.88	1.39	1.51	1.40	1.40	1.39
Total	**4.42**	**2.23**	**2.66**	**2.32**	2.36	**2.21**

Notes: Periods to which total fertility rates refer exclude month of interview. Results in this table are based on all women, including never-married women who are assumed to have no births. The number of never-married women is derived by applying a multiplication factor based on the household questionnaire to the eligible women sample.

*Coverage for 1987 is limited to the months prior to the month of interview.

Education is also associated with fertility levels. The recent TFR is inversely related to the number of years of schooling of women. Those with no education have by far the highest fertility while those who studied beyond the secondary level have the lowest. It should be borne in mind that the large majority of Thai women currently in the reproductive ages have a primary education and thus the proportions in other educational categories are relatively modest (see Chapter 1). Moreover, caution is necessary before interpreting this finding as evidence of a direct educational effect, since educational level is strongly associated with other characteristics which could have important bearing themselves on fertility. For example, women with no education are disproportionately made up of Moslems and ethnic minorities, both of whom are likely to be characterized by high fertility for reasons other than simply educational differences. The pattern of recent change in fertility according to education is irregular: the TFR shows an increase between 1981-83 to 1984-87 in the group with no education and a decline for the other groups. Again the relatively small numbers of women in the categories other than primary education counsel caution in interpreting their fertility trends.

With data on complete birth histories such as collected in the TDHS, a more extensive examination of trends is possible than simply a comparison of the TFR over the last few years prior to the survey. Age specific fertility rates are presented in Table 3.3 for successive 5 year periods preceding the survey. Use of birth histories for analysis of trends places a great burden on the quality of data, which should always be interpreted with caution. Possible omission (or even false inclusion) and incorrect dating of events will affect the accuracy of trends. In the case of the TDHS, the problem of misdating of events is minimized because respondents were requested to show documentation of the birth dates of their children whenever possible. The comparison of fertility rates calculated from the TDHS birth history data with estimates of fertility from external sources presented in Appendix B suggests that the overall fertility level may be understated. Nevertheless the evidence does not suggest any greater omission of more distant births than of recent births. Hence the trends reflected in the TDHS birth history data may be relatively accurate. Note that the age-specific schedule of rates are progressively censored as time before survey increases. The bottom diagonal of estimates (enclosed in parentheses) is partially censored.

The rates indicate a clear and consistent pattern of fertility decline over at least the last two decades. For virtually every age-group, fertility has declined steadily during the periods for which rates could be calculated. The only minor exception is the 15-19 year old age-group for which a steady fertility decline is evident over the last 20 year period but not for the earlier period.

To facilitate an examination of the relative decline in fertility by age-group, the percent decline in age specific fertility rates between each successive 5 year period prior to the survey and the most recent five year period, i.e. 0-4 years prior to the survey, can be calculated based on the rates provided in Table 3.3. The results of such a set of calculations are presented in Table 3.4. By reading down each column, the age pattern of fertility decline is readily apparent. In general, the older the age group, the greater the relative decline in fertility has been between any period in the past and the most recent five year period. For example, the fertility rate for women age 15-19 declined by 28 percent between the period 10-14 years before the survey and 0-4 years before; in comparison the rate for women aged 30-34 declined by 55

Table 3.3 Age-period fertility rates (per 1,000 women including never-married), by age at time of childbirth

Maternal age at time of birth	Years prior to survey						
	0-4	5-9	10-14	15-19	20-24	25-29	30-34
15-19	52	62	72	78	77	81	(51)
20-24	132	172	192	245	258	(261)	-
25-29	129	158	219	262	(311)	-	-
30-34	79	118	176	(235)	-	-	-
35-39	52	79	(129)	-	-	-	-
40-44	22	(42)	-	-	-	-	-
45-49	(7)	-	-	-	-	-	-

Notes: Results in this Table are based on all women, including never-married women, who are assumed to have no births. The number of never-married women is derived by applying a multiplication factor based on the household questionnaire to the eligible women sample. Results in parentheses are based on partially censored observations.

Table 3.4 Percentage decline in fertility rates between successive five year periods prior to the survey and the period 0-4 years prior to the survey, by age at time of childbirth

Maternal age at time of birth	Years prior to survey			
	5-9	10-14	15-19	20-24
15-19	17	28	33	32
20-24	23	31	46	49
25-29	18	41	51	(59)
30-34	33	55	(66)	-
35-39	34	(60)	-	-
40-44	(48)	-	-	-

Note: Based on rates presented in previous table. Figures in parentheses are based on partially censored information.

percent between the same the periods. Almost without exception, the older the age-group, the greater is the percent that fertility declined.

The results from the TDHS presented so far clearly indicate a substantial and relatively steady decline in fertility during the recent past. Figure 3.1 compares the trend in the TFR based on the TDHS with the trends based on data from the Survey of Fertility in Thailand (SOFT), estimates based on the "own children" technique as applied to the 1980 census, and uncorrected registration data (in combination with population estimates of the base population). In order to make this comparison, the TFR as derived from the TDHS has been adjusted to allow for the effect of censoring of fertility rates at the older ages for periods in the past.* In addition, given that rates for SOFT and TDHS are from sample surveys, they are presented as two year moving averages in order to stabilize the trend they show.

The sources are quite consistent in portraying a more or less steady fertility decline over the last two decades. Several other features of the comparison are worth pointing out. First, the series from TDHS fits quite well with the series from SOFT, both in terms of overlapping fairly closely for the several years shown in common and in continuing the trend of decline evident in the earlier SOFT series. Second, while both the SOFT and the TDHS series are

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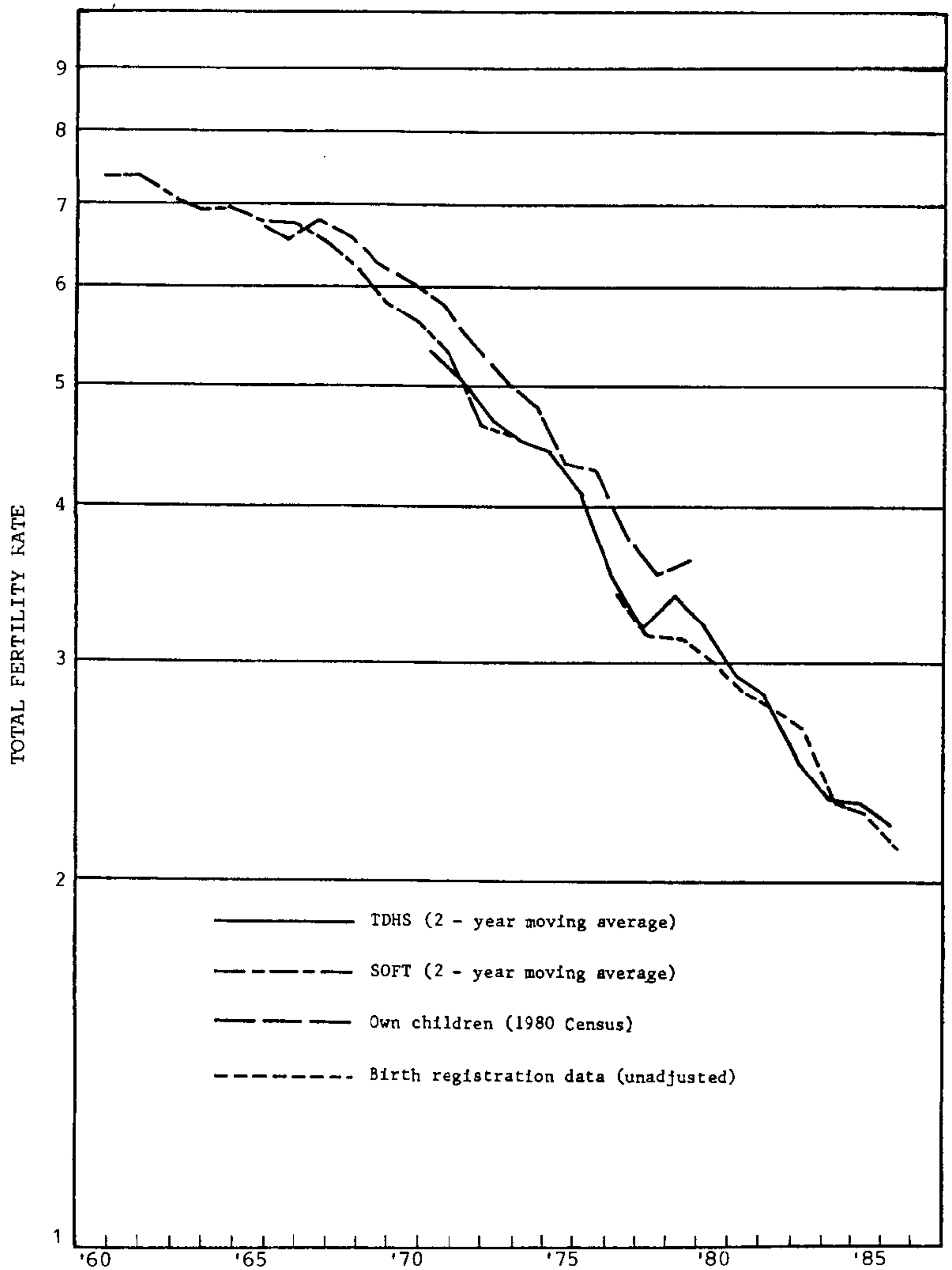
* The adjustments were made as follows. Total fertility rates derived directly from the birth histories collected in the TDHS were calculated for successive 12 months periods preceding the survey based on ages 15-49 for the first 3 prior 12 month periods (covering 1984/85-1986/87), ages 15-44 for the next 5 prior 12 month periods (covering 1979/80-1983/84), ages 15-39 for the next 5 prior 12 months periods (covering 1974/75-1978/79), and ages 15-34 for the next 4 prior 12 month periods (covering 1970/71-1973/74). In order to convert the "partial" total fertility rates derived from the TDHS for the years prior to 1984/85 to complete TFRs covering the entire reproductive age span 15-49, the ratio of the complete to the partial rate was calculated from the age specific fertility rates from the 1980 census based on the "own children" technique and the most recent SPC. Note that the census estimates refer to 12 month periods beginning in April and ending in March of the next year and thus are almost equivalent to the 12 month periods for which rates from the TDHS have been calculated (which refer to periods from approximately May to April). The partial TFR from the TDHS is then multiplied by the appropriate ratio to estimate the complete rate. For example, the ratio of the TFR 15-49 to the TFR for ages 15-34 was calculated directly from the "own children" estimates for 1970/71-1973/74 and applied to the partial TFRs from the TDHS for each of the equivalent twelve month periods to obtain a TFR for ages 15-49 for these years. In like manner, the TFRs for ages 15-39 and 15-44 for subsequent years were converted to complete TFRs for ages 15-49. Note that for the years 1970/71 to 1979/80, the adjustment factors were calculated directly from the age specific rates from the "own children" estimates. However for 1980/81 to 1983/84, the ratio of the TFR for ages 15-49 to the TFR 15-44 was obtained by interpolating between values of the ratio for 1979/80 based on the "own children" estimates and the ratio for 1985/86 based on the most recent SPC. Note that in all cases these inflation factors depend only on the age pattern of fertility and not the level of fertility reported by the sources from which they are derived.

Figure 3.1

Comparison of the trend in the TFR based on TDHS with trends based on data from SOFT, the 1980 census, and vital registration



quite parallel to the "own children" estimates from the 1980 census, they both generally fall below these estimates. Third, not only is the trend from the TDHS estimates parallel to that of the TFRs based on uncorrected registration data for the years shown, but the average level is relatively similar (although higher is some years and lower in others). This last feature suggests that while the trend shown by the TDHS is probably correct, the level of fertility may be underestimated since any correction for underregistration of births would raise the average level of the TFRs calculated from registration data above those from the TDHS.

3.2 Cumulative Fertility

In the TDHS questionnaire, the total number of children ever born has been ascertained by a sequence of questions designed to maximize recall. Each woman was first asked about the number of sons and daughters living with her, then about the number living away from home, and finally about any children that died. Experience suggests that by asking in this way about the separate components of children ever born that omissions of births can be kept to a low level. Since life-time fertility reflects the cumulation of births over the past, it has limited direct relevance to the current situation. Nevertheless, such data provides important background information for understanding current fertility.

The data in Table 3.5 are perhaps the most common fertility statistics derived from surveys. The number of children ever born is presented here for all women (assuming that never-married women had no births) and for ever-married and for currently married women. Differences in results between all women and ever-married or currently married women is greatest at the younger ages because of the large proportion of women who are still single and presumed to have no births. In contrast, differences between ever-married and currently married women are modest at all ages, although slightly greater at older ages, and reflect the impact of marital dissolution. The overall impact of marital dissolution, however, can not be judged from this comparison since many women whose marriage ends prior to completion of the reproductive age span remarry and hence are currently married at the time of the survey.

Since voluntary childlessness is rare in Thailand, the extent of primary sterility can be judged more or less from the percent of married women who are childless at the end of the childbearing ages. Primary sterility is clearly very low in Thailand as indicated by the finding that less than 3 percent of ever-married women aged 40 and over have no children. The much higher fertility rates of the past compared to the present are evident in the average number of children ever born to these same women. Ever-married women aged 40-44 born an average of 4.2 live births while those age 45-49 bore an average of 5.2 births. Among this oldest age-group, over one fourth gave birth to 7 or more children and only 15 percent gave birth to 2 children or less. This is quite a contrast to the low fertility desires younger married women say they wish to have (see Chapters 4 and 5). Given the current widespread practice of contraception, these younger women are likely to limit their actual family sizes to the small desired numbers and within the next two decades cumulative fertility of women at the end of the reproductive years is certain to be far lower than it is today.

Table 3.5 Percent distribution of children ever born among all women, ever-married women, and currently married women, by current age

Current age	Number of children ever born: 0	1	2	3	4	5	6	7	8	9	10+	Total percent	Weighted number of women	Mean CEB
							All women - including never-married*							
15-19	92.5	6.4	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100	-	0.09
20-24	59.6	24.9	12.1	2.8	0.5	0.1	0.0	0.0	0.0	0.0	0.0	100	-	0.60
25-29	31.4	22.8	27.9	12.4	4.2	1.3	0.0	0.1	0.0	0.0	0.0	100	-	1.39
30-34	17.8	13.0	30.2	20.9	11.9	3.9	1.6	0.4	0.3	0.0	0.0	100	-	2.18
35-39	11.9	7.9	20.4	23.4	16.9	9.4	5.0	2.7	0.8	1.1	0.3	100	-	3.03
40-44	8.9	5.1	11.0	19.1	19.6	13.6	10.1	6.0	3.2	1.8	1.5	100	-	3.91
45-49	6.1	4.6	8.0	11.5	13.6	14.3	14.2	10.5	7.5	4.2	5.5	100	-	4.98
Total	**40.4**	**13.5**	**15.8**	**11.3**	**7.5**	**4.4**	**2.9**	**1.8**	**1.1**	**0.6**	**0.6**	**100**	**-**	**1.82**
							Ever-married women							
15-19	55.3	37.9	6.6	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100	342	0.52
20-24	22.7	47.7	23.2	5.3	1.0	0.2	0.0	0.0	0.0	0.0	0.0	100	1,004	1.15
25-29	9.9	29.9	36.6	16.2	5.5	1.7	0.0	0.1	0.0	0.0	0.0	100	1,309	1.83
30-34	5.1	15.1	34.8	24.2	13.7	4.5	1.8	0.5	0.4	0.0	0.0	100	1,328	2.52
35-39	3.0	8.7	22.5	25.7	18.6	10.4	5.6	3.0	0.9	1.2	0.4	100	1,110	3.34
40-44	2.7	5.5	11.7	20.5	20.9	14.6	10.8	6.4	3.4	1.9	1.6	100	877	4.18
45-49	2.3	4.8	8.3	12.0	14.1	14.9	14.8	10.9	7.9	4.4	5.7	100	805	5.18
Total	**10.2**	**20.4**	**23.8**	**17.0**	**11.3**	**6.6**	**4.4**	**2.7**	**1.6**	**1.0**	**0.9**	**100**	**6,775**	**2.75**
							Currently married women							
15-19	56.4	36.5	6.8	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100	334	0.51
20-24	22.6	47.0	23.9	5.4	0.9	0.2	0.0	0.0	0.0	0.0	0.0	100	957	1.16
25-29	10.1	28.5	37.3	16.5	5.7	1.8	0.0	0.1	0.0	0.0	0.0	100	1,243	1.85
30-34	5.1	13.6	35.1	25.0	14.0	4.5	1.9	0.5	0.4	0.0	0.0	100	1,250	2.55
35-39	2.9	7.3	22.1	26.3	19.3	10.9	5.6	2.9	1.0	1.4	0.4	100	1,019	3.40
40-44	2.7	4.8	10.8	20.2	21.7	13.4	11.6	7.3	3.6	2.2	1.7	100	758	4.28
45-49	1.2	3.7	7.5	11.5	15.6	15.0	15.4	11.0	7.5	4.8	6.8	100	676	5.38
Total	**10.5**	**19.7**	**24.2**	**17.1**	**11.6**	**6.3**	**4.4**	**2.7**	**1.5**	**1.0**	**1.0**	**100**	**6,236**	**2.74**

* Never-married women are assumed to have no children. The number of never-married women is derived by applying a multiplication factor based on the household questionnaire to the eligible women sample. The weighted number of all women is not shown because it includes the derived number of never-married women.

Table 3.6 indicates cumulative fertility as measured by children ever born to ever-married women according to marriage duration and age at first marriage. The purpose of this tabulation is to permit an assessment of the relationship between age at marriage and the rate of marital childbearing. Note that beginning at higher durations, the higher age at marriage cells are empty because the upper limit of the age range of the sample (49) is exceeded (e.g., a woman could not be in the sample who married at 25+ and has been married 25-29 years given that she would be at least 50 years old at the time interviewing took place). At marriage durations 0-4, there is little difference in the average number of children ever born according to age at first marriage. As marriage duration increases, an inverse association between age at marriage and cumulative fertility becomes evident, probably reflecting the higher fecundity of earlier marrying women due to their younger age.

Table 3.6 Mean number of children ever born to ever-married women, by age at first marriage and duration since first marriage

Duration since first marriage	Age at first marriage								
	<15	15-17	18-19	20-21	22-24	25-27	28-29	30+	All ages
0-4	0.9	0.8	0.7	0.7	0.7	0.8	0.7	0.7	0.7
5-9	2.1	1.9	1.8	1.9	1.8	1.8	1.6	1.4	1.8
10-14	2.7	2.7	2.5	2.4	2.6	2.3	2.1	2.2	2.5
15-19	3.8	3.6	3.5	3.3	3.2	3.0	2.7	-	3.4
20-24	4.6	4.5	4.7	4.1	4.1	3.3	-	-	4.4
25-29	5.5	5.5	5.2	5.0	5.0	-	-	-	5.3
30+	7.1	6.2	6.5	-	-	-	-	-	6.4
All durations	**3.9**	**3.1**	**2.9**	**2.6**	**2.3**	**1.9**	**1.7**	**1.5**	**2.7**

3.3 Age at First Birth

The onset of childbearing is an important demographic indicator. In many countries, postponement of first births, reflecting a rise in age at marriage, has made a large contribution to the overall fertility decline. In the case of Thailand, the contribution has been modest but not inconsequential (Knodel et al., 1982). The proportion of women who become mothers before the age of 20 is a measure of the magnitude of adolescent fertility, which is a major health and social concern in many countries. Furthermore, early motherhood is associated with higher subsequent fertility.

Table 3.7 shows the percent distribution of women by age at first birth according to their current age. The tabulation includes a category for no birth, and refers to all women, including those who have never married (under the assumption that they have had no children). Median ages at first birth are also presented for all cohorts for which at least 50 percent of the women had a first birth (i.e. age groups 25-29 and above). An increase in the median age at first birth of approximately a year and a half is evident between the cohort of women aged 45-49 and cohort aged 25-29. Given that the timing of marriage and first childbearing are closely linked and, as documented in Chapter 2, that the age of marriage has risen, this increase in age at first birth is not surprising. Indeed, the median age at marriage rose by exactly the same amount between these two cohorts.

Very few women in Thailand start childbearing before age 15 and the proportion of women who had a first birth before age 20 decreased sharply from 32 percent for women aged 45-49 to 24 percent for women aged 20-24.

Table 3.7 Percent distribution of all women (including never-married) according to age at first birth (including the category "no birth"), by current age

Current age	No birth	Age at first birth <15	15-17	18-19	20-21	22-24	25-27	28-29	30+	Total percent	Median*
15-19	92.5	0.1	5.3	2.1	0.0	0.0	0.0	0.0	0.0	100	-
20-24	59.6	0.8	8.5	14.7	11.8	4.6	0.0	0.0	0.0	100	-
25-29	31.4	0.4	8.9	15.8	18.2	18.5	5.8	1.0	0.0	100	23.0
30-34	17.8	0.7	10.0	17.4	16.5	21.0	9.6	4.6	2.3	100	22.7
35-39	11.9	0.9	10.6	18.1	18.0	18.0	12.1	5.0	5.3	100	22.3
40-44	8.9	0.7	7.6	20.0	19.8	20.8	11.1	3.6	7.4	100	22.2
45-49	6.1	1.2	10.9	20.0	21.4	20.2	11.4	4.4	4.5	100	21.6
All ages	**40.4**	**0.6**	**8.5**	**14.1**	**13.5**	**12.9**	**5.8**	**2.1**	**2.0**	**100**	-

Notes: Results in this table are based on all women, including never-married women, who are assumed to have no births. The number of never-married women is derived by applying a multiplication factor based on the household questionnaire to the eligible women sample

* Omitted for ages under 25 and total due to censoring

Table 3.8 presents the median age at first birth for different age cohorts according to selected background characteristics. The age at first childbearing has increased more in urban than rural areas. Overall, urban women start reproduction four years later than their rural counterparts. Regionally age at first birth has risen most in Bangkok and the central region. The pattern is more irregular in the other regions showing little tendency to increase in the northeast or the south and showing an increase in the north mainly among the three youngest cohorts. Overall, the age at the start of reproduction is not greatly different among the regions except for Bangkok where women start childbearing considerably later than elsewhere. Educational differentials are quite pronounced indicating a substantial increase in the age at first birth associated with increased level of schooling completed. This association is evident for almost all age cohorts. Interestingly, there is little evidence of a consistent increase in ages at first childbearing for any of the separate educational categories suggesting that the increase observed nationally is largely a product of the increasing educational levels of younger cohorts.

Table 3.8 Median age at first birth among all women (including never-married) aged 25-49 years, by current age and selected background characteristics

Background characteristic	Current age 25-29	30-34	35-39	40-44	45-49	Total
Urban-rural residence						
Urban	-	26.3	25.8	24.8	23.8	25.9
Rural	22.1	22.2	21.7	21.8	21.3	21.9
Region						
North	22.1	21.3	21.1	21.1	21.0	21.4
Northeast	21.8	22.2	22.2	22.1	21.8	22.0
Central	23.6	23.3	23.0	22.4	21.2	22.8
South	22.8	22.4	21.2	21.2	22.5	22.1
Bangkok	-	27.4	27.0	25.3	23.4	26.8
Education						
No education	22.3	20.9	20.3	20.6	20.0	20.7
Primary	21.7	22.1	22.0	22.1	21.7	21.9
Secondary	25.5	26.4	25.6	24.5	26.8	25.6
Higher	-	28.9	29.8	28.2	29.5	30.8
Total	**23.0**	**22.7**	**22.3**	**22.2**	**21.6**	**22.4**

Notes: Results in this table are based on all women, including never-married women, who are assumed to have no births. Median is not shown for categories for which less than 50 percent of the women have had a birth. The number of never-married women is derived by applying a multiplication factor, based on the household questionnaire to the eligible women sample

CHAPTER 4

FERTILITY REGULATION

This chapter begins with an appraisal of the knowledge, the source of supply and the perceived problems (if any) for different contraceptive methods and then moves on to a consideration of current and past contraceptive practice. For users of periodic abstinence, knowledge of the ovulatory cycle is examined while for those relying on sterilization, the timing of method adoption is reviewed. Special attention is focused on nonuse, reasons for discontinuation, and intention to use in the future. The chapter concludes with tabulations on exposure to and acceptability of media messages about family planning.

These topics are of practical use to policy and program staff in several ways. The early sections concern the main pre-conditions to adoption of contraception such as knowledge of methods and sources of supply. Levels of use of contraceptives provide the most obvious and widely accepted criterion of success of any family planning program. The examination of use in relation to need pinpoints segments of the population for whom intensified efforts at service provision are most needed. In Thailand, where most women have tried at least one method, practical problems with particular methods, or in obtaining supplies and advice, are potential obstacles to further advances in the program. Survey findings on these topics can provide guidance to administrators for the improvement of services.

One simple framework for understanding the determinants of contraceptive use divides these determinants into two types: demand factors and cost factors. It should be born in mind, however, that, in reality, the two may not be independent of each other. The creation of conducive cost factors may well strengthen demand and vice versa. The TDHS contained questions dealing with a variety of aspects of demand and cost factors.

Demand factors consist of the desire of couples to postpone or terminate childbearing. These are treated in the following chapter. Cost factors consist of attributes of contraception and contraceptive services as perceived by actual and potential users. These include: knowledge of methods; acceptance that the regulation of childbearing by contraception is both possible and moral; knowledge of sources of advice and supply; and a belief that at least some methods present no major barriers to use. A further set of cost factors is likely to influence whether initial and often tentative adoption of a method is sustained or discontinued. These include: satisfactory experiences with the method and the source of supply, and ability to use the method effectively. A number of these cost factors are addressed in this chapter.

4.1 Contraceptive Knowledge

Knowledge of contraceptive methods and of places where methods can be obtained are preconditions for their use. The TDHS provides information on the level of knowledge of both methods and service providers. Knowledge data was obtained first by asking the respondent to name the ways that can be used to avoid getting pregnant. If a respondent did not spontaneously mention a particular method, the method was described by the interviewer and the respondent was asked if she recognized the method. Descriptions were included in the questionnaire for nine methods: the pill, IUD, injection, condom, vaginal methods (diaphragm, foam and jelly), female sterilization, male sterilization, periodic abstinence (rhythm) and withdrawal. In addition, other methods mentioned by the respondent (e.g., herbs) were recorded. Finally, for any modern method that she recognized, the respondent was asked if she knew about a place or a person from which she could obtain the method and what main problem, if any, was associated with the method. If she reported knowing about periodic abstinence, she was also asked if she knew a place or a person from which she could get information about the method.

As shown in Table 4.1, knowledge of at least some method of contraception is practically universal among married Thai women in reproductive ages. Over 99 percent of both ever-married and currently married women are aware of at least one modern contraceptive method. Knowledge of oral contraception, the IUD, injection, and both female and male sterilization are all close to universal with well over 90 percent of respondents either spontaneously mentioning these methods when asked what methods they know or indicating recognition when the method was read out to them by the interviewer. Condoms are also widely known although to a somewhat lesser extent than the other modern methods. In contrast, vaginal methods (diaphragm, foam or jelly) are not widely known. Likewise, familiarity with periodic abstinence and withdrawal is acknowledged by only a minority of respondents.

Table 4.2 shows contraceptive knowledge according to selected background characteristics. Knowledge of at least one method is virtually universal among all the subgroups of the population. Likewise over 90 percent of each subgroup knows the pill and injection. Some differences with respect to knowledge of other specific methods, however, is evident. In general, differentials are most pronounced for the lesser known methods. For example, knowledge of vaginal methods, periodic abstinence, and withdrawal is considerably higher among urban than rural women and increases sharply with educational level. Knowledge of withdrawal is far more common in Bangkok and the south and is the only method better known among Moslems (who are concentrated in the south) than Buddhist.

Table 4.3 presents the distribution of responses according to the main problem perceived about particular methods among women who knew the method. If this information is reasonably meaningful, it could be useful in identifying obstacles to the use of specific methods and be helpful in guiding educational and publicity campaigns. It should be noted that many respondents had difficulty answering this question, especially if they had never used the method. Thus interviewers often needed to coax respondent to elicit an answer. For a number of the methods, even probing failed to obtain an answer and substantial percentages fall in the "don't know" category. Based on the percentages who explicitly indicated there was no problem, the most problem free methods in the perceptions of respondents were sterilization (both male and female) and withdrawal. However, if the "don't know" category is assumed to represent persons who do not perceive a problem with the method and is combined with the "no problem" category, vaginal methods, the condom and withdrawal are perceived to be the most trouble free methods.

It seems likely that the results in Table 4.3 reflect in part how well known a method is rather than just how problematic it is. Quite plausibly, methods that are known by smaller proportions of respondents are not

Table 4.1 Percentage knowing any method, knowing any modern method and knowing specific contraceptive methods, among ever-married and currently married women, by current age

Age	Any method	Any modern method*	Pill	IUD	Injection	Vaginal methods	Condom	Female sterilization	Male sterilization	Periodic abstinence	With-drawal	Other	Weighted number of women
							Ever-married women						
15-19	99.5	99.2	98.8	90.5	98.1	15.1	88.5	96.1	95.3	21.8	20.2	18.5	342
20-24	99.5	99.5	99.0	94.6	97.9	13.3	90.7	97.9	95.0	28.7	30.2	18.5	1,004
25-29	99.7	99.7	98.9	95.1	97.5	16.7	91.8	97.8	96.0	33.4	32.3	20.5	1,309
30-34	99.9	99.9	99.8	96.9	98.8	17.4	92.7	99.2	98.4	31.9	29.9	16.0	1,328
35-39	99.6	99.6	98.9	95.7	97.8	19.2	90.0	98.5	96.8	27.9	27.3	14.7	1,110
40-44	99.1	99.1	96.9	93.2	95.0	15.8	82.7	96.6	93.8	26.8	23.2	9.0	877
45-49	98.4	99.3	96.3	90.5	91.6	17.6	72.0	94.4	91.6	17.8	17.3	5.7	805
All Ages	**99.4**	**99.4**	**98.5**	**94.5**	**96.9**	**16.6**	**87.8**	**97.6**	**95.6**	**28.2**	**27.1**	**15.0**	**6,775**
							Currently married women						
15-19	99.5	99.2	98.8	90.6	98.0	14.7	88.2	96.4	95.5	22.1	20.0	19.0	334
20-24	99.4	99.4	98.9	94.9	97.9	13.5	91.1	98.4	95.2	29.3	30.9	18.9	957
25-29	99.9	99.9	99.2	95.5	97.8	16.9	92.3	98.0	96.2	33.3	31.9	20.6	1,243
30-34	99.9	99.9	99.8	97.1	98.8	17.5	92.9	99.2	98.6	32.2	30.1	16.4	1,250
35-39	99.6	99.6	99.0	95.9	97.8	19.2	90.3	98.5	97.1	28.3	27.7	14.6	1,019
40-44	99.6	99.6	99.6	93.7	95.8	15.9	84.2	97.4	94.4	26.5	23.0	9.0	758
45-49	98.3	98.2	95.9	90.3	92.0	18.2	71.6	94.3	92.5	18.1	18.4	5.8	676
All Ages	**99.6**	**99.5**	**98.7**	**94.7**	**97.2**	**16.8**	**88.5**	**97.8**	**96.0**	**28.6**	**27.5**	**15.4**	**6,236**

* Includes pill, IUD, injections, vaginal methods (diaphragm/foam/jelly), female sterilization, and male sterilization

Table 4.2 Percentage of ever-married women aged 15-49 knowing specific methods and any method, by selected background characteristics

Background Characteristic	Pill	IUD	Injection	Vaginal methods	Condom	Female sterilization	Male sterilization	Periodic abstinence	Withdrawal	Other	Any method	Weighted number of women
Urban-rural residence												
Urban	98.9	94.4	96.6	25.5	91.9	98.3	96.9	54.7	48.9	16.9	99.6	1,233
Rural	98.4	94.5	96.9	14.6	86.9	97.4	95.4	22.3	22.3	14.6	99.4	5,542
Region												
North	98.0	92.0	96.5	12.1	88.1	96.9	94.4	23.7	23.3	15.5	99.0	1,396
Northeast	98.9	97.8	96.7	14.4	88.4	98.3	96.6	16.8	14.3	16.3	99.7	2,365
Central	99.2	93.9	98.0	21.0	84.3	98.3	95.7	33.5	29.4	9.8	99.9	1,450
South	96.9	91.2	96.8	14.9	89.9	95.2	94.3	34.4	47.7	23.1	98.6	833
Bangkok	98.5	93.3	95.6	25.6	90.3	97.8	96.3	56.1	47.9	11.4	99.5	732
Education												
No education	93.3	79.1	90.0	8.4	71.0	88.9	85.5	9.7	10.8	6.9	96.1	657
Primary	99.0	95.7	97.4	14.3	88.2	98.4	96.3	22.4	22.1	14.0	99.8	5,316
Secondary	99.5	98.5	99.0	30.7	98.3	99.2	98.9	75.0	67.6	26.2	99.8	521
Higher	100.0	99.0	98.8	54.1	100.0	100.0	100.0	93.7	84.9	32.5	100.0	281
Religion*												
Buddhist	99.0	95.7	97.1	16.7	88.1	98.1	96.2	28.4	26.4	15.3	99.6	6,275
Islam	92.8	81.1	92.3	13.5	82.7	88.6	86.7	25.1	39.1	11.5	96.9	359
Total	**98.5**	**94.5**	**96.9**	**16.6**	**87.8**	**97.6**	**95.6**	**28.2**	**27.1**	**15.0**	**99.4**	**6,775**

*Excludes cases whose religion is other than Buddhism or Islam or is not stated

Table 4.3 Percent distribution according to the main problem perceived in using methods (if any), by method, for women who have ever heard of the method

Main problem perceived	Pill	IUD	Injection	Vaginal methods	Condom	Female sterili-zation	Male sterili-zation	Periodic abstinence	Withdrawal	Other
No problem	32.1	29.7	35.1	30.2	43.3	52.7	48.9	41.0	49.8	43.9
Causes infecundity	3.5	1.0	19.2	0.2	0.0	0.4	0.1	0.2	0.0	1.2
Not effective	0.9	17.1	0.6	3.8	6.4	1.7	2.0	21.4	10.7	1.6
Spouse disapproves	0.0	0.2	0.0	0.1	1.3	0.0	0.1	0.9	3.9	0.1
Health concerns	3.3	9.6	5.1	2.6	0.6	2.6	1.0	0.0	0.3	2.3
Access/availability	0.0	0.1	0.1	0.0	0.1	0.0	0.1	0.0	0.0	0.1
Easy to make mistake	0.5	0.0	0.0	0.2	0.0	0.0	0.0	11.7	0.3	0.0
Inconvenient to use	1.1	0.7	0.1	3.8	3.0	0.0	0.0	4.2	4.7	1.2
Emotional/sexual reactions	3.8	1.5	2.2	1.5	0.5	10.6	9.4	0.2	2.2	1.8
Can't work	0.7	0.7	0.4	0.1	0.0	7.2	13.2	0.0	0.0	0.2
Painful	0.6	15.6	0.8	3.5	1.1	4.6	0.7	0.0	0.1	2.6
Weight change	8.0	3.2	10.3	0.5	0.1	5.6	0.7	0.0	0.0	1.1
Allergic reaction	38.3	1.4	12.8	0.7	0.5	2.7	0.3	0.1	0.2	1.7
Don't know*	7.1	19.4	13.2	52.8	43.1	11.9	23.5	20.4	27.8	42.3
Total percent	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Weighted number of women	**6,674**	**6,399**	**6,562**	**1,127**	**5,950**	**6,611**	**6,480**	**1,911**	**1,839**	**1,019**

*Includes a small number of cases for whom no answer was recorded particularly well known even among those who have heard of the method. Hence, well known and more commonly practiced methods such as the pill, IUD and injection may elicit answers about a problem just because they are better known. This is important to consider because it is may not be so that methods for which few problems are mentioned, such as vaginal methods, condoms or withdrawal, if given more publicity, would necessary have wide appeal simply because respondents who knew of these methods could not cite a problem.

Despite these problems with responses to the question about perceived problems associated with different methods, several interesting features emerge from the results. Almost no one mentioned availability or accessibility (which includes cost) as a major problem for any of the methods. Of problems that are more commonly mentioned, quite different ones show up for different methods. By far the most common problem mentioned in connection with the pill is the possibility of an "allergic" reaction, which includes a variety of negative side effects including headaches, dizziness or nausea. Weight change was also mentioned as a problem of the pill by a substantial percent of respondents. In contrast, the IUD is perceived by significant numbers of respondents as not being effective or as being painful while the injection is associated with causing infecundity. The category "health concerns" includes concern about bleeding, which is probably the reason why health concerns are cited most frequently with the IUD and injection. Both male and female sterilization are associated with loss of sexual interest and loss of ability to do heavy work. Finally, periodic abstinence is perceived to be ineffective or susceptible to mistakes in use.

Table 4.4 indicates that most women who knew a specific method could also mention a source where the method (or advice about it) could be obtained. Again many respondents found this question confusing, particularly if they were already using another method or had no intention to use the method. Frequently the question had to be repeated several times to obtain an answer. Nevertheless, the pattern of responses conform largely to where specific methods can actually be obtained and, at a minimum, indicate that Thai women are well informed about how to obtain contraceptive methods (especially considering that several of the methods are virtually universally known). This is not surprising given the very high levels of current and ever-use of contraception discussed below.

4.2 Contraceptive Use

Thailand has experienced a virtual reproductive revolution over the last two decades during which contraceptive prevalence rose from low levels to levels which are almost as high as in the economically more advanced countries of the West. According to the first national survey providing prevalence levels (Round 1 of the National Longitudinal Study) taken in 1969 (rural) and 1970 (urban), 19 percent of currently married women aged 15-44 had ever practiced contraception and 15 percent were currently practicing a method (Knodel and Debavalya, 1978). By 1984, according to CPS3, 82 percent of ever-married women 15-49 had ever-used contraception and 65 percent of currently married women aged 15-44 were currently practicing (Kamnuansilpa and Chamratrithirong, 1985). Results from the TDHS indicate that ever-use has remained at this extremely high level and that current use has increased even further.

Table 4.4 Percent distribution of women who know a specific method according to supply source named (if any)

Source	Pill	IUD	Injection	Vaginal methods	Condom	Female sterilization	Male sterilization	Periodic abstinence	Other
Government hospital	15.7	58.2	31.6	41.3	16.4	85.0	78.0	20.0	65.2
Govt. health center	59.3	27.8	49.6	25.0	48.7	5.6	7.9	24.8	4.9
Family planning clinic	0.3	0.2	0.4	0.6	0.3	0.1	1.2	1.0	0.2
Mobile clinic	0.0	0.2	0.4	0.0	0.2	0.2	2.5	0.2	0.5
Health volunteer	1.0	0.0	0.0	0.0	0.3	0.0	0.0	0.3	0.1
Reading	0.0	0.0	0.0	0.1	0.0	0.0	0.0	17.2	0.1
Private hospital or clinic	4.9	4.5	11.2	7.5	1.6	4.8	4.2	7.0	4.5
Pharmacy	12.1	0.0	0.5	3.3	17.7	0.0	0.0	0.1	1.6
Shop	0.9	0.0	0.0	0.2	0.9	0.0	0.0	0.0	0.6
MCH center or Bangkok health center	4.2	4.9	4.6	4.8	2.4	2.7	2.3	3.6	4.6
Friends, relatives	0.1	0.0	0.1	0.3	0.2	0.0	0.0	15.0	1.4
Other	0.3	0.0	0.1	0.0	0.2	0.0	0.0	2.3	1.7
Nowhere	0.0	0.0	0.0	0.1	0.0	0.0	0.0	1.7	0.0
Don't know*	1.2	4.1	1.5	16.8	10.9	1.5	3.9	6.5	14.6
Total percent	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Weighted number of women	**6,674**	**6,399**	**6,562**	**1,127**	**5,950**	**6,611**	**6,480**	**1,911**	**1,019**

* Includes a small number of cases for whom no answer was recorded

The vast majority of either ever-married or currently married women in the reproductive ages interviewed in the TDHS indicate they have used contraception at sometime. As table 4.5 indicates, 82 percent of ever-married women and 84 percent of currently married women aged 15-49 indicate they ever used a contraceptive method. Almost as high percentages indicate that they have ever used at least one modern method. The pill is by far the most common method ever used, with more than half (56 percent) of ever-married women indicating use at sometime. Injection is the second most common method ever used with more than one in four (27 percent) of ever-married women indicating use either at the present time or in the past. Female sterilization is a close third. Only very small proportions of respondents indicate they have ever used periodic abstinence or withdrawal and use of vaginal methods or Norplant, which has only been recently introduced on a pilot project basis are almost entirely absent among Thai women.

The TDHS indicates that contraceptive prevalence as measured by current use of a contraceptive method is now higher than ever before, continuing the rapid increase evident from previous surveys. Rates are shown in Table 4.6 both for currently married women aged 15-49 and aged 15-44. Previous studies of contraceptive prevalence in Thailand have typically focused on the 15-44 age range given the very low reproductive potential of women aged 45-49. To maintain comparability, the following discussion of contraceptive prevalence focuses on currently married women aged 15-44. This restriction to women 15-44 is only maintained when discussing prevalence and for other aspects of the analysis, the full 15-49 age range is used.

Contraceptive prevalence among currently married women 15-44 has reached 67.5 percent by 1987. This represents an increase over the equivalent prevalence rate of 64.6 for 1984 found by CPS3. Female sterilization is relied on by 22 percent of currently married women 15-44 which is equivalent to one third of all current users and hence is the most common contraceptive method currently practiced. Male sterilization is considerably less common with a prevalence level of 5 percent. Together, a total of 28 percent of married couples in which the wife is aged 15-44 are sterilized. The contraceptive pill, used by 20 percent of currently married women aged 15-44, is the second most common method while injectable contraceptives, used by 9 percent and the IUD, used by 7 percent, take a more distant third and fourth place. Condoms are used relatively rarely as the current method and use of vaginal methods is virtually nonexistent. Likewise, periodic abstinence and withdrawal are quite rare. Thus virtually all contraceptive use among married couples in Thailand is attributable to modern and potentially very efficient methods.

Current contraceptive use is high both among younger and older currently married women although a curvilinear relationship between age and overall use is evident and a considerable difference in the choice of method according to age is apparent. The percentage of currently married women practicing contraception rises with age reaching a peak among women in their 30's and then declines. Even among the youngest and oldest age groups, however, current use is substantial. Considering specific methods, the IUD is the only major method that shows little association between use and age. Among women under 25, contraceptive use is overwhelmingly of modern temporary methods. Use of sterilization (male and female combined), however, is substantial among married women aged 25-29, representing about 30 percent of users in that age category. For age-groups 30-34 and beyond, sterilization accounts for the majority of users.

Table 4.5 Percentage of women who have ever used specific methods among ever-married and currently married women, by current age

Age	Any method	Any modern method*	Pill	IUD	Injection	Vaginal methods	Condom	Female sterilization	Male sterilization	Periodic abstinence	Withdrawal	Other	Weighted number of women
						Ever-married women							
15-19	64.0	62.8	48.4	7.4	20.4	1.1	5.7	0.4	0.1	3.9	3.6	0.4	342
20-24	77.9	76.7	61.9	13.8	31.3	0.6	12.2	4.4	1.0	4.6	6.1	0.5	1,004
25-29	87.0	86.0	64.6	18.0	36.3	0.3	18.2	16.8	3.1	7.1	7.9	0.4	1,309
30-34	88.6	87.5	58.8	16.0	31.9	0.5	15.1	32.6	7.2	7.0	5.9	0.4	1,328
35-39	85.8	84.9	57.9	16.6	28.8	0.1	14.2	30.7	8.8	5.9	5.0	0.6	1,110
40-44	81.0	79.9	49.5	16.5	16.3	0.2	9.0	31.6	9.8	5.0	4.4	0.5	877
45-49	67.1	65.0	36.4	11.9	11.4	1.3	3.7	24.3	6.9	3.1	3.1	0.6	805
All Ages	**81.5**	**80.3**	**55.8**	**15.3**	**27.1**	**0.5**	**12.5**	**22.3**	**5.7**	**5.6**	**5.5**	**0.5**	**6,775**
						Currently married women							
15-19	63.4	62.2	47.7	7.4	20.1	1.1	5.9	0.4	0.1	4.0	3.7	0.5	334
20-24	79.1	78.0	62.6	14.4	32.1	0.5	12.7	4.4	1.1	4.7	6.4	0.5	957
25-29	88.1	87.1	65.2	18.6	36.7	0.3	18.1	17.2	3.3	7.0	7.8	0.4	1,243
30-34	89.7	88.6	59.1	16.5	32.6	0.5	15.5	33.3	7.7	7.1	6.2	0.5	1,250
35-39	87.7	86.7	58.5	17.3	29.8	0.1	14.7	31.9	9.2	6.3	5.2	0.6	1,019
40-44	84.3	83.1	51.8	17.4	16.3	0.2	8.3	32.8	10.4	5.0	4.2	0.6	758
45-49	73.1	71.0	39.9	12.8	12.5	1.5	4.1	26.3	8.1	3.0	3.4	0.6	676
All Ages	**83.6**	**82.4**	**57.2**	**15.9**	**28.1**	**0.5**	**12.8**	**22.9**	**6.0**	**5.7**	**5.7**	**0.5**	**6,236**

Table 4.6 Percent distribution of currently married women according to contraceptive method currently used, by current age

Age	Currently using any method	Pill	IUD	Injection	Vaginal methods	Condom	Female sterilization	Male sterilization	Norplant	Periodic abstinence	Withdrawal	Other	Not using	Total percent	Weighted number of women
15-19	43.0	24.7	7.0	7.0	0.0	1.2	0.4	0.1	0.0	1.9	0.7	0.0	57.0	100	334
20-24	56.8	27.6	8.0	13.7	0.0	1.0	4.4	1.0	0.1	0.4	0.6	0.0	43.2	100	957
25-29	69.1	25.2	8.8	11.3	0.0	1.2	17.2	3.3	0.1	1.2	0.9	0.1	30.9	100	1,243
30-34	75.0	16.7	5.7	8.5	0.1	1.1	33.3	7.3	0.0	1.2	1.2	0.0	25.0	100	1,250
35-39	73.3	16.0	5.7	7.7	0.0	1.5	31.9	8.4	0.0	1.1	0.8	0.2	26.7	100	1,019
40-44	69.4	10.9	8.0	4.6	0.0	1.2	32.7	10.2	0.1	0.5	1.0	0.2	30.6	100	758
45-49	48.4	6.8	4.3	2.3	0.0	0.0	26.3	7.6	0.0	0.3	0.7	0.0	51.6	100	676
15-49	**65.5**	**18.6**	**6.9**	**8.5**	**0.0**	**1.1**	**22.8**	**5.7**	**0.0**	**0.9**	**0.9**	**0.1**	**34.5**	**100**	**6,236**
15-44	**67.5**	**20.0**	**7.2**	**9.2**	**0.0**	**1.2**	**22.4**	**5.5**	**0.0**	**1.0**	**0.9**	**0.1**	**32.5**	**100**	**5,561**

The striking increase in contraceptive prevalence over the last two decades in Thailand is documented in Table 4.7, which summarizes the results from a series of more or less equivalent national surveys. The dominance of female sterilization as the most common method was evident in the first survey when overall prevalence was low but did not reemerge again as the most common method until 1984. Compared to the 1984 CPS3, there has been a slight decline in female sterilization and a slight increase in male sterilization. Pill use has remained virtually constant. The largest increases are in use of the IUD and injection. Given sampling error and differences in the sample design between the TDHS and CPS3, the small changes evident should be regarded with appropriate caution.

Table 4.7 Percentage currently practicing specific methods of contraception among currently married women aged 15-44, 1969-87

Year	Survey	Pill	IUD	Sterilization Male	Sterilization Female	Injection	Condom	Others	All methods*
1969/70	LS1	3.8	2.2	2.1	5.5	0.4	0.0	0.7	14.8
1972/73	LS2	10.6	4.7	2.8	6.8	0.9	0.1	0.5	26.4
1975	SOFT	15.2	6.5	2.2	7.5	2.1	0.5	2.8	36.7
1978/79	CPS1**	21.9	4.0	3.5	13.0	4.7	2.2	4.2	53.4
1981	CPS2	20.2	4.2	4.2	18.7	7.1	1.9	2.7	59.0
1984	CPS3	19.8	4.9	4.4	23.5	7.6	1.8	2.6	64.6
1987	TDHS	20.0	7.2	5.5	22.4	9.2	1.2	2.0	67.5

Notes: LS1 and LS2 refer to rounds 1 and 2 respectively of the National Longitudinal Study of Social, Economic and Demographic Change; SOFT refers to the Survey of Fertility in Thailand; and CPS1, CPS2, and CPS3 refer respectively to the first, second and third Contraceptive Prevalence Surveys. Results for LS1 and LS2 are derived by combining separate rural and urban surveys taken one year apart and weighing the results to reflect the different sampling fractions used.

* Rounding errors, minor coding discrepancies, and users of unspecified methods account for the small differences between the sum of the percentages practicing individual methods and the percentage for all methods.

** Excluding provincial urban.

Source: Knodel, Chamratrithirong and Debavalya, 1987 (except for TDHS).

Contraceptive practice according to selected background characteristics is examined in Table 4.8 based on currently married women aged 15-44. (Parallel results referring to currently married women in the 15-49 age range are presented in appendix table 4A.1 to permit comparison with results from other countries participating in the international DHS project.) The association between number of living children and contraceptive practice is curvilinear. Prevalence is highest among couples with 3 children compared to those with either more or less. The lower percentage practicing among couples with 4 or more children compared to those with 3 probably reflects a selection process whereby couples who do not practice contraception are more likely to reach higher family sizes than those who do practice. In addition, higher parity women are likely to be older and higher proportions may be at ages where they no longer perceive a need for contraception. Permanent methods are relatively rare among women with 0-1 children but quite common among women with 2 or more children.

There is almost no difference in the prevalence rate between rural and urban women and only minor differences in the mix of methods practiced. Sterilization is somewhat higher among urban women, perhaps reflecting the easier availability of the method in urban areas where hospitals and medical personnel are disproportionately concentrated. Likewise differences in contraceptive practice according to educational attainment are quite modest. Except for women with no education, for whom prevalence is somewhat lower than for the remainder, there is no clear association with educational level.

Regional differences in the contraceptive prevalence rate are apparent. The south is clearly characterized by the lowest prevalence level while only modest differences are evident among the remaining regions including Bangkok. Contraceptive practice in the north is extremely high with 75 percent of married women aged 15-44 currently practicing some method. In comparison with results on contraceptive prevalence measured in CPS3 in 1984, the largest regional increase is evident for the northeast where prevalence rose from 61 to 67 percent. The level in both the north and central regions increased by about three percentage points, while in the south the increase amounted to only one percentage point. Finally, Bangkok actually shows a decline in contraceptive prevalence from 72 to 67 percent.

Some regional differences are also evident in the method mix practiced. The north is notable for the high prevalence of contraceptive injectables which were popularized there before other regions through the private program of McCormick Hospital. Pill use is also unusually high in the north. The south stands out with respect to the practice of withdrawal which, although at a low absolute level even in the south, is almost totally absent elsewhere. Its use is associated with the large representation of Moslems in south. Indeed, religious differences in contraceptive prevalence are quite pronounced with Moslems characterized by only half the overall rate experienced by Buddhists. With respect to the practice of specific methods, the Moslems exceed the Buddhists only in the practice of withdrawal. It is also notable the prevalence of female sterilization, the most common method nationally, is only one third as high among Moslems as among Buddhists. The much lower contraceptive prevalence among Moslems, their more frequent practice of withdrawal, and the relative avoidance of sterilization are all consistent with previous findings from CPS3 (Kamnuansilpa and Chamratrithirong, 1985).

Table 4.8 Percent distribution of currently married women aged 15-44 according to the contraceptive method currently used, by selected background characteristics

Background characteristic	Currently using any method	Pill	IUD	Injection	Vaginal methods	Condom	Female sterilization	Male sterilization	Norplant	Periodic abstinence	Withdrawal	Other	Not currently using	Total percent	Weighted number of women
Number of living children															
0	24.8	20.3	0.0	1.2	0.0	1.0	0.1	0.6	0.0	1.0	0.4	0.2	75.2	100	660
1	57.9	27.3	9.9	13.7	0.1	1.4	1.5	1.5	0.1	1.3	1.1	0.1	42.1	100	1,262
2	78.9	21.4	8.6	10.9	0.0	1.4	27.3	7.1	0.0	1.2	1.0	0.0	21.1	100	1,592
3	84.0	16.4	6.1	9.1	0.0	0.9	41.6	8.1	0.0	0.7	0.9	0.1	16.0	100	968
4+	73.3	12.7	7.2	6.6	0.0	1.0	36.1	8.3	0.0	0.5	0.7	0.1	26.7	100	1,080
Urban-rural residence															
Urban	68.5	20.3	4.1	6.6	0.1	2.5	25.8	5.7	0.2	2.0	1.1	0.1	31.5	100	1,029
Rural	67.3	20.0	7.9	9.8	0.0	0.9	21.6	5.4	0.0	0.7	0.8	0.1	32.7	100	4,532
Region															
North	74.7	27.9	3.4	16.3	0.0	0.7	19.0	6.0	0.0	0.8	0.3	0.1	25.3	100	1,161
Northeast	66.5	16.5	13.8	6.5	0.0	0.7	25.3	2.6	0.0	0.7	0.3	0.0	33.5	100	1,943
Central	71.4	21.4	2.7	10.0	0.1	1.5	25.6	9.0	0.0	0.7	0.4	0.1	28.6	100	1,165
South	51.8	12.2	4.9	6.8	0.0	2.1	14.1	5.4	0.1	1.6	4.5	0.2	48.2	100	680
Bangkok	67.4	22.5	4.2	5.6	0.1	2.1	22.8	7.0	0.1	2.1	0.7	0.1	32.6	100	611
Education															
No education	59.4	14.7	4.9	9.6	0.0	1.3	19.4	8.8	0.0	0.7	0.0	0.0	40.6	100	445
Primary	68.6	21.0	7.5	9.8	0.0	0.8	23.0	5.2	0.0	0.4	0.8	0.1	31.4	100	4,409
Secondary	66.0	19.4	6.0	7.0	0.0	3.6	20.1	5.1	0.3	3.6	1.0	0.0	34.0	100	454
Higher	65.7	14.1	6.9	3.6	0.0	3.9	21.6	6.0	0.2	6.3	2.9	0.3	34.3	100	253
Religion*															
Buddhist	69.7	21.0	7.6	9.2	0.0	1.2	23.4	5.4	0.0	0.9	0.8	0.1	30.3	100	5,154
Islam	35.1	10.0	1.5	7.7	0.0	0.8	8.2	3.0	0.0	0.7	3.0	0.1	64.9	100	292
Total	**67.5**	**20.0**	**7.2**	**9.2**	**0.0**	**1.2**	**22.4**	**5.5**	**0.0**	**1.0**	**0.9**	**0.1**	**32.4**	**100**	**5,561**

*Excludes cases whose religion is other than Buddhism or Islam or is not stated

The timing of first contraceptive use relative to the number of living children is of interest when studying the spread of birth control as it can be indicative of when contraception is initiated during the family building process. Results in Table 4.9 show the percent distribution of ever-married women of different age cohorts according to the number of living children at the time of first use and are indicative of the increasing use of contraception for spacing purposes as adoption of birth control became widely accepted over the last two decades. Since the vast majority of Thai women want at least two children (see Chapter 5), those who use contraception before having two children are almost certainly doing so for spacing purposes. The percent of women who had no child when first using contraception shows a strong and consistent negative correlation with age. Among ever-married women age 15-19, 43 percent first used when they had no children compared to only 1 percent of women aged 45-49. An additional 20 percent of women 15-19 started to use when they had only one child. Likewise among women in their twenties, well over half used contraception when they had no child or only one child. In contrast among women in their forties, only a relatively small percentage used contraception when they had less than two or even three children. This pattern is indicative that a shift has taken place from an initial pattern in which contraceptive use was primarily for the purpose of limiting family size to one in which family planning in the fuller sense of both spacing and limiting took hold.

Table 4.9 Percent distribution of ever-married women according to number of living children at time of first use of contraception, by current age

Current age	Never used	0	1	2	3	4+	Missing	Total percent	Weighted number of women
15-19	36.0	43.0	19.6	1.4	0.0	0.0	0.0	100	342
20-24	22.1	39.8	28.6	8.2	1.1	0.1	0.1	100	1,004
25-29	13.0	29.0	34.2	16.3	5.6	1.9	0.0	100	1,309
30-34	11.4	15.0	34.3	22.0	10.7	6.6	0.0	100	1,328
35-39	14.2	8.5	22.4	21.4	14.4	19.0	0.1	100	1,110
40-44	19.0	4.2	12.8	13.7	18.0	32.2	0.1	100	877
45-49	32.9	1.3	4.8	8.9	13.4	38.6	0.0	100	805
All ages	**18.5**	**18.7**	**24.4**	**15.1**	**9.6**	**13.6**	**0.0**	**100**	**6,775**

4.3 Knowledge of the Fertile Period

In an attempt to ascertain whether Thai women have sufficient knowledge of reproductive physiology for the successful practice of periodic abstinence, respondents were asked when during the monthly cycle is a woman at greatest risk of becoming pregnant. Results are presented in Table 4.10 for all ever-married women and for the small subgroup who said they had ever practiced periodic abstinence. Perhaps because knowledge of the fertile period is limited among the Thai population, it was difficult to phrase this question in Thai in a way that appeared to make sense to most respondents. In addition, it is more common in Thailand to think in terms of the safe period rather than the period of risk. This clearly was a problem for some women when answering the question as posed. As a result, the question often appeared to be misunderstood and it was difficult to clearly distinguish someone who did not think they knew the answer from those who either gave a wrong answer or an answer that was difficult to interpret in terms of the question. Hence considerable caution is appropriate in interpreting the results.

The results suggest that an accurate knowledge of the fertile period is very limited in Thailand and indeed the whole concept of changing probabilities of conception during the monthly cycle is probably largely unfamiliar. Only 13 percent of ever-married women responded correctly, i.e. gave an answer that could be clearly interpreted as indicating the most fertile period is in the middle of the monthly cycle. The large majority either appeared to not know or gave an answer that did not fit the standard precoded categories. Even among those who claimed to have practiced periodic abstinence, only 39 percent responded correctly. It is possible, however, that these results underestimate the true level of knowledge because the question may have been misinterpreted by the respondent. On the other hand, since some women may have guessed and given the right answer by chance, the results could also overestimate the extent of correct knowledge of the fertile period.

Table 4.10 Percent distribution of ever-married women aged 15-49 and women who have ever used periodic abstinence according to knowledge of the fertile period during the ovulatory cycle

Fertile period	Ever-married women	Ever users of periodic abstinence
During menstrual period	0.9	1.0
Right after period has ended	14.9	12.8
In the middle of the cycle	12.8	39.0
Just before period begins	3.5	6.4
At any time	0.8	1.1
Other	12.3	25.4
Don't know*	54.7	14.4
Total percent	**100**	**100**
Weighted number of women	**6,775**	**380**

* Includes a small number of cases for whom no answer was recorded

4.4 Timing of Sterilization

Given the importance of female sterilization as a contraceptive method in Thailand, it is of interest to know the trend in the adoption of the method and in determining whether the age at the time of the operation is declining. Information on the age at time of the operation among sterilized women was collected in the TDHS and can serve as the basis for such an analysis. In order to use these data for this purpose, however, the problem of censoring must be taken into account. Since the eligible woman sample, for whom these data are available, excludes women above age 49, there is a decreasing age limit at which women in the sample can report being sterilized the further back in time the operation took place. For example, the oldest a women in the sample could be at the time of being sterilized if the operation took place 10 years prior to the survey would be 39. Women who were sterilized 10 or more years prior to the survey and were aged 40 or over at that time would have been excluded from the TDHS eligible women sample because they would have been over 49 years old at the time of the survey.

Table 4.11 indicates the percent distribution of sterilized women according to the age at the time of sterilization. Results are shown according to the number of years since the operation. These distributions are influenced by the censoring problem referred to above. In order to obtain a summary measure of the age at sterilization that is unbiased by censoring, the median age at sterilization is calculated for women who were under 40 at the time of sterilization and who had the operation within 9 years prior to the survey. These results show very little change in the average age at sterilization over this period of time.

Table 4.11 Percent distribution of sterilized women according to age at the time of sterilization, by the number of years since the operation

Years since operation	Age at the time of sterilization: <25	25-29	30-34	35-39	40-44	45-49	Total percent	Weighted number of women	Median*
<2	17.7	36.6	25.9	12.7	4.9	2.2	100	276	28.7
2 - 3	14.2	36.8	34.7	10.8	3.6	0.0	100	226	29.8
4 - 5	22.1	39.3	21.1	14.0	3.5	0.0	100	247	28.6
6 - 7	25.8	30.5	24.5	15.9	3.3	-**	100	209	28.7
8 - 9	16.5	37.7	28.0	17.0	0.7	-**	100	176	29.4
10+	20.9	38.0	36.2	4.9	-**	-**	100	375	- ***
Total	**19.7**	**36.7**	**29.0**	**11.6**	**2.6**	**0.4**	**100**	**1,510**	**- *** **

* Based on women sterilized prior to age 40 in order to avoid effect of censoring

** Completely censored

*** Not shown because influenced by censoring

Results in Table 4.12 attempt to determine trends in the age at sterilization over a somewhat longer period of time. Note that censoring has an increasing impact as the period under consideration extends further back in time. Thus progressively lower ages are used as cut off points when calculating the median ages as comparisons are made over longer time periods. The results suggest that there was little trend in the age at sterilization over the last 20 years. For example, among women sterilized before age 30, the median age at sterilization was practically identical for those sterilized 15-19 years prior to the survey and those sterilized less than 5 years prior to the survey. Likewise little change is evident over the 15 year period preceding the survey in the median age at sterilization among women sterilized before age 35.

Table 4.12 Median age at sterilization for women sterilized before selected ages, by the number of years since the operation

Years since operation	Median for women sterilized before age 45	40	35	30
0-4 years	29.4	29.1	28.5	26.5
5-9 years	-	29.1	27.2	25.9
10-14 years	-	-	28.9	25.9
15-19 years	-	-	-	26.3
Total	**29.2**	**29.0**	**28.2**	**26.2**

4.5 Source of Contraception

The source of contraceptive supply or service is examined in Table 4.13 for specific methods based on all current users. Those methods for which supply or service is unnecessary are omitted. Sources have been categorized to the extent possible as to whether they belong to the government or to the private sector. Since both government and private agencies operate mobile clinics, they could fit in either category and therefore are treated as indeterminate with respect to the government - private sector dichotomy. Also considered as indeterminate in this respect are respondents whose source is coded as "friends or relatives," "others," "and don't know." All together, only 3 percent of current users stated sources which are ambiguous with respect to belonging to either the government or private sector.

The government sector is clearly the major provider of contraception in Thailand. Over four fifths of current users of a method requiring supply or service indicated that a government outlet provided them with their current method. Government hospitals, including MCH centers, are particularly important as a source for female sterilization and, together with health centers, provide

Table 4.13 Percent distribution of all current users of supply or clinic methods of contraception according to most recent source for supply, by method

Source	Supply methods: Pill	Supply methods: Condom	Supply methods: Injection	Supply methods: Total supply methods	Clinic methods: IUD	Clinic methods: Female sterili-zation	Clinic methods: Male sterili-zation	Clinic methods: Total clinic methods	Total all methods*
Government sector									
Government hospital	9.2	12.4	21.4	13.0	65.7	85.6	55.2	77.1	49.3
Health center	53.7	30.8	60.5	54.9	25.2	1.6	9.6	7.3	28.0
Health volunteer	4.9	3.7	0.0	3.4	0.0	0.0	0.0	0.0	1.5
MCH or Bangkok health center	2.2	2.8	3.2	2.5	4.0	4.0	1.0	3.5	3.1
Private sector									
Family planning clinic	0.5	2.1	0.2	0.5	0.1	0.1	6.3	1.0	0.8
Private hospital or clinic	4.6	3.6	11.5	6.7	3.2	8.0	10.7	7.5	7.1
Pharmacy	20.6	39.9	1.1	15.5	0.0	0.0	0.0	0.0	6.7
Shop	2.3	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.7
Indeterminate									
Mobile clinic	0.1	1.1	1.5	0.6	1.7	0.3	14.5	2.8	1.8
Friend/relative	1.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.3
Other	0.8	0.8	0.6	0.8	0.0	0.0	0.0	0.0	0.3
Don't know**	0.0	2.9	0.0	0.1	0.0	0.4	2.7	0.7	0.5
Total									
Government	70.0	49.7	85.1	73.8	94.9	91.2	65.8	87.9	81.9
Private	28.0	45.6	12.8	24.2	3.3	8.1	17.0	8.5	15.3
Indeterminant	1.9	4.8	2.1	2.1	1.7	0.7	17.2	3.5	2.9
Total percent	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Weighted number of women	**1,170**	**67**	**530**	**1,767**	**435**	**1,511**	**359**	**2,306**	**4,075**

* Total includes women who reported using vaginal methods (supply method) or Norplant (clinic method).
** Includes women for whom no answer was recorded for source of current method

virtually all IUD's. Nevertheless, the private sector plays a substantial role in providing several methods, especially the pill and the condom. Although the condom is relatively insignificant in Thailand as a contraceptive method among married couples, the pill is of considerable importance and the private sector, particularly through drug stores, is the source of supply for over one fourth of ever-married women who use pill. The share of all pill users, including women who are single, may be ever higher but can not be determined from the TDHS given the restriction of the sample to women who have ever married.

Also of interest is the extent to which clients of various sources of contraceptive methods encounter problems when seeking services. Current and past users of contraception were asked if there was anything they disliked about the services they received the last time they received contraceptive supplies or services. Results are shown in Table 4.14 for major sources. Those who reported their last source as a pharmacy, shop, relatives or friends and, because of an error in the routing in the questionnaire, an MCH center or Bangkok Health Center were not asked about problems with services. In general, the vast majority of current and past users do report they encountered no problem. The most common problem reported was waiting time and discourteous service in connection with government hospitals, but even these problems are reported by only a very small percentage of respondents.

Table 4.14 Percent distribution according to type of dissatisfaction with the service (if any) among current users and past users who obtained a method at a source, by type of source last visited

Source of supply	No problems	Wait	Discourteous	Expensive	Did not get method desired	Other	Total percent	Weighted number of women
			Current Users					
Government hospital	88.2	3.2	5.7	0.4	0.1	2.4	100	2,014
Government health center	94.2	0.9	2.6	0.7	0.5	1.2	100	1,147
Mobile clinic	92.6	0.0	0.0	1.8	0.0	5.6	100	75
Family planning clinic	95.8	4.2	0.0	0.0	0.0	0.0	100	33
Health volunteer	98.8	0.0	1.2	0.0	0.0	0.0	100	60
Total	**90.6**	**2.2**	**4.1**	**0.9**	**0.2**	**2.0**	**100**	**3,622**
			Past Users					
Government hospital	86.9	7.5	5.6	0.0	0.0	0.0	100	68
Government health center	96.1	1.3	1.5	0.6	0.0	0.4	100	164
Total*	**93.6**	**2.8**	**2.4**	**0.6**	**0.3**	**0.3**	**100**	**259**

* Includes a small number of cases who obtained method from a mobile clinic, a family planning clinic or a health volunteer but are not shown separately because of their small number.

4.6 Reasons for Discontinuation

Table 4.15 provides information on the main reason for discontinuation among those women who have discontinued a method within the last five years. For women who have discontinued more than one method, the last method that was discontinued is considered. Note that this table includes both women who are currently using as well as those who have not resumed contraception after discontinuing.

The most common reason for discontinuing a method is to become pregnant. This is true both overall and for most methods shown. The only exception is injection for which the most common reason given for discontinuing is health concerns (including concerns about irregular bleeding). Health concerns were also mentioned frequently for the IUD. Former pill users cite both health concerns and allergic reactions (including headaches and nausea) relatively frequently. Periodic abstinence and withdrawal stand out because of the substantial proportion of former users citing method failure as a reason for discontinuation.

Table 4.15 Percent distribution of women who have discontinued a contraceptive method in the last 5 years according to the main reason for last discontinuation, by specific method

Reason	Pill	IUD	Injection	Condom	Periodic abstinence	Withdrawal	Total*
To become pregnant	38.2	27.3	26.4	41.0	39.3	35.5	34.3
Method failed	6.0	11.9	1.9	9.3	33.4	34.8	7.8
Spouse disapproved	0.6	0.5	0.1	15.2	1.0	9.1	1.8
Health concerns	12.3	22.6	30.7	0.5	1.2	0.6	16.2
Access/availability/cost	2.6	0.0	7.7	3.1	0.0	0.0	3.5
Inconvenient to use	4.8	3.2	0.9	7.9	9.9	3.0	3.9
Infrequent sex	4.4	0.0	4.1	2.0	4.3	9.5	3.9
Switch method	4.7	8.7	5.5	11.0	8.1	2.7	5.8
Infecund	2.9	2.4	1.6	1.5	0.6	0.7	2.2
Divorced, separated	1.3	1.1	1.9	1.1	0.8	0.0	1.4
Allergic reaction	14.5	1.5	9.2	0.9	0.0	0.0	9.9
Other	7.5	19.7	9.4	6.1	1.3	1.9	8.7
Don't know**	0.4	1.0	0.7	0.5	0.0	2.2	0.6
Total percent	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Weighted number of women	**1,222**	**213**	**628**	**188**	**77**	**66**	**2,434**

* Includes methods with insufficient cases to be shown separately.
** Includes women for whom no answer was recorded.

4.7 Attitude toward Becoming Pregnant

Table 4.16 shows the response of currently married women who were not pregnant, not abstaining from sex, and not using contraception when asked how they would feel if they were to become pregnant in the next few weeks. The results are presented according to the number of living children the respondent has. Overall, two fifths (40 percent) indicated that they would welcome a pregnancy. Almost one third (32 percent) indicated they would be unhappy to become pregnant, and the remainder (28 percent) said it would not matter one way or the other (28 percent). The proportion who would be happy to become pregnant is by far highest for women with no living children, among whom more than three fourths (77 percent) indicated a positive reaction to the prospect of a pregnancy in the near future and very few (only 6 percent) said they would be unhappy. The more children a woman has, the less likely she is to say that she would be happy to become pregnant and the more likely she is to indicate that she would be unhappy. Thus while women with one child are still far more likely to be happy than unhappy at the prospect of a pregnancy in the near future, among those with two children, those who would be unhappy outnumber slightly those who would be happy. Among women with more than two children, the number who would welcome a pregnancy is far less than those who would be unhappy about becoming pregnant. The number who say it would not matter, and thus appear to be indifferent, is also substantial but except for being distinctly lower among women with no children, does not vary much with the number of living children.

Table 4.16 Percent distribution of non-pregnant, non-abstaining, non-contracepting, currently married women according to attitude toward becoming pregnant in the next few weeks, by number of living children

Number of living children	Happy	Unhappy	Would not matter	No answer*	Total percent	Weighted number of women
0	77.1	6.4	16.1	0.4	100	347
1	48.6	22.6	28.1	0.7	100	390
2	32.5	35.8	30.4	1.3	100	307
3	21.3	43.2	33.0	2.5	100	172
4+	18.0	50.0	31.3	0.8	100	484
Total	**40.0**	**31.6**	**27.5**	**1.0**	**100**	**1,698**

* Includes a small number of women who are coded "don't know"

4.8 Personal Reason for Non-use

In a country such as Thailand where knowledge of contraceptive methods is practically universal and prevalence is quite high, it is of considerable interest to identify the reasons why the minority of women who are not practicing contraception but who say they do not want to be pregnant are not using any method. Such information is of potential value to the National Family Planning Program for targeting publicity and special programs for the remaining non-users as they work toward a goal of providing family planning methods to all who have a need for them.

To help determine the reasons why some women who appear to potentially need to use contraception are not using any method, those who were not using, were not abstaining from sexual intercourse, were not currently pregnant, and did not say they would be happy to become pregnant were asked their reason for not practicing contraception. Table 4.17 shows the responses according to the woman's age. The results are additionally restricted to women who are currently married and specifically said they would be unhappy to become pregnant.

The nature of the reason for non-use among this selected group of women differs among those who are less than 30 and those who are 30 or over. The most common reason stated overall for non-use is that the respondent considers herself to be menopausal or subfecund (thus not truly at risk of becoming pregnant). Overall over a third (34 percent) of women included in the tabulation gave this as a reason. However, this reason is limited almost entirely to older women. Almost half (47 percent) of women 30 or over give this as their reason for not using compared to only 2 percent of women under 30. The second most common reason overall is that the respondent reported herself to be amenorrheic or to be breastfeeding. Presumably these women do not feel they are currently at risk of pregnancy. Overall, 16 percent of the selected women cite this as the reason for non-use. However, this is largely a result of responses from women under 30, for whom this is by far the most common reason.

Two other reasons are also relatively common: 14 percent indicate health concerns and 11 percent indicate infrequent sex. The remaining reasons are all relatively unimportant in terms of accounting individually for a significant number of women not practicing family planning. The fact that 2 percent of the respondents said they are not using because they wished to become pregnant even though the tabulation is restricted to women who replied to an earlier question that they would not be happy to become pregnant in the next few weeks serves as a reminder that questions are not always fully understood by respondents in the way intended by the researchers. One possible reason for this apparent inconsistency is that some women may wish to have a child but not look forward to the period of pregnancy. Hence they say they would be unhappy about becoming pregnant even though they still wish to become pregnant.

Among the four most common reasons stated for non-use, health concerns would appears to be most relevant for the National Family Planning Program to address. Most women stating that they are menopausal or subfecund, who have infrequent sex, or who are amenorrheic or breastfeeding are undoubted at a substantially reduced risk of pregnancy, although not necessarily a totally negligible one. Combined, these categories associated with relatively low risks of conception account for 61 percent of non-use among the selected women. Efforts could be made to inform women who are amenorrheic or breastfeeding or

Table 4.17 Percent distribution of non-pregnant, non-abstaining, non-contracepting currently married women who would be unhappy if they become pregnant, according to the main reason for non-use, by current age

Reason	Current age <30	30+	All ages
Seeks pregnancy	4.9	1.0	2.1
Lack of knowledge	0.8	2.4	1.9
Opposed to family planning	2.9	4.3	3.9
Spouse or others disapproves	0.7	0.8	0.7
Infrequent sex	17.0	8.3	10.8
Postpartum/breastfeeding	38.8	7.2	16.1
Menopausal/subfecund	2.2	47.0	34.4
Health concerns	11.9	15.2	14.3
Access/availability	0.4	0.8	0.7
Costs too much	0.5	0.3	0.4
Religion	2.7	2.7	2.7
Inconvenient to use	1.0	1.2	1.1
Other	14.5	6.5	8.7
Don't know	1.7	2.2	2.1
Total percent	**100**	**100**	**100**
Weighted number of women	**150**	**386**	**536**

who are not totally abstaining that they are still at some risk. If the health concerns cited by respondents about contraceptive use are based on misinformation, however, a more important task would be for the program to disseminate information addressing those misperceptions. This would presumably increase use as a result. By and large, however, it appears that the vast majority of couples who are in need of family planning in Thailand are already practicing contraception, most of which is provided through the government's National Family Planning Program.

4.9 Intentions for Future Use of Contraception

Intention to use contraception in the future provides a forecast of potential demand for services and acts as a convenient summary indicator of disposition towards contraception among current nonusers. The results should not be interpreted literally. The distinction between intended use in the next 12 months and later should be helpful in assessing the extent of demand in the near future. In the case of Thailand, where contraceptive prevalence is already quite high, those who are nonusers are a relatively selected group. As the results just presented indicate, nonusers include a substantial proportion who do not feel they are in need of contraception because they do not perceive themselves to be at risk of becoming pregnant.

Table 4.18 indicates the intentions concerning future use of contraception among currently married women aged 15-49 who are not currently using any method. Results are presented according to the number of living children. Overall, half of nonusers intend to use at sometime in the future while about half do not intend to use or are unsure. Of those intending to use, over half indicate they intend to do so in the next 12 months. A substantial share of the remaining women who intend to use are unsure about when they would start to use. Intention to use differs according to the number of living children. A substantial majority of women with 2 or fewer children intend to use contraception at sometime while almost three-fourths of women with four or more children do not intend to use. Quite likely many of the women with large numbers of living children are relatively close to the end of the reproductive ages and may perceive they have little need for future use because of low exposure to risk of pregnancy.

Table 4.18 Percent distribution according to intentions to use in the future among currently married women not currently using any method, by number of living children (including any current pregnancy)

	Number of living children					
Intention	0	1	2	3	4+	Total
Use in next 12 months	24.6	37.7	35.2	23.2	14.7	27.2
Use later	24.6	16.7	10.3	4.5	2.8	12.9
Unsure about when	10.5	10.5	11.5	6.1	3.8	8.6
Unsure about use	8.6	6.6	6.4	10.0	4.7	6.9
Does not intend to use	31.6	28.3	36.4	56.0	73.9	44.2
No answer	0.1	0.1	0.2	0.0	0.1	0.1
Total percent	**100**	**100**	**100**	**100**	**100**	**100**
Weighted number of women	**504**	**554**	**374**	**192**	**530**	**2,153**

Table 4.19 provides some indication of women's preferences for the method they might use in the future. This information should be interpreted with caution since there are two conditions implied: intention to use and method preferred if intention is followed. Overall, those intending to use express a preference for three particular methods about equally: the pill, injection, and female sterilization. For those intending to use in the in next 12 months, the pill and injection are preferred more than sterilization while the reverse is true for those who intend to postpone use for more than twelve months. Apparently substantial numbers of those who intend to use in the near future are planning to use for spacing purposes while those who are postponing use are

Table 4.19 Percent distribution according to preferred method among currently married women not currently using a contraceptive method but who intend to use in the future, by timing of intended use

Method	Use in next 12 months	Unsure about timing	Use later	Total
Pill	29.0	23.9	22.4	26.3
IUD	6.6	5.6	5.7	6.2
Injection	33.2	27.0	19.4	28.4
Condom	1.7	1.0	0.3	1.2
Female sterilization	19.7	30.8	38.3	26.6
Male sterilization	2.1	4.2	8.8	4.3
Norplant	1.7	0.5	0.4	1.2
Periodic Abstinence	0.1	0.0	0.2	0.1
Withdrawal	0.5	1.0	0.2	0.5
Other	0.3	0.0	0.0	0.2
Unsure	5.1	6.1	4.2	5.0
Total percent	**100**	**100**	**100**	**100**
Weighted number of women	**587**	**186**	**278**	**1,051**

planning to use largely for limiting purposes. In general, the percent intending to use specific major methods among those who are unsure about when they will use, is intermediate between the percent indicated for women who intend to use in the next 12 months and those who expect to postpone use for at least 12 months.

4.10 Family Planning Messages on the Radio

The National Family Planning Program, composed of both government and private organizations, has been publicizing family planning over the radio for a number of years. The Family Health Division of the Ministry of Public Health has been regularly broadcasting half hour programs over radio stations in Bangkok and all provinces. Their programs consist of music or drama interspersed with spot announcements concerning contraception and family planning concepts. In addition, several private family planning agencies (such as PPAT and ASIN) have sponsored radio programs advocating family planning.

Respondents were asked if they had heard a message about family planning over the radio during the last month and if so, whether they had heard a message more than once. The results are presented in Table 4.20 according to selected background characteristics. Overall, 70 percent indicated that they had not heard any message. Of those who did hear a message, most heard the message more than once.

There is little difference between rural and urban women in exposure to family planning messages on the radio. Regionally, messages were heard by a higher proportion of women in the south than elsewhere. There is a direct association between educational level and having heard a message. Finally, Islamic women are slightly more likely to have heard a message than Buddhist women, perhaps reflecting their concentration in the South.

Table 4.20 Percent distribution of women according to whether they have heard a radio message about family planning during the last month, by selected background characteristics

Background characteristic	Never	Once	More than once	No answer	Total percent	Weighted number of women
Urban-rural residence						
Urban	70.0	4.0	24.9	1.1	100	1,233
Rural	70.2	4.5	24.9	0.5	100	5,542
Region						
North	71.9	5.2	22.3	0.6	100	1,396
Northeast	71.6	4.7	23.5	0.3	100	2,365
Central	71.7	4.1	23.4	0.7	100	1,450
South	58.9	3.1	37.4	0.6	100	833
Bangkok	71.9	3.8	23.1	1.2	100	732
Education						
No education	79.1	2.6	17.8	0.5	100	657
Primary	69.9	4.6	25.0	0.5	100	5,316
Secondary	66.8	3.0	28.7	1.5	100	520
Higher	59.4	7.8	32.5	0.2	100	281
Religion*						
Buddhist	70.3	4.5	24.6	0.6	100	6,275
Islam	66.4	3.8	29.2	0.6	100	359
Total	**70.2**	**4.4**	**24.9**	**0.6**	**100**	**6,775**

* Excludes cased whose religion is other than Buddhism or Islam or is not stated

Each respondent was also asked if she believed it was acceptable to broadcast family planning messages over radio or television. Results are shown in table 4.21 by age and selected background characteristics. In general, there appears to be wide popular acceptance of the idea of broadcasting family planning messages over the mass media, with 88 percent agreeing with the idea. Approval is somewhat lower among older women than younger women but differences according to age are relatively small. There is virtually no difference in acceptance between rural and urban women. Regionally acceptance is slightly lower in the south than elsewhere. Approval increases with educational level. The most pronounced difference in acceptance is found between Moslems and Buddhists with only 70 percent of the former compared to 89 percent of the latter indicating approval of the idea of broadcasting family planning messages.

Table 4.21 Percentage of women who believe that it is acceptable to have messages about family planning on the radio, by current age and selected background characteristics

Background characteristic	15-19	20-24	25-29	30-34	35-39	40-44	45-49	All ages
Urban-rural residence								
Urban	88.5	89.6	90.7	91.0	89.5	84.7	86.0	89.1
Rural	86.9	90.6	90.6	90.0	87.3	83.9	82.2	87.8
Region								
North	86.6	89.0	91.5	91.1	87.5	84.1	81.5	88.4
Northeast	89.9	94.6	90.7	93.1	87.8	86.1	83.8	89.7
Central	85.5	88.8	93.1	88.5	91.5	82.9	84.0	88.2
South	80.3	83.4	85.8	84.0	82.9	80.1	80.1	82.8
Bangkok	85.8	91.4	89.4	90.0	87.5	84.2	82.1	88.0
Education								
No education	72.9	59.6	83.1	78.5	68.3	65.2	65.5	69.9
Primary	86.9	91.8	90.3	90.1	89.3	85.8	86.6	89.2
Secondary	100.0	95.6	95.4	97.0	92.3	92.5	96.6	95.3
Higher	-	94.5	94.0	98.5	94.9	98.9	96.4	96.2
Religion*								
Buddhist	88.1	92.4	91.7	90.9	89.8	85.1	84.4	89.4
Islam	75.7	72.8	77.5	78.7	68.9	57.3	58.3	70.8
Total	**87.1**	**90.4**	**90.6**	**90.2**	**87.8**	**84.0**	**82.8**	**88.1**

* Excludes cases whose religion is other than Buddhism or Islam or is not stated

Table 4.A1 Percent distribution of currently married women aged 15-49 according to the contraceptive method currently used, by selected background characteristics

Background characteristic	Currently using any method	Pill	IUD	Injection	Vaginal methods	Condom	Female sterili-zation	Male sterili-zation	Norplant	Periodic Abstinence	With-drawal	Other	Not currently using	Total percent	Weighted number of women
Number of living children															
0	24.6	20.1	0.0	1.2	0.0	1.0	0.1	0.7	0.0	1.0	0.4	0.2	75.4	100	668
1	57.1	26.8	9.7	13.4	0.1	1.4	1.6	1.7	0.1	1.3	1.1	0.1	42.9	100	1,290
2	77.5	20.5	8.5	10.5	0.0	1.3	27.1	7.5	0.0	1.2	1.0	0.0	22.5	100	1,665
3	81.9	15.2	6.4	8.3	0.0	0.9	40.6	8.7	0.0	0.7	0.9	0.1	18.1	100	1,062
4+	65.9	11.5	6.0	5.5	0.0	0.7	33.6	7.2	0.0	0.4	0.7	0.1	34.1	100	1,553
Urban-rural residence															
Urban	67.8	18.9	4.1	6.3	0.1	2.3	27.1	5.9	0.2	2.0	1.0	0.1	32.2	100	1,124
Rural	65.0	18.6	7.5	9.0	0.0	0.8	21.9	5.7	0.0	0.7	0.8	0.1	35.0	100	5,113
Region															
North	71.3	25.8	3.4	14.8	0.0	0.7	19.4	6.0	0.0	0.7	0.3	0.1	28.7	100	1,298
Northeast	64.6	15.7	13.1	6.0	0.0	0.6	25.5	2.8	0.0	0.6	0.3	0.0	35.4	100	2,180
Central	69.7	19.5	2.8	9.3	0.1	1.3	26.1	9.6	0.0	0.6	0.4	0.1	30.3	100	1,323
South	49.9	11.2	4.5	6.2	0.0	1.9	14.5	5.6	0.1	1.5	4.4	0.2	50.1	100	769
Bangkok	66.6	20.9	4.2	5.5	0.1	1.9	24.0	6.9	0.1	2.1	0.6	0.1	33.4	100	667
Education															
No education	55.6	12.2	4.7	7.7	0.0	1.0	20.5	9.0	0.0	0.7	0.0	0.0	44.4	100	585
Primary	66.6	19.7	7.2	9.0	0.0	0.7	23.4	5.3	0.0	0.4	0.8	0.1	33.4	100	4,910
Secondary	66.1	18.5	5.8	6.7	0.0	3.4	21.0	5.8	0.3	3.6	1.0	0.0	33.9	100	477
Higher	64.8	13.4	6.6	3.5	0.0	3.7	21.9	6.3	0.1	6.3	2.7	0.2	35.2	100	265
Religion*															
Buddhist	67.6	19.5	7.3	8.4	0.0	1.1	23.8	5.7	0.0	0.9	0.7	0.1	32.4	100	5,781
Islam	32.5	8.9	1.4	6.9	0.0	0.7	8.0	2.7	0.0	0.6	3.2	0.1	67.5	100	326
Total	**65.5**	**18.6**	**6.9**	**8.5**	**0.0**	**1.1**	**22.8**	**5.7**	**0.0**	**0.9**	**0.9**	**0.1**	**34.5**	**100**	**6,236**

* Excludes cases whose religion is other than Buddhism or Islam or is not stated

CHAPTER 5

FERTILITY PREFERENCES

This chapter addresses three questions which allow an assessment of the need for contraception. Does the respondent want more children? If so, how long would she prefer to wait before the next child? If she could start afresh, how many children in all would she want? These questions are also relevant for assessing the future trend in fertility, especially in a country with high contraceptive prevalence such as Thailand. Two further issues are also examined: To what extent do unwanted or mistimed pregnancies occur? What effect would the prevention of such pregnancies have on the fertility rates? These two questions are of considerable interest given that an important goal of the family planning program in Thailand, as elsewhere, is to give couples the freedom and ability to bear the number of children that they want and to achieve the spacing of births that they prefer.

Interpretation of data on fertility preferences has always been the subject of controversy. Survey questions have been criticized on the grounds that answers are misleading because: a) they reflect uninformed, ephemeral views, which are held with weak intensity and little conviction; and b) they do not take into account the effect of social pressures or the attitudes of other family members, particularly the husband, who may exert a major influence on reproductive decisions. The first objection has only limited relevance in societies such as Thailand, where contraceptive use is almost universal. Furthermore, the TDHS attempts to measure the intensity of views. The second objection is correct in principle but in practice its importance is doubtful. For instance, evidence from previous Thai surveys in which both husbands and wives are interviewed suggests that there is no radical difference between the views of the two sexes concerning fertility preferences (e.g. Knodel and Pitaktepsombati, 1975)

The inclusion of women who are currently pregnant complicates the measurement of views on future childbearing. For these women, the question on desire for more children is rephrased to refer to desire for another child <u>after</u> the one that they are expecting. To take into account the way in which the preference variable is defined for pregnant women, the results are classified by number of living children, including the current pregnancy as equivalent to a living child. In addition, the answers of pregnant women on preferred waiting time before the next birth presumably include the remaining gestation period of the current pregnancy and are thus not strictly comparable with the answers of nonpregnant women.

Women who have been sterilized for contraceptive purposes or whose husband has been sterilized also require special analytic treatment. The general strategy in this chapter is to classify them as wanting no more children. The validity of this assumption is substantiated by the fact that the vast majority of sterilized women, when asked in the survey, indicate that they do not regret having been sterilized.

5.1 Desire for Additional Children

A series of questions were asked in the TDHS to determine whether a woman wanted to have additional children and the certainty with which she held her view towards future childbearing. Results are presented in Table 5.1 for currently married women according to the number of living children the woman had at the time of the survey. As evident in these results, only a third of currently married women wish to continue childbearing. Among those who want another child, most reconfirmed this preference when probed about how definite they are about their desire for more children. Likewise among those who are not sterilized but who said they wish no more children, the large majority indicate in response to a further probe that they are definite in this opinion. Among those women who are sterilized or whose husband is sterilized, only a small proportion indicate they regret being sterilized.

Table 5.1 Percent distribution of currently married women according to whether they want more children and the certainty of their preference, by number of living children (including any current pregnancy)

Preference and certainty	Number of living children (including current pregnancy) 0	1	2	3	4	5	6+	All currently married women
Have another:								
Definitely	84.2	69.5	20.8	9.4	6.7	3.0	2.0	30.1
Not sure	2.2	3.4	2.5	1.0	0.9	0.8	0.5	1.9
Undecided	3.5	3.2	2.9	1.3	1.7	1.4	0.1	2.3
No more:								
Not sure	2.7	6.2	5.1	3.7	1.9	2.4	2.6	4.2
Definitely	5.0	14.4	35.4	36.7	44.3	45.7	64.4	32.6
Sterilized:								
Regret-have another	0.2	0.9	5.0	3.6	2.1	0.9	0.3	2.5
Regret-no more; undecided	0.0	0.0	0.5	1.1	0.3	2.0	0.5	0.5
No regret	0.7	2.3	27.3	43.0	41.5	43.6	28.0	25.3
Regret unknown	0.0	0.0	0.2	0.1	0.2	0.3	0.9	0.2
Infecund	0.9	0.1	0.3	0.0	0.0	0.0	0.1	0.2
No answer	0.6	0.0	0.1	0.1	0.4	0.0	0.4	0.2
Total percent	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Weighted number of women	**511**	**1,318**	**1,745**	**1,095**	**691**	**400**	**476**	**6,236**

Results concerning the desire for additional children are summarized in a somewhat different manner in Table 5.2 which classifies women both in terms of their desire for having an additional child and their desired timing for the next birth. Such a joint classification is useful for assessing the total potential need for contraceptive services, i.e., for spacing as well as for limiting births. In constructing Table 5.2 and subsequent tables on desire for additional children, a woman who is sterilized or whose husband is sterilized is considered as desiring no more children. In addition, the percentages in Table 5.2 and subsequent tables do not precisely match those in Table 5.1 because some women who initially indicated that they were undecided about wanting another child were able to specify a preference when probed further and have been reclassified accordingly.

Overall, approximately two thirds of currently married women in reproductive ages want no more children. An additional 17 percent want more children but wish to delay the next birth at least two years while 16 percent want another birth either soon (within two years) or are uncertain or indifferent as to when. Only about 1 percent of respondents are uncertain (after probing) if they want more children at all.

Desire for additional children is strongly associated with number of living children. Most women with no children or only one child wish to have an additional child while almost three fourths of those with two children want no more children. Among women with three or more children, the vast majority want no more, rising from 88 percent of women with three living children to 96 percent of those with six children or more. Among women who want more children, most are able to state a preference for the timing of the next birth. The majority of those with no children who wish to have a child want to have their next child soon (within two years) while most with one, two, or three children prefer to delay their next birth at least two years. Among the few women with four or more children who want another child, a substantial proportion are undecided about when to have the child.

Table 5.2 Percent distribution of currently married women according to fertility preferences, by number of living children (including any current pregnancy)

Preference	Number of living children (including current pregnancy)							All currently married women
	0	1	2	3	4	5	6+	
Want no more (sterilized)	9.7	24.7	74.4	88.6	91.0	95.3	97.0	66.0
Have another soon*	51.6	20.5	6.4	2.5	2.6	0.9	0.8	11.2
Have another later**	17.5	47.1	14.6	7.2	2.6	2.9	0.6	17.3
Have another, undecided when	19.4	6.9	3.3	1.5	2.5	0.4	1.2	4.6
Undecided	1.8	0.8	1.3	0.3	1.3	0.6	0.4	0.9
Total percent	100	100	100	100	100	100	100	100
Number	511	1,318	1,745	1,095	691	400	476	6,236

*Wants next birth within 2 years
**Wants to delay next birth for 2+ years

Desire for additional children is strongly associated with age as indicated in Table 5.3. The proportion wanting no more children increases with age while the proportion wanting a child soon decreases with age, undoubtedly reflecting the more advanced stages of family building associated with increasing age and hence the greater chance that an older couple will have reached or exceeded their desired family size in comparison with a younger couple.

Table 5.3 Percent distribution of currently married women according to whether they want more children, by current age

Preference	Current age							All currently married women
	15-19	20-24	25-29	30-34	35-39	40-44	45-49	
Want no more (sterilized)	19.2	29.9	53.4	73.5	84.4	91.8	92.7	66.0
Have another soon*	24.2	17.7	14.8	10.7	7.2	4.1	3.8	11.2
Have another later**	45.3	44.9	26.0	9.9	3.7	1.1	0.4	17.3
Have another, undecided when	10.3	6.8	4.8	4.7	3.4	2.7	2.2	4.6
Undecided	1.0	0.6	1.0	1.1	1.3	0.4	0.9	0.9
Total percent	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Weighted women	**334**	**957**	**1,243**	**1,250**	**1,019**	**758**	**676**	**6,236**

* Wants next birth within 2 years
** Wants to delay next birth for 2+ years

A more direct way to examine the increase in the percentage wishing to stop having children with advancing stages of family building is to compare desire for additional children among women at different marriage durations. Table 5.4 shows the percent of currently married women who want no more children according to the number of years since first marriage and selected background characteristics. In addition, a summary percentage is shown for women of all durations collectively after being standardized for marriage duration. This measure permits a more meaningful comparison among different categories of background characteristics than do the unstandardized results since it controls for the effect that differences in the marriage duration distributions among the different subgroups can have on the overall percent wanting no more children within the subgroup. The weighted distribution of the entire sample with regards to marriage duration is used as the basis for standardization.

The extent to which differences in the distribution of women according to marriage duration, and hence stage of family building, distort differences in the overall percent wanting no more children is most evident when comparing different educational groups. The unstandardized results indicate a pronounced inverse association between educational level and the desire to stop childbearing: women with no education are most likely to want no more children while women with an education beyond the secondary level are the least likely. Once the results are standardized for marriage duration, however, the relationship disappears and only very modest differences are evident among the different educational subgroups. Indeed women with no education show the lowest standardized percent not wanting more children. The inverse relationship evident in the unstandardized results is clearly an artifact of differences with respect to duration of marriage prevailing among the different groups. Women with no education tend to be older and hence married longer than average while those with secondary and higher education tend to be younger and married for shorter durations. The advanced stage of family building common among women with no education is associated with a high unstandardized percentage wanting no more children. In contrast, the relatively early stages of family building among the better educated tend to depress the unstandardized percent wanting to stop childbearing.

Table 5.4 Percentage of currently married women who want no more children (including sterilized) by years since first marriage and, for all currently married women, standardized for years since first marriage, by background characteristics

Background characteristic	Years since first marriage					All currently married women	
	0-4	5-9	10-14	15-19	20+	unstandardized	standardized*
Urban-rural residence							
Urban	30.0	56.8	78.1	88.5	91.1	64.1	67.9
Rural	20.2	56.5	75.4	85.8	92.9	66.2	65.2
Region							
North	18.5	50.7	80.8	89.0	92.8	65.4	65.1
Northeast	18.8	58.8	74.7	87.8	95.5	66.6	66.2
Central	26.1	61.7	74.9	85.3	90.7	67.5	66.9
South	22.9	51.2	69.9	78.4	89.7	63.3	61.7
Bangkok	31.3	56.3	77.0	87.6	89.9	63.4	67.4
Education							
No education	12.4	46.5	75.8	83.5	93.5	74.6	61.3
Primary	22.2	56.6	76.5	86.5	92.7	66.7	65.9
Secondary	28.0	57.0	71.2	88.4	85.9	54.1	64.9
Higher	20.4	64.6	67.3	86.1	88.2	50.8	64.4
Religion**							
Buddhist	23.4	57.6	76.5	86.9	93.3	66.6	66.6
Islam	10.7	40.7	56.3	73.3	85.0	53.3	52.4
Total	**22.4**	**56.6**	**75.9**	**86.3**	**92.6**	**65.8**	**65.8**

* Standardized using the distribution for the total sample (weighted) as the standard

** Excludes cases whose religion is other than Buddhism or Islam or is not stated

The impact of standardization has less impact on the other comparisons but some effect is evident in most. The difference between urban and rural women reverses after standardization but remains modest. Regional differences alter somewhat with Bangkok being characterized by the highest percent wanting no more children after standardization rather than showing the lowest percent. Religious differences remain largely unchanged with Moslems being noticeably less likely to want to cease childbearing than Buddhists both before and after standardization for marriage duration.

In Table 5.5, the percent who want no more children is shown for each parity by selected background characteristics. For each category shown, the percent wanting no more children increases with the number of living children. Among women with at least 3 children, typically close to or over 90 percent want no more children regardless of background characteristics. The only exception is among Moslem women for whom the percent who wish no more children is distinctly lower than for other categories. But even among Moslem women, almost 60 percent of those with three children and more than 80 percent of those with four or more children want no more.

Table 5.5 Percentage of currently married women who want no more children (including sterilized) by number of living children (including current pregnancy), by background characteristics

Background characteristic	Number of living children (including current pregnancy) 0	1	2	3	4+	All currently married women
Urban-rural residence						
Urban	14.0	33.7	81.8	89.2	95.9	64.1
Rural	6.7	22.2	72.3	88.4	93.6	66.2
Region						
North	11.7	28.3	81.5	92.2	95.0	65.4
Northeast	3.9	17.7	69.1	89.2	95.8	66.6
Central	8.8	26.7	78.8	91.2	92.4	67.5
South	7.5	16.4	54.8	79.8	89.7	63.3
Bangkok	14.8	35.8	80.8	86.6	95.3	63.4
Education						
No education	13.7	27.8	60.3	89.9	92.5	74.6
Primary	8.6	24.5	74.1	88.1	94.1	66.7
Secondary	10.9	26.3	75.6	92.3	100.0	54.1
Higher	4.1	21.0	86.8	92.4	68.2	50.8
Religion*						
Buddhist	8.9	25.5	75.5	90.4	94.8	66.6
Islam	0.0	10.9	37.7	59.3	84.3	53.3
Total	**8.8**	**24.6**	**74.1**	**88.6**	**93.8**	**65.8**

* Excludes cases whose religion is other than Buddhism or Islam or is not stated

Greater variation is apparent according to background characteristics among women with 0, 1, or 2 children. For example, urban women with two or fewer children are more likely to stop childbearing than rural women. Regionally, above average percentages of women with none, one or two children in the north and Bangkok want no more children while the percentages are below average in the northeast and the south. Only among women with two living children is a consistent positive association evident between educational level and percent wanting no more children. For women with one or no child, the pattern is irregular. The most pronounced difference in percent wanting no more children is apparent between Buddhists and Moslems, suggesting larger family size norms among the latter. For example, among women with two living children, three quarters of Buddhists want no more children, almost exactly twice the percentage as among the Moslems.

5.2 Future Need for Family Planning

Table 5.6 examines the potential need for family planning among currently married women according to selected background characteristics. Women are considered to be in need if they are not contracepting <u>and</u> either want no more births or want to postpone the next birth for two or more years. Included among these women are some who are not immediately at risk of a pregnancy, i.e., they are not exposed because they are pregnant, amenorrheic, not currently menstruating or not currently sexually active as well as women who are infecund and thus not truly in need of contraception. Therefore the results presented in this table should not be interpreted as the extent of current unmet need for family planning. Instead, the women included in the numerators for the percentages in the table can be collectively viewed as a maximum estimate of those women who potentially are either in need now or might in the near future be in need of family planning to avoid an unwanted or unplanned pregnancy. By taking into account the intention to use family planning, the table also provides an estimate of the potential demand for family planning to postpone or regulate <u>future</u> fertility.

Given the high level of current contraceptive prevalence (see Chapter 4),it is not surprising that the overall level of need is rather modest and that the potential demand for family planning that is still to be met in the near term future (i.e., those with a potential need <u>and</u> who intend to use) is only ten percent of currently married women. Close to half of this potential demand will be for spacing purposes.

The percent of currently married women defined to be in need of family planning differs only modestly between rural and urban women but regionally is distinctly higher in the south compared to other regions. It is also higher among women with no education compared to women with some schooling and among Moslems compared to Buddhists. Since Moslems tend to be concentrated in the south and are disproportionately characterized by no education (see Chapter 1), these patterns are not entirely independent of each other. Differences in the percent of women who are both defined to be in need <u>and</u> intend to use contraception are far less pronounced and do not necessarily follow the same pattern as the percent defined to be in need alone. Clearly many who are defined to be in need according to the criteria used in Table 5.6 do not intend to use contraception in the future.

Table 5.6 Percentage of currently married women who are potentially in need of family planning (i.e., who are not contracepting and who want no more births or want to postpone the next birth for 2 or more years) and the percentage who are in need and who intend to use family planning in the future, by background characteristics

	In need			In need and intend to use contraception			
Background characteristic	Wants no more	Wants to postpone	Total	Wants no More	Wants to postpone	Total	Weighted number of women
Urban-rural residence							
Urban	13.3	5.9	19.1	5.6	4.1	9.7	1,124
Rural	17.1	6.7	23.8	5.6	4.3	10.0	5,113
Region							
North	14.1	5.1	19.2	4.3	3.9	8.2	1,298
Northeast	16.7	6.5	23.1	5.5	5.0	10.5	2,180
Central	14.6	4.9	19.5	6.2	3.0	9.2	1,323
South	24.7	12.3	37.0	7.0	5.2	12.2	769
Bangkok	14.1	6.1	20.2	6.0	4.3	10.4	667
Education							
No education	27.3	5.4	32.6	2.6	2.1	4.7	585
Primary	16.1	6.5	22.6	6.0	4.3	10.3	4,910
Secondary	11.3	7.2	18.5	6.4	5.8	12.2	477
Higher	8.1	8.4	16.5	4.0	6.0	9.9	265
Religion*							
Buddhist	15.6	5.7	21.2	5.7	4.1	9.8	5,781
Islam	30.6	20.9	51.5	5.8	7.4	13.2	326
Total	**16.4**	**6.5**	**23.0**	**5.6**	**4.3**	**9.9**	**6,236**

* Excludes cases whose religion is other than Buddhism or Islam or is not stated

5.3 Preferred Number of Children

Thus far in this chapter interest has focused on the respondent's wishes for the future, implicitly taking into account the number of sons and daughters that she already has. In ascertaining the total preferred number of children, the respondent is required to perform the more difficult task of considering abstractly and independently of her actual family size the number of children she would choose if she could start again.

Table 5.7 shows the percent distribution of ever-married women with different numbers of living children according to their preferred number of children. In addition, the mean preferred number of children is indicated both for currently and ever-married women. Overall, the preferred number of children is 2.8, down from 3.0 in 1984 as indicated by CPS3 and lower than any previous national survey has indicated (Knodel, Chamratrithirong, and Debavalya, 1987, p.61).

As is typical in most surveys there is an association between actual and preferred number of children, increasing from 2.2 for women with 0-1 child to 4.0 for those with 6 or more children. Several likely reasons account for this. First, to the extent that women implement their preferences, those who want larger families will tend to achieve larger families. Second, women may adjust upwards their preferred size of family, as the actual number of children increases (i.e., rationalization). It is also possible that women with large families, being on average older than women with small families, have larger preferred sizes because of attitudes that they acquired 20 to 30 years ago.

The results shown in Table 5.7 permit determination of the percent of respondents for whom the preferred number of children is less than their actual. Despite the likelihood that some rationalization occurs, over one fourth of women with three children indicate a preferred number of less than three, over 40 percent of women with four children indicate a preferred number less than four, and the large majority of women with five or six or more children state preferred numbers of children lower than their actual number. This is of particular interest as an indicator of surplus or unwanted fertility, which is also the topic addressed by a later table.

Table 5.7 Percent distribution of ever-married women according to preferred number of children and mean preferred number of children for ever-married women and currently married women, by number of living children (including any current pregnancy)

Preferred number of children	Number of living children (including current pregnancy) 0	1	2	3	4	5	6+	Total
0	2.0	0.8	0.9	1.4	1.4	3.3	2.0	1.4
1	11.4	9.9	3.2	3.1	2.7	1.7	1.0	5.0
2	63.2	63.8	54.8	22.2	23.0	23.0	16.3	43.3
3	15.4	18.5	28.6	49.7	15.7	30.5	26.8	27.5
4	4.8	4.8	9.2	16.3	45.7	11.3	25.6	14.5
5	2.4	0.7	2.2	5.7	5.9	22.9	7.9	4.7
6+	0.5	0.8	0.6	0.9	5.1	6.1	19.2	3.0
Non-numeric responses	0.2	0.1	0.3	0.4	0.4	0.4	0.6	0.3
No answer	0.1	0.4	0.1	0.4	0.2	0.8	0.6	0.3
Total percent	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Number	544	1,497	1,849	1,171	749	447	517	6,775
Mean preferred number, ever-married women	**2.2**	**2.2**	**2.5**	**3.0**	**3.5**	**3.5**	**4.0**	**2.8**
Mean preferred number, currently married women	**2.2**	**2.2**	**2.5**	**3.0**	**3.5**	**3.6**	**4.0**	**2.8**

The mean preferred number of children is shown in Table 5.8 for ever-married women according to age and selected background characteristics. Also shown as a separate column is the mean preferred number of children stated by recently married women (defined as currently married women whose first marriage occurred less than 5 years prior to interview). Such women are at relatively early stages of their reproductive careers. Hence their fertility expectations and preferences are likely to be influential for the course of fertility over the next decade and are likely to be more representative of the next generation of parents than are the fertility expectations and ideals of women towards the end of their reproductive span. Moreover, their responses regarding preferred family size are unlikely to be affected by rationalization since few recently married women will have already exceeded their desired family size. For these reasons they deserve special attention.

For the overall sample, women married less than five years state a mean preferred family size of only 2.3 children, down slightly from the comparable figure of 2.4 children found by CPS3 in 1984. As expected, recently married women express a substantially lower preferred family size than the 2.8 children expressed by women of all marriage durations taken collectively (as indicated by the figures for all ages). The latter figure is undoubtly influenced by ex post facto rationalization and in addition may reflect the higher family size preferences that prevailed some years earlier when the older women of today were bearing most of their children. These same reasons underly the positive association between age and mean preferred number of children evident not only for the total sample but also for every separate category shown.

Table 5.8 Mean preferred number of children for ever-married women, by current age and background characteristics, and for currently married women married less than 5 years, by background characteristics

Background characteristic	Current age of ever married women							All ages	Women married less than 5 years*
	15-19	20-24	25-29	30-34	35-39	40-44	45-49		
Urban-rural residence									
Urban	2.0	2.2	2.3	2.4	2.6	2.8	3.0	2.5	2.2
Rural	2.2	2.4	2.7	2.8	3.1	3.2	3.6	2.9	2.3
Region									
North	2.3	2.3	2.5	2.6	2.9	2.7	3.3	2.7	2.3
Northeast	2.3	2.3	2.7	2.9	3.2	3.3	3.8	3.0	2.3
Central	1.8	2.2	2.5	2.7	2.7	2.9	3.4	2.7	2.1
South	2.7	2.7	3.0	2.9	3.2	3.5	3.5	3.1	2.6
Bangkok	2.0	2.2	2.3	2.3	2.6	2.8	3.1	2.5	2.2
Education									
No education	2.5	2.7	3.1	3.2	3.8	3.4	4.0	3.5	3.0
Primary	2.2	2.3	2.6	2.7	2.9	3.1	3.4	2.8	2.3
Secondary	1.9	2.1	2.3	2.5	2.6	2.7	2.4	2.3	2.1
Higher	2.0	2.2	2.3	2.3	2.5	2.5	2.5	2.4	2.3
Religion**									
Buddhist	2.1	2.3	2.5	2.7	2.9	3.0	3.4	2.7	2.2
Islam	3.0	3.0	3.3	3.2	3.4	3.9	4.1	3.4	2.9
Total	**2.2**	**2.3**	**2.6**	**2.7**	**3.0**	**3.1**	**3.5**	**2.8**	**2.3**

* Currently married women whose first marriage occurred less than 5 years prior to interview
** Excludes cases whose religion is other than Buddhism or Islam or is not stated

Differentials in preferred numbers of children among the various categories of the population show a similar pattern for recently married and all ever-married women. However, the differentials are typically less pronounced for recently married women. This is particularly evident in the case of the urban-rural difference which almost disappears when only recently married women are considered. Family size preferences appear to be distinctly higher in the south, among women with no education, and among Moslems. It should be noted that the relatively small group of women with no education consists disproportionately of women who are either Moslems or ethnic minorities such as hill tribes and therefore may reflect more cultural than purely educational effects.

5.4 Fertility Planning Status of Birth and Unwanted Fertility

In the TDHS, women were asked a series of questions for each child born in the preceding five years and any current pregnancy to determine whether the particular pregnancy was planned, unplanned but wanted at a later time, or unwanted. These questions form a potentially powerful indicator of the degree to which couples successfully control childbearing. In addition, the data can be used to gauge the effect on period fertility of the prevention of unwanted births.

The questions are extremely demanding. The respondent is required to recall accurately her wishes at one or more points in the last five years and to report them honestly. The danger of rationalization is present; an unwanted conception may well become a cherished child. Likewise, a child that was conceived with indifference but has since become an economic burden may now be perceived as unwanted. Despite these potential problems of comprehension, recall and truthfulness, results from a number of previous surveys in various countries have proved surprisingly plausible. Respondents are clearly willing to report unwanted conceptions, although some rationalization probably occurs; the net result is probably an underestimate of unwanted fertility.

Table 5.9 is a birth-based rather than a woman-based table. It provides perhaps a useful indicator of the degree of successful reproductive control exercised by couples in the recent past. A distinction should be kept in mind between unwanted pregnancies and unwanted births. Results obtained through the TDHS refer only to pregnancies that result in live births (or to the current pregnancy) and exclude pregnancies that terminate in an abortion, whether spontaneous or induced. In Thailand, induced abortion, although illegal, does exist and thus unwanted pregnancies will outnumber unwanted births by a potentially substantial margin.

The results indicate that slightly over two thirds of all pregnancies resulting in a live birth during the last five years were wanted at the time of conception. An additional 17 percent were wanted but at a later time. Only 13 percent were not wanted at all. Roughly similar patterns are evident for pregnancies whether preceded by a non-contraceptive or by a contraceptive interval. Although strictly comparable figures are not available from earlier surveys, the extent of unwanted fertility appears to have declined recently. According to the CPS3 conducted in 1984, which refers only to the most recent birth (or current pregnancy) rather then to any births, 25 percent of such births during the five years preceding the survey were unwanted at all. This in turn was down slightly from the levels found in CPS2 conducted in 1981.

Table 5.9 Percent distribution of all pregnancies* resulting in live births (including current pregnancy) in last five years according to contraceptive practice and planning status, by birth order

Contraceptive practice and planning status	Birth order 1	2	3	4+	All pregnancies
Non-contraceptive interval					
Wanted then	50.3	28.8	30.5	27.9	36.7
Wanted later	9.0	10.0	8.4	11.0	9.6
Not wanted	2.2	2.4	7.8	21.9	6.8
Contraceptive interval					
Wanted then	29.4	41.8	34.0	16.6	31.4
Wanted later	5.7	10.5	8.8	4.6	7.4
Not wanted	1.3	4.8	9.8	16.7	6.6
Not classifiable	2.1	1.6	0.8	1.2	1.6
Total	**100**	**100**	**100**	**100**	**100**
Number of pregnancies	**1,443**	**1,170**	**643**	748	**4,004**

* Pregnancies resulting in the birth of twins are treated as single pregnancies.

A pronounced association between birth order and planning status of the pregnancy resulting in the birth is evident. Regardless of whether the preceding interval was contraceptive or not, the percent of births unwanted at all increases with birth order. Very few first or even second order births were unwanted at all, although a considerably higher proportion were mistimed. Among fourth and higher order births, almost two out of five were unwanted and an additional 16 percent were mistimed.

Table 5.10 presents a condensed version of the categories used in the previous table for women with a birth in the last 12 months prior to the survey. Although this table refers to women rather than births, the two are almost identical in this case since very few women have more than one birth within a twelve month period. The pattern for these very recent births is quite similar to those during the last five years. The percent unwanted at all or mistimed is substantially higher for third and higher order births than for first and second births.

Based on reports about whether a pregnancy leading to a live birth was wanted or not (and ignoring mistiming), it is possible to calculate "wanted" fertility rates. These wanted fertility rates are calculated in exactly the same manner as the conventional age-specific fertility rates presented in Chapter 3, except that births classified as unwanted are omitted from the numerator; the age specific rates can be cumulated to form a wanted total fertility rate which is analogous to the conventional total fertility rate. Wanted fertility rates express the level of fertility that theoretically would result if all unwanted births were prevented. Comparison of actual rates with wanted rates indicates the potential demographic impact of the elimination of unwanted births.

Table 5.10 Percentage of women who had a birth in the last 12 months* who wanted a child then, later, or wanted no more children, by birth order

Planning status	Birth order 1-2	3+	All birth
Wanted child then	79.4	50.3	69.3
Wanted child later	14.6	19.2	16.2
Wanted no more children	5.7	30.1	14.2
Planning status unknown	0.3	0.3	0.3
Total percent	**100**	**100**	**100**
Weighted number of women	**430**	**228**	**658**

* Note that the number of women with a birth in the past 12 months is roughly equivalent to the number of births in the past 12 months. Thus the percent who wanted no more children is equivalent to the percent of unwanted births.

The total wanted fertility rate provides another indicator of fertility aspirations and may be interpreted as the number of wanted births that a woman would bear by the end of her childbearing span, if she experienced the wanted fertility rates observed for the past five years. Theoretically, the wanted fertility rate should be a better measure of desired fertility than answers to the direct question on preferred family size. It is more firmly grounded in reality, because answers of respondents presumably take into account both the balance of sons and daughters already born and survivorship considerations. Preferred family size responses presumably refer to surviving children and may assume an ideal distribution of sons and daughters.

One further difference between the two measures is that the wanted fertility rate takes observed fertility as its starting point and can never be larger than the actual TFR; total preferred sizes can and often are larger than the number of children born. This characteristic of the total wanted rate has both an advantage and a disadvantage. It may be the more realistic measure, because it takes into account the fact that fecundity impairment prevents some women from having wanted births and from achieving their desired size. However, it has the disadvantage of interpretive complexity and, like any period measure, is highly vulnerable to temporary influences on the level of recent fertility. In the case of the TDHS, there is also the problem that the actual fertility rates may be understated as discussed in Chapter 3. If this is so, the wanted fertility rate will also be understated.

Table 5.11 presents total wanted fertility rates (for women 15-44) based on births during the five years preceding the survey, according to urban-rural residence, region and education. The equivalent actual total fertility rates are shown for comparison. Overall, wanted total fertility is 17 percent lower than actual total fertility. If the wanted total fertility rate were accurate, it could imply that with perfect contraception, Thai fertility would have been well below the replacement level during the past five years. As

Table 5.11 Total wanted fertility rates and total fertility rates based on women 15-44 only, for the five years preceding the survey, by selected background characteristics

	Total wanted fertility rates, 15-44	Total fertility rates, 15-44
Urban-rural residence		
Urban	1.37	1.64
Rural	2.11	2.53
Region		
North	1.91	2.27
Northeast	2.27	2.62
Central	1.65	1.99
South	2.42	3.16
Bangkok	1.34	1.60
Education		
No education	2.79	3.44
Primary	2.06	2.47
Secondary	1.46	1.65
More than secondary	1.32	1.40
Total	1.93	2.32

indicated above, however, wanted total fertility is probably understated because the actual fertility rates from which it starts are too low. Hence no definitive statement can be made concerning wanted fertility levels. It is useful to recall that recently married women express a preferred number of children of 2.3 which would result over the longer run in a total fertility rate substantially higher than the 1.93 indicated in table 5.11 (depending on the proportion of women who marry).

Differentials in total wanted fertility rates are very similar to those for actual total fertility rates except that the levels are lower for all categories. Among the different regions in Thailand, above replacement fertility (i.e., greater than a TFR of 2.25) would have prevailed only in the northeast and the south and, among educational groups, only among women with no education if only wanted births were born during the last 5 years according to these results.

Chapter 6

Mortality and Health

This chapter deals with the subject of infant and child mortality and the health of children. These issues are important and relevant to the assessment of both population and health policies and programs. The topics of mortality and health are closely related. The mortality level of children, particularly during infancy, is widely used as an indicator of general health status and living standards of the population. The chapter begins with an analysis of infant and childhood mortality for various calendar year periods. Next, attention turns to sources of prenatal care and to key indicators of child survival such as immunization coverage and the treatment of diarrhea. The chapter concludes with an analysis of the anthropometric measurements (height and weight) which were taken on children 3 through 36 months of age.

6.1 Infant and Child Mortality

The data on infant and child mortality are derived from the birth histories collected in the TDHS. For each live birth, information on the date of birth, sex, survivorship status and, for those who died, age at death in terms of days, months and years was asked from the mother. Based on this information, mortality measures of children are calculated for alternative time periods preceding the survey.

It should be noted that estimates of infant and child mortality based on survey data have limitations. First, most mortality estimates using survey data are based on relatively small numbers of cases, particularly when mortality levels are low. This can lead to unstable estimates. To reduce this problem, mortality measures based on the TDHS are calculated for five or ten year periods. Second, data on birth histories are generally collected through retrospective reports. This method of data collection is subject to underreporting of events and misreporting of birth and death dates. The extent of these errors affects the results. These data problems are usually expected to be less serious for time periods close to the survey date. Third, estimates of mortality trends using birth histories as reported by women in the reproductive ages at a given point in time are affected by censoring because women past age 49 are not interviewed. Estimates of mortality in the past are necessarily based only on those births reported by women interviewed at the time of the survey and therefore exclude births in the past that occurred to women who are 50 or older when the survey was done. As the length of the time period covered extends further into the past, the resulting censoring of information becomes progressively severe. For example, mortality rates for infants born ten years before the survey can be based only on births to women up to age 39 at that time and thus exclude births to women aged 40 or above because these women were not interviewed. Since higher rates of infant and child mortality are usually associated with more advanced maternal ages (see below), this presumably biases downward mortality estimates for past periods. To minimize the effect of censoring, analysis of trends in infant and child mortality from the TDHS is limited to a period of no more than 15 years prior to the survey.

Table 6.1 presents estimates of mortality for three alternative periods before the survey: 1972-76, 1977-81 and 1982-87. Each time period covers five calendar years except for the period 1982-87 which includes the months in 1987 preceding the interview of a respondent, usually a time of 3 to 5 months. Mortality rates were calculated for two age groups: under 1 year and 1-4 years of age. The infant mortality rate is measured by the probability of dying between birth and exact age 1 (1q0) and is expressed as per 1,000 live births. The probability of dying between age 1 and exact age 5 (4q1) serves as a measure of child mortality and is expressed as per 1,000 children reaching age 1. An overall measure of mortality under age five, or the probability of dying between birth to exact age 5 (5q0), expressed per 1,000 live births, is also presented.

Results shown in Table 6.1 indicate that both infant and child mortality have declined during the past 15 years. Between the periods 1972-76 to 1982-87, infant mortality shows a continuous reduction, declining by 36 percent. During the same 15 year time span, child mortality shows a decline only between the last two five year periods, between which a 17 percent reduction is indicated. Overall, the risk of dying before age 5 declined by 33 percent over the entire period. In all periods, infant mortality is a major component of mortality under five years of age. For example, in the most recent period, 1982-87, the results indicate that the mortality risks were such that 35 per 1,000 live births died before reaching age 1 compared to 10 per 1,000 children aged 1 dying before reaching age 5.

The infant mortality rate for the period 1982-87 derived from the TDHS is low in comparison to the rate estimated by the most recent SPC, which found an infant mortality rate of 40.7 per 1,000 live births for the one year period from mid-1985 to mid-1986. The discrepancy between the estimates from the two sources is particularly striking given that the TDHS estimate refers to a longer period into the past (over which mortality was declining). Thus, the TDHS estimate would be expected to be higher instead of lower than the SPC estimate. If the SPC estimate is accurate, it implies that some level of omission of dead children characterizes the data reported in the TDHS for this period. Interestingly, when infant mortality estimates from the TDHS for the period 1972-76 are compared with the estimate from the second SPC, covering the two year period from mid-1974 to mid-1976, the two estimates correspond quite

Table 6.1 Infant and childhood mortality estimates by time period

	Time period			Percent change
	1972-76	1977-81	1982-87*	1972-76 to 1982-87
Infant mortality	55	41	35	-36
Child mortality	12	12	10	-17
Under five mortality	67	53	45	-33

Note: See text for definition of mortality measures.

* Includes exposure during 1987 up to the calendar month preceding the survey

closely: 52 versus 55 per 1,000 live births for the SPC and TDHS respectively. This agreement is all the more surprising since, as discussed above, the effect of censoring is expected to bias the TDHS estimate downward.

Differentials in infant and child mortality are best considered over a more extended period than only five years to ensure more stable rates. Mortality rates according to urban-rural residence, region, and mother's education are shown in Table 6.2 for the ten year period (1977-1987). The results indicate significant differences in mortality by urban-rural residence. Both infant and child mortality in rural areas are substantially higher than in urban areas. Regional variation in the level of mortality is also evident with mortality under five lowest in Bangkok, followed by the central region. Relatively similar rates of mortality under five are found in the north, northeast and south. Although mortality under five in the south is the highest of all the regions, this is due to relatively high child mortality rather than to unusually high infant mortality. During 1977-87, infant mortality is highest in the northeast and lowest in Bangkok. The north and south show similar levels of infant mortality.

Table 6.2 Infant and child mortality estimates, 1977-1987 based on the TDHS and infant mortality, 1985-86 based on the Survey of Population Change (SPC), by selected background characteristics

Background characteristic	Infant mortality $({}_1q_0)$	Child mortality $({}_4q_1)$	Under five mortality $({}_5q_0)$	From SPC, 1985-86: Infant mortality
Urban-rural residence				
Urban	27	8	35	28
Rural	41	12	52	43
Region				
North	40	12	51	48
Northeast	44	9	53	45
Central	34	11	45	30
South	40	16	56	37
Bangkok	20	8	28	27
Mother's education				
No education	54	22	74	-
Primary	39	10	49	-
Secondary or higher	19	2	21	-
Total	**38**	**11**	**49**	**41**

Note: The TDHS rates presented include exposure during 1987 up to the calendar month preceding the survey. The SPC rates are from the National Statistical Office (forthcoming). See text for definition of mortality measures.

Urban-rural and regional levels in infant mortality rates from the TDHS can also be compared with those from the most recent SPC covering the period from mid-1985 to mid-1986. As discussed earlier, given that the TDHS estimates cover a longer period of time into the past when mortality was declining, the TDHS estimates should yield higher mortality levels than the SPC. However, as evident from the SPC rates shown also in Table 6.2 for comparative purposes, this is generally not the case. Overall, infant mortality based on the TDHS is slightly lower than the SPC estimate (38 compared to 41 per 1000 live births). This is true both for the urban and rural sectors and in all regions except the central region and the south.

Both infant and child mortality are inversely associated with mother's education. Mothers with higher education (secondary or above) are likely to have better access to health care facilities and services as a result of a better financial situation and this may account in part for the lower mortality rates of their children. In addition, a variety of other factors associated with education, such as knowledge about appropriate health practices, general health habits, a safer living environment and ability to adequately feed their children may also play a part.

The relationships between infant and child mortality and various demographic variables are examined in Table 6.3 for the ten year period, 1977-1987. Sex differences in mortality below age five years in Thailand are similar to the pattern found in many populations. Infant mortality is significantly higher for males than for females while mortality in childhood is roughly similar for the two sexes. The relationship between mother's age at childbirth and mortality is curvilinear. Based on the four age-groups shown, infant and child mortality is lowest for mothers aged 20-29. In comparison, infant and child mortality rates for mothers aged 35 years and above are more than twice as high.

TDHS data show that birth order is positively related to infant and child mortality. First born children are 17 percent less likely to die in infancy than second and third born children. Fourth to six order children are 33 percent more likely to die and seventh or higher order children have excess mortality of more than 100 percent. Similar patterns are found for child mortality. The lower level of infant and child mortality of first born children as compared to second and third born is unexpected since in most populations the association between birth order and infant mortality is J shaped.

The length of the previous birth interval is negatively related to infant mortality. Infant mortality for children born after an interval of less than two years is almost twice as high as for children born after intervals of 4 or more years. For child mortality, the rate for children born after a 2-3 year birth interval is the lowest but does not differ greatly from child mortality following longer birth intervals. The level of child mortality for children born after shorter birth intervals (less than 2 years), however, is considerably greater than for other children.

Another way to assess the situation regarding infant and childhood mortality in Thailand is to analyze the data on the mean number of children ever born in comparison with the mean number of surviving children. The difference between the two cumulative measures is the mean number of children who died. Table 6.4 presents these data as well as indicating the proportion of children who died according to age of mother. It can be seen that the

Table 6.3 Demographic differentials in infant and child mortality, 1977-1987

	Infant mortality $({}_{1}q_{0})$	Child mortality $({}_{4}q_{1})$	Under five mortality $({}_{5}q_{0})$
Sex of child			
Male	45	11	56
Female	31	11	42
Mother's age at birth			
Less than 20	40	14	53
20-29	33	9	42
30-34	37	10	47
35+	69	22	89
Birth Order			
1	30	8	38
2-3	36	10	46
4-6	48	14	61
7 or more	74	24	96
Previous birth interval*			
Less than 2 years	58	19	76
2-3 years	38	9	47
4 years or more	32	11	42
Total	**38**	**11**	**49**

Note: The rates presented include exposure during 1987 up to the calendar month preceding the survey.

* Based on births of order two and higher

proportion who died before the interview day increases from 0.021 for mothers aged 15-19 to 0.124 for mothers aged 45-49. With the minor exception of children born to mothers in their twenties, the proportion of children who died increases with each successive age-group of mothers. The general increase in the proportion of children who died before the interview day among mothers of older ages reflects both the longer average exposure time to the chance of dying for children of older women and a probable decline over time in infant and child mortality due to both socio-economic and health improvements during recent decades.

Table 6.4 Mean number of children ever-born, surviving, and dead, and proportion of children dead among those ever-born, among ever-married women, by current age of mother

Current age	Ever-born	Surviving	Dead	Proportion dead	Weighted number of women
15-19	0.52	0.51	0.01	0.021	342
20-24	1.15	1.10	0.05	0.042	1,004
25-29	1.83	1.76	0.07	0.041	1,309
30-34	2.52	2.37	0.14	0.057	1,328
35-39	3.34	3.10	0.24	0.072	1,110
40-44	4.18	3.76	0.42	0.101	877
45-49	5.18	4.54	0.64	0.124	805
All ages	**2.75**	**2.53**	**0.22**	**0.081**	**6,775**

6.2 Prenatal Care

The Ministry of Public Health has a clear policy to provide good health service coverage to mothers and children, a combined group which constitutes more than half of the population of the country. Programs of the Department of Health and the Department of Communicable Disease Control (CDC) have put great emphasis on a child survival scheme which aims to reduce infant mortality rates as well as to improve the health condition of mothers and children.

The policy aims to help ensure the health of children even before birth through a prenatal care program. Questions on prenatal care have been included in the TDHS and the results are summarized in Table 6.5 according to selected background characteristics. Data in this table show the percent distribution of births in the last 5 years by type of prenatal care for the mother and the percentage of cases in which the mother received a tetanus toxoid injection. In order to interpret the results in this table, it should be noted that the MOPH program has designed a total program of 4 prenatal exams for pregnant women with at least a minimum of 2 exams recommended for rural pregnant women. In this survey, however, women were only asked if they had any check-up during each pregnancy (leading to a live birth) occurring in the last 5 years and if so, who was it who did the check-up. Thus frequency of prenatal care services cannot be determined.

The results in Table 6.5 indicate that for about 78 percent of births during the last 5 years, the mother received some kind of prenatal care, almost all of which was provided by medical or trained health personnel. Examining differences by age of mother, it is evident that women under 30 are somewhat more likely to seek prenatal care than older women. More striking, however, are the differentials by other background characteristics. There is a sharp difference by urban-rural residence. While in approximately 94 percent of the time, urban mothers sought at least one prenatal exam, their rural counterparts did so only 74 percent of the time. Equally noteworthy are the differentials by region. The percentage of times mothers who received prenatal care at least once visited with trained health personnel is greatest in Bangkok (96%) and lowest in the south (66%). Intermediate frequencies are found in north (72%), northeast (76%) and central region (85%) in ascending order. The relatively high rates for Bangkok and the central region, which is the most urbanized of the four regions excluding Bangkok, is most likely attributable to the higher concentration of medical doctors and health facilities in urban places.

Table 6.5 Percent distribution of births in the last 5 years according to the type of prenatal care for the mother and percentage of births whose mother received a tetanus toxoid injection, by selected background characteristics

Background characteristic	Doctor	Trained nurse/ midwife	Traditional birth attendant	Other	No one	Not stated	Total percent	Percent receiving tetanus toxoid injection	Weighted number of births
Age									
<30	46.5	32.1	0.9	0.0	19.7	0.7	100	69.7	2,226
30+	45.7	29.1	0.9	0.1	23.7	0.4	100	58.7	1,423
Urban-rural residence									
Urban	83.3	10.9	0.0	0.0	5.1	0.7	100	62.8	622
Rural	38.6	35.1	1.1	0.1	24.6	0.6	100	66.0	3,027
Region									
North	43.2	28.4	0.0	0.0	27.9	0.5	100	64.4	702
Northeast	33.7	41.8	1.1	0.0	23.0	0.5	100	71.9	1,288
Central	66.1	19.2	0.2	0.2	13.8	0.5	100	64.7	687
South	28.0	38.1	2.9	0.1	29.9	1.1	100	59.3	592
Bangkok	86.9	8.9	0.0	0.0	3.8	0.5	100	56.2	380
Education									
No education	26.4	21.7	1.1	0.0	50.4	0.3	100	47.2	350
Primary	42.3	35.3	1.0	0.0	20.7	0.6	100	66.6	2,834
Secondary	81.4	13.0	0.0	0.4	4.1	1.0	100	72.7	306
Higher	91.2	8.4	0.0	0.0	0.0	0.4	100	69.5	158
Religion*									
Buddhist	48.9	31.2	0.6	0.1	18.7	0.6	100	67.4	3,247
Islam	26.9	33.3	4.2	0.0	34.7	0.9	100	51.3	288
Total	**46.2**	**30.9**	**0.9**	**0.1**	**21.4**	**0.6**	**100**	**65.4**	**3,649**

* Excludes cases whose religion is other than Buddhism or Islam or is not stated

Educational differentials are also shown in Table 6.5 and reveal the expected positive correlation between level of educational attainment and the percentage who received prenatal care. The percentage of times mothers received prenatal care with a medical doctor ranges from 91 percent for mothers with an educational background beyond secondary school to only 26 percent for those who did not attend school. In terms of religious differentials, Buddhist mothers were more likely to seek prenatal care than Moslem mothers. In addition, Moslem mothers were less likely to have their pregnancy examined by a medical doctor.

Neonatal tetanus, which is a major cause of infant mortality in many developing countries, can be prevented through tetanus toxoid injections. Two injections are recommended for mothers who have not previously been inoculated. In the TDHS, all mothers who gave birth in the 5 years preceding the survey were asked if they had received a tetanus toxoid injection. The responses to this question are obviously dependent on the mothers ability to recall events during pregnancy accurately and to distinguish between tetanus toxoid and other injections.

Table 6.5 shows that 65 percent of the time mothers with a birth during the last five years receive a tetanus toxoid injection during pregnancy. Mothers aged under 30 received a tetanus toxoid injection a higher percentage of the time than mothers 30 years or older (70% versus 59%). However, rural mothers receive a tetanus toxoid injection more of the time (66%) than urban mothers (63%). This pattern may be related to a belief among obstetricians in Bangkok and other urban areas that the risk of neonatal tetanus for births delivered in urban hospitals is minimal since sanitation is good. The same explanation may account for why tetanus toxoid injections are least common in Bangkok (56%). It is also possible that rural mothers may be more likely to confuse tetanus toxoid with other injections and thus overreport occurrence more than urban mothers.

Education shows a marked impact on the acceptance of tetanus toxoid injections. Mothers who did not attain any schooling were least likely to have a tetanus toxoid injection (47%) while mothers who finished secondary school or studied beyond secondary school were most likely to have the injection (73% and 70% respectively). The slightly lower percentage for mothers with an education beyond secondary school compared to those with a secondary school education is probably explained by the greater concentration of the former in urban areas where, as noted above, better medical conditions may reduce the necessity of a tetanus toxoid injection. In terms of religious differentials, Buddhists receive a tetanus toxoid injection a higher percentage of times than Moslems (67% versus 51%). This differential is probably a result of the fact that Moslems are less likely to have any prenatal care than are Buddhists, thus reducing the chances of receiving this particular service from any outlet.

6.3 Assistance during Delivery

The TDHS collected information on the type of assistance provided during delivery for all births born during the last 5 years. Results are shown in Table 6.6 according to selected background characteristics. Overall, two thirds of births are delivered by trained health personnel and among these, two thirds are delivered by medical doctors and one third by trained nurse/midwives. One forth of births are delivered by traditional birth attendants with the remainder, a total of 7 percent, receiving assistance from some other source or from no one at all. These results are in sharp contrast to the situation in 1969-70 when a national survey indicated that 57 percent of the respondents' most recent births were delivered by traditional birth attendants and only 28 percent were assisted by trained health personnel (calculated from Prachuabmoh, et al, 1972).

Table 6.6 Percent distribution of births in the last 5 years according to type of assistance during delivery, by selected background characteristics

Background characteristic	Doctor	Trained nurse/ midwife	Traditional birth attendant	Other	Relative	No one	Not stated	Total percent	Weighted number of births
Age									
<30	44.0	22.4	26.4	5.2	0.8	0.4	0.8	100	2,226
30+	44.0	21.4	23.8	7.6	0.4	2.4	0.4	100	1,423
Urban-rural residence									
Urban	83.3	12.3	2.0	1.0	0.3	0.3	0.8	100	622
Rural	35.9	24.0	30.2	7.3	0.7	1.4	0.6	100	3,027
Region									
North	49.2	15.7	17.5	15.4	1.0	0.8	0.5	100	702
Northeast	27.3	23.2	39.2	6.8	0.7	2.4	0.5	100	1,288
Central	67.1	18.6	9.0	3.5	0.5	0.8	0.5	100	687
South	19.3	39.5	39.0	0.8	0.3	0.1	1.1	100	592
Bangkok	88.0	8.6	1.8	0.5	0.2	0.3	0.6	100	380
Education									
No education	32.7	11.0	32.2	22.2	0.7	0.9	0.3	100	350
Primary	39.8	24.1	28.3	5.2	0.7	1.3	0.6	100	2,834
Secondary	76.2	18.2	3.3	0.0	0.2	1.2	1.0	100	306
Higher	82.3	16.9	0.4	0.0	0.0	0.0	0.4	100	158
Religion*									
Buddhist	46.5	22.8	22.7	5.5	0.6	1.3	0.6	100	3,247
Islam	22.1	19.5	54.4	2.7	0.4	0.0	0.9	100	288
Total	**44.0**	**22.0**	**25.4**	**6.2**	**0.6**	**1.2**	**0.6**	**100**	**3,649**

* Excludes cases whose religion is other than Buddhism or Islam or is not stated

There is little association between the age of the mother and the extent to which births were delivered by trained health personnel. Place of residence, on the other hand, shows a strong differential in type of assistance during delivery. Clearly, rural residents are more likely to be assisted by a traditional birth attendant than are their urban counterparts (30% compared to 2%). In contrast, 83 percent of women in the urban places have their child delivered by a medical doctor compared to only 36 percent of rural women. This difference is probably attributable largely to the greater availability of doctors and hospitals in urban areas. Regionally, delivery by a traditional birth attendant is most common in the northeast and the south. In each of these regions, 39 percent of births are assisted by traditional birth attendants. Correspondingly, the percentage of births assisted by doctors is lowest in these two regions (27% and 19% respectively). Of all the regions, Bangkok (88%) shows the highest share of births delivered by a medical doctor and the lowest (2%) by traditional birth attendants.

There is a clear positive relationship between education and the extent to which help was sought from trained health personnel. The percentage of mothers who are assisted by traditional birth attendants decreased from about 32 percent for those with no education to less than half of a percent among those with more than a secondary education. Similarly, the percentage of those who are assisted by a medical doctor rises from about 33 percent to 82 percent between the lowest and highest educational categories. Also striking is the differential by religion. Clearly, births borne by Moslems are more likely to be assisted by traditional birth attendants than those borne by Buddhists.

6.4 Immunization

An important indicator of child health status in a country is the proportion of children protected through immunization against potentially life threatening diseases. Thailand's Expanded Programme of Immunization (EPI), which was started in 1977, seeks to immunize children against tuberculosis, diphtheria, pertussis, tetanus, polio, and measles. To achieve this, children are to receive one dose of BCG and measles vaccines and three does of DPT and polio vaccines. The national operational plan has been periodically updated and in 1986 was revised to accelerate immunization activities to achieve Universal Child Immunization. Currently, the program operates in all areas of the country and is considered to be one of the priority programs within the CDC Department. At present, the schedule of immunizations recommended by the CDC is as follows:

BCG - at birth or 1st month;
DPT1 and Polio1 at ages 2-3 months;
DPT2 and Polio2 at ages 4-5 months;
DPT3 and Polio3 at ages 6-7 months;
and Measles at ages 9-12 months.

The TDHS provides information on immunization coverage for living children under five. The data on the type and date of vaccination were collected by copying the information from the child's health record card or booklet. Mothers with children under 5 years old were asked if each of their children had a health record card or booklet which recorded immunizations. If the mother said yes and could show the interviewer the card or booklet, the dates of all immunizations received by the child were recorded. This included information on BCG, DPT, polio and measles vaccinations. For mothers who did not have or could not show a health card or booklet with a record of immunizations, a question was asked about whether the child had any vaccinations. The data on immunization should be helpful for assessing the recent efforts of the CDC Department to expand immunization coverage.

Before interpreting the data presented in this report on immunization, it should be noted that there is no single, unified health record card in use in Thailand that is routinely provided to mothers. Moreover, the health record cards and booklets that are in use are designed for different purposes and do not necessarily contain information on immunization. Within the Ministry of Public Health, the Nutrition and the Family Health Division issues one type to record certain information relevant to their programs while the CDC issues a special card only for immunization information to be recorded. Moreover, some hospitals issue their own health record cards or booklets for children which often contain space for information about immunizations. Because of this situation interviewers sometimes had to go to some length to explain to respondents which card they were requesting to see.

To correctly interpret the following analysis, it is important to recognize that in the TDHS, only possession of health record cards or booklets dealing with immunization were recorded and that this is necessarily limited only to children who received at least one vaccination. Thus as used in this report, all children who are counted as having a health record card or booklet have been vaccinated at least once. The reverse is not true, however, namely not all children vaccinated at least once have a health record card or booklet.

Table 6.7 looks at the percent distribution of children under 5 years of age according to immunization status and method of reporting immunization status, by age of child. The results indicate that the percentage of children who received at least one dose of at least one type of immunization ranges from 64 percent for children aged under 6 months to 84 percent for children aged 36-47 months. The proportion of children whose immunization status was determined through showing a health record card or booklet declines as the age of children increases. This in part reflects the increasing extent to which health record cards or booklets are coming into use. However, it undoubtedly also reflects the fact that the older a child is, the greater the likelihood that the parent has lost or discarded the health record card or booklet. Once the basic series of immunizations are completed, the mother may see little purpose in retaining the immunization record.

Data in Table 6.7 are useful for assessing the proportion of children under 5 years who have been contacted by the EPI program but does not provide information on how complete a regime of immunizations those contacted received. To more fully assess the coverage of the EPI program one would need to look at the proportion immunized by age of child and type of vaccine. To examine this aspect of EPI coverage, Table 6.8 shows the percent of children with specific immunizations as well as the percent with full immunization coverage (BCG, DPT3, Polio3, and measles) according to their age among those for whom a health record card or booklet with immunization information was shown.

Table 6.7 Percent distribution of children under 5 years of age according to immunization status and method of reporting immunization status, by age of child

Age of child	Received at least one immunization as determined from: Health record card/booklet	Mother's report	Total percent receiving immunization	Percent not receiving immunization	Total percent	Weighted number of children
Under 6 months	37.6	26.5	64.1	35.9	100	301
6-11 months	49.3	36.3	85.6	14.4	100	347
12-23 months	36.0	53.4	89.4	10.6	100	757
24-35 months	30.9	52.0	82.9	17.1	100	689
36-48 months	22.2	61.5	83.7	16.3	100	695
49-59 months	14.5	68.5	83.0	17.0	100	729
All ages	**29.3**	**53.9**	**83.2**	**16.9**	**100**	**3,520**

Table 6.8 Among all children under 5 years of age with health record cards or booklets, the percentage for whom BCG, DPT, polio and measles immunizations are recorded, by age of child

Age of child	Among children with health record card/booklet, percent who have received: BCG	DPT 1	DPT 2	DPT 3	Polio 1	Polio 2	Polio 3	Measles	All immuniza-tions*	Weighted number of children
Under 6 months	93.1	77.1	24.4	1.9	77.4	24.7	1.9	0.0	0.0	114
6-11 months	91.2	96.8	87.5	65.8	97.1	86.8	64.7	19.4	16.9	171
12-23 months	92.7	99.2	94.4	82.9	99.0	94.0	82.7	53.5	48.4	273
24-35 months	91.6	99.2	94.3	88.3	97.6	93.0	87.1	55.8	51.9	213
36-47 months	85.8	97.3	92.1	80.2	95.6	90.8	80.2	36.4	30.7	154
48-59 months	87.8	96.6	85.8	79.7	96.6	84.9	79.4	41.8	36.8	106
All ages	**90.7**	**95.8**	**84.3**	**71.5**	**95.3**	**83.6**	**71.0**	**38.7**	**34.7**	**1,049**

Note: For the percentage of children under 5 years of age for whom health record cards or booklets were shown, see Table 6.7.

* Includes children who are fully immunized (i.e., those receiving BCG, three doses of DPT and polio and a measles vaccination).

Among the 29 percent with a health record card or booklet, overall coverage is quite high for BCG (91 percent), the third dose of DPT (72 percent), and the third dose of polio vaccine (71 percent). It is important to note that since these tabulations on specific immunizations are based only on children who had been brought at least once for immunization (as otherwise they would not have had a health card or booklet with an immunization record), these results will substantially overstate the extent of immunizations in the general population. In addition, mothers who received and retained a record of these immunizations may be self-selected for being more likely to bring their children for the complete series. The one possible exception to a likely overestimate concerns the youngest age group of children, some of whom are still below the recommended age for several of the specific immunizations. In this case the data might understate the extent to which children will eventually receive some of the specific immunizations, especially those targeted for older ages.

It is of interest that measles coverage is far lower than that of other vaccines, undoubtedly reflecting its more recent introduction into the EPI program. Note that the percentage receiving measles immunization among children one or two years of age is far higher than among older children.

Because in Thailand children are not expected to have completed the full schedules of immunization until the age of 12 months, further analysis of coverage is restricted to children aged 12 months and older. Table 6.9 presents the percent distribution of children 12 to 59 months of age according to immunization status and method of reporting by selected background characteristics. Mothers in the urban areas not only are more likely to have their children immunized but are also more likely to have a record of these immunizations to show the interviewer. About 95 percent of children aged 12-59 months in the urban areas were immunized at least once, compared to 83 percent of rural children. The percent with a health record card or booklet with immunization data in the urban areas was 42 percent, compared with only 23 percent in the rural areas. The figures for combined coverage of all antigens are also higher in the urban than in the rural areas as demonstrated in Table 6.10. About 53 percent of urban children for whom a health record card or booklet was available were immunized by all required antigens compared to 41 percent of rural children.

With respect to regional differentials, the highest percentage of children who had not been immunized with any antigen are found in the south (25%) and the lowest in Bangkok (4%). The differences in other regions are small. When analysis is restricted to those children whose mother was able to show the interviewer a record of immunizations, the lowest combined coverage for all antigens is in the northeast (33%) and highest in Bangkok (55%). The low combined coverages for the northeast and central region are due mainly to proportions of children who received measles vaccine.

The results also reveal a positive relationship between education and immunization. The percentage of children aged 12 to 59 months who were immunized by at least one dose of one type of vaccine rises from about 71 percent among those whose mother had no formal education to 99 percent among those whose mother completed more than secondary education. When the analysis of educational differentials is restricted to the approximately 26 percent of children whose mother had a health record card or booklet with immunization information, the relationship between education and immunizations is less

Table 6.9 Percent distribution of children 12 to 59 months of age according to immunization status and method of reporting immunization status, by selected background characteristics

Background characteristic	Received at least one immunization as determined from: Health record card/booklet	Mother's report	Total percent receiving immunization	Percent not receiving immunization	Total percent	Weighted number of children
Urban-rural residence						
Urban	41.5	53.2	94.7	5.3	100	490
Rural	22.8	60.0	82.8	17.2	100	2,382
Region						
North	33.8	49.7	83.5	16.5	100	549
Northeast	17.0	69.9	86.9	13.1	100	1,005
Central	27.5	57.0	84.5	15.5	100	564
South	22.6	52.2	74.8	25.2	100	458
Bangkok	44.0	52.0	96.0	4.0	100	296
Education						
No education	11.7	58.9	70.6	29.4	100	265
Primary	24.9	59.4	84.3	15.7	100	2,240
Secondary	39.8	57.0	95.9	4.1	100	245
Higher	47.7	51.7	99.4	0.6	100	122
Religion*						
Buddhist	27.1	59.8	86.9	13.1	100	2,568
Islam	15.8	51.2	67.0	33.0	100	215
Total	**26.0**	**58.9**	**84.9**	**15.1**	**100**	**2,872**

* Excludes cases whose religion is other than Buddhism or Islam or is not stated

Table 6.10 Among children 12 to 59 months of age with health record cards or booklets, the percentage for whom BCG, DPT, polio and measles immunizations are recorded, by selected background characteristics

Background characteristic	BCG	DPT 1	DPT 2	DPT 3	Polio 1	Polio 2	Polio 3	Measles	All immuniz-ations*	Weighted number of children
	Among children aged 12 to 59 months with health record card/booklet, percent who have received									
Urban-rural residence										
Urban	94.2	98.8	95.2	89.3	97.9	94.4	88.4	56.0	52.5	203
Rural	88.8	98.3	91.7	81.2	97.5	90.8	80.9	46.3	40.9	543
Region										
North	92.3	99.1	95.7	90.0	98.7	94.9	89.2	57.0	51.5	189
Northeast	89.3	100.0	90.4	78.1	98.8	89.1	78.4	39.2	32.9	171
Central	84.7	95.9	90.7	79.2	94.8	89.6	77.8	41.9	36.3	155
South	89.1	98.1	89.5	76.9	97.4	89.2	77.5	49.1	47.0	104
Bangkok	96.2	98.9	96.2	91.4	97.9	95.3	90.5	58.5	55.2	130
Education										
No education	94.9	95.0	86.4	78.6	95.0	86.4	80.7	46.5	42.9	31
Primary	88.9	98.5	93.2	82.6	97.7	92.6	82.2	46.0	40.4	558
Secondary	93.5	98.5	88.6	83.2	97.6	86.3	82.5	59.1	57.3	98
Higher	95.4	100.0	98.0	94.7	97.9	95.9	92.1	62.0	57.8	58
Religion**										
Buddhist	90.0	98.6	92.9	83.7	97.8	92.0	83.2	49.3	44.1	696
Islam	92.3	95.3	85.7	72.7	92.6	83.0	72.7	31.4	31.4	34
Total	**90.3**	**98.5**	**92.7**	**83.4**	**97.6**	**91.8**	**83.0**	**49.0**	**44.1**	**746**

Note: For the percentage of children aged 12 to 59 months for whom health record cards or booklets were shown, see Table 6.9

* Includes children who are fully immunized (i.e., those receiving BCG, three doses of DPT and polio and a measles vaccination)

** Excludes cases whose religion is other than Buddhism or Islam or is not stated

consistent. In general, children of mothers who finished more than primary school are more likely to be immunized and have a higher combined coverage than children of mothers with primary education or less (see Table 6.10).

In terms of religion, it is evident that children borne by Buddhist mothers were more likely to be immunized than children borne by Moslem mothers. The corresponding share of children receiving some immunization for the children of the two religious groups are 87 and 67 percent respectively. The combined coverage of those for which a health record card or booklet is available is also higher for Buddhist children (44%) than for Moslem children (31%).

According to the goals of the EPI program in Thailand, children should be fully immunized by the age of one year receiving one dose of BCG, three doses of DPT and Polio and the measles vaccine. However, in the actual operation there are many circumstances that can cause delays in providing or receiving immunizations. For example, the supply of vaccine may not be available at the time of the required schedule, or the ploughing and planting season may coincide with the scheduled visit and cause a temporary delay because of time constraints on the part of mother. The net result is that many mothers do not bring their child for vaccination according to the recommended schedule. To allow for some delay in immunizations, but at the same time to provide the most up-to-date information, Tables 6.11 and 6.12 restrict analysis of immunization coverage to children aged 12-23 months. Results are presented by the same selected background characteristics. The general pattern is similar to results for children age 12-59 months discussed above.

Table 6.11 Percent distribution of children 12-23 months of age according to immunization status and method of reporting immunization status, by selected background characteristics

Background characteristic	Received at least one immunization as determined from: Health record card/booklet	Mother's report	Total percent receiving immunization	Percent not receiving immunization	Total percent	Weighted number of children
Urban-rural residence						
Urban	54.9	41.0	95.9	4.1	100	136
Rural	31.9	56.1	88.0	12.0	100	623
Region						
North	43.1	48.5	91.6	8.4	100	147
Northeast	25.7	63.7	89.4	10.6	100	257
Central	37.7	53.8	83.9	16.1	100	158
South	31.8	46.2	78.0	22.0	100	113
Bangkok	57.7	39.1	96.8	3.2	100	83
Education						
No education	16.3	59.0	75.3	24.7	100	66
Primary	34.0	55.1	89.1	10.9	100	580
Secondary	57.5	40.7	98.2	1.8	100	78
Higher	57.6	42.4	100.0	0.0	100	35
Religion*						
Buddhist	37.0	54.0	91.0	9.0	100	693
Islam	21.3	48.9	70.1	29.9	100	52
Total	36.0	53.4	89.4	10.6	100	758

* Excludes cases whose religion is other than Buddhism or Islam or is not stated

Table 6.12 Among children 12 to 23 months of age with health record cards or booklets, the percentage for whom BCG, DPT, polio and measles immunizations are recorded on the health card, by selected background characteristics

Background characteristic	Among children aged 12 to 23 months with health record card/booklet, percent who have received									
	BCG	DPT 1	DPT 2	DPT 3	Polio 1	Polio 2	Polio 3	Measles	All immunization**	Weighted number of children
Urban-rural residence										
Urban	94.3	97.3	93.1	84.9	97.4	93.3	85.2	64.2	56.8	75
Rural	92.1	100.0	94.9	82.1	99.6	94.3	81.7	49.4	45.2	199
Region										
North	91.1	99.4	98.2	88.9	98.2	96.3	88.2	58.9	52.4	63
Northeast	95.7	100.0	95.3	76.3	100.0	95.3	76.3	33.8	32.2	66
Central	90.7	98.9	92.0	85.1	98.9	92.0	84.6	55.8	50.7	60
South	91.9	100.0	88.6	76.3	100.0	88.6	76.3	55.2	50.9	37
Bangkok	94.0	97.9	95.5	86.2	98.1	95.7	86.4	69.2	60.4	48
Education*										
Primary	90.8	99.5	95.3	81.5	99.4	95.6	81.4	48.7	43.2	197
Secondary	99.0	98.6	91.5	83.0	97.6	87.8	82.8	65.0	61.8	45
Higher	95.9	100.0	94.3	94.3	100.0	94.3	92.9	65.8	60.3	20
Religion*										
Buddhist	92.6	99.2	94.7	83.3	99.0	94.3	83.1	53.1	47.9	256
Total	**92.7**	**99.2**	**94.4**	**82.9**	**99.0**	**94.0**	**82.7**	**53.5**	**48.4**	**759**

Note: For the percentage of children aged 12 to 23 months for whom health record cards or booklets were shown, see Table 6.11.

* Results not shown for categories with less than 20 weighted cases
** Includes children who are fully immunized (i.e. those receiving BCG, three doses of DPT and polio and measles Vaccination).

6.5 Diarrhea Prevalence

Diarrhea has been singled out for investigation in the TDHS for two reasons. In many countries, it is a major contributory cause of death in infancy and childhood, and it is often amenable to treatment by oral rehydration. This combination of high incidence, severity and the existence of effective treatment makes diarrhea a high priority concern for health services.

In the TDHS there is no attempt to estimate diarrheal incidence (i.e., the number of new cases of the disease occurring in a specified time period) since no information is collected in the TDHS on the date on which a diarrheal episode started or on its duration. The questions in the TDHS, however, can be used to obtain two different point prevalence estimates: (a) the percentage of children under 5 years whose mothers report that they had diarrhea in a 24-hour period before the survey and (b) the percentage of children under 5 whose mothers report that they had diarrhea in a two-week period before the survey.

Both of these measures, however, need to be interpreted with great caution because the measurement of diarrheal disease is subject to several methodological difficulties. First, the prevalence of this disease is undoubtedly seasonally affected. Note that the TDHS took place largely during the hot dry season for most of the country. Unpublished data from recent annual summaries of the Epidemiology Division of the Ministry of Public Health indicate that the number of diarrhea cases (to persons of all ages) reported during March through May, the major months during which the TDHS took place, are above average for the year. Second, there may be a definitional problem. In the TDHS, interviewers were instructed to specify to respondents what was meant by diarrhea and to use local terminology where appropriate. However, this may not have always been done and even so some mothers may have had different interpretations. A third problem relates to the time reference period used. While it is likely that most mothers will know whether their child had diarrhea in the past 24 hours, some may forget if a child had diarrhea in the past two weeks. The effect these factors have on either increasing or decreasing the rates derived from the TDHS is not known. The primary reason that data on the presence of diarrhea among children were collected was not to obtain a prevalence figure, but rather to examine treatment practices which are discussed below.

Results in Table 6.13 show that overall 6 percent of children were reported as experiencing diarrhea within the 24 hours preceding interview and 16 percent were reported as experiencing diarrhea within the preceding two weeks. Diarrhea is more common among children less than 2 years old than among those who are older. This is probably in part attributable to natural immunity which children at older ages are more likely to have acquired. Girls experienced fewer episodes of diarrhea than boys. Only 5 percent of girls experienced an incidence of diarrhea within the past 24 hours and 14 percent during the past two weeks. The corresponding figures for boys are 7 and 17 percent respectively.

Children in rural areas are more likely to experience an episode of diarrhea. This is probably due to the poorer personal hygiene as well as poorer environmental sanitation for the rural residents as compared to residents of the urban areas. Approximately 7 percent of children in the rural areas had diarrhea within the past 24 hours and 17 percent within the past two weeks. These rates are higher than the corresponding rates of 4 and 10 percent respectively for urban children. Except for Bangkok, where the prevalence of diarrhea is distinctly lower, regional differences are minimal.

Although the prevalence of diarrhea differs by education of the mother, the relationship is not completely consistent. In general, children of mothers who have a secondary or higher education are less likely to experience diarrhea than children of mothers who finished no more than primary school. With respect to religion, Islamic children are more likely to experience an episode of diarrhea than Buddhist children. This is true for both diarrhea episodes within 24 hours and within two weeks preceding the interview.

Table 6.13 Percentage of children under 5 years of age reported by the mother to have had diarrhea in the past 24 hours and the past two weeks, by selected background characteristics

Background characteristic	Percentage of all children under 5 reported by the mother as having had diarrhea: Past 24 hours	Past two weeks*	Weighted number of children under 5
Age			
Under 6 months	8.3	17.8	301
6-11 months	8.9	22.8	347
12-23 months	8.3	23.3	759
24-35 months	6.8	14.6	689
36-47 months	1.9	10.4	695
48-59 months	4.8	9.1	729
Sex			
Boy	7.0	17.1	1,806
Girl	5.1	14.0	1,714
Unban-rural residence			
Urban	3.7	9.8	609
Rural	6.6	16.8	2,911
Region			
North	7.3	17.5	672
Northeast	6.0	16.6	1,234
Central	5.9	14.1	671
South	6.6	16.1	571
Bangkok	3.7	10.6	373
Education			
No education	9.6	22.6	330
Primary	6.1	15.9	2,728
Secondary	3.2	8.1	304
Higher	4.4	10.2	158
Religion**			
Buddhist	5.7	14.8	3,136
Islam	10.8	24.1	275
Total	**6.1**	**15.6**	**3,520**

* Includes 24 hours period
** Excludes cases whose religion is other than Buddhism or Islam or is not stated

6.6 Diarrhea Treatment

Diagnosis and treatment of diarrhea by medical personnel among children under five years of age is critical both as a direct child survival intervention and to prevent other health threats from taking advantage of the child's weakened state. The TDHS also provides information as to whether medical care was sought for diarrheal episodes, which is reported in Table 6.14 along with the percentage of children receiving various treatments for diarrheal episodes. Particular attention is focused here on the use of Oral Rehydration Salt (ORS) packets or home solutions of sugar, salt and water for treatment. Overall about 41 percent of diarrhea cases were brought to the attention of a doctor or nurse, 37 percent were treated with ORS packets, and 6 percent with a home solution of sugar and salt water. This administration of ORS or a home solution may be done either independently or with the advice and prescription from a medical doctor or nurse. About 70 percent of children with diarrhea were given some treatment other than ORS or a home solution. In some cases this was in addition to also being given ORS or a home solution. Overall in only 18 percent of diarrhea cases did the mother (or other guardian) neither consult a medical authority nor give any treatment.

The percentage of children who did not receive treatment for diarrhea and for whom no medical authority was consulted is higher among those under 6 months of age than among older children. While girls experience fewer episodes of diarrhea than boys as indicated above, boys are slightly more likely to receive treatment or have a medical authority consulted about their case.

A comparison of treatment patterns by place of residence shows relatively small differences. A somewhat higher proportion of diarrhea episodes go untreated or without consultation in rural areas (19%) compared to urban areas (14%). In addition, a higher proportion of urban diarrhea cases involved consultation with a doctor or a nurse (46%) than rural cases (41%). Also ORS packets or a home solution of sugar and salt is more likely to be given in urban than rural cases.

An examination of the differences in diarrhea treatment by region reveals that the northeast had the highest proportion (40%) using ORS. This is consistent with the program efforts of the Ministry of Public Health in introducing and educating mothers to use ORS when their child had diarrhea. In cases where ORS is not available, home solution of sugar and salt (homemade ORS) is recommended. The proportion for which homemade ORS was used is also among the highest (9%) in the northeast.

Mothers with better education are likely to handle an episode of diarrhea differently from mothers with a low level of education. In general, mothers who are educated beyond primary school are more likely to treat their child with ORS or a home made solution than those with lower levels of education. The percentages of diarrhea cases with no treatment and no consultation among children of mothers who finished or studied beyond secondary school are less than the percentages of those with lower levels of educational attainment. Although Moslem children were more likely than Buddhist children to experience an episode of diarrhea, as noted above, the ways parents of the two religions handle episodes are similar.

Table 6.14 Percentage of children under 5 years of age who had diarrhea in the past two weeks consulting a doctor or nurse and the percentage receiving different treatments as reported by the mother, by selected background characteristics

Background characteristic	Percentage of children with diarrhea consulting a doctor or nurse	Percentage of children with diarrhea treated by*: ORS packets	Home solution of sugar salt, water	Other treatment**	No treatment or medical consultation	Weighted number of children with diarrhea
Age						
Under 6 months	27.5	17.3	1.7	63.7	20.2	54
6-11 months	47.9	39.5	5.6	69.5	18.4	79
12-23 months	36.8	37.2	8.3	67.5	14.5	177
24-35 months	51.1	41.9	4.8	78.5	7.3	101
36-47 months	40.6	44.2	7.5	63.4	14.4	72
48-59 months	41.5	37.8	2.8	74.8	7.5	66
Sex						
Boy	42.5	35.4	5.2	71.0	13.6	309
Girl	39.5	40.0	6.7	68.0	15.5	240
Urban-rural residence						
Urban	45.8	40.7	7.8	66.6	10.4	60
Rural	40.6	37.0	5.6	70.2	14.9	489
Region						
North	41.5	35.7	0.6	77.4	9.4	118
Northeast	39.9	40.0	9.2	71.4	17.2	205
Central	46.6	33.0	3.2	60.4	15.2	95
South	37.2	38.9	6.3	68.6	14.0	92
Bangkok	43.1	36.8	9.2	63.6	13.6	40
Education						
No education	34.8	33.7	0.0	72.2	13.9	75
Primary	42.2	36.5	6.6	68.2	15.2	434
Secondary	37.2	54.3	8.8	84.6	4.7	25
Higher	(46.0)	(55.0)	(7.0)	(80.0)	(11.4)	16
Religion* **						
Buddhist	42.2	37.4	6.0	70.0	14.1	463
Islam	41.8	39.0	6.4	66.9	16.1	66
Total	**41.2**	**37.4**	**5.8**	**69.8**	**14.4**	**549**

Notes: Results shown in parentheses are based on fewer than 20 weighted cases
* Women were able to specify more than one treatment so that the percentages of children receiving various treatments may not add to 100
** Includes tablets, injections and syrups and change in diet (increasing or decreasing food or fluids)
*** Excludes cases whose religion is other than Buddhism or Islam or is not stated

6.7 ORT Knowledge

The Primary Health Care (PHC) program in Thailand, as in many other countries, has put a great emphasis on diarrheal disease control as one of the main interventions to increase the survival chances of children. The PHC program has relied chiefly on IE&C strategies as a means to educate people to protect themselves and their children from diarrhea. Through the Village Health Volunteer (VHV) training curriculum, the PHC program aims to increase the knowledge of the clinical symptoms of diarrhea as well as the benefits of Oral Rehydration Therapy (ORT) and how to administer it.

As diarrhea, particularly among children under 5 years old, can result in rapid dehydration and death, the use of ORT is very important for the survival of children. Since knowledge of ORT is a prerequisite for the use of ORS, TDHS investigated this topic. The percentage distribution of mothers of children under 5 years of age who knew about ORT by education and residence is shown in Table 6.15 according to selected background characteristics. Overall, about 78 percent of mothers with children under 5 knew about ORT. There seems to be a positive association between education and knowledge of ORT. The percentage of mothers who knew about ORT increases from 57 percent among those with no education to 88 percent among those with more than secondary school. This positive relationship with education is observed for both urban and rural mothers and more or less in each region.

Mothers in the urban areas are generally more likely to know about ORT than those in the rural areas but this appears to be largely a function of differences in educational levels. Within the separate educational categories, knowledge differs little by urban-rural residence, except among those with no education. When classified by region, knowledge of ORT among mothers in Bangkok and the northeast are highest, estimated at about 81 percent in each. The high level of knowledge in Bangkok may be attributable to the higher concentration of mothers with higher education there than elsewhere. In the northeast, the high level of knowledge is probably explained by greater program efforts in that region to educate villagers and health volunteers of ORT. Knowledge of ORT was lowest in the north (73%) and intermediate in the central region (77%) and the south (79%).

The information about knowledge of ORT derived from the TDHS is limited in as much as it only indicates familiarity with the technique but does not inform us if the respondent has correct knowledge on how and when to use it. Given that over one fifth of respondents do not know about ORT at all and that some unknown share of those who know the method may nevertheless have incorrect knowledge about it, a substantial effort is still needed to educate mothers on the use and benefits of ORT and on how ORT can prevent death from the cause of dehydration.

Table 6.15 Percentage of mothers of children under 5 years of age who know about ORT, by education and selected background characteristics

Background characteristic	No education	Primary	Secondary	Higher	Total
Urban-rural residence					
Urban	61.5	78.7	86.4	87.7	81.1
Rural	56.7	78.9	87.3	88.5	77.4
Region					
North	53.6	76.4	88.3	89.0	72.9
Northeast	54.2	81.5	88.3	75.0	80.6
Central	69.1	76.0	83.4	100.0	77.3
South	54.2	78.6	87.9	90.0	77.8
Bangkok	67.0	78.7	87.4	88.1	81.2
Total	**57.1**	**78.9**	**86.9**	**88.1**	**78.1**

6.8 Anthropometric Measurements of Length and Weight

A main component of the TDHS is to carry out the anthropometric measurements of children aged 3-36 months. The accuracy of the anthropometric data depends heavily on the ability of the measurers. In the TDHS, the team supervisors and assistants were assigned to perform this task. Considerable time was devoted to training which was primarily done under guidance from an expert from DHS headquarters. The training sessions consisted of a discussion of the general principles, practical instructions, practice of measurements and tests. Most of the training was devoted to the practice of height measurement. One to three tests were carried out during the training period for each trainee. Those who did not pass the first test were required to take the subsequent tests. One assistant failed to meet the established standard after the third test. She was later assigned to do other work in the team. Test results in general suggest that the measurers tended to underestimate the length due mainly to their reluctance to press firmly on the knees of the children at the instant of measurement. This is a relatively common problem with anthropometric measurement, particularly with very young children.

Inaccurate reporting of age of children can adversely affect the validity of the anthropometric data. Age data in months is required. As discussed earlier, a special effort was made in the TDHS to obtain accurate information on birth dates of children by asking the respondents to show documentary evidence whenever possible. As previously noted, birth dates were documented for slightly over half of the children born during the five years preceding the survey. In addition, interviewers were instructed to record reported ages of young children in months. This did not prove difficult in most cases since it is a common practice to state ages of young children in months in Thailand. As a result of these procedures, the accuracy of children's reported age in the TDHS is probably quite high. As evident in Figure 6.1 there is no clear pattern of age heaping except possibly for an unusual peak at 25 months. There are no discernible concentrations at months 12, 18, 24, 30 and 36 as is common in populations where ages are not precisely reported. This is encouraging and certainly one indication that the age data as reported in months is at least free from biases associated with heaping.

A total of 2,003 children were identified between ages 3 and 36 months and hence eligible for anthropometric measurement. Only 27 of these lacked detailed information on birth dates (or age in months) and were excluded from the analysis. An additional 13 cases, had an improbable height and/or weight recorded. These cases represent errors of measurement or data entry or both and are excluded. Also excluded are another 111 children, or 5.5 percent, who were neither weighed nor measured for length either because the mother refused, the child was not present at the time of measurement, or some other problem prevented measurement. Finally, 3 children have been excluded because they do not have both height and weight recorded due to some difficulty during the measurement process which prevented completion. This total of 1,849 children (unweighted), or 92 percent of those originally identified as eligible, serve as the basis for the following analysis.

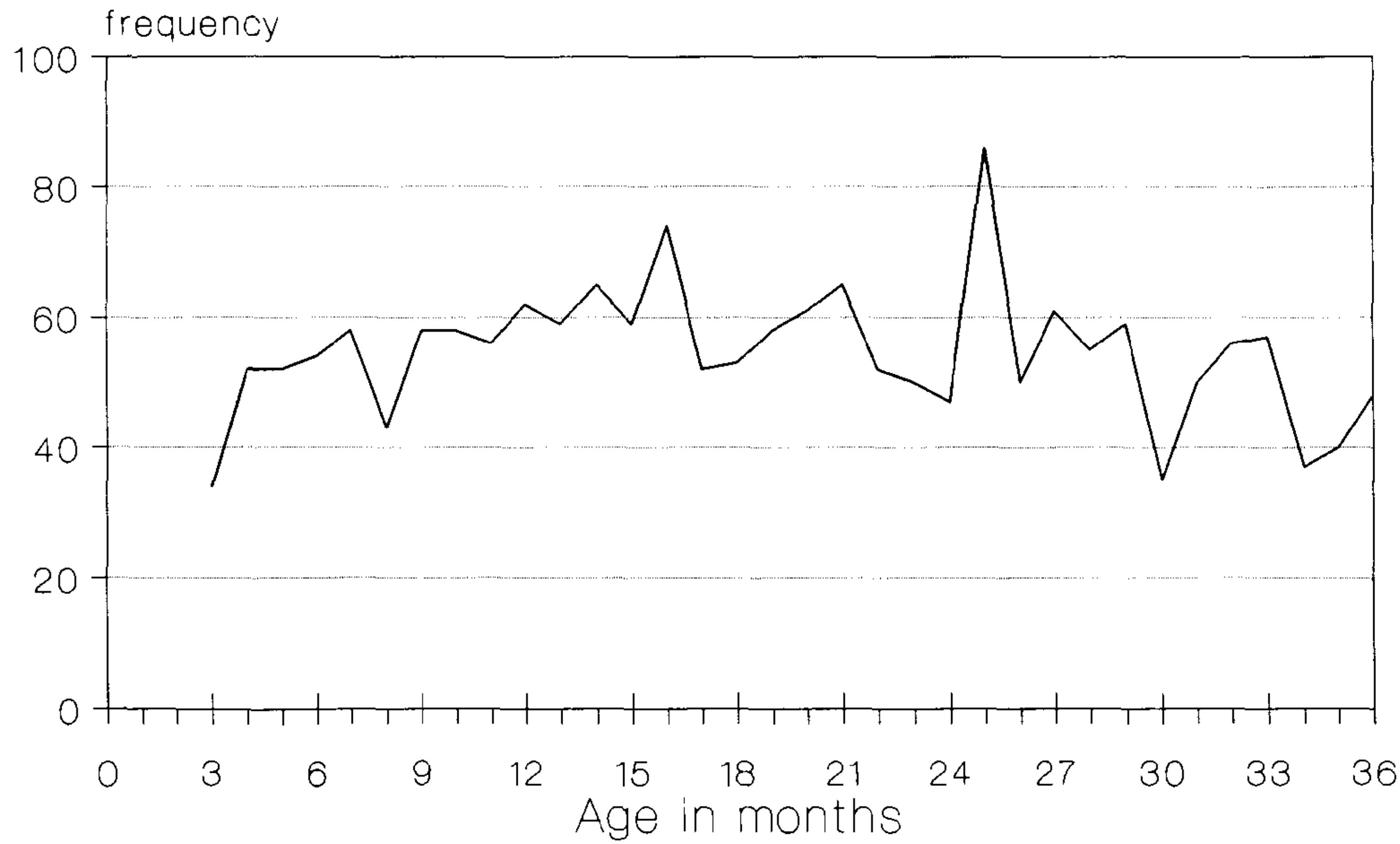
For comparative purposes, the nutritional status tables in this report use the reference population defined by the U.S. National Center for Health Statistics and accepted by the U.S. Centers for Disease Control and the World Health Organization. Four standard indices of physical growth present data that describe the nutritional status of children 3 through 36 months in Thailand:

- Height-for-age
- Weight-for-height
- Height-for-age by weight-for-height
- Weight-for-age

Each index provides somewhat different information on the nutritional status of children. Height-for-age is a measure of linear growth. A child who is 2 or more standard deviations (SD) below the mean of the reference population in terms of height for age is considered short for his/her age ("stunted") or chronically undernourished. A second important index which describes current nutritional status is weight-for-height. A child who is 2 or more standard deviations from the mean of the reference population in terms of weight-for height is described as thin for his/her age ("wasted") or acutely undernourished. The third important index is height-for-age by weight-for-height. This cross tabulation (known as a Waterlow table) yields an indicator of children who are both wasted and stunted and serves to identify those children who are currently the most severely undernourished. The fourth index, weight-for-age, is a composite index of weight for height and height for age. As such, it does not provide additional information beyond that already provided by the other indices. However, weight-for-age is a commonly reported statistic and often is used in clinical settings to monitor the growth of children on a longitudinal basis. Weight-for-age is included in this report because it may provide a useful reference for clinical weight programs.

The terms "stunted" and "wasted" are merely descriptive. Stunting is a measure of chronic undernutrition that indicates growth retardation. It is typically associated with poor economic conditions. Severe stunting is a

Figure 6.1
Reported Age of Children Weighed and Measured



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relatively gradual process that represents the accumulated effects of undernutrition over a number of years. Wasting,on the other hand, can develop rapidly. Usually, a child will double its height during the first year of life but treble its weight. The term wasting refers to inadequate food intake which results in thinness or a deficit in tissue and fat mass compared to the amount expected in a healthy, well fed child. There are a number of factors which can precipitate wasting such as infection and disease (most commonly diarrheal disease) and seasonal variations in food supply.

Height-for-age

Figure 6.2 provides a detailed examination of the association of the age of children between 3 and 36 months and the mean height-for-age measure (as well as the weight-for-height and the weight-for-age measures to be discussed below). The results show a general decline in the height-for-age measure in comparison with the international reference up until age 20 months and then, more or less, a leveling off. One unexpected feature of the results plotted in Figure 6.2 is that the youngest infants measured, those age 3, 4 and 5 months, are already half a standard deviation (-0.5SD) below the international reference. There is no evidence that Thai children are inherently shorter at birth than other ethnic groups. Rather it would be expected that they should not be very different at a very young age, before nutritional differences have had an opportunity to have a major effect. One possible interpretation is that the height measurement may be biased downward. This could arise if the measurers did not press firmly on the knees of the children at the instant of measurement. As noted above, this tendency was observed during training and, although it was called to the attention of the measurers, they may have reverted to this practice when doing the fieldwork. As discussed below, the results on weight-for-height show a pattern consistent with this possibility.

If a tendency to underestimate height did exist, it is possible that it was particularly associated with the young infants since typically it is less difficult to straighten the legs of older children. However, the bias may also be present to some extent for children of all ages who were measured. When interpreting results from the anthropomorphic measurement, this possible bias needs to be kept in mind. For example, if height is underestimated, then the Thai results on height-for-age will show lower values compared to the international reference than is in fact the true situation. As a result, the extent of stunting will be overestimated.

Table 6.16 shows the percent of children aged 3-36 months who fall into various standard deviation categories away from the mean of the international reference population in terms of height-for-age. Results are presented both for all measured children collectively as well as according to selected background characteristics. In a large, healthy and well fed population of children in this age range, there is always some variation in height-for-age. The variation approximately follows a normal distribution with 2.3 percent of children expected to be low in height for their age, that is -2SD or more from the mean of the reference population, and another 2.3 percent expected to be tall in height-for-age, that is, +2SD or more from the mean of the reference population.

Among the total children in Table 6.16, 22.4 percent are -2SD or more below the mean of the reference population. These children are defined as

Figure 6.2
Mean Nutritional Status by Age

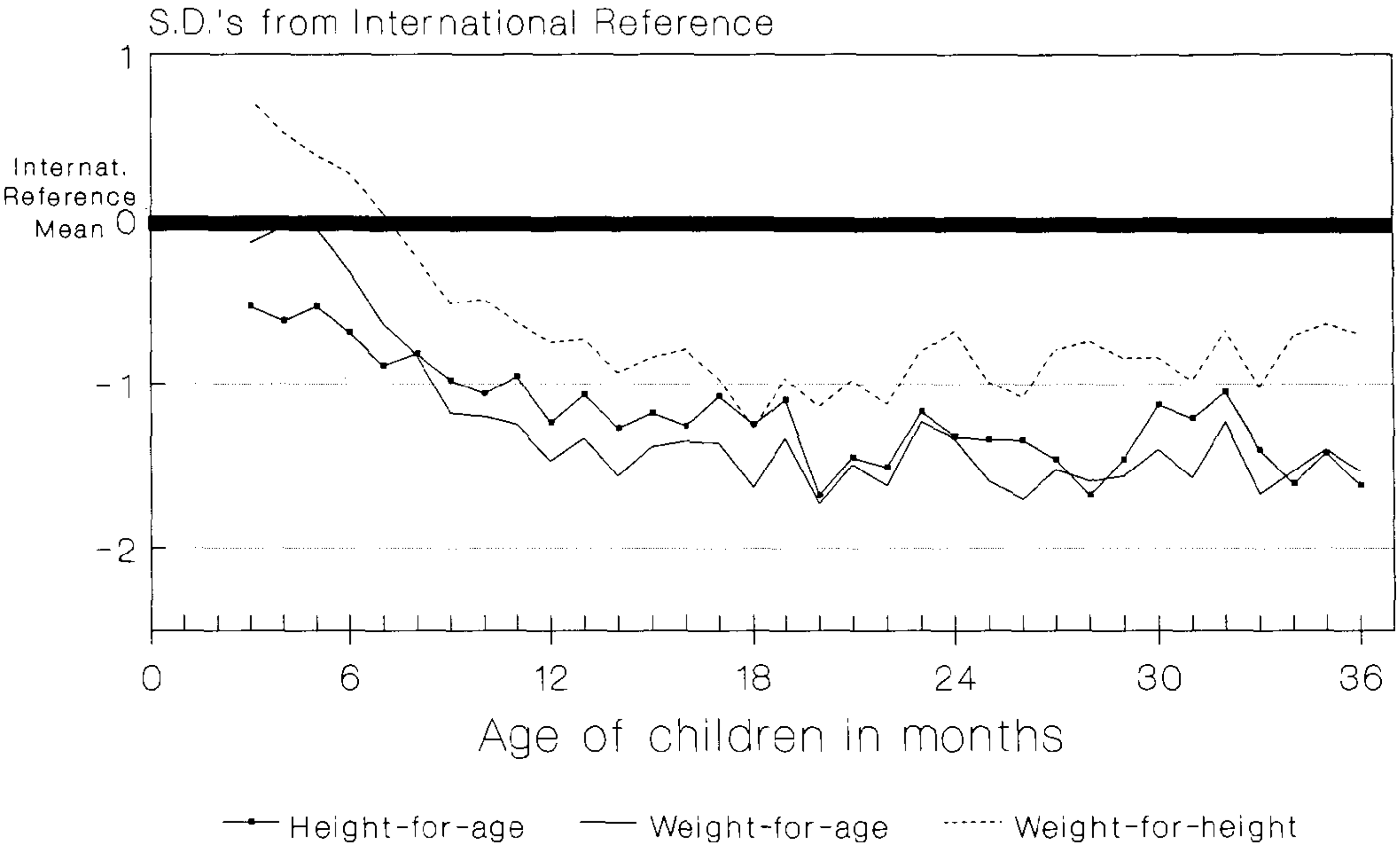

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Table 6.16 Percentage of children aged 3-36 months in each standard deviation category of height-for-age using the international NCHS/CDC/WHO reference by selected background characteristics

Background characteristic	-3.00 or more	-2.00 to -2.99	-1.00 to -1.99	-0.99 to +0.99	1.00 to +1.99	+2.00 or more	Total percent	Weighted number of children 3-36 months
		Standard deviations from NCHS/CDC/WHO reference						
Sex								
Male	3.9	18.6	37.5	37.8	2.1	0.2	100	943
Female	4.8	17.4	34.4	40.0	2.6	0.9	100	913
Age in months								
3 - 11	1.1	10.2	32.3	51.8	4.2	0.4	100	466
12 - 23	4.0	19.8	37.9	35.4	2.3	0.7	100	710
24 - 36	7.0	21.4	36.4	33.6	1.1	0.5	100	681
Previous birth interval*								
< 2 years	3.1	24.8	34.7	34.6	2.1	0.7	100	240
2-3 years	3.5	21.6	34.0	35.8	2.4	0.7	100	465
4 years or more	4.9	14.9	37.5	41.1	1.2	0.4	100	449
Twins	27.5	25.4	22.4	21.8	0.0	2.9	100	21
Urban-rural residence								
Urban	1.6	9.7	24.8	57.2	5.0	1.8	100	308
Rural	4.9	19.6	38.2	35.2	1.8	0.3	100	1,548
Region								
North	5.8	17.0	43.5	32.8	0.8	0.1	100	353
Northeast	4.5	22.3	39.5	31.5	2.1	0.1	100	672
Central	3.2	14.9	27.5	50.8	2.6	1.0	100	346
South	5.5	19.4	36.2	36.2	1.9	0.7	100	295
Bangkok	1.7	8.0	24.8	58.3	5.7	1.5	100	191
Education of mother								
No education	11.9	18.6	43.7	22.0	3.0	0.7	100	149
Primary	4.3	19.4	37.2	37.5	1.3	0.3	100	1,449
Secondary	0.3	12.3	25.4	55.3	5.7	0.9	100	170
Higher	1.5	4.0	22.6	58.0	10.9	3.0	100	89
All children	**4.4**	**18.0**	**36.0**	**38.8**	**2.3**	**0.5**	**100**	**1,857**

* Excludes first births; twins are included both as a separate category and under the appropriate interval category

stunted or chronically undernourished. Stunting is evident in equal proportions among males and females, but there are several outstanding differentials according to other background characteristics. By age, children become progressively more stunted as they get older. Among children aged 3-11 months, 11.3 percent are -2SD below the mean reference population compared to 28.4 percent of children 24-36 months old.

Stunting is about equally associated with short and moderate length birth intervals but considerably lower for children born after a longer interval, defined as 4 or more years. Among the few twins measured, stunting is extremely high. As also shown in Figure 6.3, urban children are far less likely to be stunted than rural children (11% versus 25%) and regionally, the percent of children who are stunted is lowest in Bangkok (10%) followed by the central region (18%), intermediate in the north (23%) and south (25%), and highest in the northeast (27%). Education of the mother shows a strong inverse relationship with stunting. As also shown in Figure 6.4, children of mothers with no education are by far the most likely to be stunted (31%) and those whose mothers studied beyond the secondary level are by far the least likely (6%).

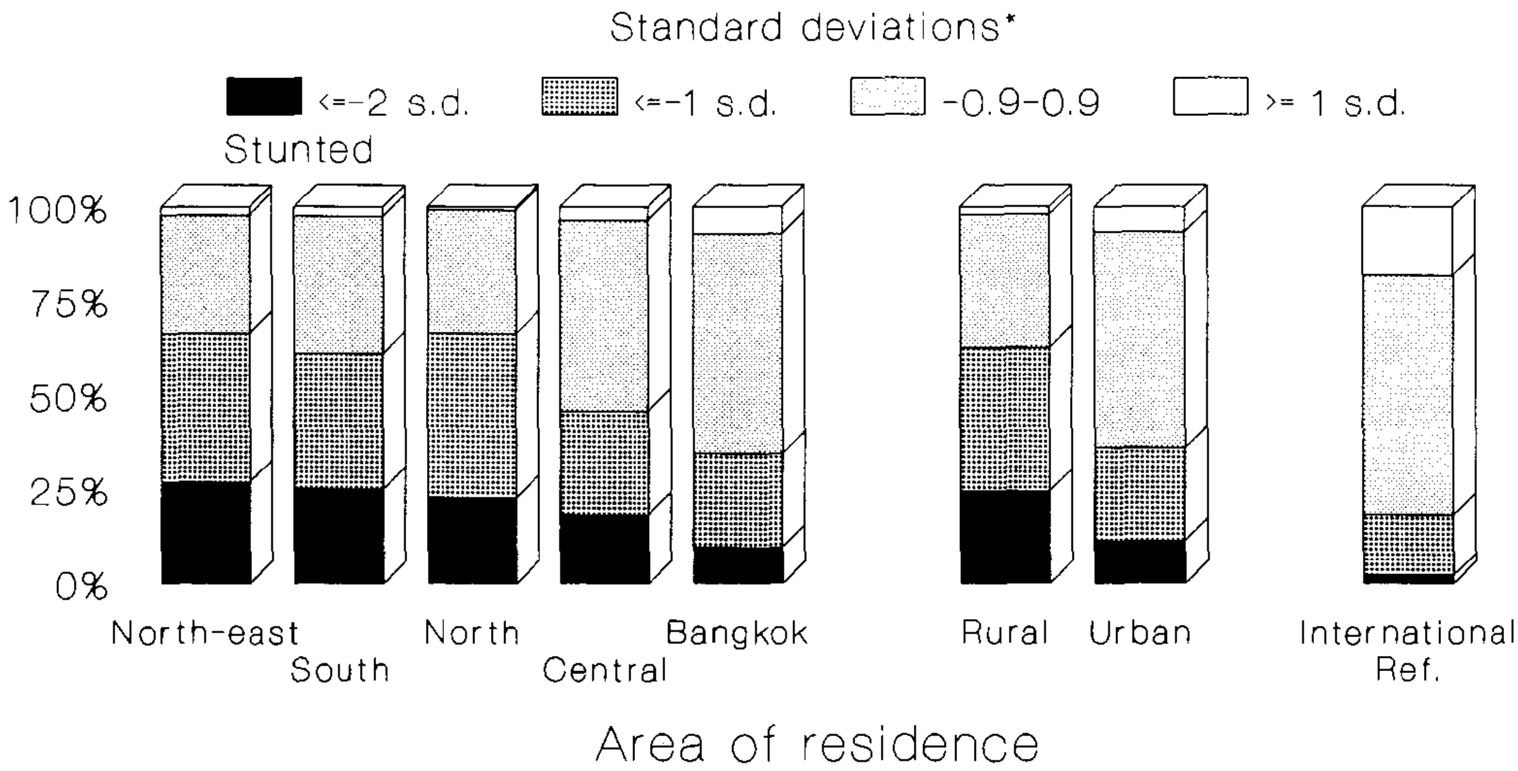
Weight-for-height

Weight-for-height is a measure of recent nutritional status. Children who are -2SD or more below the mean of the reference population are considered thin for their age (wasted) or acutely undernourished. The weight-for-height index measures body mass in relation to body length. Since age is not a variable included in this measure, weight-for-height is not influenced by any possible misreporting of age by the mother.

A comparison of the mean weight-for-height results from the TDHS with the international reference according to age of child in single months is included in Figure 6.2. One of the more striking features of these results is that the youngest Thai children are above the international reference on average. This would mean that Thai children are fatter for their height by over 0.5 SD at three months of age and only decline below the international reference by the eighth month. Such a result could arise spuriously if height was underestimated but weight was not and is further evidence that the height data may be biased towards the low side as discussed in connection with the height-for-age data. If this is indeed the case, the TDHS results underestimate the extent of wasting based on weight-for-height data. If such a bias affects the data more or less equally at all ages, then the declining trend of mean weight-for-height with respect to the international reference up until about 14-18 months of age followed by a leveling off well below the international reference would still be genuine. In this case, the whole graph should be shifted downward. If the bias is limited mainly to young infants, then the initial decline would be exaggerated and only the values for the first few months of age shown should be shifted downward. Without knowing the extent and nature of biases in the measurement, a more definitive interpretation is not possible.

Table 6.17 shows the percent of children who fall into various standard deviation categories away from the mean of the reference population. Overall, approximately 6 percent of children 3 through 36 months are acutely undernourished (i.e., -2SD or more below the standard). By sex, there is essentially no difference between male and female children in terms of the

Figure 6.3
Stunting Among Children by Area of Residence



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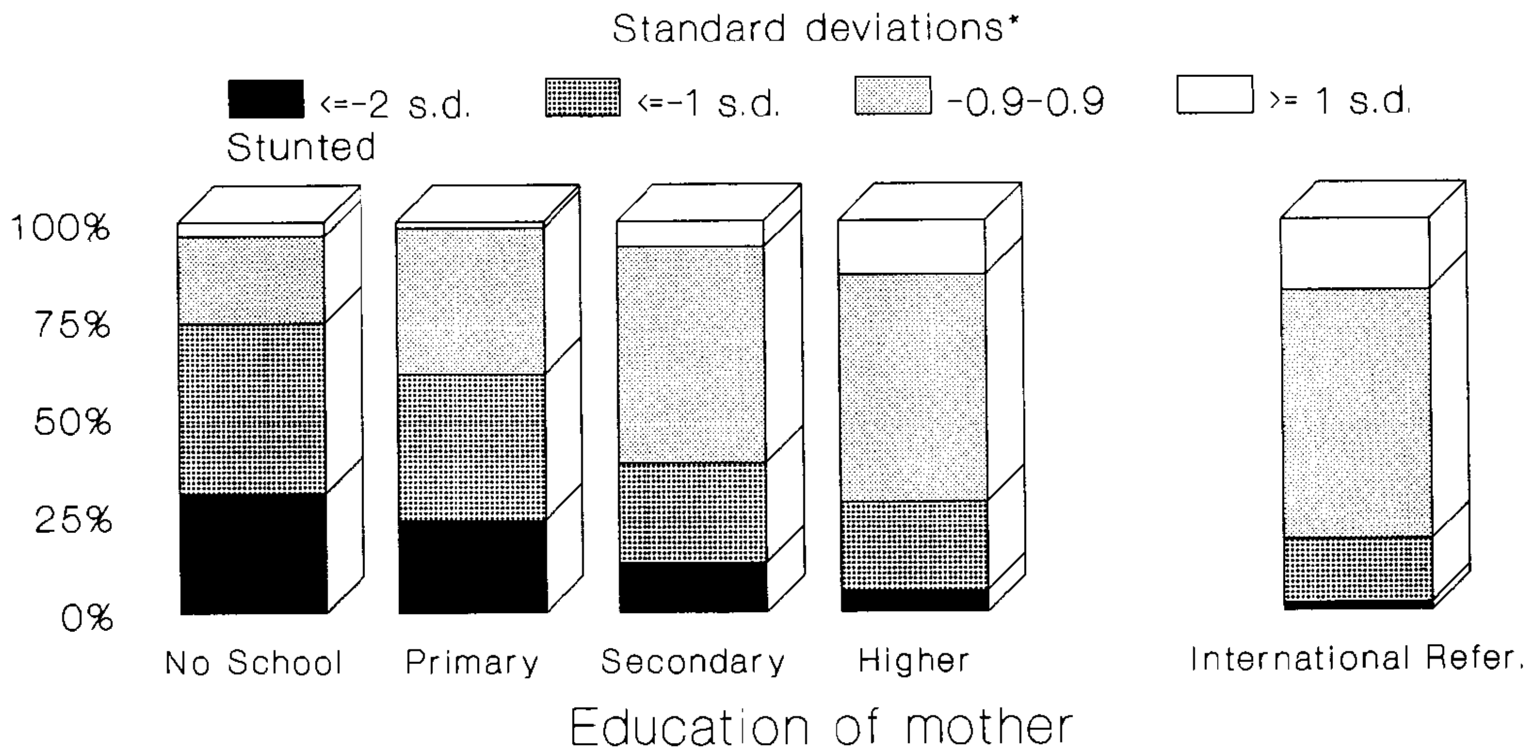
* Standard deviations from international reference for Height/Age

Figure 6.4
Stunting Among Children by Education of Mother



Thailand DHS 1987

* Standard deviations from international reference for Height/Age

Table 6.17 Percentage among children aged 3-36 months in each standard deviation category of weight-for-height using the international NCHS/CDC/WHO reference by selected background characteristics

Background characteristic	Standard deviations from NCHS/CDC/WHO reference -3.00 or more	-2.00 to -2.99	-1.00 to -1.99	-0.99 to +0.99	1.00 to +1.99	+2.00 or more	Total percent	Weighted number of children 3-36 months
Sex								
Male	0.5	5.6	35.5	53.0	4.3	1.1	100	943
Female	0.6	4.8	34.1	55.0	4.1	1.4	100	913
Age in months								
3 - 11	0.0	1.2	17.7	65.5	11.8	3.8	100	466
12 - 23	0.9	9.5	39.8	46.8	2.3	0.7	100	710
24 - 36	0.5	3.5	41.3	53.6	1.0	0.1	100	681
Previous birth interval*								
< 2 years	0.0	10.1	33.6	50.5	2.7	3.1	100	240
2-3 years	0.8	5.2	37.4	52.7	3.7	0.2	100	465
4 years or more	0.6	5.4	34.1	53.4	4.8	1.6	100	449
Twins	0.0	11.9	14.6	67.7	5.8	0.0	100	21
Urban-rural residence								
Urban	0.2	4.1	26.4	60.5	6.2	2.6	100	308
Rural	0.6	5.4	35.6	52.7	3.8	1.0	100	1,548
Region								
North	0.8	5.6	31.0	57.2	3.6	1.8	100	353
Northeast	0.6	5.5	41.5	48.0	3.2	1.2	100	672
Central	0.4	4.4	36.9	53.3	4.8	0.2	100	346
South	0.2	5.6	25.6	61.4	6.0	1.2	100	295
Bangkok	0.3	4.6	28.6	59.0	5.1	2.4	100	191
Education of mother								
No education	0.0	8.0	34.6	51.1	2.3	4.1	100	149
Primary	0.6	5.5	36.6	52.8	3.8	0.7	100	1,449
Secondary	0.4	2.4	29.8	56.2	7.8	3.6	100	170
Higher	0.0	1.6	15.6	74.0	8.2	0.6	100	89
All children	**0.5**	**5.2**	**34.8**	**54.0**	**4.2**	**1.3**	**100**	**1,857**

* Excludes first births; twins are included both as a separate category and under the appropriate interval category

percent wasted. The age of the child, however, does make a considerable difference. Acute undernutrition increases sharply from 1.2 percent among children aged 3 through 11 months to 10.4 percent among children aged 12 through 23 months but declines to 4.0 percent for children 24-36 months old. The differentials by birth interval show the highest percent wasted among children born after intervals of less than 2 years (and for twins). There is little difference in acute undernourishment between urban and rural children although rural children are more likely than urban children to fall at least -1SD under the international reference. Regionally, there are not great differences in the percent wasted, although the percent falling at least -1SD below the standard is distinctly highest in the northeast. The educational level of the mother is inversely associated with the percent wasted, falling from 8 percent of children of mothers with no education to under 2 percent of children whose mothers studied beyond the secondary level.

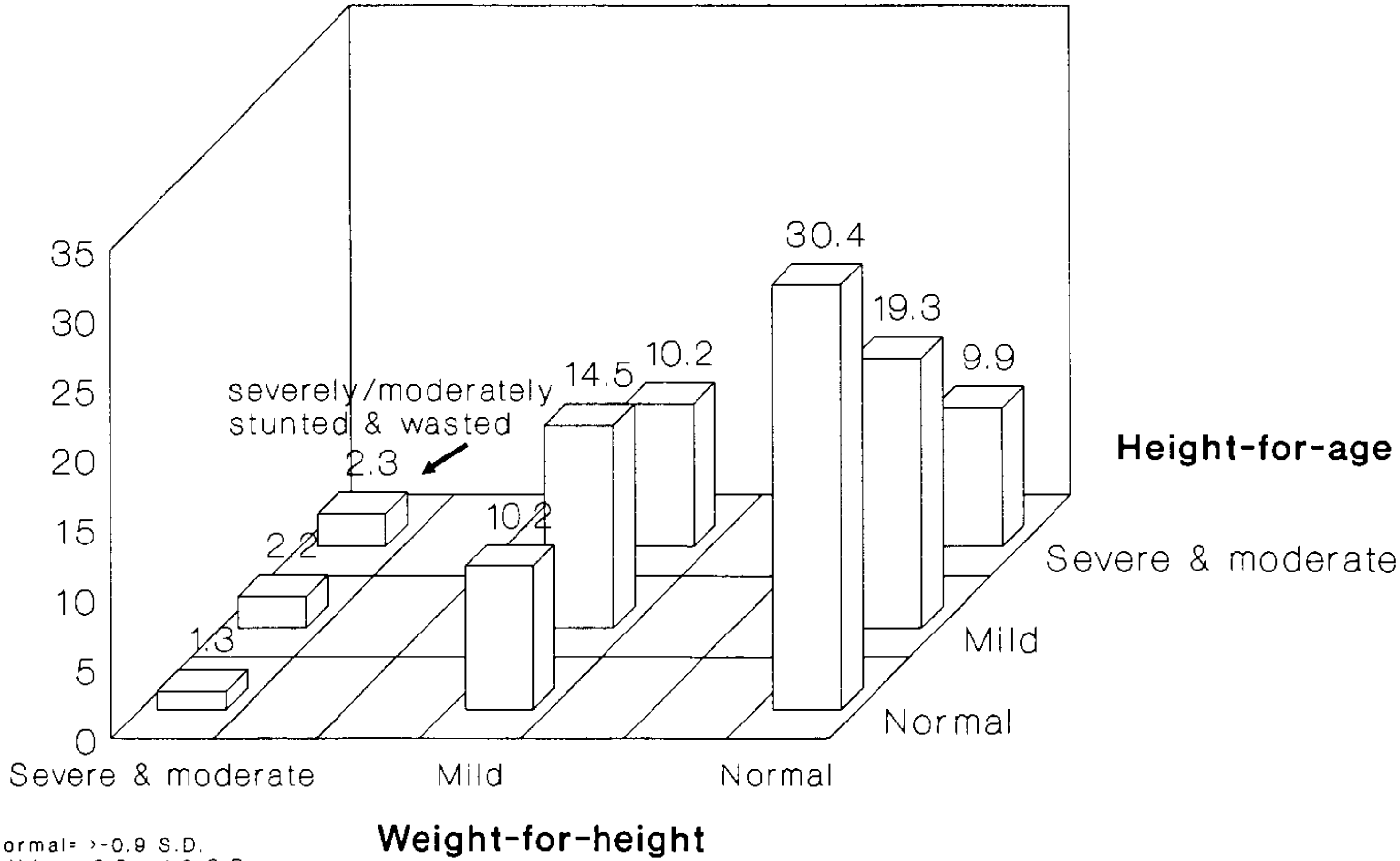
Height-for-age by weight-for-height

The relationship between thinness and shortness (stunting and wasting), or chronic undernutrition and acute undernutrition is shown in Table 6.18 and Figure 6.5. These results represent a cross tabulation of height-for-age by weight-for-age and indicates that 2.3 percent of all children aged 3 through 36 months are both stunted and wasted. These children fall -2SD or more below the mean of the reference population in terms of their height-for-age and their weight-for-height. They are clearly the most severely undernourished. This is an underestimate, however, if height has been systematically biased downwards by errors in the measuring procedures. The results also show that 20.1 percent are scarcely or moderately stunted but not wasted. Such children are considered to represent "hidden undernutrition" because they do not look undernourished. They are short but are of more or less normal weight for height, so they just look small.

Table 6.18 Percentage among children aged 3-36 months in each height-for-age standard deviation category by each weight-for-height standard deviation category (Waterlow classification) using the NCHS/CDC/WHO international reference.

Height-for-age standard deviations from NCHS/CDC/WHO reference	Weight-for-height standard deviations from NCHS/CDC/WHO reference						
	-3.00 or less	-2.00 to -2.99	-1.00 to -1.99	-0.99 to +0.99	1.00 to +1.99	+2.00 or more	Percent frequency
-3.00 or less	0.0	0.9	2.1	1.4	0.0	0.0	4.4
-2.00 to -2.99	0.1	1.3	8.1	8.1	0.3	0.1	18.0
-1.00 to -1.99	0.2	2.0	14.5	17.2	1.7	0.4	36.0
-0.99 to +0.99	0.2	1.0	9.5	25.7	2.0	0.7	38.8
+1.00 to +1.99	0.0	0.0	0.5	1.5	0.2	0.1	2.5
+2.00 or more	0.0	0.1	0.2	0.2	0.0	0.0	0.5
Percent frequency	**0.5**	**5.2**	**34.8**	**54.0**	**4.2**	**1.3**	**100.0**
N = 1857							

Figure 6.5
Crosstabulating Weight-for-Height & Height-for-Age



normal= >-0.9 S.D.
mild = >-2.0-<-1.0 S.D.
moderate and severe= <-2.0 S.D.

Thailand DHS 198

Figure 6.6 summarizes the extent of undernutrition according to selected background characteristics based on the combined results from the height-for-age measures and the weight-for-height measure. It shows the percent of children in each subgroup that are simultaneously stunted and wasted, defined for this purpose in terms of a child at least - 2SD below the reference population in height-for-age and -1.5SD below in weight-for-height. Overall in Thailand, just over 7 percent of children are defined to be both stunted and wasted using this particular definition. The results indicate that boys are somewhat more likely to be seriously undernourished than girls, that undernutrition increases with age of the child, is more common among rural than urban children, and is far lower for children with mothers who have received education beyond the primary level.

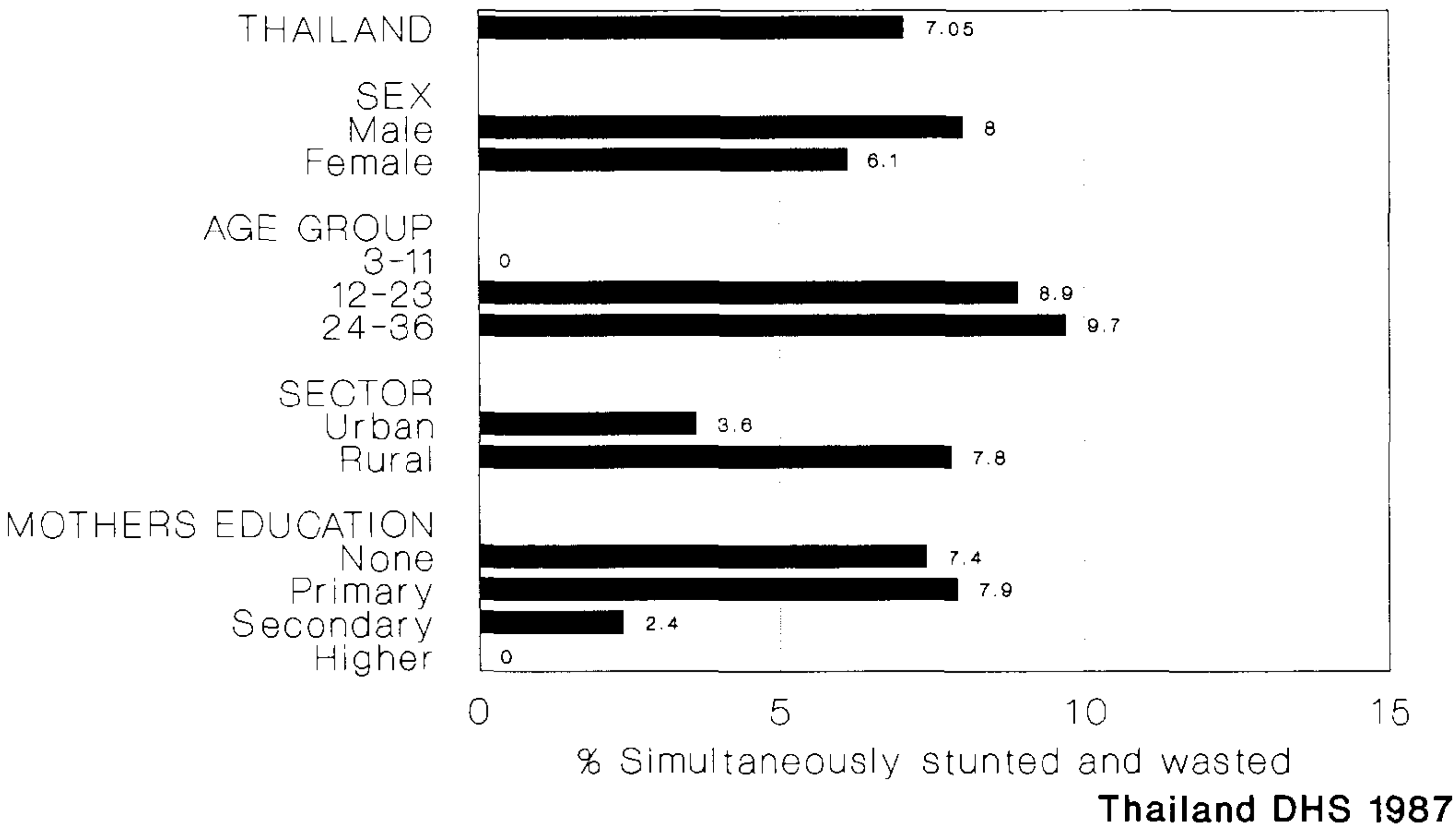
Figure 6.7 shows the distribution of all measured children combined according to height-for-age and weight-for-height compared to the international reference. Both the height-for-age and the weight-for-height distributions derived from TDHS are parallel to the normalized international reference but shifted consistently to the left. The extent of leftward shifting, however, is less in the case of the weight-for-height curve. The differences in patterns might reflect the possible tendency to underestimate height.

Weight-for-age

Table 6.19 shows the percent of children aged 3-36 months who fall into various standard deviation categories away from the mean of the reference population in terms of weight-for-age. Because weight-for-age is a composite index which reflects long term chronic undernutrition and recent acute undernutrition, it does not provide information beyond that already presented in the tables on height-for-age and weight-for-height. It does not distinguish between a child who is underweight because of thinness from one who is underweight because of shortness. Also, because loss of body weight (as well as gain) can occur rapidly and show seasonal fluctuations, a single point estimate of weight-for-age can sometimes prove difficult to interpret, particularly when compared with other estimates obtained at different time periods. Most often weight-for-age is a measure used in clinical, longitudinal weight programs. The data on weight-for-age from the TDHS are presented because they may provide a useful reference for these programs.

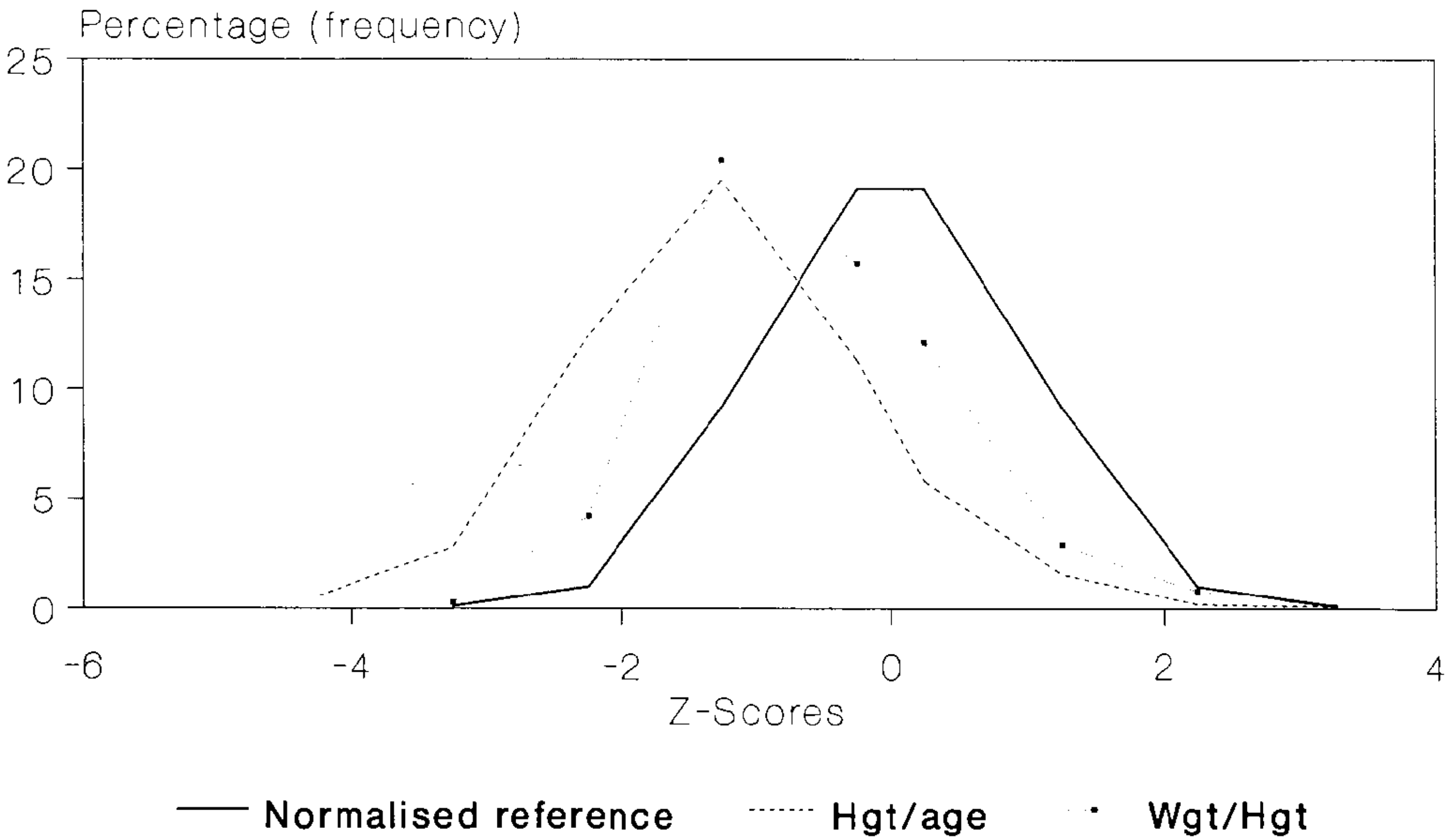
A comparison of the mean weight-for-age of children by age in months from the TDHS with the international reference is also included in Figure 6.2. The finding that the mean weight of the youngest children in Thailand, those 3-5 months of age, is very close to that of the international reference and then starts to decline is more or less a typical pattern for a developing country and suggests that the weight measurements, unlike those for height, are probably not systematically biased. Indeed, the weighing procedure followed is simpler for the measurer to do than the procedure for measuring height in the sense that it does not require forcing the child to lie straight. While errors in reading the weight undoubtedly occurred, there is no obvious reason why such errors would be biased in a particular direction. Thus it is interesting to note that while weight-for-age tends to be closer to the international reference than height-for-age at the very young ages, it is further below the reference at most ages from 9 months onwards. This suggests the possibility that biases affecting height measurement may have been concentrated at the youngest ages only.

Figure 6.6
Percent Simultaneously Stunted & Wasted* by Background Variables



*<=- 2 s.d. Ht/age & <=-1.5 s.d. Wt/hgt
N=131

Figure 6.7
Population Height/Age & Weight/Height Compared to International Reference



Thailand DHS 1987

Table 6.19 Percentage among children aged 3-36 months in each standard deviation category of weight-for-age using the international NCHS/CDC/WHO reference by selected background characteristics

Background characteristic	-3.00 or more	-2.00 to -2.99	-1.00 to -1.99	-0.99 to +0.99	1.00 to +1.99	+2.00 or more	Total percent	Weighted number of children 3-36 months
	Standard deviations from NCHS/CDC/WHO reference							
Sex								
Male	4.6	20.9	39.9	31.5	3.1	0.1	100	943
Female	4.0	22.2	34.3	37.0	1.7	0.8	100	913
Age in months								
3 - 11	0.9	12.5	24.2	55.3	6.5	0.5	100	466
12 - 23	4.9	24.7	40.8	27.8	1.1	0.7	100	710
24 - 36	5.9	24.4	15.5	26.4	0.9	0.1	100	681
Previous birth interval*								
< 2 years	3.2	34.3	26.3	33.2	2.6	0.4	100	240
2-3 years	6.0	19.8	41.5	31.2	1.2	0.3	100	465
4 years or more	5.3	21.1	37.8	32.2	2.9	0.7	100	449
Twins	20.1	13.5	31.7	32.9	1.9	0.0	100	21
Urban-rural residence								
Urban	1.2	10.5	33.8	47.5	5.3	1.4	100	308
Rural	4.9	23.7	37.8	31.5	1.8	0.3	100	1,548
Region								
North	4.4	22.3	40.5	31.7	1.0	0.1	100	353
Northeast	5.9	28.3	37.0	26.5	2.1	0.2	100	672
Central	3.7	16.6	35.7	40.1	3.2	0.7	100	346
South	3.3	17.7	36.3	39.7	2.3	0.7	100	295
Bangkok	0.9	11.2	35.4	46.4	4.9	1.3	100	191
Education of mother								
No education	6.9	28.3	41.5	20.4	2.9	0.0	100	149
Primary	4.5	23.1	38.2	32.6	1.4	0.3	100	1,449
Secondary	1.9	11.5	33.1	44.8	7.4	1.3	100	170
Higher	0.8	4.5	21.4	63.3	7.7	2.3	100	89
All children	**4.3**	**21.5**	**37.1**	**34.2**	**2.4**	**0.4**	100	**1,857**

* Excludes first birth; twins are included both as a separate category and under the appropriate interval category

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APPENDIX A

SAMPLE DESIGN AND IMPLEMENTATION

A.1 The Study Population

The survey was designed to cover the whole country geographically. The study population was composed of three types of units on which substantive information is collected and analysed. These were as follows:

1. Non-municipal communities or villages. This involved the collection of basic information on community characteristics and facilities. All areas classified as municipal were excluded. The respondents were designated leaders and functionaries in the community, with some supplementary information compiled from administrative and other sources.

2. Private households in urban and rural areas. This involved the listing of individual household members, including usual residents and temporary visitors, and the collection of information on their basic demographic and educational characteristics. Population residing in institutions or under other special arrangements outside private households, as well as foreign households were excluded. Respondents could be any adult usual resident of the household.

3. Ever-married women aged 15-49. This covered women in private households on the basis of a de facto coverage definition. Visitors and usual residents who were in the household the night before the first visit or before any subsequent visit during the few days the interviewing team was in the area were eligible. Excluded were the small number of married women aged under 15 and women not present in private households.

A.2 Sample Size and Allocation

The objective of the survey was to provide reliable estimates for major domains of the country. This consisted of two overlapping sets of reporting domains: (a) Five regions of the country namely Bangkok, north, northeast, central region (excluding Bangkok), and south; (b) Bangkok versus all provincial urban and all rural areas of the country. These requirements could be met by defining six non-overlapping sampling domains (Bangkok, provincial urban, and rural areas of each of the remaining 4 regions), and allocating approximately equal sample sizes to them. On the basis of past experience, available budget and overall reporting requirement, the target sample size was fixed at 7,000 interviews of ever-married women aged 15-49, expected to be found in around 9,000 households. Table A.1 shows the actual number of households as well as eligible women selected and interviewed, by sampling domain (see Table 1.1 for reporting domains). Further details on the number of households selected are shown in Table A.2 and discussed in Section A.4.

Table A.1 Number of households and women selected and successfully interviewed by sampling domain

Sampling domain	Households Selected (1)	Households Successfully interviewed (2)	Households Response rate (%) (3)=(2)/(1)	Eligible Women Selected (4)	Eligible Women Successfully interviewed (5)	Eligible Women Response rate (%) (6)=(5)/(4)	Overall response rate(%) (7)=(3)x(6)	Eligible women per 100 hh. (8)=(4)/(2)x100
Bangkok	1,913	1,762	92.1	1,441	1,248	86.6	79.8	81.8
Provincial urban	1,717	1,644	95.7	1,254	1,175	93.7	89.7	75.7
North rural	1,479	1,455	98.4	1,186	1,168	98.5	96.9	81.5
Northeast rural	1,299	1,286	99.2	1,093	1,064	97.3	96.3	85.0
Central rural	1,566	1,506	96.4	1,178	1,112	94.4	90.8	78.2
South rural	1,449	1,392	95.7	1,049	1,008	96.1	92.4	75.6
Total	9,423	9,045	96.0	7,201	6,775	94.1	90.2	79.6

A.3 The Frame and Sample Selection

The frame for selecting the sample for urban areas, was provided by the National Statistical Office of Thailand and by the Ministry of the Interior for rural areas. It consisted of information on population size of various levels of administrative and census units, down to blocks in urban areas and villages in rural areas. The frame also included adequate maps and descriptions to identify these units. The extent to which the data were up-to-date as well as the quality of the data varied somewhat in different parts of the frame. Basically, the multi- stage stratified sampling design involved the following procedure. A specified number of sample areas were selected systematically from geographically/administratively ordered lists with probabilities proportional to the best available measure of size (PPS). Within selected areas (blocks or villages) new lists of households were prepared and systematic samples of households were selected. In principle, the sampling interval for the selection of households from lists was determined so as to yield a self weighting sample of households within each domain. However, in the absence of good measures of population size for all areas, these sampling intervals often required adjustments in the interest of controlling the size of the resulting sample. Variations in selection probabilities introduced due to such adjustment, where required, were compensated for by appropriate weighting of sample cases at the tabulation stage.

Details of the selection procedure differed among the sampling domains and are summarized below:

1. Bangkok

The sample was selected in two stages: selection of 48 blocks with PPS, followed by listing and selection of households within blocks with the objective, ideally, of obtaining a self-weighting sample according to the following scheme:

- First stage: selection of blocks with probability $48 \frac{B_i}{\Sigma B_i}$

- Second stage: selection of households with probability $\frac{b}{B_i}$

where B_i is the measure of size of a block (i); ΣB_i being the sum for the whole domain; and b is the constant target sample take per block of around 30 households. The overall sampling rate becomes a constant = $48.b/\Sigma B_i$, determined in accordance with the target sample size. In application, the above procedure was modified as follows.

(i) To greatly reduce the clerical work involved, a PPS sample of 48 pages of the book containing block records was selected first. A page was selected with probability proportional to the total number of households in blocks recorded on the page.

(ii) Measures of sizes of blocks within the selected pages were updated on the basis of available information where possible. Then one block per page was selected with PPS, using the updated measures of size.

(iii) The sampling interval to be applied at the last stage was determined originally such that in conjunction with (i) and (ii), it would result in a uniform overall sampling rate $(48.b/\Sigma B_i)$.

(iv) Households within each selected block were listed just before the fieldwork period. Generally these were sampled using the rate determined in (iii). However, in many cases this procedure would have resulted in large variations in the number of households selected because of discrepancies between the actual number of households found in a block and the number originally expected. In such cases, selection intervals (iii) were adjusted so as to reduce these variations in sample "takes" per block.

(v) Finally, data were weighted to compensate for the above mentioned adjustments.

2. Other Urban

The sample was selected in three stages:

(i) From a single list arranged by region, and within region geographically, a systematic sample of 24 districts was selected with probability proportional to population (P_i) in 1980.

(ii) Within each selected district, two blocks were selected with equal probability. The equal probability rather than a PPS scheme was used because no usable measures of block size were available.

(iii) Within each selected block, households were listed and sampled at a rate so as to provide a self weighting sample of the desired size. Consequently the selection scheme proceeded in the following stages:

- first stage: selection of 24 districts with PPS, $24 \frac{P_i}{\Sigma P_i}$

- 2nd stage: selection of 2 blocks from A blocks in the district with equal probability, $\frac{2}{A}$

- 3rd stage: selection of households so as to achieve uniform overall probability

(iv) Where necessary, large variations in block sample sizes resulting from the above procedure were avoided by adjusting the last stage selection interval in (iii).

(v) Finally, survey data were weighted to compensate for differences in overall selection probabilities because of adjustments made in (iv).

3. Rural Areas

The sample was selected separately within each region following a similar procedure as follows:

- first stage: selection of 24 districts for region with systematic PPS: $24 \frac{D_i}{\Sigma D_i}$

- 2nd stage: selection of 2 tambol per district with systematic PPS: $2 \frac{T_{ij}}{\Sigma T_{ij}}$

- 3rd stage: selection of one village per tambol with PPS:

$$\frac{V_{ijk}}{\Sigma V_{ijk}} = \frac{V_{ijk}}{T_{ij}}$$

- 4th stage: listing of households within a village and selection with inverse-PPS with the objective of obtaining a self-weighting sample of the required size.

In the above equations, D_i is the measure of population size of a district, T_{ij} of a tambol and V_{ijk} of a village in it. It should be noted that effectively the sample remains a three stage sample as in the case of urban areas outside Bangkok. The reason for this is that since only one village is selected per tambol, the procedure does not differ from selecting two villages directly from a systematic list for the whole district. (The combined selection scheme for the second and third stages is $2.V_{ijk}/\Sigma T_{ij}$).

In application, there were some departures from the above scheme. The measures of size used in the first stage (D_i) referred to population numbers; however, at subsequent stages it was more convenient to use somewhat more up-to-date measures in terms of numbers of households (for this reason ΣT_{ij} differ from D_i, but ΣV_{ijk} equals T_{ij}). Unfortunately, the two measures, though they came in principle from the same source, were not entirely compatible, resulting in significant variations in ultimate sample takes. Improving control over sample takes required adjustment of the final stage sampling rate in some cases, compensated as before by weighting of sample results at the cluster level.

A.4 SAMPLE OUTCOME

As noted earlier, the final sample of households was selected from lists prepared in the sample areas. The time interval between household listing and enumeration was generally very short, except to some extent in Bangkok where the listing itself took more time. In principle, the units of listing were the same as the ultimate units of sampling, namely households. However in a small proportion of cases, the former differed from the latter in several respects, identified at the stage of final enumeration:

a) Some units listed actually contained more than one household each

b) Some units were "blanks", that is, were demolished or not found to contain any eligible households at the time of enumeration.

c) Some units were doubtful cases in as much as the household was reported as "not found" by the interviewer, but may in fact have existed.

Table A.2 shows the number of units listed, the number taking into account multiple households (a) in the list, and the estimated number selected after deducting blanks (b). The ratio of the number successfully interviewed to the number selected gives the response rate. This response rate may be underestimated to the extent that all the doubtful cases (c) have been considered as cases of non-response and included in the denominator. It is possible that some of these were genuine "blanks", but can not be verified to be so definitively under practical conditions of survey taking. The estimated response rates for the household and individual interviewed were already shown in Table A.1.

A.5 Weighting of Sample Results

Sample cases are weighted for the following reasons:

- to compensate for differences in sampling probabilities,
- to compensate for differences in response rates, and
- to make the regional and urban-rural distribution of the sample correspond to the distribution according to the most recent population projections and evidence available from other, supposedly more reliable, sources.

Each of these is described below in turn.

1. Design weights. These refer to the weights which compensate for differences in selection probability. They are inversely proportional to design probabilities of selection, but can be scaled arbitrarily such that the average weight is 1.0 per case for the sample as a whole. Firstly, these weights differ by sampling domain since domains were sampled at different rates to yield nearly constant sample sizes despite differences in domain size. Secondly, to a lesser extent, sampling rates differed among blocks and villages in cases where it was necessary to introduce this variation to improve control over sample takes, given the inaccuracies in the available measures of size.* Design weights are applied at the level of the block or village identically to all households and individual women in the area.

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*In 5 (out of 48) sample blocks in Bangkok, some arbitrary adjustment was made to the design weights. The measures of size used for selecting these areas were seriously underestimated, so that it either required very large sample takes (for a self-weighting sample) or the application of very large weights (if the sample takes were kept reasonable). Arbitrary adjustment was made to the sample weights in these cases to avoid the large increase in variance which either of the above two options would have involved.

Table A.2 Outcome of the sample of households

Sampling domain	Units listed (1)	(1) corrected for multiple households in single listings (2)	Vacant or not a dwelling (3)	Demolished (4)	Number of household selected (5)=(2)-(3)-(4)	Not found (6)	No one at home (7)	No adult at home (8)	Refused/ postponed (9)	Other (10)	Successfully interviewed (11)
Bangkok	1,902	2,046	128	5	1,913	4	96	6	38	7	1,762
Provincial urban	1,715	1,760	43	0	1,717	1	57	2	12	1	1,644
Rural:											
North	1,440	1,496	5	12	1,479	10	7	1	3	3	1,455
Northeast	1,296	1,310	6	5	1,299	1	9	0	1	2	1,286
Central	1,488	1,603	13	24	1,566	25	23	3	1	8	1,506
South	1,440	1,508	20	39	1,449	26	25	0	0	6	1,392
Total	**9,281**	**9,723**	**215**	**85**	**9,423**	**67**	**217**	**12**	**55**	**27**	**9,045**

2. Weights due to differential non-response. Because of generally high response rates, with the exception of Bangkok to some extent, the application of weights to compensate for non-response was in itself not very important. However, since it was already necessary to apply design weights at the level of the block/village, these latter could be easily modified to take into account non-response as well. The adjustment consisted of multiplying the design weights by the inverse of the response rate in the block/village. The final weights were scaled so that the average weight was, again, 1.0 per case.

Since the overall response rate for individual interviews (col 8, Table 1.1) was lower than that for household interviews (col 3, Table 1.1) in the same area, the weights were not exactly the same for the two types of units.

3. Adjustment of regional and urban-rural distribution of the sample

Finally, the above weights were adjusted to make the sample distribution of the population and of eligible women correspond to the best available "standard" distributions of these at the level of the major reporting domain (region and urban-rural sectors). The external standards were obtained from (a) NESDB projections of the total population for 1987 by region; (b) proportion urban of total population by region from Ministry of Interior registration figures for 1985; (c) the corresponding NESDB projections for the numbers of women aged 15-49; and (d) estimates for proportions ever-married among women aged 15-49 in each domain from the 1984 Survey of Population Change. Multiplication of (a) and (b) provides estimates of the total population distributed simultaneously by region and urban-rural status while multiplication of (b), (c) and (d) provides estimates of the number of ever-married women age 15-49 (i.e. eligible women) distributed simultaneously by region and urban-rural status. The former distribution is used to derive correction factors for the few tabulations that refer to the total population of individuals as enumerated in households while the latter distribution serves as the basis for determining the correction factors to be applied to tabulations referring to information derived from the eligible woman questionnaire.

Both for the total population and for ever-married women aged 15-49, the joint distribution by region and urban-rural status consists of nine mutually exclusive and exhaustive categories: one for Bangkok (which is treated as entirely urban) and one each for the urban and rural sectors of the four remaining regions. Table A.3 compares the distribution of the entire population and of ever-married women aged 15-49 as enumerated in the TDHS sample both before any weighting and after being weighted for sample design and non-response with the corresponding standard distribution. Tables A.4a and A.4b illustrate the derivation of the standard distributions for the total population and the population of ever-married women aged 15-49 respectively. The ratio of the proportion in each of the nine categories in the appropriate standard distribution to the corresponding proportion in the distribution of the sample population after weighting for sample design and non-response represents the multiplication factors to be applied to obtain the final weights. Adjusting the weights in this manner ensures that the regional and urban-rural distribution of the weighted sample agrees with the external standard. This adjustment has no effect on the survey results for the individual sampling domains when taken separately except in the case of the provincial urban domain, in which case it

Table A.3 Comparison between sample distribution and "standard" distribution by region and urban-rural status

	% distribution of total population				% distribution of eligible women			
	Unweighted (as enumerated) (1)	Weighted for design and non-response (2)	Standard (3)	Correction weights for household interview data (4)=(3)/(2)	Unweighted (as inter-viewed) (5)	Weighted for design and non-response (6)	Standard (7)	Correction weights for eligible women interview data (8)=(7)/(6)
Bangkok	19.7	15.5	11.1	.717	18.4	14.9	10.8	.724
North								
Urban	3.7	2.3	1.5	.651	4.3	2.0	1.6	.783
Rural	15.0	19.0	18.0	.954	17.2	19.4	19.0	.981
Northeast								
Urban	4.4	2.5	2.0	.800	4.7	2.4	2.1	.883
Rural	15.3	27.2	32.7	1.204	15.7	28.6	32.8	1.148
Central								
Urban	5.2	3.6	2.2	.611	5.3	3.5	2.2	.634
Rural	16.9	18.2	19.4	1.063	16.4	18.1	19.2	1.061
South								
Urban	3.3	1.8	1.6	.887	3.2	1.6	1.5	.913
Rural	16.5	10.0	11.4	1.145	14.8	9.5	10.8	1.139
Total	100	100	100	-	100	100	100	-

ensures that the regional distribution of the weighted provincial urban sample agrees with the external standard. Moreover, when results are presented by region, it ensures that the urban-rural distribution of the weighted results within a region corresponds to the external standard.

As evident from Table A.3, there is a substantial difference both in the cases of the total sample population and the eligible women population between the unweighted distribution and the distribution after weighting for design and non-response. This is as expected based on the nature of the sample design. There are also some differences, however, between the latter distributions and the standard distributions, particularly with respect to Bangkok and the provincial urban components of most regions. In these cases the sample sizes turned out to be considerably larger than anticipated and the extent of adjustment required is substantial. This discrepancy may reflect the fact that the true population of Bangkok and provincial urban areas are substantially larger than official estimates and projections indicate. However, no firm conclusion can be drawn concerning this based on a sample of the scale of the TDHS. Therefore it is appropriate to accept the standard estimates as a basis for adjusting the sample weights.

Table A.4a Derivation of "standard" distribution for total population

	(1) Population 1987, from NESDB projections (in 1,000's)*	(2) Proportion urban 1985, from MOI registration	(3) Estimated 1987 urban population (1)x(2)	(4) Estimated 1987 rural population (1)-(3)
Bangkok	5,972	1.000	5,972.0	-
North	10,488	.079	828.6	9,659.4
Northeast	18,622	.059	1,098.7	17,523.3
Central	11,577	.103	1,192.4	10,384.6
South	6,996	.125	874.5	6,121.5

*Regional projections assume constant age sex structure and regional distribution of migrants; the central region figure is determined by combining Bangkok region excluding Bangkok metropolis, subcentral, east and west areas of central region

Table A.4b Derivation of "standard" distribution of ever-married women

	(1) Women 15-49 1987, from NESDB projections (in 1000's)*	(2) Proportion ever married among women 15-49 SPC**	(3) Estimated ever married women 15-49 (in 1000's) (1)x(2)	(4) Proportion urban 1985 from MOI registration	(5) Estimated 1987 urban ever married women 15-49 (in 1000's) (3)x(4)	(6) Estimated 1987 rural ever married women 15-49 (in 1000's) (3)-(5)
Bangkok	1,817	.5741	1,043	1.000	1,043.0	-
North	2,791	.7129	1,990	.079	157.2	1,832.8
Northeast	4,671	.7209	3,367	.059	198.7	3,168.3
Central	3,054	.6757	2,064	.103	213.5	1,851.4
South	1,693	.6986	1,183	.125	147.9	1,035.1

*Regional projections assume constant age sex structure and regional distribution of migrants; the central region figure is determined by combining Bangkok region excluding Bangkok metropolis, subcentral, east and west areas of central region

**Women of unknown marital status are excluded from basis of calculation

A.6 TDHS Sample Provinces

The sample includes 65 out of a total of 73 provinces (including Bangkok). A list of the TDHS sample provinces is given below:

North:

1. Uthai Thani
2. Nakhon Sawan
3. Phetchabun
4. Phichit
5. Kamphaeng Phet
6. Tak
7. Sukhothai
8. Phitsanulok
9. Uttaradit
10. Phrae
11. Nan
12. Phayao
13. Chiang Rai
14. Lampang
15. Lamphun
16. Chiang Mai

Northeast:

17. Chaiyaphum
18. Nakhon Ratchasima
19. Buri Ram
20. Surin
21. Si Sa Ket
22. Ubon Ratchathani
23. Yasothon
24. Maha Sarakham
25. Roi Et
26. Kalasin
27. Khon Kaen
28. Udon Thani
29. Sakon Nakhon
30. Nakhon Phanom
31. Nong Khai

Central:

32. Trat
33. Chanthaburi
34. Rayong
35. Chon Buri
36. Chachoengsao
37. Prachin Buri
38. Saraburi
39. Phra Nakhon Si Ayutthaya
40. Lop Buri
41. Sing Buri
42. Chai Nat
43. Suphan Buri
44. Kanchanaburi
45. Nakhon Pathom
46. Pathum Thani
47. Nonthaburi
48. Samut Prakan
49. Samut Songkhram
50. Samut Sakhon
51. Ratchaburi
52. Prachuap Khiri Khan

South:

53. Chum Phon
54. Surat Thani
55. Phangnga
56. Phuket
57. Krabi
58. Nakhon Si Thammarat
59. Trang
60. Phatthalung
61. Songkhla
62. Pattani
63. Yala
64. Narathiwat

Bangkok Metropolitan Area:

65. Bangkok

APPENDIX B

Comparison of Sample Characteristics with External Sources

In chapter 1, several of the basic characteristics of the sample were described. In this appendix, characteristics of the sample are examined further with particular attention to comparisons with information from external sources. Most important for this purpose, because of their extensive coverage, are the 1980 census and the recent Survey of Population Change (SPC), a large scale survey conducted by the National Statistical Office. The most recent SPC was conducted in 1984-86 and was the third in a series of mid-decade dual record system surveys designed to estimate fertility and mortality as well as the extent and completeness of vital registration. In addition, the SPC provides information on characteristics of the population. The most recent SPC is based on a national probability sample of approximately 60,000 households. Results describing characteristics of the base population at mid-year 1984 have been published and serve as a convenient source for comparison with the TDHS (National Statistical Office, 1985). Vital rates from the most recent SPC, referring to the one year period from mid-1985 to mid-1986, have also been made available to the Institute of Population Studies in advance of publication. Data on population characteristics are also available from the previous SPC and refer to mid-1975 while vital rates from the previous SPC refer to the two year period from mid-1974 to mid-1976 (National Statistical Office, 1978).

B.1 Age and Sex Distribution

The percent distribution by age and sex of the entire sample population as enumerated by the household questionnaire is shown in Table B.1 along with equivalent data from three other sources: the most recent population projections from the National Economic and Social Development Board (NESDB), the most recent SPC, and the 1980 Census. Since the NESDB projections rely heavily on the 1980 census, the two sources are not independent. However, results of the projections incorporate adjustments to the census data and permit a comparison for 1987, the year when the TDHS took place. Three different assumptions about fertility were made. The projections based on the median fertility assumptions are selected for comparison. However, the projected age distribution for 1987 corresponding to the low or the high fertility assumptions are almost identical since all three series start with the same assumed fertility levels for the period 1980-85. This initial starting fertility level is heavily influenced by fertility estimates derived from CPS3. The differences in the reference years should be born in mind when comparing the TDHS sample with the SPC and the census, which respectively refer to the situations 3 years and 7 years earlier. In addition, it should be noted that age in the TDHS sample refers to stated age while age in the census (and hence NESDB projections) and age in the SPC are derived from birthdates whenever possible. This is important because stated age among Thais frequently refers to age at next birthday rather than the age at last birthday, the conventional demographic definition of age (Chamratrithirong, Debavalya and Knodel, 1978).

Table B.1 Percent distribution according to age, by sex, comparison of results from the TDHS household sample, the NESDB projected population, the Survey of Population Change (SPC) and the census

	TDHS, 1987			NESDB Projections for 1987*			SPC, 1984			Census 1980		
Age	Males	Females	Total	Males	Females	Total	Males	Females	Total	Males	Females	Total
0-4	9.0	8.4	8.7	12.1	11.8	11.9	11.6	10.9	11.3	12.4	11.8	12.1
5-9	11.0	10.2	10.6	11.9	11.7	11.8	12.6	11.6	12.1	13.3	12.7	13.0
10-14	12.8	11.7	12.2	11.7	11.4	11.5	13.2	12.5	12.8	13.5	12.9	13.2
15-19	12.3	11.5	11.9	11.6	11.2	11.4	11.7	11.3	11.5	12.1	12.0	12.1
20-24	10.0	10.4	10.2	10.6	10.3	10.5	9.1	9.7	9.4	10.0	10.1	10.1
25-29	8.2	8.2	8.2	8.9	8.8	8.9	8.4	8.5	8.4	7.8	8.0	7.9
30-34	7.7	8.1	7.9	7.4	7.5	7.5	7.1	7.0	7.1	6.0	6.1	6.0
35-39	6.1	6.5	6.3	5.9	5.9	5.9	5.4	5.6	5.5	5.2	5.3	5.2
40-44	4.6	5.0	4.8	4.6	4.6	4.6	4.8	4.9	4.9	4.8	4.9	4.8
45-49	4.4	4.3	4.3	3.9	4.0	4.0	4.4	4.5	4.4	4.2	4.3	4.2
50-54	4.0	4.3	4.2	3.4	3.6	3.5	3.6	3.9	3.7	3.3	3.4	3.4
55-59	3.0	3.1	3.1	2.7	2.9	2.8	2.7	3.0	2.9	2.4	2.5	2.5
60-64	2.5	2.8	2.7	2.0	2.2	2.1	2.0	2.2	2.1	1.8	2.0	1.9
65 +	4.2	5.4	4.8	3.2	4.1	3.6	3.5	4.4	3.9	3.1	3.9	3.5
All ages	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Note: TDHS results refers to usual household residents

* Medium fertility assumption

One of the more striking differences between the TDHS sample age distribution and the distribution projected by NESDB is the lower proportions in the two youngest age-groups, especially in the 0-4 group but also in the 5-9 group. Several reasons probably underly this difference. First, the fact that the age distribution of the TDHS household sample is based on stated age probably has led to the transfer of some children through age misstatement from the 0-4 age-group into the 5-9 age-group, largely as a result of reporting some 4 years old children as 5 years old. This is a net loss for the 0-4 group because no children can be transferred into the 0-4 age-group from younger ages. Although the 5-9 age-group gains from transfers from the 0-4 group, it looses to the 10-14 age-group and thus no net gain may result. Second, the NESDB projections are based on assumptions about fertility levels since 1980 that are considerably higher than reported in the TDHS. While fertility may be understated by the TDHS, there is reason to suspect that the initial fertility levels incorporated into the projections, which are heavily dependent on the CPS3 results, are too high. The CPS3 fertility estimates are discussed below in connection with a comparison between TDHS fertility estimates and those from various other sources. In brief, the low proportions in the two youngest age groups in the TDHS sample probably results from a combination of age misstatement (for the 0-4 group), an overestimate of fertility in the projections, and some underreporting of young children in the TDHS.

The proportion in the oldest age-groups are generally higher in the TDHS sample than in either the NESDB projections or the SPC. For the combined sexes, the TDHS shows a higher proportion in every age-group from 50-54 and above than the SPC and for every age-group from 30-34 and above than the NESDB projections. However, the proportion of the females in the overall reproductive ages is not greatly different between the various sources. For the TDHS sample, 54 percent of the female population is between ages 15-49 compared to 52 percent for both the NESDB projections and the SPC and 51 percent according to the 1980 census.

Table B.2 compares the age distribution of ever-married women in the reproductive ages from the TDHS eligible woman sample with the equivalent distributions from SPC and the 1980 census. In general, the match between TDHS and SPC is quite close. The trend towards somewhat later marriage documented in Chapter 2 is probably responsible for the decline in the proportion of ever-married women in the two youngest age-groups shown between the 1980 census and the TDHS.

The sex ratio of the sample population according to age as derived from the household listing is compared in Table B.3 with the NESDB projected population for 1987, the SPC and the 1980 census. In the data from all sources, the sex ratio, initially showing a surplus of males, generally declines with age. This is expected given the larger number of boys born than girls and the higher male than female mortality rates at most ages (National Statistical Office, 1978). One of the more striking contrasts is the noticeably higher sex ratios for the two youngest age-groups evident for the SPC but not in any of the other sources. The TDHS sample shows lower sex ratios at most of the prime reproductive ages than the other sources.

Table B.2 Percent distribution of ever-married women aged 15-49 according to age-group, comparison of results from TDHS, the Survey of Population Change (SPC), and the census

Age	TDHS 1987	SPC 1984	Census 1980
15-19	5.0	5.7	6.0
20-24	14.8	16.2	17.3
25-29	19.3	19.6	19.3
30-34	19.6	18.0	16.2
35-39	16.4	14.7	14.7
40-44	12.9	13.4	14.0
45-49	11.9	12.3	12.5
Total	**100**	**100**	**100**

Notes: The TDHS results are based on the eligible women sample

Table B.3 The sex ratio (males per 100 females), by age, comparison of results from the TDHS household sample, the NESDB projected population, the Survey of Population Change (SPC) and the census

Age	TDHS 1987	NESDB 1987	SPC 1984	Census 1980
0-4	103	103	107	104
5-9	103	103	109	104
10-14	106	104	106	104
15-19	103	104	103	99
20-24	92	103	94	98
25-29	96	101	99	96
30-34	92	99	101	98
35-39	91	100	97	98
40-44	88	100	98	97
45-49	98	97	98	96
50-54	88	93	92	97
55-59	94	92	93	96
60-64	87	92	91	93
65+	75	79	80	80
All ages	**96**	**100**	**100**	**100**

Note: The TDHS results refer to usual household residents

B.2 Marital Status Distribution

Since the TDHS focused on ever-married women in the reproductive ages and most of the information was obtained through the eligible woman sample, it is important to assess the extent to which the sample is representative in terms of marital status. This is particularly the case because of the important role that the marital status distribution of the overall sample plays in the calculation of the age-specific and total fertility rates which, as noted in Chapter 3 and discussed below, appear to be lower than expected.

For the TDHS, the proportions ever married by age among women within the reproductive ages can be calculated directly from the household listing or, alternatively, can be estimated from the eligible woman sample in combination with the household listings as described in Chapter 2. When such a tabulation is based directly on the household listing, however, an adjustment is necessary to allow for the fact that ages in the household interview are on average somewhat overstated. This arises from the fact that ages in the household interview are directly reported as mentioned above and are as likely to refer to age at next birthday as to age at last birthday. This has a noticeable distorting effect on the proportions ever married, especially at the younger ages where the proportion married increases rapidly with age. Therefore, results based directly on the household questionnaire have been adjusted by using a formula proposed by Hill (1979) for this purpose. The adjustment assumes that the stated age as reported in the household listings is on average half a year greater than the correct age. Comparisons between stated and calculated ages for interviewed eligible women suggest that this is approximately the order of magnitude of age misstatement involved.

In the case of the eligible woman sample, age is calculated, whenever possible, from reported date of birth and therefore exclusively refers to age at last birthday (except for the minority of women who did not report a birthdate). As described in Chapter 2, although the marital status distribution based on the eligible woman sample also incorporates information on single women from the household questionnaire, the manner in which this is done eliminates distortions due to any age misstatement.

Table B.4 compares the percent ever married by age for women and men within the age-span 15-49 based on the TDHS, the census, and the SPC. Results from the TDHS are presented based on the household questionnaire, both before and after adjusting for age misstatement. For women, results based on the eligible women questionnaire (derived as described in Chapter 2) are also shown. For comparison, the proportions ever married as reported in the 1980 census and the 1984 SPC are given as well as the projected proportions ever married for 1987 (to correspond to the timing of the TDHS fieldwork) based on linear extrapolation of the trend observed between the 1970 and 1980 census and the trend between the 1975 and 1984 SPCs.

Table B.4 Percentage ever-married, by age and sex, comparison of results from TDHS, the Census and the Survey of Population Change (SPC)

	TDHS 1987			From census		SPC	
	From household questionnaire						
Age and Sex	unadjusted	adjusted*	From eligible woman questionnaire	Projected to 1987**	Observed 1980	Projected to 1987***	Observed 1984
Females							
15-19	12.3	14.9	16.8	15.1	16.7	18.6	19.3
20-24	49.2	52.4	52.2	52.6	56.5	58.6	59.9
25-29	75.9	77.7	76.2	75.4	79.1	80.6	81.5
30-34	86.3	87.0	86.7	85.6	88.2	88.7	89.5
35-39	91.1	91.5	90.9	91.3	92.7	92.2	92.9
40-44	93.9	94.1	93.6	93.7	94.7	94.4	95.0
45-49	96.2	96.3	96.3	95.1	95.9	95.8	96.4
Males							
15-19	3.5	5.1	-	3.2	3.7	7.3	6.6
20-24	29.5	32.6	-	35.7	34.9	36.8	37.0
25-29	65.4	68.2	-	74.7	75.1	74.4	74.4
30-34	87.0	88.4	-	88.1	89.1	89.6	89.8
35-39	93.6	94.0	-	93.6	94.1	95.0	94.7
40-44	96.3	96.5	-	96.1	96.2	96.9	96.7
45-49	97.8	97.8	-	96.8	96.8	97.6	97.4

Notes: Persons of unknown marital status have been distributed proportionately in the results for the 1980 census and 1984 SPC. The TDHS results refer to usual household residents.

* Adjusted for rounding up of age by an average of 0.5 years (see Hill, 1979, pp.23-26).
** Projected by linear extrapolation of the change between the 1970 and 1980 censuses.
*** Projected by linear extrapolation of the change between the 1975 and 1984 Surveys of Population change.

It should be noted that marital status distributions as recorded in the censuses and the taste two SPCs are not entirely consistent with each other and therefore separate projections are made based on the two sources. It seems reasonable to assume that the proportions ever married, at least among women, have been declining during recent decades: results from the TDHS (see Chapter 2) as well as a number of other national surveys show an increasing age at marriage for women (Knodel, Chamratrithirong and Debavalya, 1986). Moreover, comparisons between the two last censuses (1970 and 1980) and between the last two SPCs (1975 and 1984) indicate declines at most ages in proportions ever married, especially for women, of roughly equivalent magnitude. However, when the two censuses and the two SPCs are combined and compared as a single series, no consistent trend is apparent. Indeed, as the data shown in Table B.4 indicate, the proportions ever married as reported in the 1984 SPC are actually higher at most ages than in the 1980 census. If we assume that the proportions ever married are in fact declining, then it appears that, for unknown reasons, both SPCs record somewhat higher proportions married for most age-groups, especially for women, than would be expected based on the censuses (see Limanonda, 1988).

The results presented in Table B.4 indicate that once the marital distribution from the household questionnaire is adjusted for age misstatement, the proportions ever married by age-group for women are very similar to those derived from the eligible woman questionnaire. Overall, proportions of women ever married from the TDHS resemble quite closely those projected from the censuses. They are lower, however, than those projected from the SPCs for every age-group except 45-49. For men, the adjusted proportions ever married from the TDHS are also generally closer to those projected from the censuses than from the SPCs, although in the case of men, these two projections do not differ greatly from each other. The largest difference between the TDHS and the projected figures from either source is found between the proportion of men ever married at ages 25-29, with the TDHS figure being substantially lower.

A final judgement of the reasonableness of the proportions ever married as recorded by the TDHS depends on whether the projected estimates from the censuses or the SPCs are judged to be more accurate. If the censuses are accurate, and the trend that is apparent between the 1970 and 1980 censuses can be safely extrapolated seven years ahead to 1987, the proportions ever married recorded by the TDHS would appear to be quite reasonable, at least among women. If instead the SPCs are more accurate and the trend between the 1975 and 1984 rounds can be extrapolated to 1987, then the proportions ever married as recorded in the TDHS would appear to be too low. Under this latter situation, the understatement of proportions ever married among women could account in part for why age-specific and total fertility rates as derived from the TDHS appear to be on the low side (see below). However, there is no compelling reason at this point to assume that the SPCs measure the marital status distributions more accurately than the censuses.

Given that the eligible woman sample consisted of ever-married women, it is also of interest to compare the marital status of these women with equivalent results from the latest census and SPC. Such a comparison is presented on Table B.5. Overall within the TDHS eligible woman sample, 92 percent of ever-married women in the reproductive ages are currently married, about 3 percent are widowed, and the remaining 5 percent are divorced. These results are quite similar to those of both the 1984 SPC and the 1980 census.

Table B.5 Percent distribution of ever-married women aged 15-49 according to marital status, by age, comparison of results from TDHS, the Survey of Population Change (SPC) and the census

	TDHS, 1987			SPC, 1984			Census, 1980		
Age	Currently married	Widowed	Separated, divorced	Currently married	Widowed	Separated, divorced	Currently married	Widowed	Separated, divorced
15-19	98.1	0.1	1.8	94.6	1.0	4.3	94.4	1.1	4.5
20-24	95.5	0.5	4.0	94.8	1.0	4.3	94.3	1.4	4.3
25-29	95.1	0.8	4.1	94.2	1.8	4.0	94.2	1.9	3.9
30-34	94.1	1.3	4.6	93.6	2.4	4.0	93.2	2.9	3.9
35-39	92.0	3.6	4.4	91.2	4.2	4.6	91.2	4.8	4.0
40-44	86.6	7.1	6.4	87.6	7.4	5.0	88.2	7.7	4.2
45-49	84.1	9.3	6.6	82.5	12.7	4.8	83.6	12.2	4.2
Total	**92.2**	3.1	**4.7**	**91.4**	**4.2**	**4.4**	**91.5**	**4.4**	**4.1**

Notes: The TDHS results are based on the eligible woman sample; persons of unknown marital status have been distributed proportionately in the Census and SPC results.

As would be expected, the proportions of ever-married women who are currently married in the TDHS sample decrease steadily with age while both the proportions widowed and separated or divorced increase with age. For most age groups, the marital status distribution of the TDHS ever-married woman sample is similar to ever-married women in the census and SPC. The main exception is the youngest age-group, in which relatively fewer widowed and divorced or separated women are found in the TDHS sample than in the other sources.

B.3 Educational Level

A comparison of the educational distribution of the TDHS sample based on the household questionnaire and that reported for the 1984 SPC are shown in Table B.6 for males and females in the reproductive age range. In comparing these two sources, it should be recalled that educational levels have been increasing steadily over the last several decades. This is clearly evident from a comparison of the different age-cohorts in either survey. As age increases, the percent with no education consistently decreases and the percent with secondary or higher education increases. Thus the average level of education should be somewhat higher for a given age-group in the TDHS compared to the same age-group in the SPC since the TDHS took place almost three years later. Moreover, given the different ways that age is determined in the two surveys (directly from stated age in the TDHS household questionnaire and from birthdates in the SPC), the equivalent age-groups in the TDHS are approximately a half a year younger on average than in the SPC, further contributing to the expected difference.

Table B.6 Percent distribution according to educational level, by age and sex, comparison of results from TDHS and the Survey of Population Change (SPC)

Sex and age	TDHS, 1987				SPC, 1984			
	None	Primary	Secondary or above	Total	None	Primary	Secondary or above	Total
Females								
15-19	3.2	64.0	32.7	100	2.7	73.2	24.1	100
20-24	4.1	69.6	26.4	100	3.1	75.2	21.7	100
25-29	5.7	70.2	24.1	100	5.1	78.7	16.2	100
30-34	7.0	77.5	15.5	100	6.1	84.3	9.5	100
35-39	9.4	79.0	11.6	100	8.4	82.9	8.7	100
40-44	12.9	76.1	11.0	100	13.0	81.1	5.9	100
45-49	18.3	75.8	5.8	100	n.a	n.a	n.a	
Males								
15-19	1.7	61.1	37.2	100	1.5	67.3	31.2	100
20-24	2.9	63.5	33.6	100	1.8	69.8	28.4	100
25-29	2.1	65.6	32.3	100	2.3	74.6	23.1	100
30-34	3.7	73.2	23.1	100	2.6	81.0	16.4	100
35-39	3.5	79.7	16.8	100	3.3	82.5	14.2	100
40-44	4.8	74.4	20.8	100	6.0	80.8	13.2	100
45-49	7.4	75.9	16.8	100	n.a	n.a	n.a	

Notes: TDHS results are based on the household questionnaire and refer to usual household residents. Both the TDHS and SPC results exclude persons of unknown education.

n.a. = not available

As anticipated, for both men and women, the percent with secondary education or above is higher in every age-group for the TDHS sample than for the SPC sample. Unexpectedly, however, the proportions with no education are also higher for all age-groups for women and for most age-groups for men. It is also interesting to note that when the percent with secondary education or above in a particular age-group in the SPC is compared with the percent found in the next older age-group in the TDHS, in most cases the TDHS percent is still higher. In this comparison, the differences cannot be attributable to a time trend since the gap between the surveys is less than the four and a half year difference (allowing for differences in the way age was determined) between two successive age-groups. Thus the TDHS when compared to the SPC has a slightly greater representation of the least and the most educated.

B.4 Fertility

The TDHS collected data on both cumulative and current levels of fertility and a comparison of each with data from external sources is of interest. Table B.7 shows the mean number of children ever born to ever-married women and the percent of children surviving according to the age of the woman based on the TDHS together with results from CPS3, SPC and the 1980 census. Given that fertility appears to have been declining for at least two decades, as indicated by results from the TDHS (see Chapter 3) as well as other sources (Knodel, Chamratrithirong and Debavalya, 1987), cumulative fertility for any given age-group as recorded in the TDHS would be expected to be lower than in the earlier sources. Indeed, the average number of children ever born to women in each age-group is smallest according to the TDHS and, for most age-groups, is largest according to the 1980 census. Results from the CPS3 for age-groups under 30, however, are higher than would be expected from the rest of the sources. Since the CPS3 and SPC data were collected at almost the same time, their results should be quite similar to each other. Nevertheless, for the first three age-groups, the CPS3 results are distinctly higher than those from the SPC. Indeed for the 20-24 age-group, the CPS3 results are slightly higher than even those from the 1980 census. Thus it is likely that the CPS3 results somewhat overstate cumulative fertility for these age-groups and the more relevant comparison for the TDHS results is with the SPC and census.

It is difficult to know how much lower cumulative fertility should be at the time of the TDHS in comparison to earlier sources. One possibility is to linearly extrapolate the trend for each age group evident between the census and SPC to the time of the TDHS and to compare the extrapolated mean number of children ever born with the observed number. If this is done, the observed results appear to be slightly lower than the extrapolated estimates for most age-groups. For the overall sample, (i.e. all age-groups combined) the extrapolated mean number of children ever born is 2.89 compared to the observed average of 2.75. This comparison, however, is subject to both errors in the census and the SPC and to errors in the assumption of an expected linear change and hence can be considered at most as only suggestive of a possible understatement in cumulative fertility in the TDHS.

The percentage of children ever born who are still surviving generally declines with the age of the mother in the TDHS as well as in the other sources, reflecting both longer average exposure time to the chance of dying for children of older women and a probable decline in infant and child mortality during recent decades. No clear trend in the percent of children surviving, however, is apparent from a comparison of the different sources.

Prior to the TDHS, a variety of different sources have been used to estimate fertility in Thailand. These include dual-record system estimates from the Survey of Population Change, estimates based on the "own-children" technique as applied to census data, the Contraceptive Prevalence Surveys, the Survey of Fertility in Thailand (conducted as part of the World Fertility Survey) as well as registration data. As discussed in Chapter 3, since complete fertility histories were collected in the TDHS, it is possible to compute age specific fertility rates not only for the present but also for an extended period into the past subject to progressive censoring at older age-groups, the further back in time the estimate refers. The very low level of recent fertility indicated by the TDHS in Chapter 3 requires careful evaluation.

Table B.7 Mean number of children ever born, and percent surviving for ever-married women, by age of woman, comparison of results from TDHS, the Third Contraceptive Prevalence Survey (CPS3), Survey of Population Change (SPC) and the census

	TDHS		CPS3, 1984		SPC, 1984		Census 1980	
Age of woman	Children ever born	Percent surviving	Children ever born	Percent surviving	Children ever born	Percent surviving	Children ever born	Percent surviving
15-19	.52	97.9	.81	92.9	.69	94.5	.69	97.9
20-24	1.15	95.7	1.44	95.6	1.31	95.9	1.43	95.4
25-29	1.83	95.9	2.14	94.2	2.03	94.7	2.32	94.4
30-34	2.52	94.3	2.82	94.0	2.88	93.3	3.28	93.4
35-39	3.34	92.8	3.73	91.5	3.77	91.6	4.26	92.0
40-44	4.18	89.9	4.77	90.3	4.81	89.0	5.05	90.2
45-49	5.18	87.6	5.54	85.6	5.65	86.7	5.52	88.1
Total	**2.75**	**92.0**	**2.98**	**91.6**	**3.07**	**90.9**	**3.34**	**91.6**

Comparison with previous estimates of fertility is a useful starting point. Table B.8 summarizes a number of such comparisons. In each case total fertility rates have been calculated up to the oldest age-groups for which an equivalent rate can be calculated from the TDHS data.

Annual statistics on registered births, compiled by the Ministry of Public Health, provide one useful source against which the TDHS fertility estimates can be compared. It is widely acknowledged that births are underregistered in Thailand. Although the precise extent of underregistration is debatable, most estimates suggest registration is between 75 and 90 percent complete, probably closer to the higher figure in recent years. The most recent Survey of Population Change based on information collected from mid-1985 to mid-1986, estimates that birth registration is 88 percent complete. It should be noted, however, that this refers only to births actually occurring during the study period and does not necessarily imply the number of births registered nationally is 88 percent of the number that actually occurred during the year. One important difference can arise from the fact that the births reported nationally include all births registered in a given time period including births that occurred earlier but have been registered late, even if the birth registered refers to a child who is presently at school entry age or even older. Unfortunately, the extent of late registration is unknown and may have changed considerably over time. In addition, errors that occur at the various levels of aggregation that take place prior to reporting the births to the national center will also influence the extent to which the national figures reported for registered births in a year correspond to the actual number that occurred during that year.

Based on the number of registered births by age of mother for 1982 through 1984 and unpublished preliminary registration data for 1985 and 1986, and utilizing the most recent official population projections to obtain the number of women in reproductive age-groups, the TFR has been calculated for each year from 1982 through 1986. Without making any allowance for underregistration, the TFR based on these data declines steadily by 23 percent from 2.76 to 2.12 during this five year period and averages 2.41 for the entire five years.

When the TFR is calculated from the birth histories collected in the TDHS for the same calendar years, the resulting TFR declines by 19 percent from 2.73 in 1982 to 2.21 in 1986 and averages 2.44 during the entire period. Hence the extent of decline and the level of fertility are very similar between the TDHS and the birth registration data unadjusted for underregistration. While it is encouraging that similar trends are apparent in the two sets of data, the fact that the TDHS indicates only a slightly higher TFR than implied by the rates calculated from raw registration data (4 percent higher in 1986; one percent higher for the entire 5 year period) is suggestive that TDHS underestimates the level of recent fertility.

The latest SPC also provides a recent estimate of total fertility referring to the period between mid-1985 and mid-1986 (based on births recorded in the sample and taking underregistration into account). A comparison of the total fertility rate based on TDHS data for approximately the same period with that estimated by the SPC reveals that the TDHS data yield a TFR that is 85 percent as high. A comparison of total fertility up to age 39 based on the TDHS and the second SPC which refers to the two year period between mid-1974 and mid-1976 also indicates a lower rate from the TDHS.

Table B.8 Total fertility rates to selected age, comparison of results from TDHS and selected other sources, 1970-1986

Period to which rates refer	Ages to which rates refer	Comparison source	Comparison rate	TDHS rate	Ratio of TDHS to comparison rate
1986	15-49	Registration[a]	2.12	2.21	1.04
1982-86	15-49	Registration[a]	2.41[b]	2.44	1.01
1983-84[c]	15-49	CPS3	3.47	2.45	0.71
1982-84[d]	15-49	CPS3	3.36	2.64	0.79
1980-81[e]	15-44	CPS2	3.65	2.88	0.81
1985-86[f]	15-49	3rd SPC	2.73	2.32	0.85
1974-76[g]	15-39	2nd SPC	4.46	3.97	0.89
1975-80[h]	15-39	Census[i]	3.51	3.35	0.95
1970-75[j]	15-34	Census[i]	4.01	3.66	0.91
1970-75	15-34	Parity Increment[k]	3.63	3.64	1.00
1970-74	15-34	SOFT	3.67	3.69	1.01

Notes: All rates from the TDHS covering more than a one year period are unweighted averages of the single year rates. Unless otherwise specified, rates from comparison sources covering more than one year are weighted averages for the entire period covered.

a) Based on registered births as reported by the Ministry of Public Health, unadjusted for underregistration, and the number of women as indicated in the most recent NESDB projections
b) Unweighted average of single year rates
c) Both TDHS and CPS3 rates refer to a period from approximately May 1983 to April 1984.
d) Both TDHS and CPS3 rates refer to a period from approximately May 1982 to April 1984.
e) Both TDHS and CPS2 rates refer to a period from approximately May 1980 to April 1981.
f) For the TDHS rate, the period covered is approximately from May 1985-April 1986; for the SPC, the period covered is approximately from midyear 1985 to midyear 1986
g) For the TDHS rate, the period covered is approximately from May 1974 to April 1976; for the SPC, the period covered is approximately from midyear 1974 to midyear 1976.
h) For the TDHS rate the period covered is approximately from May 1975 to April 1980; the rate derived from the census refers to the period from April 1975 to March 1980.
i) Based on fertility estimates derived from applying the "own-children" method to the 1980 census.
j) For the TDHS rate the period covered is approximately from May 1970 to April 1975; the rate derived from the census refers to the period from April 1970 to March 1975.
k) Based on a comparison of children ever born by cohort as recorded in the 1970 census and the 1975 SPC.

Sources: Published and unpublished data from the Division of Health Statistics, Ministry of Public Health; National Economic and Social Development Board, 1985; National Statistical Office, forthcoming; Arnold, Perjaranonda, and Choe, 1985; Knodel and Piampiti, 1987; Kamnuansilpa and Chamratrithirong, 1985; Hill, 1979; and National Statistical Office, 1978

One possible source of the difference between the TDHS fertility and the latest SPC estimate could be the considerable difference in the marital status distributions indicated by the two surveys as discussed above. For example, if the higher proportions ever married among women based on the projection from the two SPC's are substituted for the observed proportions ever married from the TDHS, the TFR derived from the birth histories of the eligible women sample for the period roughly equivalent to the one covered by the SPC would increase by about 7 percent, from 2.32 to 2.47. The TDHS estimate would thus be 91 percent as high as the SPC estimate rather than only 85 percent as high.

The biggest discrepancy in fertility rates between the TDHS and the other sources shown in Table B.8 is found in comparison to the last two Contraceptive Prevalence Surveys. For CPS3, the most recent one, two fertility estimates are available, one for the 12 months period preceding the survey and the other for the 24 month period preceding the survey. Curiously, the 24 month estimate from CPS3 is lower than the 12 month estimate (the reverse should be true if fertility declined during the two years preceding the survey). A similar phenomenon is present in fertility rates from virtually all surveys in Thailand that obtain fertility estimates from retrospective reports (National Research Council 1980). It is not true, however, in the case of the TDHS. In comparison with the total fertility rate from CPS3 based on the 12 month period preceding the survey, the TDHS rate for the same calendar period is only 71 percent as high. In comparison to TFR from the CPS3 for the 24 months preceding the survey, the TDHS rate is 79 percent as high based on the same 24 month period. A TFR from CPS2 is only available for the 12 month period preceding the survey. Again the rate for the same calendar period based on TDHS data is substantially lower.

In the case of the comparison with CPS2 and CPS3, differences in the fertility rates are unlikely to be attributable to differences in the marital status distribution. In both CPS2 and CPS3, only ever-married women were interviewed and age specific fertility rates were estimated by applying the proportions ever married implied by extrapolating results from the 1970 and 1980 census. As indicated above, the marital status distribution of the TDHS is quite compatible with the distribution implied by extrapolating the census results.

There is some reason to suspect that the estimates of current fertility from CPS2 and CPS3 are too high. A policy followed during CPS3 fieldwork, but not in the TDHS, permitted substitution of originally selected sample households when none was found at home after repeated visits. If as a result of being able to substitute, interviewers were less persistent in attempts to reach an originally targeted household for which no one was home, such a policy could conceivably lead to a disproportionate selection of households in which a recent birth occurred. This would arise from the fact that households in which someone is readily found at home, especially during the daytime, are more likely to have young infants present. As a result, the CPS3 fertility rates could be inflated. Unfortunately, no information is available on the extent to which substitution actually occurred and thus the potential effect it might have had can not be estimated.

When fertility rates based on the TDHS data are compared for the decade of the 1970's with estimates derived from the 1980 census using the "own children" technique, the estimates based on the TDHS are also lower, although by a relatively modest extent. However, the TDHS indicates fertility levels quite similar to the level estimated by SOFT for 1970-74 as well as an indirect estimate derived through application of the "parity-increment" method to data on children ever born from the 1970 census and 1975 SPC.

While none of the estimates of fertility from the external sources are beyond question themselves, the overall picture provided suggests that the TDHS results understate the true level of current fertility to a moderate but unknown extent, particularly during the more recent period. At the same time, the continuing trend of declining fertility during the most recent five year period indicated by the TDHS results appears to be genuine given the consistency with the trend indicated by birth registration data.

As mentioned in Chapter 3, one of the innovative features of the TDHS with respect to eliciting the birth history data was to ask respondents to show the interviewer birth certificates or household registration forms, if possible, to help determine the dates of births of children and increase the accuracy and completeness of such information. Documentation was provided for about half (52 percent of the births). Unfortunately it was not recorded if the specific source of documentation was a birth certificate or the household registration form but from observation it seems clear that each was common. This procedure should increase the accuracy of the dating of events in the birth history and it is encouraging that unlike previous surveys, the total fertility rate for the 1-12 month period prior to the survey is not higher than for the 13-24 month period (2.11 versus 2.32). However, this procedure could conceivably lead to some underreporting of births, if it increased the chance of omission of births for which documentation was not available to show the interviewer. Although interviewers were instructed to request to see the documentation only after the total number of children ever born was determined through direct questioning and after the names of each child ever born was listed in the form for recording the fertility history, some interviewers might have requested to see household registration forms earlier in the interview to aid in the completion of the household questionnaire, even though this was not part of the instructions. If this were the case, an interviewer might be tempted to use the registration form to help list a women's children and there might be a tendency to omit children ever born who would not be found on the household registration form, in particular children who died or who were living away from home.

To check on this possibility, the separate components of the total number of children ever born, namely children living at home, children living elsewhere and dead children from the TDHS results are compared in Table B.9 with those from CPS3, in which requesting documentation or birth dates of children was not routinely practiced. The comparison suggests that this potential bias was not a problem. Overall, the TDHS recorded greater mean numbers of children living elsewhere than was true for the CPS3, just the opposite of what would be predicted. While the mean number of dead children is slightly lower, this could reflect some improvement in mortality. Under any circumstances, the proportion dead among children ever born for most age-groups of mothers are only very slightly lower. The main source of the lower mean number of children ever born between the two surveys is in the mean number of children ever born who are living in the household, exactly those who would be most expected to be in the household registration form.

Table B.9 Mean number of chi according to wldren ever born according to whether alive or dead and whether living household or e]in the mother's household or elsewhere, by age of mother, comparison oIDHS and CPS3 : results from TDHS and CPS3

Survey and age of woman	Mean number of orn			Proporti children ever born			Proportion of children ever born		
	Total	Living ir househol	Dead	Living i househol	Living elsewhere	Dead	Living in household	Living elsewhere	Dead
TDHS (1987)									
15-19	0.51	0.47	0.02	0.94	0.02	0.02	0.94	0.03	0.03
20-24	1.21	1.00	0.05	0.89	0.08	0.05	0.89	0.07	0.04
25-29	1.75	1.54	0.07	0.88	0.13	0.07	0.88	0.08	0.04
30-34	2.42	2.09	0.12	0.87	0.20	0.12	0.87	0.08	0.05
35-39	3.16	2.59	0.20	0.82	0.36	0.20	0.82	0.11	0.06
40-44	4.02	2.80	0.37	0.70	0.86	0.37	0.70	0.21	0.09
45-49	4.94	2.72	0.56	0.55	1.66	0.56	0.55	0.34	0.11
All ages	**2.63**	**1.99**	**0.19**	**0.76**	**0.44**	**0.19**	**0.76**	**0.17**	**0.07**
CPS3 (1984)									
15-19	0.81	0.75	0.05	0.92	0.02	0.05	0.92	0.02	0.06
20-24	1.43	1.33	0.07	0.93	0.03	0.07	0.93	0.02	0.05
25-29	2.11	1.92	0.12	0.91	0.07	0.12	0.91	0.04	0.06
30-34	2.78	2.49	0.16	0.90	0.13	0.16	0.90	0.05	0.06
35-39	3.63	3.07	0.27	0.84	0.29	0.27	0.84	0.08	0.07
40-44	4.53	3.38	0.40	0.75	0.75	0.40	0.75	0.17	0.09
45-49	5.30	3.46	0.70	0.65	1.15	0.70	0.65	0.22	0.13
All ages	**2.89**	**2.38**	**0.22**	**0.82**	**0.28**	**0.22**	**0.82**	**0.10**	**0.08**

The reasons underlying the relatively low estimates of current fertility found in the TDHS are unclear. For at least two reasons, it seems reasonable to expect that a retrospective fertility survey based on ever-married women would be more likely to underestimate than overestimate age specific fertility rates relating to all women. First, while it is unlikely that women report nonexistent births, some women may omit actual births when relating their birth histories. Although incorrect dating of births could create excessive fertility rates for some periods covered by birth histories, overall the net result should suffer from some omission, even if only minimal. Second, the assumption used that never-married women had no births is not totally realistic. As discussed in Chapter 3, we do not believe that this assumption has led in the case of the TDHS to a serious distortion of the fertility rates, although it would be difficult to provide definitive evidence to substantiate this assertion. It is interesting to note that one of the few sources that the TDHS fertility rates agree with closely are those from SOFT, estimates which also were based on retrospectively reported complete fertility histories from an ever-married woman sample. The two reasons specified above as to why fertility could be expected to be understated, of course, also apply in the case of SOFT.

At this point in the analysis of the TDHS, our best judgement is that the true level of current fertility in Thailand is probably somewhat above that found by the TDHS but nevertheless is still quite low. We expect that the recent TFR is probably lower than most observers had previously been led to believe, especially because of the influence of the relatively high fertility estimates of the last two CPS surveys. Perhaps the most compelling evidence that fertility must be quite low is the almost indisputable evidence of a high level of contraceptive prevalence, consisting almost entirely of efficient modern methods. Given that also some abortion is practiced to some unknown extent, it seems quite improbable that fertility could be very substantially higher than that shown in the TDHS.

APPENDIX C

ESTIMATING SAMPLING ERRORS

The results from sample surveys are affected by two types of errors: (1) nonsampling error and (2) sampling error. Nonsampling error is due to mistakes made in carrying out field activities, such as failure to locate and interview the correct household, errors in the way questions are asked, misunderstanding of the questions on the part of either the interviewer or the respondent, data entry errors, etc. Although efforts were made during the design and implementation of the TDHS to minimize this type of error, nonsampling errors are impossible to avoid and difficult to evaluate statistically.

The sample of women selected in the TDHS is only one of many samples of the same size that could have been selected from the same population, using the same design. Each one would have yielded results that differed somewhat from the actual sample selected. The variability observed between all possible samples constitutes sampling error, which, although it is not known exactly, can be estimated from the survey results. Sampling error is usually measured in terms of the "standard error" of a particular statistic (mean, percentage, etc.), which is the square root of the variance of the statistic across all possible samples of equal size and design. The standard error can be used to calculate confidence intervals within which one can be reasonably assured the true value of the variable for the whole population falls. For example, for any given statistic calculated from a sample survey, the value of that same statistic as measured in 95 percent of all possible samples of identical size and design will fall within a range of plus or minus two times the standard error of that statistic.

If the sample of women had been selected as a simple random sample, it would have been possible to use straightforward formulas for calculating sampling errors. However, the TDHS sample design depended on stratification, stages, and clusters and consequently, it is necessary to utilize more complex formulas. The computer package CLUSTERS was used to assist in computing the sampling errors with the proper statistical methodology.

The CLUSTERS program treats any percentage or average as a ratio estimate, $r = y/x$, where both x and y are considered to be random variables. The variance of r is computed using the formula given below, with the standard error being the square root of the variance:

$$\text{var}(r) = \frac{1-f}{x^2} \sum_{h=1}^{H} \frac{m_h}{m_h-1} \sum_{i=1}^{m_h} \left(Z_{hi}^2 - \frac{Z_h^2}{m_h} \right)$$

in which, $Z_{hi} = Y_{hi} - rx_{hi}$, and $Z_h = Y_h - rx_h$, where h represents the stratum and varies from 1 to H,

m_h is the total number of clusters selected in the h-th stratum,

y_{hi} is the sum of the values of variable y in cluster i in the h-th stratum,

x_{hi} is the sum of the number of cases (women) in cluster i in the h-th stratum,

f is the overall sampling fraction, which is so small that the CLUSTERS program ignores it.

In addition to the standard errors, CLUSTERS computes the design effect (DEFT) for each estimate, which is defined as the ratio between the standard error using the given sample design and the standard error that would result if a simple random sample had been used. A DEFT value of one indicates that the sample design is as efficient as a simple random sample and a value greater than one indicates the increase in the sampling error due to the use of a more complex and less statistically efficient design.

On the survey data file, sample blocks/villages have been given sequential numbers reflecting the order in which they were selected.* For the two stage sample in Bangkok, clusters (241-288) form the primary sampling units. Because of systematic selection in the specified order, these can be taken as pairs to form 24 "implicit" strata for variance computation. (Alternatively, they can be paired successively, number 241 with 242, 242 with 243, etc., to form 47 successive pairs for more stable variance estimates). In each of the remaining sampling domains, with three sampling stages, each pair of successive blocks/villages forms a single primary sampling unit (PSU), e.g., 001 and 002 together, 003 and 004 together, etc. This gives 24 PSUs per domain. These resulting PSUs can be paired into 12 implicit strata (or 23 successive pairs) for computation of variances.

Practical methods of variance computation require certain weighted aggregates only at the PSU level, separated into implicit strata. Sample weights have been coded on to the record of each individual sample case in the survey data file. Variances can therefore be estimated on the basis of the above information reflecting the structure of the sample.

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*These numbers are recorded on the data file as a separate variable distinct from the original cluster number (as the latter do not fully reflect the selection order)

Sampling errors are presented in Tables C.2a to C.2k for 27 variables considered to be of major interest. Results are presented for the whole country, for urban and rural areas, for the five regions and for women aged 15-24, 25-34 and 35-49. For each variable, the type of statistic (mean, proportion) and the base population (ever-married women, currently married women) are given in Table C.1. For each variable, Tables C.2a to C.2k present the mean value of the variable, its standard error or SE, the DEFT value or design effect, the relative standard error, and the 95 percent confidence limits.

In general, the sampling errors for the country as a whole are small, which means that the TDHS results are reliable. For example, for the variable children ever born, the overall mean from the sample is 2.747 and its standard error is 0.042. Therefore, to obtain the 95 percent confidence limits, one adds and subtracts twice the standard error to the sample estimate, i.e., which means that there is a high probability (95 percent) that the true average number of children ever born for all Thai women falls within the interval of 2.664 to 2.830.

Table C.1 List of variables for sampling errors for Thailand DHS

Variable	Description	Indicator	Base group
EDUC	Secondary or more	Proportion	EMW 15-49
CEB	Children ever born	Mean	EMW 15-49
CEBSURV	Children surviving	Mean	EMW 15-49
KNOWMOD	Knowing any modern method	Proportion	EMW 15-49
EVERUSE	Ever used any method	Proportion	EMW 15-49
CURRUSE	Currently using any method	Proportion	CMW 15-44
USEPIL	Using pill	Proportion	CMW 15-44
USEFST	Using female sterilization	Proportion	CMW 15-44
USEMST	Using male sterilization	Proportion	CMW 15-44
USEINJ	Using injection	Proportion	CMW 15-44
USEIUD	Using IUD	Proportion	CMW 15-44
WANTMOR	Wanting more children	Proportion	CMW 15-49
NOMORE	Wanting no more children	Proportion	CMW 15-49
DELAY	Wanting to delay next birth for 2 or more years	Proportion	CMW 15-49
IDEAL1	Ideal number of children	Mean	CMW 15-49 with numeric answer
IDEAL2	Ideal number of children	Mean	CMW 15-49 married < 5 years
BREASTF	Breastfeeding duration	Mean	Births in last 3 years
AMENOR	Amenorrhea duration	Mean	Births in last 3 years
ABSTAIN	Postpartum abstinence	Mean	Births in last 3 years
CEB45	Children ever born	Mean	EMW 45-49
ATTENT	Medical attention at birth	Proportion	Mothers, for all births in last five years
TETANUS	Received tetanus	Proportion	Mothers, for all births in last five years
DIARRHE	Had diarrhea in last 2 weeks	Proportion	Children under 5
DITREAT	Diarrhea treatment	Proportion	Children < 5 with diarrhea in last 2 weeks
HASCARD	Has a health card	Proportion	Children 12-59 months
ANYIMM	Received any immunization (on card or from mother)	Proportion	Children 12-59 months
CARDIM	Received any immunization (on card only)	Proportion	Children 12-59 months

Table C.2a Sampling errors for the total population

Variable	Value	Standard Error	Design Effect	Relative Error	Confidence Limits R-2SE	Confidence Limits R+2SE
EDUC	.118	.007	1.758	.058	.105	.132
CEB	2.747	.042	1.621	.015	2.664	2.830
CEBSURV	2.526	.034	1.508	.013	2.458	2.593
KNOWMOD	.994	.002	.000	.002	.991	.997
EVERUSE	.815	.008	1.596	.009	.800	.830
CURRUSE	.675	.009	1.482	.014	.657	.694
USEPIL	.200	.009	1.664	.045	.183	.218
USEFST	.224	.010	1.742	.043	.205	.244
USEMST	.055	.005	1.619	.090	.045	.065
USEINJ	.092	.005	1.312	.055	.082	.103
USEIUD	.072	.007	2.071	.100	.057	.086
WANTMOR	.330	.007	1.139	.021	.316	.344
NOMORE	.657	.007	1.200	.011	.642	.671
DELAY	.173	.006	1.212	.034	.161	.184
IDEAL1	2.806	.037	2.215	.013	2.732	2.879
IDEAL2	2.296	.036	1.482	.016	2.223	2.369
BREASTF	16.570	.566	1.492	.034	15.438	17.701
AMENOR	7.164	.374	1.239	.052	6.416	7.913
ABSTAIN	3.549	.293	1.265	.082	2.964	4.134
CEB45	5.182	.136	1.485	.026	4.911	5.454
ATTENT	.440	.017	1.758	.038	.406	.473
TETANUS	.654	.016	1.726	.024	.622	.685
DIARRHE	.156	.009	1.375	.057	.138	.174
DITREAT	.856	.017	1.057	.019	.823	.889
HASCARD	.260	.014	1.601	.055	.231	.288
ANYIMM	.848	.013	1.716	.015	.822	.874
CARDIM	.260	.014	1.601	.055	.231	.288

Table C.2b Sampling errors for the urban population

Variable	Value	Standard Error	Design Effect	Relative Error	Confidence Limits R-2SE	Confidence Limits R+2SE
EDUC	.358	.019	1.957	.053	.320	.396
CEB	2.144	.044	1.252	.020	2.057	2.232
CEBSURV	2.051	.040	1.222	.019	1.971	2.130
KNOWMOD	.996	.001	1.008	.001	.993	.998
EVERUSE	.844	.009	1.243	.011	.826	.862
CURRUSE	.685	.011	1.088	.016	.663	.708
USEPIL	.203	.012	1.339	.059	.179	.227
USEFST	.258	.011	1.166	.044	.236	.281
USEMST	.057	.005	.990	.089	.047	.068
USEINJ	.066	.006	1.137	.095	.054	.079
USEIUD	.041	.005	1.219	.131	.030	.052
WANTMOR	.344	.010	1.028	.030	.324	.365
NOMORE	.638	.011	1.065	.017	.616	.660
DELAY	.159	.008	1.013	.050	.143	.175
IDEAL1	2.466	.037	1.495	.015	2.393	2.540
IDEAL2	2.161	.040	1.216	.019	2.081	2.241
BREASTF	9.772	.777	1.348	.079	8.218	11.325
AMENOR	4.640	.432	.993	.093	3.776	5.504
ABSTAIN	3.643	.455	1.130	.125	2.733	4.553
CEB45	4.112	.175	1.137	.043	3.762	4.462
ATTENT	.833	.017	1.354	.020	.800	.867
TETANUS	.628	.017	1.052	.026	.595	.661
DIARRHE	.098	.010	1.079	.101	.078	.118
DITREAT	.896	.031	1.102	.035	.833	.958
HASCARD	.415	.022	1.212	.053	.371	.458
ANYIMM	.947	.009	1.129	.009	.929	.965
CARDIM	.415	.022	1.212	.053	.371	.458

Table C.2c Sampling errors for the rural population

Variable	Value	Standard Error	Design Effect	Relative Error	Confidence Limits R-2SE	R+2SE
EDUC	.065	.007	1.876	.108	.051	.079
CEB	2.881	.049	1.491	.017	2.783	2.979
CEBSURV	2.631	.040	1.397	.015	2.551	2.711
KNOWMOD	.994	.002	1.655	.002	.990	.998
EVERUSE	.808	.009	1.500	.011	.790	.826
CURRUSE	.673	.011	1.412	.017	.651	.695
USEPIL	.200	.011	1.580	.053	.179	.221
USEFST	.216	.012	1.689	.054	.193	.240
USEMST	.054	.006	1.563	.110	.042	.066
USEINJ	.098	.006	1.219	.062	.086	.110
USEIUD	.079	.009	1.920	.110	.061	.096
WANTMOR	.327	.008	1.076	.024	.311	.343
NOMORE	.661	.008	1.135	.013	.644	.678
DELAY	.176	.007	1.142	.039	.162	.190
IDEAL1	2.880	.043	2.080	.015	2.793	2.967
IDEAL2	2.335	.046	1.364	.020	2.244	2.426
BREASTF	18.014	.646	1.370	.036	16.722	19.307
AMENOR	7.701	.447	1.163	.058	6.806	8.595
ABSTAIN	3.529	.341	1.193	.097	2.846	4.211
CEB45	5.370	.153	1.368	.028	5.064	5.675
ATTENT	.359	.018	1.647	.051	.322	.395
TETANUS	.659	.019	1.657	.029	.621	.697
DIARRHE	.168	.011	1.283	.063	.147	.189
DITREAT	.851	.018	.957	.021	.815	.887
HASCARD	.228	.016	1.557	.071	.195	.260
ANYIMM	.828	.015	1.558	.019	.797	.859
CARDIM	.228	.016	1.557	.071	.195	.260

Table C.2d Sampling errors for the North Region

Variable	Value	Standard Error	Design Effect	Relative Error	Confidence Limits R-2SE	R+2SE
EDUC	.082	.013	1.819	.160	.056	.108
CEB	2.537	.112	1.999	.044	2.314	2.761
CEBSURV	2.293	.084	1.762	.037	2.126	2.461
KNOWMOD	.990	.006	2.337	.006	.977	1.002
EVERUSE	.885	.019	2.244	.021	.847	.922
CURRUSE	.747	.018	1.467	.025	.710	.784
USEPIL	.279	.024	1.845	.086	.231	.327
USEFST	.190	.017	1.535	.092	.155	.225
USEMST	.060	.013	1.875	.215	.034	.086
USEINJ	.163	.011	1.027	.067	.142	.185
USEIUD	.034	.008	1.593	.245	.017	.051
WANTMOR	.340	.012	.934	.036	.316	.364
NOMORE	.654	.012	.930	.018	.630	.678
DELAY	.193	.010	.933	.052	.173	.214
IDEAL1	2.669	.144	3.623	.054	2.382	2.957
IDEAL2	2.319	.122	2.117	.053	2.075	2.563
BREASTF	14.035	1.399	1.758	.100	11.237	16.834
AMENOR	7.750	.847	1.224	.109	6.056	9.443
ABSTAIN	3.616	.631	1.209	.175	2.353	4.878
CEB45	5.200	.436	1.961	.084	4.327	6.072
ATTENT	.492	.040	1.945	.082	.411	.572
TETANUS	.644	.046	2.279	.071	.552	.736
DIARRHE	.175	.025	1.621	.141	.126	.225
DITREAT	.906	.027	1.043	.030	.851	.961
HASCARD	.338	.036	1.720	.106	.266	.410
ANYIMM	.835	.030	1.671	.036	.775	.895
CARDIM	.338	.036	1.720	.106	.266	.410

Table C.2e Sampling errors for the Northeast Region

Variable	Value	Standard Error	Design Effect	Relative Error	Confidence Limits R-2SE	Confidence Limits R+2SE
EDUC	.058	.009	1.437	.155	.040	.076
CEB	2.939	.061	1.053	.021	2.818	3.061
CEBSURV	2.671	.050	1.010	.019	2.571	2.772
KNOWMOD	.997	.002	1.094	.002	.993	1.000
EVERUSE	.795	.014	1.306	.018	.767	.824
CURRUSE	.665	.021	1.485	.031	.624	.707
USEPIL	.165	.017	1.570	.104	.131	.200
USEFST	.253	.023	1.777	.090	.208	.299
USEMST	.026	.006	1.283	.231	.014	.038
USEINJ	.065	.009	1.198	.134	.048	.082
USEIUD	.138	.019	1.837	.135	.101	.176
WANTMOR	.320	.014	1.058	.043	.293	.348
NOMORE	.666	.015	1.138	.023	.636	.696
DELAY	.165	.013	1.274	.080	.139	.192
IDEAL1	2.967	.046	1.313	.015	2.875	3.058
IDEAL2	2.313	.066	1.119	.029	2.181	2.445
BREASTF	22.157	1.145	1.342	.052	19.867	24.446
AMENOR	7.799	.820	1.191	.105	6.158	9.440
ABSTAIN	2.853	.601	1.303	.210	1.652	4.054
CEB45	5.551	.216	1.083	.039	5.118	5.984
ATTENT	.272	.031	1.670	.114	.210	.334
TETANUS	.718	.033	1.696	.047	.651	.785
DIARRHE	.166	.017	1.130	.100	.133	.200
DITREAT	.827	.031	.850	.038	.765	.890
HASCARD	.170	.028	1.672	.166	.114	.227
ANYIMM	.870	.028	1.812	.032	.814	.925
CARDIM	.170	.028	1.672	.166	.114	.227

Table C.2f Sampling errors for the Central Region

Variable	Value	Standard Error	Design Effect	Relative Error	Confidence Limits R-2SE	Confidence Limits R+2SE
EDUC	.126	.018	2.041	.140	.091	.162
CEB	2.656	.115	2.201	.043	2.427	2.885
CEBSURV	2.470	.097	2.102	.039	2.275	2.664
KNOWMOD	.999	.000	.000	.000	.999	.999
EVERUSE	.855	.010	1.069	.011	.835	.875
CURRUSE	.714	.013	1.024	.019	.687	.741
USEPIL	.214	.016	1.381	.077	.181	.246
USEFST	.256	.016	1.301	.064	.223	.289
USEMST	.090	.016	1.867	.172	.059	.121
USEINJ	.100	.014	1.633	.142	.071	.128
USEIUD	.027	.005	1.071	.187	.017	.037
WANTMOR	.312	.016	1.257	.051	.280	.343
NOMORE	.671	.017	1.307	.025	.638	.705
DELAY	.147	.009	.928	.061	.129	.165
IDEAL1	2.687	.052	1.460	.019	2.583	2.791
IDEAL2	2.125	.051	1.167	.024	2.023	2.226
BREASTF	12.533	.904	1.103	.072	10.726	14.341
AMENOR	6.218	.717	1.087	.115	4.784	7.653
ABSTAIN	3.634	.621	1.169	.171	2.392	4.876
CEB45	4.811	.255	1.512	.053	4.302	5.320
ATTENT	.671	.022	1.088	.033	.626	.715
TETANUS	.647	.021	1.047	.033	.604	.690
DIARRHE	.141	.019	1.330	.133	.103	.179
DITREAT	.848	.037	.997	.044	.774	.922
HASCARD	.275	.025	1.228	.092	.224	.325
ANYIMM	.844	.018	1.031	.021	.808	.881
CARDIM	.275	.025	1.228	.092	.224	.325

Table C.2g Sampling errors for the South Region

Variable	Value	Standard Error	Design Effect	Relative Error	Confidence Limits R-2SE	Confidence Limits R+2SE
EDUC	.148	.017	1.636	.112	.115	.181
CEB	3.241	.077	1.177	.024	3.087	3.395
CEBSURV	3.000	.069	1.172	.023	2.862	3.138
KNOWMOD	.985	.006	1.717	.006	.973	.997
EVERUSE	.664	.028	2.044	.042	.609	.719
CURRUSE	.518	.022	1.419	.043	.473	.563
USEPIL	.122	.012	1.197	.102	.097	.146
USEFST	.141	.011	.997	.078	.119	.163
USEMST	.054	.008	1.161	.154	.037	.070
USEINJ	.068	.009	1.163	.136	.050	.087
USEIUD	.049	.009	1.326	.185	.031	.067
WANTMOR	.358	.014	.997	.040	.329	.386
NOMORE	.632	.015	1.067	.024	.602	.663
DELAY	.210	.014	1.162	.067	.182	.238
IDEAL1	3.083	.042	1.222	.014	2.998	3.168
IDEAL2	2.607	.052	.967	.020	2.504	2.711
BREASTF	16.904	1.058	1.357	.063	14.788	19.019
AMENOR	7.786	.603	.948	.077	6.581	8.992
ABSTAIN	4.641	.584	1.082	.126	3.472	5.810
CEB45	5.506	.203	.997	.037	5.100	5.912
ATTENT	.193	.021	1.381	.109	.151	.235
TETANUS	.592	.028	1.382	.047	.536	.647
DIARRHE	.161	.019	1.411	.118	.123	.199
DITREAT	.860	.040	1.261	.046	.780	.940
HASCARD	.226	.024	1.387	.106	.178	.274
ANYIMM	.748	.030	1.588	.041	.687	.809
CARDIM	.226	.024	1.387	.106	.178	.274

Table C.2h Sampling errors for Bangkok

Variable	Value	Standard Error	Design Effect	Relative Error	Confidence Limits R-2SE	Confidence Limits R+2SE
EDUC	.333	.028	2.077	.083	.278	.389
CEB	2.143	.064	1.278	.030	2.015	2.271
CEBSURV	2.067	.060	1.268	.029	1.948	2.187
KNOWMOD	.994	.002	.978	.002	.990	.998
EVERUSE	.835	.013	1.235	.016	.809	.861
CURRUSE	.674	.016	1.088	.023	.642	.706
USEPIL	.225	.016	1.270	.073	.193	.258
USEFST	.228	.015	1.158	.066	.198	.258
USEMST	.070	.007	.922	.104	.055	.084
USEINJ	.056	.008	1.125	.142	.040	.073
USEIUD	.042	.007	1.063	.157	.029	.055
WANTMOR	.347	.013	.919	.037	.321	.373
NOMORE	.634	.013	.945	.021	.607	.661
DELAY	.165	.011	.955	.064	.144	.186
IDEAL1	2.458	.058	1.610	.024	2.342	2.573
IDEAL2	2.190	.062	1.249	.028	2.066	2.314
BREASTF	9.805	1.056	1.339	.108	7.693	11.918
AMENOR	4.789	.610	1.015	.127	3.570	6.008
ABSTAIN	3.881	.618	1.088	.159	2.645	5.116
CEB45	4.210	.234	1.031	.055	3.743	4.677
ATTENT	.880	.023	1.571	.026	.835	.925
TETANUS	.562	.023	1.030	.040	.517	.608
DIARRHE	.106	.014	1.070	.135	.078	.135
DITREAT	.864	.043	1.020	.050	.777	.951
HASCARD	.440	.032	1.282	.072	.377	.504
ANYIMM	.961	.008	.872	.008	.945	.976
CARDIM	.440	.032	1.282	.072	.377	.504

Table C.2i Sampling errors for women aged 15-24

Variable	Value	Standard Error	Design Effect	Relative Error	Confidence Limits R-2SE	Confidence Limits R+2SE
EDUC	.130	.012	1.262	.090	.107	.153
CEB	.988	.033	1.389	.033	.922	1.054
CEBSURV	.949	.032	1.404	.033	.886	1.012
KNOWMOD	.994	.003	1.383	.003	.988	.000
EVERUSE	.743	.023	1.932	.031	.697	.790
CURRUSE	.533	.024	1.721	.045	.484	.581
USEPIL	.269	.020	1.645	.076	.228	.310
USEFST	.034	.006	1.208	.180	.022	.046
USEMST	.008	.002	.980	.310	.003	.013
USEINJ	.119	.009	.940	.072	.102	.136
USEIUD	.077	.011	1.448	.140	.056	.099
WANTMOR	.720	.017	1.369	.024	.686	.755
NOMORE	.271	.017	1.333	.061	.238	.305
DELAY	.450	.016	1.121	.035	.419	.481
IDEAL1	2.314	.037	1.462	.016	2.239	2.389
IDEAL2	2.261	.041	1.455	.018	2.179	2.343
BREASTF	18.513	.811	1.317	.044	16.892	20.134
AMENOR	7.707	.586	1.159	.076	6.534	8.880
ABSTAIN	3.462	.483	1.288	.139	2.497	4.428
CEB45	.000	.000	.000	.000	.000	.000
ATTENT	.407	.020	1.191	.049	.367	.447
TETANUS	.692	.026	1.593	.038	.640	.744
DIARRHE	.182	.017	1.350	.091	.149	.215
DITREAT	.825	.033	1.179	.040	.759	.891
HASCARD	.267	.023	1.313	.085	.221	.312
ANYIMM	.849	.019	1.296	.022	.811	.887
CARDIM	.267	.023	1.313	.085	.221	.312

Table C.2j Sampling errors for women aged 25-34

Variable	Value	Standard Error	Design Effect	Relative Error	Confidence Limits R-2SE	Confidence Limits R+2SE
EDUC	.144	.010	1.452	.069	.124	.163
CEB	2.176	.048	1.913	.022	2.080	2.271
CEBSURV	2.066	.042	1.829	.020	1.982	2.150
KNOWMOD	.998	.001	.000	.001	.996	.000
EVERUSE	.878	.009	1.475	.011	.860	.897
CURRUSE	.720	.013	1.460	.018	.694	.747
USEPIL	.209	.011	1.407	.055	.186	.232
USEFST	.252	.013	1.509	.052	.226	.278
USEMST	.053	.007	1.477	.125	.040	.066
USEINJ	.099	.007	1.141	.069	.085	.112
USEIUD	.073	.008	1.515	.108	.057	.088
WANTMOR	.354	.012	1.211	.033	.331	.377
NOMORE	.632	.012	1.294	.020	.607	.657
DELAY	.179	.009	1.194	.051	.161	.198
IDEAL1	2.680	.054	2.434	.020	2.573	2.787
IDEAL2	2.398	.074	1.465	.031	2.251	2.545
BREASTF	14.452	.717	1.376	.050	13.017	15.886
AMENOR	6.326	.474	1.161	.075	5.379	7.274
ABSTAIN	3.166	.319	1.025	.101	2.528	3.805
CEB45	.000	.000	.000	.000	.000	.000
ATTENT	.481	.020	1.491	.041	.441	.520
TETANUS	.675	.019	1.557	.029	.636	.714
DIARRHE	.144	.011	1.303	.079	.121	.167
DITREAT	.871	.023	1.104	.026	.825	.916
HASCARD	.281	.016	1.319	.057	.249	.313
ANYIMM	.871	.015	1.557	.017	.841	.901
CARDIM	.281	.016	1.319	.057	.249	.313

Table C.2k Sampling errors women aged 35-49

Variable	Value	Standard Error	Design Effect	Relative Error	Confidence Limits R-2SE	Confidence Limits R+2SE
EDUC	.089	.007	1.317	.080	.075	.103
CEB	4.135	.072	1.664	.017	3.991	4.278
CEBSURV	3.720	.058	1.554	.016	3.604	3.836
KNOWMOD	.991	.002	1.273	.002	.986	.995
EVERUSE	.789	.010	1.297	.013	.769	.809
CURRUSE	.716	.012	1.146	.017	.692	.741
USEPIL	.139	.010	1.180	.069	.119	.158
USEFST	.323	.016	1.472	.050	.290	.355
USEMST	.092	.009	1.275	.095	.074	.109
USEINJ	.064	.008	1.443	.130	.047	.081
USEIUD	.067	.011	1.940	.171	.044	.089
WANTMOR	.100	.006	1.019	.062	.088	.113
NOMORE	.885	.007	1.049	.008	.871	.898
DELAY	.020	.003	1.145	.162	.013	.026
IDEAL1	3.194	.045	1.460	.014	3.103	3.285
IDEAL2	2.084	.223	1.068	.107	1.637	2.531
BREASTF	18.911	1.242	1.075	.066	16.427	21.394
AMENOR	8.714	1.251	1.360	.144	6.213	11.216
ABSTAIN	5.179	.966	1.272	.186	3.248	7.111
CEB45	5.182	.136	1.484	.026	4.911	5.454
ATTENT	.370	.028	1.250	.077	.313	.427
TETANUS	.516	.032	1.427	.062	.452	.581
DIARRHE	.147	.015	.965	.102	.117	.177
DITREAT	.878	.061	1.456	.069	.757	.999
HASCARD	.180	.022	1.148	.122	.136	.224
ANYIMM	.775	.031	1.496	.040	.713	.836
CARDIM	.180	.022	1.148	.122	.136	.224

APPENDIX D

SURVEY INSTRUMENTS

D.1 The Household and Individual Questionnaire

Project Number 50

Questionnaire number	☐☐☐☐
Region	☐
Changwat	☐☐
District	☐☐
Rural/urban	☐
Cluster number	☐☐☐
Household number	☐☐
Samvil	☐

Institute of Population Studies
Chulalongkorn University
Thailand Demographic Health Survey
March-June 2530 (1987)

Name of household schedule respondent (Mr.,Mrs.,Miss) ------------------
Surname ------------------------
House number ------ Village number ------ Village name/ED, Block --------
Street ------------ Tambol -------------- District --------------------
Changwat --

VISITS FOR HOUSEHOLD QUESTIONNAIRE				
	1	2	3	FINAL VISIT
Day, Month	--------	--------	--------	☐☐☐
Interviewer's Name	--------	--------	--------	☐☐
Result	--------	--------	--------	☐
Number of Visits				☐

Name of eligible woman -------------- line number -------- ☐☐
Total eligible women identified in household ------------------ ☐
Total eligible women interviewed ---------------------------- ☐
Respondent Number ------ ☐ (of total women interviewed in household)

Visits for Eligible Women Questionnaire

	1	2	3	FINAL VISIT
Day, Month	----------	----------	----------	☐☐☐
Interviewer name	----------	----------	----------	☐☐
Result	----------	----------	----------	☐
Number of Visits ------------------				☐

	FIELD EDITED BY	OFFICE EDITED BY	KEYED BY	KEYED BY
NAME	____________	____________	________	☐☐
DATE	____________	____________	________	

HOUSEHOLD SCHEDULE

Time Started ____________ hour __________ minute ☐☐☐☐

Now we would like some information about the people who usually live in your household, or are staying with you now __________ total persons

NO.	NAMES OF USUAL RESIDENTS AND VISITORS	RELATIONSHIP TO HEAD OF HOUSEHOLD	RESIDENCE				SEX		AGE	(ASK ONLY PERSONS AGE 13 AND OVER)	
(1)	(2)	(2A)	(3)		(4)		(5)		(6)	(7)	(7A)
	Please give me the names of the persons who usually live in your household or are staying with you now.		Does (NAME) usually live here?		Was (NAME) here last night?		(NAME) is male/female?		How old is he/she?	Marital status	Highest grade completed
			YES	NO	YES	NO	MALE	FEMALE			
01	______	☐☐	1	2	1	2	1	2	☐☐	☐	☐☐
02	______	☐☐	1	2	1	2	1	2	☐☐	☐	☐☐
03	______	☐☐	1	2	1	2	1	2	☐☐	☐	☐☐
04	______	☐☐	1	2	1	2	1	2	☐☐	☐	☐☐
05	______	☐☐	1	2	1	2	1	2	☐☐	☐	☐☐
06	______	☐☐	1	2	1	2	1	2	☐☐	☐	☐☐
07	______	☐☐	1	2	1	2	1	2	☐☐	☐	☐☐
08	______	☐☐	1	2	1	2	1	2	☐☐	☐	☐☐
09	______	☐☐	1	2	1	2	1	2	☐☐	☐	☐☐
10	______	☐☐	1	2	1	2	1	2	☐☐	☐	☐☐
11	______	☐☐	1	2	1	2	1	2	☐☐	☐	☐☐
12	______	☐☐	1	2	1	2	1	2	☐☐	☐	☐☐

Interviewer: Circle the line number of every ever married women aged 15-50
Total number of eligible women ☐

(8) Just to make sure I have a complete listing:

1. Are there any other persons such as small children or infants that we have not listed?
   YES ☐ (ENTER EACH IN TABLE) NO ☐→
2. In addition, are there any other people who may not be members of your family, such as domestic servants, lodgers or friends who usually live here?
   YES ☐ (ENTER EACH IN TABLE) NO ☐→
3. Do you have any guests or temporary visitors staying with you?
   YES ☐ (ENTER EACH IN TABLE) NO ☐

Time finished ___________ hour _________ minute ☐☐☐☐

SECTION 1. RESPONDENT'S BACKGROUND

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP TO
101	RECORD NUMBER OF PEOPLE LISTED IN THE HOUSEHOLD SCHEDULE.	NUMBER OF PEOPLE ---- [ ][ ]	
102	RECORD NUMBER OF CHILDREN AGE 5 AND UNDER LISTED IN THE HOUSEHOLD SCHEDULE WHO NORMALLY LIVE IN THE HOUSEHOLD.	NUMBER OF CHILDREN 5 AND UNDER --------- [ ][ ]	
103	RECORD THE TIME.	HOUR --------------- [ ][ ] MINUTES ------------ [ ][ ]	
104	First I would like to ask some questions about yourself and your household. For most of the time until you were 12 years old, did you live in the countryside, in a town, or in a city?	COUNTRYSIDE ----------- 1 TOWN ------------------ 2 (SPECIFY) BANGKOK-THONBURI ------- 3 ABROAD --------------- 4	
105	How long have you been living continuously in ____________ (NAME OF VILLAGE, TOWN, CITY)?	ALWAYS --------------- 95 VISITOR -------------- 96 YEARS -------------- [ ][ ]	→107 →107
106	Just before you moved here, did you live in the countryside, in a town, or in a city?	COUNTRYSIDE ----------- 1 TOWN ------------------ 2 (SPECIFY) BANGKOK-THONBURI ------- 3 ABROAD --------------- 4	
107	In what month and year were you born?	MONTH -------------- [ ][ ] DK MONTH -------------- 98 YEAR --------------- [ ][ ] DK YEAR ------------ 33	[ ] [ ]
108	How old are you? Interview: If Respondent is under 15 or over 49 stop interview.	REPORTED AGE -------- [ ][ ] CORRECTED AGE ------- [ ][ ]	
109	Have you ever attended school?	YES ------------------- 1 NO -------------------- 2	 →113

NO.1	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP TO
110	What is the highest grade you completed?	PRIMARY ----- 1 2 3 4 5 6 7 SECONDARY OLD SYSTEM ---- 1 2 3 4 5 NEW SYSTEM -- 1 2 3 4 5 6 TEACHING COLLEGE (SPECIFY) ----- 1 2 3 4 5+ VOCATIONAL (SPECIFY) ----- 1 2 3 4 5+ UNIVERSITY ------ 1 2 3 4 5+ OTHER (SPECIFY) -----------	
111	(Check 110) What was the highest level of school you attended: primary, secondary, or higher?	PRIMARY --------------- 1 SECONDARY ------------- 2 HIGHER ---------------- 3	
112	CHECK 111: PRIMARY SECONDARY OR HIGHER (SKIP TO 114)		
113	Can you read a letter or newspaper easily, with difficulty or not at all?	EASILY --------------- 1 WITH DIFFICULTY ------- 2 NOT AT ALL ----------- 3	 →115
114	Do you usually read a newspaper or magazine at least once a week?	YES ------------------ 1 NO ------------------- 2	
115	Do you usually watch television every week?	YES ------------------ 1 NO ------------------- 2	
116	Do you usually listen to the radio every day or regularly?	YES ------------------ 1 NO ------------------- 2	
117	What is the major source of drinking water for members of your household?*	PIPED INTO RESIDENCE OR YARD -------------- 01 BOTTLE WATER ---------- 02 PUBLIC TAP ------------ 03 PRIVATE WELL/POND ----- 04 PUBLIC WELL/POND ------ 05 RIVER, SPRING, SURFACE WATER ---------------- 06 TANKER TRUCK, OTHER VENDOR --------------- 07 RAINWATER ------------- 08 OTHER (SPECIFY)-------- 09 NEIGHBOR'S WELL/POND -- 10 NEIGHBOR'S TAP WATER -- 11	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP TO
118	What is the major source of water for household use other than drinking (e.g., handwashing, cooking) for members of your household*	PIPED INTO RESIDENCE OR YARD ---------- 01 PUBLIC TAP ---------- 03 PRIVATE WELL/POND ----- 04 PUBLIC WELL/POND ------ 05 RIVER, SPRING, SURFACE WATER ---------- 06 TANKER TRUCK, OTHER VENDOR ---------- 07 RAINWATER ---------- 08 OTHER (SPECIFY)---------- 09 NEIGHBOR'S WELL/POND -- 10 NEIGHBOR'S TAP WATER -- 11	 01 →120 04 →120 08 →120
119	How long does it take to go there, get water, and come back?	MINUTES ---------- [ ][ ][ ] ON PREMISES ---------- 996	
120	What kind of toilet facility does your household have?	FLUSH ---------- 1 SEPTIC TANK ---------- 2 PIT ---------- 3 OTHER ---------- 4 (SPECIFY) NO FACILITIES ---------- 5	
121	Right now, do you have a cake of soap or have you run out?	YES ---------- 1 RUN OUT ---------- 2 NO SOAP ---------- 3 OTHER (SPECIFY) ------- 4	
122	Does your house have: Electricity? A radio? A television? A refrigerator?	YES NO ELECTRICITY ----- 1 2 RADIO ---------- 1 2 TELEVISION ------ 1 2 REFRIGERATOR ----- 1 2	
123	Does any member of your household own: A bicycle? A motorcycle? A car/truck/minibus A ploughing machine (IF URBAN, CIRCLE '2')	YES NO BICYCLE ------ 1 2 MOTORCYCLE ------ 1 2 CAR/TRUCK/MINIBUS 1 2 PLOUGHING MACHINE 1 2	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP TO
124	MAIN MATERIAL OF THE FLOOR.*	PARQUET, OR POLISHED WOOD ---------------- 1 POLISHED STONE -------- 2 VINYL OR ASPHALT STRIPS 3 CERAMIC TILES --------- 4 WOOD PLANKS ----------- 5 CEMENT ---------------- 6 EARTH/SAND ------------ 7 OTHER ----------------- 8 (SPECIFY)	
*125	What is your religion?	BUDDHISM -------------- 1 ISLAM ----------------- 2 CHRISTIANITY ---------- 3 OTHER (SPECIFY) ------- 4	
*126	What language do you normally speak at home?	CENTRAL THAI ---------- 01 NORTHERN DIALECT ------ 02 NORTHEASTERN DIALECT -- 03 LAO ------------------- 04 SOUTHERN DIALECT ------ 05 MALAY (YAWEE) --------- 06 COMBODIAN ------------- 07 CHINESE --------------- 08 OTHER (SPECIFY) ------- 09 THAIYAI --------------- 10 TRIBAL LANGUAGE ------- 11	

SECTION 2. REPRODUCTION

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP TO
201	Now I would like to ask about all the births you have had during your life. Have you ever given birth?	YES ---------------------- 1 NO ---------------------- 2	 →206
202	Do you have any son or daughter you have given birth to who is now living with you?	YES ---------------------- 1 NO ---------------------- 2	 →204
203	How many sons live with you? And how many daughters live with you? IF NONE ENTER 00.	SONS AT HOME ------- ☐☐ DAUGHTERS AT HOME -- ☐☐	
204	Do you have any son or daughter you have given birth to who is alive but not living with you?	YES ---------------------- 1 NO ---------------------- 2	 →206
205	How many sons are alive but do not live with you? And how many daughters are alive but do not live with you? IF NON ENTER 00.	SONS ELSEWHERE ----- ☐☐ DAUGHTERS ELSEWHERE- ☐☐	
200	Have you ever given birth to a boy or a girl who was born alive but later died? IF NO, PROBE: Any (other) boy or girl who cried or showed any sign of life, but only survived a few hours or days?	YES ---------------------- 1 NO ---------------------- 2	 →208
207	How many boys have died? And how many girls have died? IF NONE ENTER 00.	BOYS DEAD ----------- ☐☐ GIRLS DEAD ---------- ☐☐	
208	SUM ANSWERS TO 203, 205 AND 207 AND ENTER TOTAL.	TOTAL -------------- ☐☐	
209	CHECK 208: Just to make sure that I have this right, you have had in TOTAL _____ live births during your life. Is that correct? YES ☐ ↓ NO ☐ (PROBE AND CORRECT 201-209 AS NECESSARY)		

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP TO
*209A	Besides the live births you mentioned, have you ever had any miscarriage	YES ---------- 1 NO ---------- 2	 →210
*209B	How many time did you have a miscarriage?	NUMBER ---------- [ ][ ]	
210	CHECK 208: ONE OR MORE BIRTHS [ ] ↓	NO BIRTHS [ ] (SKIP TO 221)	
211	Now I would like to talk to you about your births, whether still alive or not starting with the first one you had. (RECORD NAMES OF ALL THE BIRTHS IN 212. RECORD TWINS ON SEPARATE LINES AND MARK WITH A BRACKET.)		

212 What name was given to your (first, next) baby?	213 Is (NAME) a boy or a girl?	214 In what month and year was (NAME) born? Ask to see birth certificate?	215 Is (NAME) still alive?	216 IF DEAD: How old was (NAME) when he/she died? RECORD DAYS IF LESS THAN ONE MONTH, MONTHS IF LESS THAN TWO YEARS, OR YEARS.	217 IF ALIVE: How old was (NAME) at his/her last birthday? RECORD AGE IN COMPLETED YEARS.	218 IF ALIVE: Is he/she living with you?
01	BOY ..... 1 GIRL 2	MONTH YEAR SELF REPORTED -1 FROM DOCUMENT -2	YES ..... 1 (SKIP TO 217) NO 2	DAYS 1 MONTHS 2 YEARS 3 GO TO NEXT BIRTH	REPORTED AGE CORRECTED AGE	YES ..... 1 NO 2
02	BOY ..... 1 GIRL 2	MONTH YEAR SELF REPORTED -1 FROM DOCUMENT -2	YES ..... 1 (SKIP TO 217) NO 2	DAYS 1 MONTHS 2 YEARS 3 GO TO NEXT BIRTH	REPORTED AGE CORRECTED AGE	YES ..... 1 NO 2
03	BOY ..... 1 GIRL 2	MONTH YEAR SELF REPORTED -1 FROM DOCUMENT -2	YES ..... 1 (SKIP TO 217) NO 2	DAYS 1 MONTHS 2 YEARS 3 GO TO NEXT BIRTH	REPORTED AGE CORRECTED AGE	YES ..... 1 NO 2
04	BOY ..... 1 GIRL 2	MONTH YEAR SELF REPORTED -1 FROM DOCUMENT -2	YES ..... 1 (SKIP TO 217) NO 2	DAYS 1 MONTHS 2 YEARS 3 GO TO NEXT BIRTH	REPORTED AGE CORRECTED AGE	YES ..... 1 NO 2
05	BOY ..... 1 GIRL 2	MONTH YEAR SELF REPORTED -1 FROM DOCUMENT -2	YES ..... 1 (SKIP TO 217) NO 2	DAYS 1 MONTHS 2 YEARS 3 GO TO NEXT BIRTH	REPORTED AGE CORRECTED AGE	YES ..... 1 NO 2
06	BOY ..... 1 GIRL 2	MONTH YEAR SELF REPORTED -1 FROM DOCUMENT -2	YES ..... 1 (SKIP TO 217) NO 2	DAYS 1 MONTHS 2 YEARS 3 GO TO NEXT BIRTH	REPORTED AGE CORRECTED AGE	YES ..... 1 NO 2
07	BOY ..... 1 GIRL 2	MONTH YEAR SELF REPORTED -1 FROM DOCUMENT -2	YES ..... 1 (SKIP TO 217) NO 2	DAYS 1 MONTHS 2 YEARS 3 GO TO NEXT BIRTH	REPORTED AGE CORRECTED AGE	YES ..... 1 NO 2
08	BOY ..... 1 GIRL 2	MONTH YEAR SELF REPORTED -1 FROM DOCUMENT -2	YES ..... 1 (SKIP TO 217) NO 2	DAYS 1 MONTHS 2 YEARS 3 GO TO NEXT BIRTH	REPORTED AGE CORRECTED AGE	YES ..... 1 NO 2
09	BOY ..... 1 GIRL 2	MONTH YEAR SELF REPORTED -1 FROM DOCUMENT -2	YES ..... 1 (SKIP TO 217) NO 2	DAYS 1 MONTHS 2 YEARS 3 GO TO NEXT BIRTH	REPORTED AGE CORRECTED AGE	YES ..... 1 NO 2
10	BOY ..... 1 GIRL 2	MONTH YEAR SELF REPORTED -1 FROM DOCUMENT -2	YES ..... 1 (SKIP TO 217) NO 2	DAYS 1 MONTHS 2 YEARS 3 GO TO NEXT BIRTH	REPORTED AGE CORRECTED AGE	YES ..... 1 NO 2
11	BOY ..... 1 GIRL 2	MONTH YEAR SELF REPORTED -1 FROM DOCUMENT -2	YES ..... 1 (SKIP TO 217) NO 2	DAYS 1 MONTHS 2 YEARS 3 GO TO NEXT BIRTH	REPORTED AGE CORRECTED AGE	YES ..... 1 NO 2
12	BOY ..... 1 GIRL 2	MONTH YEAR SELF REPORTED -1 FROM DOCUMENT -2	YES ..... 1 (SKIP TO 217) NO 2	DAYS 1 MONTHS 2 YEARS 3 GO TO NEXT BIRTH	REPORTED AGE CORRECTED AGE	YES ..... 1 NO 2

219 COMPARE 208 WITH NUMBER OF BIRTHS IN HISTORY ABOVE AND MARK:

NUMBERS ARE THE SAME ☐ NUMBERS ARE DIFFERENT ☐

(PROBE AND RECONCILE)

*218A Ask only about those 6 years old and older : Has (Name) entered school yet?	*218B Is (Name) still in school or has (Name) finished school?	*218C What level is (Name) studying/finished?	For only those still in school : *218D To what level of schooling would you like to send (Name)? *219E To what level of schooling do you think you can afford to send (Name)? (Probe)
YES .... 1 → NO .... 2 ↓	IN SCHOOL ...... 1 FINISHED 2	GRADE	*218D GRADE ..... *218E GRADE .....
YES .... 1 → NO .... 2 ↓	IN SCHOOL ...... 1 FINISHED 2	GRADE	*218D GRADE ..... *218E GRADE .....
YES .... 1 → NO .... 2 ↓	IN SCHOOL ...... 1 FINISHED 2	GRADE	*218D GRADE ..... *218E GRADE .....
YES .... 1 → NO .... 2 ↓	IN SCHOOL ...... 1 FINISHED 2	GRADE	*218D GRADE ..... *218E GRADE .....
YES .... 1 → NO .... 2 ↓	IN SCHOOL ...... 1 FINISHED 2	GRADE	*218D GRADE ..... *218E GRADE .....
YES .... 1 → NO .... 2 ↓	IN SCHOOL ...... 1 FINISHED 2	GRADE	*218D GRADE ..... *218E GRADE .....
YES .... 1 → NO .... 2 ↓	IN SCHOOL ...... 1 FINISHED 2	GRADE	*218D GRADE ..... *218E GRADE .....
YES .... 1 → NO .... 2 ↓	IN SCHOOL ...... 1 FINISHED 2	GRADE	*218D GRADE ..... *218E GRADE .....
YES .... 1 → NO .... 2 ↓	IN SCHOOL ...... 1 FINISHED 2	GRADE	*218D GRADE ..... *218E GRADE .....
YES .... 1 → NO .... 2 ↓	IN SCHOOL ...... 1 FINISHED 2	GRADE	*218D GRADE ..... *218E GRADE .....
YES .... 1 → NO .... 2 ↓	IN SCHOOL ...... 1 FINISHED 2	GRADE	*218D GRADE ..... *218E GRADE .....
YES .... 1 → NO .... 2 ↓	IN SCHOOL ...... 1 FINISHED 2	GRADE	*218D GRADE ..... *218E GRADE .....

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP TO
220	Was your last child born by caesarean section?	YES ---------- 1 NO ---------- 2 DK ---------- 8	
221	Are you pregnant now?	YES ---------- 1 NO ---------- 2 UNSURE ---------- 3	 →226 →226
222	For how many months have you been pregnant?	MONTHS ---------- [ ][ ]	
223	Since you have been pregnant, have you been given any injection to prevent the baby from getting tetanus, that is, convulsions after birth?	YES ---------- 1 NO ---------- 2 DK ---------- 8	
224	Did you see anyone for a check on this pregnancy was normal?	YES ---------- 1 NO ---------- 2	 →227
225	Whom did you see? PROBE FOR TYPE OF PERSON AND RECORD MOST QUALIFIED.	DOCTOR ---------- 1 TRAINED NURSE/MIDWIFE -- 2 TRADITIONAL BIRTH ATTENDANT ---------- 3 OTHER ______ 4 (SPECIFY)	→227
226	How long ago did your last menstrual period start?	DAYS AGO ---------- 1 [ ][ ] WEEKS AGO ---------- 2 [ ][ ] MONTHS AGO ---------- 3 [ ][ ] MENOPAUSE (YEARS AGO) 4 [ ][ ] BEFORE LAST BIRTH ---- 995 NEVER MENSTRUATED ---- 996	
227	When during her monthly cycle do you think a woman has the greatest chance of becoming pregnant? PROBE: What are the days or duration during the cycle when a woman has the highest change of becoming pregnant if she has intercourse	DURING HER PERIOD ------ 1 RIGHT AFTER HER PERIOD HAS ENDED ------ 2 IN THE MIDDLE OF THE CYCLE ---------- 3 JUST BEFORE HER PERIOD BEGINS ---------- 4 AT ANY TIME ---------- 5 OTHER ______ 6 (SPECIFY) DK ---------- 8	
228	PRESENCE OF OTHERS AT THIS POINT:	YES NO CHILDREN UNDER 10 - 1 2 HUSBAND ---------- 1 2 OTHER MALES ---------- 1 2 OTHER FEMALES ------ 1 2	

SECTION 3: CONTRACEPTION

301 Now I would like to talk about a different topic. There are various ways or methods that a couple can use to delay or avoid a pregnancy. Which of these ways or methods have you heard about? CIRCLE CODE 1 IN 302 FOR EACH METHOD MENTIONED SPONTANEOUSLY. THEN PROCEED DOWN THE COLUMN, READING THE NAME AND DESCRIPTION OF EACH METHOD NOT MENTIONED SPONTANEOUSLY. CIRCLE CODE 2 IF METHOD IS RECOGNIZED, AND CODE 3 IF NOT RECOGNIZED. THEN, FOR EACH METHOD WITH CODE 1 OR 2 CIRCLED IN 302, ASK 303-305 BEFORE PROCEEDING TO THE NEXT METHOD.

	302 Have you ever heard of (METHOD)? READ DESCRIPTION.	303 Have you ever used (METHOD)?	304 Where would you go to obtain (METHOD) if you wanted to use it? (CODES BELOW)	305 In your opinion, what is the main problem, if any, with using (METHOD)? (CODES BELOW)
01 PILL Women can take a pill every day.	YES/SPONT........1 YES/PROBED.......2 NO.............3	YES.....1 NO......2	OTHER ______	OTHER ______
02 IUD Women can have a loop or coil placed inside them by a doctor or a nurse.	YES/SPONT........1 YES/PROBED.......2 NO.............3	YES.....1 NO......2	OTHER ______	OTHER ______
03 INJECTIONS Women can have an injection by a doctor or nurse which stops them from becoming pregnant for several months.	YES/SPONT........1 YES/PROBED.......2 NO.............3	YES.....1 NO......2	OTHER ______	OTHER ______
04 DIAPHRAGM/FOAM/JELLY Women can place a sponge, suppository, diaphragm, jelly or cream inside them before intercourse.	YES/SPONT........1 YES/PROBED.......2 NO.............3	YES.....1 NO......2	OTHER ______	OTHER ______
05 CONDOM Men can use a rubber sheath during sexual intercourse.	YES/SPONT........1 YES/PROBED.......2 NO.............3	YES.....1 NO......2	OTHER ______	OTHER ______
06 FEMALE STERILIZATION Women can have an operation to avoid having any more children.	YES/SPONT........1 YES/PROBED.......2 NO.............3	YES.....1 NO......2	OTHER ______	OTHER ______
07 MALE STERILIZATION Men can have an operation to avoid having any more children.	YES/SPONT........1 YES/PROBED.......2 NO.............3	YES.....1 NO......2	OTHER ______	OTHER ______
08 PERIODIC ABSTINENCE Couples can avoid having sexual intercourse on certain days of the month when the woman is more likely to become pregnant.	YES/SPONT........1 YES/PROBED.......2 NO.............3	YES.....1 NO......2	Where would you go to obtain advice on periodic abstinence? OTHER ______	OTHER ______
09 WITHDRAWAL Men can be careful and pull out before climax.	YES/SPONT........1 YES/PROBED.......2 NO.............3	YES.....1 NO......2		OTHER ______
10 ANY OTHER METHODS? Have you heard of any other ways or methods that women or men can use to avoid pregnancy? ______ (SPECIFY)	YES/SPONT........1 NO.............3	YES......1 NO.......2	OTHER ______	OTHER ______

CODES FOR 304	CODES FOR 305
01 GOVERNMENT HOSPITAL 02 GOVERNMENT HEALTH CNTR 03 FAMILY PLANNING CLINIC 04 MOBILE CLINIC 05 FIELD WORKER 06 READING 07 PRIVATE HOSP OR CLINIC 08 PHARMACY 09 SHOP 10 MCH CENTER 11 FRIENDS/RELATIVES 12 OTHER (SPECIFY) 13 NOWHERE 98 DK	01 NO PROBLEM 02 NOT EFFECTIVE 03 HUSBAND DISAPPROVES 04 HEALTH CONCERNS 05 ACCESS/AVAILABILITY 06 COSTS TOO MUCH 07 INCONVENIENT TO USE 08 OTHER (SPECIFY) 98 DK

306 CHECK 303: NOT A SINGLE "YES" (NEVER USED) ☐ AT LEAST ONE "YES" (EVER USED) ☐ → SKIP TO 309

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP TO
307	Have you ever used anything or tried in any way to delay or avoid getting pregnant?	YES ---------- 1 NO ---------- 2	 →339
308	What have you used or done? CORRECT 302-303 AND OBTAIN INFORMATION FOR 304-306 AS NECESSARY.		
309	CHECK 303: EVER USED PERIODIC ABSTINENCE ☐ ↓ NEVER USED PERIODIC ABSTINENCE ☐ (SKIP TO 311)		
310	The last time you used periodic abstinence, how did you determine on which days you had to abstain?	BASED ON CALENDAR ------ 1 BASED ON BODY TEMPERATURE ---------- 2 BASED ON CERVICAL MUCUS (BILLINGS) METHOD ----- 3 BASED ON BODY TEMPERATURE AND MUCUS ---------- 4 OTHER ---------- 5 (SPECIFY)	
311	How many living children, if any, did you have when you first did something or used a method to avoid getting pregnant? IF NONE ENTER 00.	NO CHILDREN ---------- 00 NUMBER OF CHILDREN-----☐☐ SPECIFIED FIRST METHOD USED ----------☐☐	 →312
*311A	After marriage but before the first pregnancy did you use any contraception?	YES ---------- 1 NO ---------- 2	
*311B	How long after marriage did you first start using contraception?	MONTHS ---------- ☐☐ YEARS ---------- ☐☐ LESS THAN 1 MONTH ------ 96	
312	CHECK 221: NOT PREGNANT OR NOT SURE ☐ ↓ PREGNANT ☐ (SKIP TO 318)		

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP TO
313	Are you or your husband currently using contraception?	YES ---------------------- 1 NO ----------------------- 2	 →318
314	Which method are you or your husband using?	PILL ------------------- 01 IUD -------------------- 02 INJECTIONS ------------- 03 DIAPHRAGM/FOAM/JELLY --- 04 CONDOM ----------------- 05 FEMALE STERILIZATION --- 06 MALE STERILIZATION ----- 07 PERIODIC ABSTINENCE ---- 08 WITHDRAWAL ------------- 09 OTHER(SPECIFY) --------- 10 NORPLANT --------------- 11	 →319 →317 →318 → 319
315	Please show me the package of pills you are using. (RECORD NAME OF BRAND).	BRAND NAME --------------- ☐☐ NOT ABLE TO SHOW -------- 98	
316	How much did your current packet (cycle) of pills cost you?	COST --------------- ☐☐ FREE ------------------- 96 DK --------------------- 98	
*316A	During the last month, did you forget to take a pill?	YES -------------------- 1 NO --------------------- 2	 →319
*316B	How many times did you forget?	NUMBER ---------------- ☐	→319
317	In what month and year did you (he) have the operation?	MONTH -------------- ☐☐ YEAR --------------- ☐☐	 →319A
318	Have you obtained a method (or advice about how) to avoid pregnancy from a hospital, a health center, a clinic, a doctor, or a fieldworker in the last twelve months?	YES -------------------- 1 NO --------------------- 2	 →322

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP TO
319 319A	Where did you obtain (advice for) (METHOD) the last time? Where did the sterilization take place?	GOVERNMENT HOSPITAL --- 01 GVNT HEALTH CENTER ---- 02 F.P. CLINIC ---------- 03 MOBILE CLINIC --------- 04 FIELDWORKER ---------- 05 READING -------------- 06 PVT HOSPITAL OR CLINIC- 07 PHARMACY ------------- 08 SHOP ----------------- 09 MCH CENTER ----------- 10 FRIENDS/RELATIVES ----- 11 OTHER(SPECIFY) -------- 12 NO WHERE ------------- 13 DK ------------------- 98	08–98 →322
320	Was there anything you (particularly) disliked about the services you received there? IF YES: What?*	WAIT TOO LONG --------- 1 DISCOURTEOUS ---------- 2 EXPENSIVE ------------ 3 METHOD UNAVAILABLE ---- 4 OTHER(SPECIFY) ------- 5 NO COMPLAINTS --------- 6	
322	CHECK 313, 314: HE/SHE STERILIZED ☐ (SKIP TO 324) CURRENTLY USING ANOTHER METHOD ☐ ↓	NOT CURRENTLY USING ☐ (SKIP TO 333)	
323	For how long have you been using (CURRENT METHOD) continuously?	MONTHS ------------ ☐☐ YEARS ------------- ☐☐	
324	Have you experienced any problems from using (CURRENT METHOD)?	YES ------------------ 1 NO ------------------- 2	2 →326
325	What is the main problem you experienced?	METHOD FAILED --------- 01 PARTNER DISAPPROVES --- 02 HEALTH CONCERNS ------- 03 ACCESS/AVAILABILITY --- 04 COST TOO MUCH --------- 05 INCONVENIENT TO USE --- 06 OTHER ______ -- 07 (SPECIFY) DK ------------------- 98	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP TO
326	At any time during the same month, do you regularly use any other method than (CURRENT METHOD)?	YES ------------------ 1 NO ------------------- 2	 →328
327	Which method is that? CHECK 302-325 AND CORRECT AS NECESSARY.	PILL ----------------- 01 IUD ------------------ 02 INJECTIONS ------------ 03 DIAPHRAGM/FOAM/JELLY -- 04 CONDOM ---------------- 05 PERIODIC ABSTINENCE --- 08 WITHDRAWAL ------------ 09 OTHER (SPECIFY) ------- 10 NORPLANT -------------- 11 CONDOM+PERIOD --------- 21 CONDOM+WITHDRAWAL ----- 22 PERIOD+WITHDRAWAL ----- 23 CONDOM+PERIOD+WITHDRAWAL 24	
328	Have you ever used any other method or done anything else (since your last birth) before (CURRENT METHOD) to avoid getting pregnant?	YES (HAS PREVIOUS LIVE BIRTH) --------------- 1 YES (NO PREVIOUS LIVE BIRTH) --------------- 2 NO (HAS PREVIOUS LIVE BIRTH) --------------- 3 NO (NO PREVIOUS LIVE BIRTH) --------------- 4	 →329 →328B →342
*328A	What is the first method you used after your most recent birth?	PILL ----------------- 01 IUD ------------------ 02 INJECTION ------------- 03 DIAPHRAGM/FOAM/JELLY -- 04 CONDOM ---------------- 05 PERIODIC ABSTINENCE --- 08 WITHDRAWAL ------------ 09 OTHER (SPECIFY) ------- 10 NORPLANT -------------- 11 CONDOM+PERIOD --------- 21 CONDOM+WITHDRAWAL ----- 22 PERIOD+WITHDRAWAL ----- 23 CONDOM+PERIOD+WITHDRAWAL 24	
*328B	How long after your last birth did you start using METHOD? (Specify method in 314 or 328A, whichever is applicable)	LT ONE WEEK ----------- 96 WEEKS --------------- [ ][ ] MONTHS -------------- [ ][ ] YEARS --------------- [ ][ ]	→328E
*328C	Before or after menses returned? Did you start METHOD (Specify method in 314 or 328A, whichever is applicable)	BEFORE ---------------- 1 AFTER ----------------- 2	→328E

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP TO
*328D	How long after menses returned did you start using METHOD? (Specify method in 314 or 328A, whichever is applicable)	LT ONE WEEK ---------- 96 WEEKS ------------ [ ][ ] MONTHS ------------ [ ][ ] YEARS ------------ [ ][ ]	
*328E	CHECK 328 Use more than one method? YES [ ] NO [ ] (SKIP TO 342)		
*328F	In what month and year did you start using (FIRST METHOD) (the last time)? (Mention method in 328A)	MONTH ------------ [ ][ ] YEAR ------------ [ ][ ]	
*328G	For how long had you been using (FIRST METHOD) before you stopped using it (last time)?	MONTHS ------------ [ ][ ] YEARS ------------ [ ][ ]	
*328H	What was the main reason you stopped using (FIRST METHOD) then?	METHOD FAILED --------- 02 INFREQUENT SEX -------- 03 PARTNER DISAPPROVED --- 04 HEALTH CONCERNS ------- 05 ACCESS/AVAILABILITY --- 06 COST TOO MUCH --------- 07 FATALISTIC ----------- 08 INCONVENIENT TO USE --- 09 OTHER ________ -- 10 (SPECIFY) DK ------------------ 98	
*328I	Did you use any other method between the time you stopped using this first method and when you started using your current method?	YES ---------------- 1 No ---------------- 2	2 → 342
329	Which method did you use before (CURRENT METHOD)?	PILL --------------- 01 IUD ---------------- 02 INJECTIONS ---------- 03 DIAPHRAGM/FOAM/JELLY -- 04 CONDOM -------------- 05 MALE STERILIZATION ---- 07 PERIODIC ABSTINENCE --- 08 WITHDRAWAL ---------- 09 OTHER (SPECIFY) ------ 10 NORPLANT ------------ 11 CONDOM+PERIOD -------- 21 CONDOM+WITHDRAWAL ----- 22 PERIOD+WITHDRAWAL ----- 23 CONDOM+PERIOD+WITHDRAWAL 24	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP TO
330	In what month and year did you start using (METHOD BEFORE CURRENT) (the last time)?	MONTH ---------- [ ][ ] YEAR ---------- [ ][ ]	
331	For how long had you been using (METHOD BEFORE CURRENT) before you stopped using it (last time)?	MONTHS ---------- [ ][ ] YEARS ---------- [ ][ ]	
332	What was the main reason you stopped using (METHOD BEFORE CURRENT) then?	METHOD FAILED -------- 02 INFREQUENT SEX -------- 03 PARTNER DISAPPROVED --- 04 HEALTH CONCERNS -------- 05 ACCESS/AVAILABILITY --- 06 COST TOO MUCH -------- 07 FATALISTIC ---------- 08 INCONVENIENT TO USE --- 09 OTHER ______ - 10 (SPECIFY) DK ---------------- 98	→342
333	CHECK 208: ANY BIRTHS? YES [ ] ↓ NO [ ] (SKIP TO 335)		
334	Since your last birth have you done anything or used any method to avoid getting pregnant?	YES ---------------- 1 NO ---------------- 2	 →339
*334A	What was the first method you used since your last birth?	PILL ---------------- 01 IUD ---------------- 02 INJECTIONS ------------ 03 DIAPHRAGM/FOAM/JELLY -- 04 CONDOM -------------- 05 PERIODIC ABSTINENCE --- 08 WITHDRAWAL ----------- 09 OTHER (SPECIFY) ------- 10 NORPLANT ------------ 11 CONDOM+PERIOD -------- 21 CONDOM+WITHDRAWAL ----- 22 PERIOD+WITHDRAWAL ----- 23 CONDOM+PERIOD+WITHDRAWAL 24	
*334B	How long after your last birth did you start using METHOD? (MENTION THE METHOD IN 334A)	MONTHS ---------- [ ][ ] YEARS ---------- [ ][ ] LESS THAN 1 MONTH -- 96	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP TO
*334C	Did you start using METHOD before your menses returned or did you wait until after menses returned? (MENTION METHOD IN 334A)	BEFORE ---------------- 1 AFTER ---------------- 2	→334E
*334D	How long after your first menses did you start using METHOD? (MENTION METHOD IN 334A)	LESS THAN 1 WEEK ------ 96 WEEKS -------------- [ ][ ] MONTHS ------------- [ ][ ] YEARS -------------- [ ][ ]	
*334E	Did you use any <u>other</u> method since your last Birth?	YES ------------------- 1 NO -------------------- 2	→336
335	Which was the last method you used?	PILL ------------------ 01 IUD ------------------- 02 INJECTIONS ------------ 03 DIAPHRAGM/FOAM/JELLY -- 04 CONDOM ---------------- 05 MALE STERILIZATION ---- 07 PERIODIC ABSTINENCE --- 08 WITHDRAWAL ------------ 09 OTHER (SPECIFY) -------- 10 NORPLANT -------------- 11 CONDOM+PERIOD --------- 21 CONDOM+WITHDRAWAL ----- 22 PERIOD+WITHDRAWAL ----- 23 CONDOM+PERIOD+WITHDRAWAL 24	
336	In what month and year did you start using that method (last time)? (MENTION METHOD IN 334A OR 335, WHICHEVER IS APPLICABLE)	MONTH -------------- [ ][ ] YEAR --------------- [ ][ ]	
337	For how long had you been using (LAST METHOD) before you stopped using it (last time?) (MENTION METHOD IN 334A OR 335, WHICHEVER IS APPLICABLE)	MONTHS ------------- [ ][ ] YEARS -------------- [ ][ ]	
338	What was the main reason you stopped using (LAST METHOD) then?* (MENTION METHOD IN 334A or 335, WHICHEVER IS APPLICABLE)	TO BECOME PREGNANT ----- 01 METHOD FAILED --------- 02 INFREQUENT SEX -------- 03 PARTNER DISAPPROVED --- 04 HEALTH CONCERNS ------- 05 ACCESS/AVAILABILITY --- 06 COST TOO MUCH --------- 07 FATALISTIC ------------ 08 INCONVENIENT TO USE --- 09 OTHER ______________ -- 10 (SPECIFY) DK -------------------- 98	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP TO
339	Do you intend to use a method to avoid pregnancy at any time in the future?	YES ---------------- 1 NO ------------------ 2 UNCERTAIN ---------- 3 DK ------------------ 8	2, 3, 8 →342
340	Which method would you prefer to use?	PILL ---------------- 01 IUD ------------------ 02 INJECTIONS ----------- 03 DIAPHRAGM/FOAM/JELLY --- 04 CONDOM --------------- 05 FEMALE STERILIZATION --- 06 MALE STERILIZATION ----- 07 PERIODIC ABSTINENCE ---- 08 WITHDRAWAL ----------- 09 OTHER (SPECIFY) ------- 10 NORPLANT ------------ 11 CONDOM+PERIOD -------- 21 CONDOM+WITHDRAWAL ----- 22 PERIOD+WITHDRAWAL ----- 23 CONDOM+PERIOD+WITHDRAWAL 24 UNSURE -------------- 30	
341	Do you intend to use (PREFERRED METHOD) in the next 12 months?	YES ---------------- 1 NO ------------------ 2 UNSURE -------------- 3 DK ------------------ 8	
342	In the last month, have you heard a message about family planning on the radio?	YES ---------------- 1 NO ------------------ 2	2 →344
343	Did you hear it once or more than once?	ONCE ---------------- 1 MORE THAN ONCE -------- 2	
344	Do you think it is acceptable or not acceptable for family planning information to be provided on radio or television?	ACCEPTABLE ----------- 1 NOT ACCEPTABLE -------- 2 DK ------------------ 8	
345	COUNTRY SPECIFIC QUESTIONS ON FAMILY PLANNING MESSAGES ON TELEVISION.		

346 CHECK 214, 221:
HAD LIVE BIRTH SINCE JAN. 1982 OR PREGNANT [ ]
NO LIVE BIRTH SINCE JAN. 1982 AND NOT PREGNANT OR NOT SURE [ ] (SKIP TO SECTION 5)

347 Now I would like to get some more information about (your pregnancy and) all the children you had in the last 5 years. CHECK WHETHER PREGNANT AND RECORD NAMES OF BIRTHS SINCE JAN. 1982. THEN ENTER EVER USE OF CONTRACEPTION.
ASK QUESTIONS ABOUT ALL BIRTHS.

	CURRENTLY PREGNANT	LAST BIRTH	NEXT-TO-LAST BIRTH	SECOND-FROM-LAST BIRTH	THIRD-FROM-LAST BIRTH
	YES [ ] NO [ ]	NAME________ ALIVE [ ] DEAD [ ]	NAME________ ALIVE [ ] DEAD [ ]	NAME________ ALIVE [ ] DEAD [ ]	NAME________ ALIVE [ ] DEAD [ ]
348 CHECK 306: EVER USED A METHOD [ ] (ASK 349-356 FOR EACH COLUMN) NEVER USED A METHOD [ ] (ASK 355 FOR EACH COLUMN)					
349 Before you became pregnant (with NAME) (but after PRECEDING BIRTH) (IF ANY) had you done anything or used any method to avoid getting pregnant, even for a short time?	YES........1 NO.........2 (SKIP TO 355)	YES........1 NO.........2 (SKIP TO 355)	YES........1 NO.........2 (SKIP TO 355)	YES........1 NO.........2 (SKIP TO 355)	YES........1 NO.........2 (SKIP TO 355)
350 Which was the last method you used then?	LAST PILL..........01 IUD...........02 INJECTIONS.....03 DIAPH/FOAM/JEL.04 CONDOM.........05 MALE STER......07 PERIODIC ABST..08 WITHDRAWAL.....09 OTHER..........10 (SPECIFY)	LAST PILL............01 IUD.............02 INJECTIONS.......03 DIAPH/FOAM/JEL...04 CONDOM...........05 MALE STER........07 PERIODIC ABST....08 WITHDRAWAL.......09 OTHER............10 (SPECIFY)	LAST PILL...........01 IUD............02 INJECTIONS......03 DIAPH/FOAM/JEL..04 CONDOM..........05 MALE STER.......07 PERIODIC ABST...08 WITHDRAWAL......09 OTHER...........10 (SPECIFY)	LAST PILL............01 IUD.............02 INJECTIONS......03 DIAPH/FOAM/JEL..04 CONDOM..........05 MALE STER.......07 PERIODIC ABST...08 WITHDRAWAL......09 OTHER...........10 (SPECIFY)	LAST PILL.............01 IUD..............02 INJECTIONS.......03 DIAPH/FOAM/JEL...04 CONDOM...........05 MALE STER........07 PERIODIC ABST....08 WITHDRAWAL.......09 OTHER............10 (SPECIFY)
351 Any method before that? RECORD CODE. IF NONE, ENTER '00'.	PRECEDING METHOD [ ][ ]	PRECEDING METHOD [ ][ ]	PRECEDING METHOD [ ][ ]	PRECEDING METHOD [ ][ ]	PRECEDING METHOD [ ][ ]
USE CODES IN 350 352 For how long had you used (LAST METHOD) that time?	MONTHS....[ ][ ] YEARS.....[ ][ ]	MONTHS.....[ ][ ] YEARS......[ ][ ]	MONTHS.....[ ][ ] YEARS......[ ][ ]	MONTHS.....[ ][ ] YEARS......[ ][ ]	MONTHS.....[ ][ ] YEARS......[ ][ ]
353 Did you become pregnant while you were using (LAST METHOD)?	YES..........1 (SKIP TO 356) NO...........2	YES...........1 (SKIP TO 356) NO............2	YES...........1 (SKIP TO 356) NO............2	YES...........1 (SKIP TO 356) NO............2	YES...........1 (SKIP TO 356) NO............2
354 What was the main reason you stopped using (LAST METHOD)?	TO GET PREGNANT.01 (GO TO NEXT COL) INFREQUENT SEX..03 PARTNER DISAPPROVED...04 HEALTH CONCERNS.05 ACCESS/ AVAILABILITY..06 COST TOO MUCH...07 FATALISTIC......08 INCONVEN TO USE.09 OTHER..........10 (SPECIFY) DK.............98	TO GET PREGNANT.01 (GO TO NEXT COL) INFREQUENT SEX..03 PARTNER DISAPPROVED...04 HEALTH CONCERNS.05 ACCESS/ AVAILABILITY..06 COST TOO MUCH...07 FATALISTIC......08 INCONVEN TO USE.09 OTHER...........10 (SPECIFY) DK.............98	TO GET PREGNANT.01 (GO TO NEXT COL) INFREQUENT SEX..03 PARTNER DISAPPROVED...04 HEALTH CONCERNS.05 ACCESS/ AVAILABILITY..06 COST TOO MUCH...07 FATALISTIC......08 INCONVEN TO USE.09 OTHER...........10 (SPECIFY) DK.............98	TO GET PREGNANT.01 (GO TO NEXT COL) INFREQUENT SEX..03 PARTNER DISAPPROVED...04 HEALTH CONCERNS.05 ACCESS/ AVAILABILITY..06 COST TOO MUCH...07 FATALISTIC......08 INCONVEN TO USE.09 OTHER...........10 (SPECIFY) DK.............98	TO GET PREGNANT..01 (GO TO 401) INFREQUENT SEX...03 PARTNER DISAPPROVED....04 HEALTH CONCERNS..05 ACCESS/ AVAILABILITY...06 COST TOO MUCH....07 FATALISTIC.......08 INCONVEN TO USE..09 OTHER............10 (SPECIFY) DK...............98
355 At the time you became pregnant (with NAME), did you want to have that child then, did you want to wait until later, or did you want no (more) children at all?	THEN.........1 LATER........2 NO MORE......3 (ALL GO TO NEXT COL)	THEN.........1 LATER........2 NO MORE......3 (ALL GO TO NEXT COL)	THEN.........1 LATER........2 NO MORE......3 (ALL GO TO NEXT COL)	THEN.........1 LATER........2 NO MORE......3 (ALL GO TO NEXT COL)	THEN.........1 LATER........2 NO MORE......3 (ALL GO TO 401)
356 Did you want to have that child but at a later time, or not have another child at all?	HAVE CHILD LATER.........1 NOT HAVE CHILD.2 (ALL GO TO NEXT COL)	HAVE CHILD LATER.........1 NOT HAVE CHILD.2 (ALL GO TO NEXT COL)	HAVE CHILD LATER.........1 NOT HAVE CHILD.2 (ALL GO TO NEXT COL)	HAVE CHILD LATER.........1 NOT HAVE CHILD.2 (ALL GO TO NEXT COL)	HAVE CHILD LATER.........1 NOT HAVE CHILD.2 (ALL GO TO 401)

401 CHECK 214:
ONE OR MORE LIVE BIRTHS SINCE JAN. 1982 [ ]
NO LIVE BIRTHS SINCE JAN. 1982 [ ] (SKIP TO SECTION 5)

402 ENTER NAME AND SURVIVAL STATUS OF EACH BIRTH SINCE JAN. 1982* IN TABLE. BEGIN WITH LAST BIRTH.
ASK QUESTIONS ABOUT ALL BIRTHS.

ORDER	[ ][ ]	[ ][ ]	[ ][ ]	[ ][ ]
	LAST BIRTH NAME____________ ALIVE [ ] DEAD [ ]	NEXT-TO-LAST BIRTH NAME____________ AVIVE [ ] DEAD [ ]	SECOND-FROM-LAST BIRTH NAME____________ ALIVE [ ] DEAD [ ]	THIRD-FROM-LAST BIRTH NAME____________ ALIVE [ ] DEAD [ ]
403 When you were pregnant with (NAME) were you given any injection to prevent the baby from getting tetanus, that is, convultion after birth?	YES............1 NO............2 DK............8	YES............1 NO............2 DK............8	YES............1 NO............2 DK............8	YES............1 NO............2 DK............8
404 When you were pregnant with (NAME), did you see anyone for a check on this pregnancy? IF YES: Whom did you see? PROBE FOR TYPE OF PERSON AND RECORD MOST QUALIFIED.	DOCTOR..........1 TRAINED NURSE/ MIDWIFE........2 TRADITIONAL BIRTH ATTENDANT......3 OTHER..........4 (SPECIFY) NO ONE.........5	DOCTOR..........1 TRAINED NURSE/ MIDWIFE........2 TRADITIONAL BIRTH ATTENDANT......3 OTHER..........4 (SPECIFY) NO ONE.........5	DOCTOR..........1 TRAINED NURSE/ MIDWIFE........2 TRADITIONAL BIRTH ATTENDANT......3 OTHER..........4 (SPECIFY) NO ONE.........5	DOCTOR..........1 TRAINED NURSE/ MIDWIFE........2 TRADITIONAL BIRTH ATTENDANT......3 OTHER..........4 (SPECIFY) NO ONE.........5
405 Who assisted with the delivery of (NAME)? PROBE FOR TYPE OF PERSON AND RECORD MOST QUALIFIED.	DOCTOR..........1 TRAINED NURSE/ MIDWIFE.........2 TRADITIONAL BIRTH ATTENDANT.......3 RELATIVE.........4 OTHER...........5 (SPECIFY) NO ONE..........6 HUSBAND OR MOTHER.7	DOCTOR..........1 TRAINED NURSE/ MIDWIFE.........2 TRADITIONAL BIRTH ATTENDANT.......3 RELATIVE.........4 OTHER...........5 (SPECIFY) NO ONE..........6 HUSBAND OR MOTHER.7	DOCTOR..........1 TRAINED NURSE/ MIDWIFE.........2 TRADITIONAL BIRTH ATTENDANT.......3 RELATIVE.........4 OTHER...........5 (SPECIFY) NO ONE..........6 HUSBAND OR MOTHER.7	DOCTOR..........1 TRAINED NURSE/ MIDWIFE.........2 TRADITIONAL BIRTH ATTENDANT.......3 RELATIVE.........4 OTHER...........5 (SPECIFY) NO ONE..........6 HUSBAND OR MOTHER.7
*405A Where did you deliver (NAME)?	GOVT HOSPITAL....1 PRIVATE HOSPITAL.2 HEALTH STATION...3 PRIVATE CLINIC...4 HOME............5 OTHER...........6 (SPECIFY)	GOVT HOSPITAL....1 PRIVATE HOSPITAL.2 HEALTH STATION...3 PRIVATE CLINIC...4 HOME............5 OTHER...........6 (SPECIFY)	GOVT HOSPITAL....1 PRIVATE HOSPITAL.2 HEALTH STATION...3 PRIVATE CLINIC...4 HOME............5 OTHER...........6 (SPECIFY)	GOVT HOSPITAL....1 PRIVATE HOSPITAL.2 HEALTH STATION...3 PRIVATE CLINIC...4 HOME............5 OTHER...........6 (SPECIFY)
406 Did you ever feed (NAME) at the breast?	YES............1 NO............2 (SKIP TO 409)	YES............1 NO............2 (SKIP TO 409)	YES............1 NO............2 (SKIP TO 409)	YES............1 NO............2 (SKIP TO 409)
407 CHECK ABOVE: Are you still breastfeeding (NAME)?	YES............1 (SKIP TO 409) NO............2 DEAD............3	/ / / / / / / / /	/ / / / / / / / /	/ / / / / / / / /
408 How many months did you breastfeed (NAME)?	MONTHS.....[ ][ ] UNTIL DEATH...96	MONTHS.....[ ][ ] UNTIL DEATH...96	MONTHS.....[ ][ ] UNTIL DEATH...96	MONTHS.....[ ][ ] UNTIL DEATH...96
409 How many months after the birth of(NAME) did your period return?	MONTHS.....[ ][ ] NOT RETURNED..96	MONTHS.....[ ][ ] NOT RETURNED..96 (ALL SKIP TO 411)	MONTHS.....[ ][ ] NOT RETURNED..96 (ALL SKIP TO 411)	MONTHS.....[ ][ ] NOT RETURNED..96 (ALL SKIP TO 411)
410 Have you resumed sexual relations since the birth of (NAME)?	YES (OR PREGN.).1 NO............2 (GO TO NEXT COL)	/ / / / / / / / /	/ / / / / / / / /	/ / / / / / / / /
411 How many months after the birth of (NAME) did you resume sexual relations?	[ ][ ] MONTHS (GO TO NEXT COL)	[ ][ ] MONTHS (GO TO NEXT COL)	[ ][ ] MONTHS (GO TO NEXT COL)	[ ][ ] MONTHS (GO TO NEXT COL)

412 CHECK 407 FOR LAST BIRTH:
LAST CHILD STILL BREASTFED [ ]
ALL OTHERS [ ] (SKIP TO 418)

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP TO
413	How many times did you breastfeed last night, between sundown and sunrise?	NUMBER OF TIMES..|__|__| CHILD SLEEPS AT BREAST...............96	
414	How many times did you breastfeed yesterday during the daylight hours?	NUMBER OF TIMES..|__|__| AS OFTEN AS CHILD WANTED.........96	
415	At any time yesterday or last night, was (NAME OF LAST CHILD) given any of the following: Plain water? Juice? Powdered milk? Cow's or goat's milk? Any other liquid? Any solid or mushy food?	YES NO PLAIN WATER.......1 2 JUICE.............1 2 POWDERED MILK.....1 2 COW'S/GOAT'S MILK.1 2 ANY OTHER LIQUID __________...1 2 (SPECIFY) ANY SOLID OR MUSHY FOOD............1 2	
416	CHECK 415: WAS GIVEN FOODS OR LIQUIDS |__| NO FOODS OR LIQUIDS GIVEN |__| (SKIP TO 418)		
417	Were any of these given in a bottle with a nipple?	YES...................1 NO....................2	

418 ENTER NAME AND SURVIVAL STATUS OF EACH BIRTH SINCE JAN.1982 BELOW BEGIN WITH THE LAST BIRTH. THE HEADING IN THE TABLE SHOULD BE EXACTLY THE SAME AS PREVIOUS TABLE. <u>ASK QUESTIONS ONLY FOR LIVING CHILDREN.</u>

ORDER	[ ][ ]	[ ][ ]	[ ][ ]	[ ][ ]
	LAST BIRTH NAME____________ ALIVE [ ] DEAD [ ] →	NEXT-TO-LAST BIRTH NAME____________ ALIVE [ ] DEAD [ ] →	SECOND-FROM-LAST BIRTH NAME____________ ALIVE [ ] DEAD [ ] →	THIRD-FROM-LAST BIRTH NAME____________ ALIVE [ ] DEAD [ ] → (GO TO 427)
419 Do you have a health card for (NAME)? IF YES: May I see it, please?	YES, SEEN........1 YES, NOT SEEN........2 (SKIP TO 421) NO CARD........3	YES, SEEN........1 YES, NOT SEEN........2 (SKIP TO 421) NO CARD........3	YES, SEEN........1 YES, NOT SEEN........2 (SKIP TO 421) NO CARD........3	YES, SEEN........1 YES, NOT SEEN........2 (SKIP TO 421) NO CARD........3
420 RECORD DATES OF IMMUNIZATIONS FROM HEALTH CARD.	MO DA MO YR BCG 0 [ ][ ] [ ][ ] [ ][ ] DPT1 0 [ ][ ] [ ][ ] [ ][ ] POLIO1 0 [ ][ ] [ ][ ] [ ][ ] DPT2 0 [ ][ ] [ ][ ] [ ][ ] POLIO2 0 [ ][ ] [ ][ ] [ ][ ] DPT3 0 [ ][ ] [ ][ ] [ ][ ] POLIO3 0 [ ][ ] [ ][ ] [ ][ ] MEASLES 0 [ ][ ] [ ][ ] [ ][ ] (SKIP TO 422)	MO DA MO YR BCG 0 [ ][ ] [ ][ ] [ ][ ] DPT1 0 [ ][ ] [ ][ ] [ ][ ] POLIO1 0 [ ][ ] [ ][ ] [ ][ ] DPT2 0 [ ][ ] [ ][ ] [ ][ ] POLIO2 0 [ ][ ] [ ][ ] [ ][ ] DPT3 0 [ ][ ] [ ][ ] [ ][ ] POLIO3 0 [ ][ ] [ ][ ] [ ][ ] MEASLES 0 [ ][ ] [ ][ ] [ ][ ] (SKIP TO 422)	MO DA MO YR BCG 0 [ ][ ] [ ][ ] [ ][ ] DPT1 0 [ ][ ] [ ][ ] [ ][ ] POLIO1 0 [ ][ ] [ ][ ] [ ][ ] DPT2 0 [ ][ ] [ ][ ] [ ][ ] POLIO2 0 [ ][ ] [ ][ ] [ ][ ] DPT3 0 [ ][ ] [ ][ ] [ ][ ] POLIO3 0 [ ][ ] [ ][ ] [ ][ ] MEASLES 0 [ ][ ] [ ][ ] [ ][ ] (SKIP TO 422)	MO DA MO YR BCG 0 [ ][ ] [ ][ ] [ ][ ] DPT1 0 [ ][ ] [ ][ ] [ ][ ] POLIO1 0 [ ][ ] [ ][ ] [ ][ ] DPT2 0 [ ][ ] [ ][ ] [ ][ ] POLIO2 0 [ ][ ] [ ][ ] [ ][ ] DPT3 0 [ ][ ] [ ][ ] [ ][ ] POLIO3 0 [ ][ ] [ ][ ] [ ][ ] MEASLES 0 [ ][ ] [ ][ ] [ ][ ] (SKIP TO 422)
421 Has (NAME) ever had a vaccination to prevent him/her from getting diseases?	YES........1 NO........2 DK........8	YES........1 NO........2 DK........8	YES........1 NO........2 DK........8	YES........1 NO........2 DK........8
422 Has (NAME) had diarrhea in the last 24 hours?	YES........1 (SKIP TO 424) NO........2 DK........8	YES........1 (SKIP TO 424) NO........2 DK........8	YES........1 (SKIP TO 424) NO........2 DK........8	YES........1 (SKIP TO 424) NO........2 DK........8
423 Has (NAME) had diarrhea in the two last weeks?	YES........1 NO........2 (GO TO NEXT COL OR GO TO 428) DK........8	YES........1 NO........2 (GO TO NEXT COL OR GO TO 427) DK........8	YES........1 NO........2 (GO TO NEXT COL OR GO TO 427) DK........8	YES........1 NO........2 (GO TO NEXT COL OR GO TO 427) DK........8
424 Did you take (NAME) to a private doctor or to a hospital or clinic to treat the diarrhea (the last time)? IF YES: Where did you take him/her?	DOCTOR (HEALTH CENTER)........1 HOSPITAL/CLINIC........2 NO........3	DOCTOR (HEALTH CENTER)........1 HOSPITAL/CLINIC........2 NO........3	DOCTOR (HEALTH CENTER)........1 HOSPITAL/CLINIC........2 NO........3	DOCTOR (HEALTH CENTER)........1 HOSPITAL/CLINIC........2 NO........3
425 Was (NAME) given an oral rehydration packet to treat the diarrhea (the last time)?	YES........1 NO........2 DK........8	YES........1 NO........2 DK........8	YES........1 NO........2 DK........8	YES........1 NO........2 DK........8
426 Was there anything (else) you or somebody did to treat the diarrhea? IF YES: What was done? CIRCLE CODE 1 FOR ALL MENTIONED.	HOME SOLUTION OF SUGAR, SALT AND WATER........1 TABLETS, INJECTIONS, SYRUPS........1 INCREASE FLUIDS........1 DECREASE FLUIDS........1 INCREASE FOODS........1 DECREASE FOODS........1 OTHER........1 (SPECIFY) NOTHING........1 (ALL GO TO NEXT COL)	HOME SOLUTION OF SUGAR, SALT AND WATER........1 TABLETS, INJECTIONS, SYRUPS........1 INCREASE FLUIDS........1 DECREASE FLUIDS........1 INCREASE FOODS........1 DECREASE FOODS........1 OTHER........1 (SPECIFY) NOTHING........1 (ALL GO TO NEXT COL)	HOME SOLUTION OF SUGAR, SALT AND WATER........1 TABLETS, INJECTIONS, SYRUPS........1 INCREASE FLUIDS........1 DECREASE FLUIDS........1 INCREASE FOODS........1 DECREASE FOODS........1 OTHER........1 (SPECIFY) NOTHING........1 (ALL GO TO NEXT COL)	HOME SOLUTION OF SUGAR, SALT AND WATER........1 TABLETS, INJECTIONS, SYRUPS........1 INCREASE FLUIDS........1 DECREASE FLUIDS........1 INCREASE FOODS........1 DECREASE FOODS........1 OTHER........1 (SPECIFY) NOTHING........1 (ALL GO TO 427)

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP TO
427	CHECK 425: ORAL REHYDRATION: MENTIONED FOR ANY BIRTH [ ] (SKIP TO 502) NOT MENTIONED [ ] ↓		
428	Have you ever heard of a special product called (LOCAL NAME) you can get for the treatment of diarrhea?	YES........1 NO........2	

SECTION 5. MARRIAGE

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP TO
502	Are you now married, or living with a man, or are you widowed, divorced or not now living together?	MARRIED AND HUSBAND PRESENT ---------- 1 MARRIED, HUSBAND (WORKING ELSEWHERE 1 OR MORE MONTHS)---------- 2 WIDOWED ---------- 3 DIVORCED ---------- 4 SEPARATED ---------- 5	
*502A	Did you officially register your marriage?	YES ---------- 1 NO ---------- 2	
*502B	Did you have any ceremony?	YES ---------- 1 NO ---------- 2	
503	Have you been married or lived with a man only once, or more than once?	ONCE ---------- 1 MORE THAN ONCE ---------- 2	
504	In what month and year did you start living with your (first) husband or partner?	MONTH ---------- ☐☐ DK MONTH ---------- 98 YEAR ---------- ☐☐ DK YEAR ---------- 33	
505	How old were you when you started living with him?	AGE ---------- ☐☐	☐☐
506	Are your father and motner still alive?	YES / NO / DK WOMAN'S MOTHER --- 1 / 2 / 8 WOMAN'S FATHER --- 1 / 2 / 8	
507	Are your (first) husband's/partner's father and mother still alive?	YES / NO / DK FIRST HUSBAND'S MOTHER ------- 1 / 2 / 8 FIRST HUSBAND'S FATHER ------- 1 / 2 / 8	

NO	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP TO
508	CHECK 506 AND 507: ALL ALIVE ☐ (SKIP TO 511) OTHER ☐		
509	Was (MENTION PARENTS NOT ALIVE NOW) alive at the time you began living together with your (first) husband or partner?	YES NO DK WOMAN'S MOTHER --- 1 2 8 WOMAN'S FATHER --- 1 2 8 FIRST HUSBAND'S MOTHER ---------- 1 2 8 FIRST HUSBAND'S FATHER ---------- 1 2 8	
510	CHECK 509: SOME PARENT ALIVE AT MARRIAGE ☐ NO PARENT ALIVE AT MARRIAGE ☐ (SKIP TO 514)		
511	At the time you began living together, did you and your (first) husband (or partner) live with any of these parents	YES ------------------- 1 NO -------------------- 2	 →513
*511A	Did you live with your own parents or with your husband's parents	OWN PARENTS ----------- 1 HUSBAND'S PARENTS ------ 2	
*511B	Did you live with them for at least six months	YES ------------------- 1 NO -------------------- 2 MARRIED LT 6 MONTHS STILL LIVE WITH PARENTS ------ 3	 →513
512	For about how many years did you live together with a parent at that time?	YEARS ------------- ☐☐ UP TO THE PRESENT ------ 96	
513	Are you now living either with your parents or your husband's parents? (Probe who depends on whom financially)	LIVE WITH OWN PARENT(S)- 1 LIVE WITH HUSBAND'S PARENT(S) ------------ 2 OWN PARENT(S) LIVE WITH THEM ---------------- 3 HUSBAND'S PARENT(S) LIVE WITH THEM -------- 4 NO -------------------- 5 LIVE WITH CURRENT HUSBAND'S PARENT --------------- 6 CURRENT HUSBAND'S PARENT LIVE WITH ------------ 7	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP TO
514	In how many localities have you lived for six months or more since you were first married (started living together) including this place?	NUMBER OF LOCALITIES --------- ▱▱	
516	How we need some details about your sexual activity in order to get a better understanding of contraception and fertility. How old were you when you first had sexual intercourse?	AGE ---------------- ▱▱ AT MARRIAGE ---------- 95	
*516A	CHECK 502 Currently married ▱ (↓) Other ▱ → go to 524		
517	Have you had sexual intercourse in the last four weeks?	YES -------------------- 1 NO --------------------- 2	 →519
518	How many times?	TIMES -------------- ▱▱ CAN NOT REMEMBER ---- 94 REFUSED ------------ 95	
519	When was the last time you had sexual intercourse?	DAYS AGO -------- 1 ▱▱ WEEKS AGO ------- 2 ▱▱ MONTHS AGO ------ 3 ▱▱ CAN NOT REMEMBER ---- 994 REFUSED ------------ 995 BEFORE LAST BIRTH --- 996	 →524
520	CHECK 221: PREGNANT ▱ (SKIP TO 524) NOT PREGNANT OR NOT SURE ▱ (↓)		
521	CHECK 313: USING ▱ (SKIP TO 524) NOT USING ▱ (↓)		
522	If you became pregnant in the next few weeks, would you feel <u>happy</u>, <u>unhappy</u>, or would it <u>not matter</u> very much?	HAPPY ----------------- 1 UNHAPPY --------------- 2 WOULD NOT MATTER ------- 3	→524

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP TO
523	What is the main reason that you are not using a method to avoid pregnancy?	LACK OF KNOWLEDGE OR LACK OF SOURCE -------- 01 OPPOSED TO FAMILY PLANNING -------------- 02 PARTNER DISAPPROVES ---- 03 OTHER PEOPLE DISAPPROVE ------------ 04 INFREQUENT SEX --------- 05 POSTPARTUM/BREAST-FEEDING -------------- 06 MENOPAUSAL/SUBFECUND -- 07 HEALTH CONCERNS -------- 08 ACCESS/AVAILABILITY --- 09 COSTS TOO MUCH --------- 10 FATALISTIC ------------- 11 RELIGION --------------- 12 INCONVENIENT TO USE --- 13 OTHER ______________ 14 (SPECIFY) DK --------------------- 98	
524	PRESENCE OF OTHERS AT THIS POINT:	YES NO CHILDREN UNDER 10 - 1 2 HUSBAND ------------ 1 2 OTHER MALES -------- 1 2 OTHER FAMALES ------ 1 2	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP TO
601	CHECK 314: HUSBAND OR WOMAN STERILIZED ☐ (SKIP TO 609) OTHER ☐ ↓		
602	CHECK 502: CURRENTLY MARRIED OR LIVING TOGETHER ☐ ↓ OTHER ☐ (SKIP TO 611)		
603	I now have some questions about the future. CHECK 221. NOT PREGNANT ☐ OR NOT SURE Would you like to have a (another) child or would you prefer not to have any (any more) children? PREGNANT: ☐: After the child you are expecting, would you like to have another child or would you prefer not to have any more children?	HAVE ANOTHER ------------ 1 NO MORE ---------------- 2 SAYS SHE CAN'T GET PREGNANT --------------- 6 UNDECIDED OR DK --------- 8	→606 →611 →605
604	Would you say that you definitely do not want to have (more) children, or are you not sure?	DEFINITELY NO MORE ----- 1 NOT SURE --------------- 2	→611 →611
605	Are you more inclined toward having a (another) child or toward not having a (another) child?	HAVE ANOTHER ----------- 1 NOT HAVE ANOTHER ------- 2 UNDECIDED -------------- 3	→607 →611 →611
606	Would you say that you definitely want a (another) child, or are you not sure?	DEFINITELY MORE -------- 1 NOT SURE --------------- 2	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP TO
607	How long would you like to wait from now before the birth of a (another) child?	TIME TO WAIT: MONTHS ---------- 1 [_][_] YEARS ----------- 2 [_][_] DK ------------------ 998	 →608A →608A
608	CHECK 215: How old would your youngest child be? IF NO LIVING CHILDREN, CIRCLE '96'	AGE OF YOUNGEST: YEAR -------------- [_][_] NO LIVING CHILDREN ---- 96 DK ------------------- 98	
*608A	How many additional children do you want to have?	NUMBER ------------ [_][_] DON'T KNOW ----------- 98	→611 →611
609	Do you regret that you (your husband) had the operation not to have any more children?	YES ------------------ 1 NO ------------------- 2	 →611
610	Would you like to have another child or would you prefer not to have any more children?	HAVE ANOTHER ---------- 1 NO MORE -------------- 2 UNDECIDED OR DK ------- 8	
611	CHECK 202 AND 204: NO LIVING CHILDREN [_]: If you could choose exactly the number of children to have in your whole life, how many would that be? HAS LIVING CHILDREN [_]: If you could go back to the time you did not have any children and could choose exactly the number of children to have in your whole life, how many would that be? RECORD SINGLE NUMBER, RANGE, OR OTHER ANSWER.	NUMBER ------------ [_][_] RANGE: BETWEEN ____ AND ____ OTHER ANSWER ____________ (SPECIFY)	
*612	Do you think that for a person noweday completing lower secondary school is sufficient or should they go beyond?	LOWER SECONDARY SUFFICIENT ---------- 1 BEYOND -------------- 2 DEPENDS ------------- 3	

SECTION 7. HUSBAND'S BACKGROUND AND WOMAN'S WORK

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP TO
702	Now I have some questions about your (most recent) husband/partner. Did your husband/partner ever attend school?	YES ------------------ 1 NO ------------------- 2	 →706
703	What is the highest grade he completed?	PRIMARY ----- 1 2 3 4 5 6 7 SECONDARY OLD SYSTEM ---- 1 2 3 4 5 NEW SYSTEM -- 1 2 3 4 5 6 TEACHING COLLEGE (SPECIFY) ------ 1 2 3 4 5+ VOCATIONAL (SPECIFY) ------ 1 2 3 4 5+ UNIVERSITY ------ 1 2 3 4 5+ OTHER (SPECIFY) __________	
704	(Check 703) What was the highest level of school he attended: primary, secondary, or higher?	PRIMARY --------------- 1 SECONDARY ------------- 2 HIGHER ---------------- 3 DON'T KNOW ------------ 8	 →706
705	CHECK 703: PRIMARY ☐ ↓ SECONDARY OR HIGHER ☐ (SKIP TO 707)		
706	Can (could) he read a letter or newspaper easily, with difficulty or not at all?	EASILY ---------------- 1 WITH DIFFICULTY ------- 2 NOT AT ALL ------------ 3	
707	What kind of work does (did) your husband/partner mainly do?	(SPECIFY IN DETAIL) ----------------- -----------------	
*707A	Does (Did) he have any other job besides the one you mentioned (in 707)	YES (SPECIFY) --------- 1 NO -------------------- 2	
708	CHECK 707: DOES (DID) NOT WORK IN AGRICULTURE ☐ ↓ WORKS (WORKED) IN AGRICULTURE ☐ (SKIP TO 710) DK ··· 9		

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP TO
709	Does (did) he earn a regular wage or salary?	YES ---------- 1 NO ---------- 2 DK ---------- 8	→712
710	Does (did) your husband/partner work <u>mainly</u> on his or family land, or on someone else's land?	OWN LAND ---------- 1 FAMILY LAND ---------- 2 SOMEONE ELSE'S LAND ---- 3	→712 →712
711	Does (did) he work mainly for money or does (did) he work for a share of the crops?	MONEY ---------- 1 A SHARE OF THE CROPS --- 2	
712	Before you married your (first) husband, did you yourself ever work regularly to earn money, other than on a farm or in a business run by your family?	YES ---------- 1 (SPECIFY) NO ---------- 2	→714
713	When you were earning money then, did you turn most of it over to your family or did you keep most of it yourself?	FAMILY ---------- 1 SELF ---------- 2 HALF ---------- 3	
714	Since you were first married, have you ever worked regularly to earn money, other than on a farm or in a business run by your family?	YES ---------- 1 (SPECIFY) NO ---------- 2	
717	Are you now working including work on a farm or in a business run by your family?	YES ---------- 1 NO ---------- 2	→ 718
*717A	CHECK 717 Work in Agriculture ☐ ↓ Not in Agriculture ☐ (Go to 717C) DK ···9		
*717B	Do you work mainly in your own land, Family land, or someone else's land?	OWN LAND ---------- 1 FAMILY LAND ---------- 2 SOMEONE ELSES LAND ----- 3	→717D

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP TO
*717C	Do you work for your own family, for others or are you self employed	FOR FAMILY ------------- 1 FOR OTHER -------------- 2 SELF EMPLOYED ---------- 3	
*717D	Are you paid in cash, in kind, or not paid at all?	IN CASH ---------------- 1 IN KIND ---------------- 2 NOT PAID --------------- 3	
718	RECORD THE TIME	HOUR --------------- [ ][ ] MINUTES ------------- [ ][ ]	

SECTION 8. HEIGHTS AND WEIGHTS

801	FOR EACH LIVING CHILD FROM 3 TO 36 MONTHS OLD, RECORD HEIGHT AND WEIGHT. RECORD NAMES STARTING WITH THE YOUNGEST.	
	ORDER NUMBER [ ][ ] NAME____________	MONTH OF BIRTH [ ][ ] YEAR OF BIRTH 19 [ ][ ] WEIGHT IN KILOGRAMS [ ][ ][ ]:[ ] HEIGHT IN CMS [ ][ ][ ][ ]:[ ]
	UNABLE TO RECORD	____________ REASON
	ORDER NUMBER [ ][ ] NAME____________	MONTH OF BIRTH [ ][ ] YEAR OF BIRTH 19 [ ][ ] WEIGHT IN KILOGRAMS [ ][ ][ ]:[ ] HEIGHT IN CMS [ ][ ][ ][ ]:[ ]
	UNABLE TO RECORD	____________ REASON
	ORDER NUMBER [ ][ ] NAME____________	MONTH OF BIRTH [ ][ ] YEAR OF BIRTH 19 [ ][ ] WEIGHT IN KILOGRAMS [ ][ ][ ]:[ ] HEIGHT IN CMS [ ][ ][ ][ ]:[ ]
	UNABLE TO RECORD	____________ REASON
*802	Record height and weight of the mother: Line number [ ][ ] Name ----------------	WEIGHT (IN KILOGRAM) [ ][ ]: [ ] HEIGHT (IN CMS) [ ][ ][ ]: [ ] FROM MEASUREMENT ---------- 1 FROM SELFREPORTING -------- 2

INTERVIEWER'S OBSERVATIONS
(To be filled in after completing interview.)

Person interviewed: ____________________

____

____

Specific questions: ____________________

____

____

Other aspects: ____________________

____

Name of interviewer: ____________________ Date: __________

____

SUPERVISOR'S OBSERVATIONS

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Supervisor: ____________________ Date: __________

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EDITOR'S OBSERVATIONS

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Editor: ____________________ Date: __________

2038S

D.2 The Community Questionnaire

Thailand Demographic and Health Survey
Institute of Population Studies, Chulalongkorn University

March - June, 1987

__Instructions:__ This questionnaire is to be conducted by the supervisor using group interview approach. There should be at least 3 respondents. The qualified respondents are the village leaders such as the village head, his assistant, village health volunteer, leader of the housewife group.

'Village' is defined by village number or the administrative boundary. A village may have one or more village name.

Time interview started .... hour .... minute
Name of the village .... Village number ..... Region.......
Amphoe .... Province ....
Date of interview: Day ..... Month .... Year .....

	Name of respondents	Position	Age (in years)	Duration of residence in the village (years)
1				
2				
3				
4				
5				

Interviewer's Name ....

No.	Questions	Coding categories	Skip to
1	Identification	.... (Name of locality) Cluster Number ······· ☐☐☐ Same village .... ☐	
2	Type of settlement	Clustered .... 1 Scattered .... 2 Some clustered some scattered 3	
2a	Is this village in the sanitary area?	Yes .... 1 No 2	
3	Total number of population of this village	<250 .... 1 250 - <500 .... 2 500 - <1,000 .... 3 1,000 - <2,000 .... 4 2,000 - <5,000 .... 5 5,000 - <10,000 .... 6 10,000 + ... 7	
4	Type of main access road	Paved asphalt or cement ... 1 Paved: laterite (good) .... 2 Laterite (bad) .... 3 Unpaved, clayed .... 4 No road 5	
5	Diatance in Km's to nearest provincial town .... specify	<10 .... 1 10 - < 20 .... 2 20 - < 30 .... 3 30 - < 50 .... 4 50 - <100 .... 5 100 + ... 6	

No.	Questions	Coding categories	Skip to
6	Type of transport commonly used to the nearest provincial town (circle all applicable)	Minibus .... 1 Bus .... 1 Taxi .... 1 Boat .... 1 Train .... 1 Motorcycle .... 1 None 1	
7	Does the village have a community based contraceptive distribution program?	Yes (year started) .... 1 No 2	 → 8
7A	What are the methods provided? and how much does each method cost?	Method Cost .... ☐☐ .... ☐☐ .... ☐☐	
8	Is there a village health volunteer (VHV) in the village? If no; Was the village visited by a VHV in the last year?	Yes in village (year started) .... 0 No, but was visited .... 1 No 2	→ 8b → 9
8a	How often (times per month?)	Times/month .... ☐	
8b	Does this VHV resupply pill or provide any contraceptive method?	Yes .... 1 No 2	 → 9
8c	What methods are provided and how much does each method cost?	Method Cost .... ☐☐ .... ☐☐ .... ☐☐	

No.	Questions	Coding categories	Skip to
9	During the past year was the village or the village nearby visited by a mobile medical (or family planning) clinic?	Yes .... 1 No .... 2 Visited village nearby 3	 →10
9a	How many times (last year)?	No. of times .... ☐	
9b	What method were provided and how much did each method cost? If only advice or suggestion was given, code 97 by cost.	Method Cost .... ☐☐ .... ☐☐ .... ☐☐	
10	Is there a traditional midwife in the village?	Yes .... 1 No 2	 →11
10a	Is this midwife trained in modern techniques?	Yes .... 1 No 2	
11	Is this village visited by a trained midwife?	Yes .... 1 No 2	
11a	How or where do most villagers get rid of the waste water (clothes washing dishwashing)?	Has a drainage pipe .... 1 On the ground .... 2 Under the floor .... 3 Other 4	
11b	How or where do most villagers dispose the garbage?	Bury in a hole .... 1 Burn .... 2 In the river or cannel .... 3 Sanitary or M.A. garbage collector .... 4 Other (specify) 5	

12. AVAILABILITY OF PUBLIC SERVICES NEAREST TO THE CLUSTER.

	(1)		(2)	(3)	(4)	(5)
	IN LOCALITY		DISTANCE IN KM'S [a]	MOST COMMON TRANSPORT [b]	TRAVEL TIME (one way plus waiting time) GET THERE (MINUTES)	COST OF TRANSPORT [a]
	YES	NO				
A. <u>EDUCATION</u>						
1 Primary school	1	2				
2 Secondary School	1	2				
3 Higher/Technical	1	2				
B. <u>GENERAL SERVICES</u>						
1 Post Office	1	2				
2 Weekly Market	1	2				
3 Cinema	1	2				

CODE: [a] 97 = 97 +

00 = Less than 1

[b]

Bus/Minibus 01
Boat 02
Walking 03
Cycling/Tricycle 04
Motorcycle, Tuktuk 05
Train 06
Bus/Minibus & Boat 12
Bus/Minibus & Motorcycle 15
Bus/Minibus & Train 16
Boat & Walking 23
Boat & Motorcycle 25

13. DETAILS ABOUT EACH OF THE HEALTH SERVICES OF DIFFERENT TYPE CLOSEST TO THE CLUSTER. (COLS 3 TO 10 ONLY FOR THOSE SERVICES WITHIN 30 KM'S OF THE CLUSTER.

	(1)	(2)	(3)	(4)
	IN LOCALITY?	DISTANCE FROM CLUSTER IN KM'S [a]	TYPE OF MOST COMMON TRANSPORT	TIME TO GET THERE [b]
A. HOSPITAL ________ (NAME)	YES ......1 NO ......2 → WHERE? ________ (LOCALITY)	__ __ IF: 30+ →	MOTORIZED .1 BOAT ......2 WALKING ...3 CYCLING ...4 MOTORCYCLE.5 OTHER 6	__ __ __ (MINUTES)
B. HEALTH CENTRE ________ (NAME)	YES ......1 NO ....2 → WHERE? NONE .....3 ________ (LOCALITY)	__ __ IF: 30+ →	MOTORIZED .1 BOAT .....2 WALKING ...3 CYCLING ...4 MOTORCYCLE.5 OTHER 6	__ __ __ (MINUTES)

CODES: [a] 97 = 97+ [b] 997 = 997+
98 = DK 998 = DK
00 = Less than 1 000 = Less than 1

(5)	(6)	(7)	(8)	(9)	(10)
NUMBER OF DOCTORS [a]	NUMBER OF NURSES [a]	DAYS OPEN	HOURS OPEN (NUMBER)	SERVICES AVAILABLE	YEAR IN WHICH SERVICE STARTED
		MONDAY 1		MCH 1	
		TUESDAY ...1		EMERGENCY .1	
		WEDNESDAY .1		GENERAL ...1	
		THURSDAY ..1		FAM. PLAN..1	
		FRIDAY 1		ORAL REHY-DRATION .1	
		SATURDAY ..1			
		SUNDAY 1			
		OTHER 1			
		MONDAY ...1		MCH 1	
		TUESDAY ...1		EMERGENCY .1	
		WEDNESDAY .1		GENERAL ...1	
		THURSDAY ..1		FAM. PLAN..1	
		FRIDAY 1		ORAL REHY-DRATION .1	
		SATURDAY ..1			
		SUNDAY 1			
		OTHER 1			

No.	Questions	Coding categories	Skip to
13c	Does this village have a private clinic?	Yes (specify number) ...... 1 No 0	1 → *13c.1
13c.1	Where is the nearest private clinic? Probe: How many?	Location .... Number .... [ ][ ]	
*13c.1	When was this clinic first operated?	Year .... [ ][ ] Number of ....years ago [ ][ ]	
13c.2	Distance to the clinic.	In village .... 00 Distance .... (km.) [ ][ ]	00 → 13c.9
13c.3	Most common transport to the clinic.	Bus/minibus .... 1 Boat .... 2 Walking .... 3 Cycling .... 4 Motorcycle .... 5 Other (specify) 6	
13c.4	Time travel (one way plus waiting time) to the clinic	.... hour(s) .... minute(s) [ ][ ][ ]	
13c.9	Is oral rehydration salt available at the clinic?	Yes .... 1 No .... 2 DK 8	2, 8 → 13D
13c.10	Do you know when ORS was first available at the clinic?	Year started .... [ ][ ] Number of ..... years ago [ ][ ] DK (Year started) .... 33 DK (Number of years ago)... 98	
13D	Does this village have a modern pharmacy?	Yes (specify number) ...... 1 No 0	1 → *13D.1
13D.1	Location of the nearest modern Pharmacy? Probe: How many	Location .... Number .... [ ][ ]	

No.	Questions	Coding categories	Skip to
*13D.1	When was the first modern pharmacy started?	Year .... /__/__/ Number of .....years ago /__/__/	
13D.2	Distance to the modern pharmacy.	In village .... 00 Distance ....km. /__/__/	00 → 13D.9
13D.3	Most common transport to the pharmacy.	Motorized .... 1 Boat .... 2 Walking .... 3 Cycling .... 4 Motorcycle .... 5 Other(specify) 6	
13D.4	Time travel (one way plus waiting time) to the pharmacy.	.... hour(s) .... minute(s) /__/__/__/	
13D.9	Is ORS available at the pharmacy?	Yes .... 1 No .... 2 DK 8	2, 8 → 14
13D.10	Do you know when ORS was first available at the pharmacy?	Year started .... /__/__/ Number of..... years ago /__/__/ DK (year started).......... 33 DK (Number of years ago) .. 98	

14. DETAILS ABOUT EACH OF THE FAMILY PLANNING SERVICES OF DIFFERENT TYPE CLOSEST TO THE CLUSTER. (COLS 3 TO 10 ONLY FOR THOSE SERVICES WITHIN 30 KM'S OF CLUSTER).

	(1) IN LOCALITY?	(2) DISTANCE FROM CLUSTER IN KM'S [a]	(3) TYPE OF MOST COMMON TRANSPORT	(4) TIME TO GET THERE [b]	(5) METHODS AVAILABLE
A. HOSPITAL ________ (NAME)	YES ......1 NO ......2 WHERE? ________ (LOCALITY)	/_/_/ IF: 30+	MOTORIZED .1 BOAT ......2 WALKING ...3 CYCLING ...4 MOTORCYCLE.5 OTHER 6	/_/_/_/ (MINUTES)	PILL ....1 IUD ....1 INJECTIONS..1 CONDOM .....1 FEM. STER...1 MALE STER...1 OTHER 1
B. HEALTH CENTRE ________ (NAME)	YES ......1 NO ......2 WHERE? NONE .....3 ________ (LOCALITY)	/_/_/ IF: 30+	MOTORIZED .1 BOAT ......2 WALKING ...3 CYCLING ...4 MOTORCYCLE.5 OTHER 6	/_/_/_/ (MINUTES)	PILL ....1 IUD ....1 INJECTIONS..1 CONDOM .....1 FEM.STER....1 MALE STER...1 OTHER 1

CODE: [a] 97 = 97+ [b] 997 = 997+
98 = DK 998 = DK
00 = Less than 1 000 = Less than 1

(6)	(7)	(8)	(9)	(10)	(11)
COST OF METHODS	YEAR METHOD FIRST AVAILABLE	NUMBER OF DOCTORS FOR FAM. PLAN. [a]	NUMBER OF NURSES FOR FAM. PLAN. [a]	DAYS OPEN FOR FAM. PLAN.	HOURS OPEN FOR FAM. PLANNING (NUMBER)
				MONDAY 1	
				TUESDAY ...1	
				WEDNESDAY .1	
				THURSDAY ..1	
				FRIDAY 1	
				SATURDAY ..1	
				SUNDAY 1	
				OTHER 1	
				MONDAY 1	
				TUESDAY ...1	
				WEDNESDAY .1	
				THURSDAY ..1	
				FRIDAY 1	
				SATURDAY ..1	
				SUNDAY 1	
				OTHER 1	

No.	Questions	Coding categories	Skip to
14c	Does this village have a clinic that also provides family planning methods?	Yes .... 1 (specify number) No 0	1 → *14c.1
14c.1	Location of the nearest clinic that provides family planning services. Probe: How many	Location .... Number .... /_/_/	
*14c.1	When was the clinic for family planning services first started?	Year .... /_/_/ Number of ......years ago /_/_/	
14c.2	Distance to the clinic.	In village .... 00 Distance .... km. /_/_/	00 → 14c.5
14c.3	Most common transport to the clinic.	Motorized .... 1 Boat .... 2 Walking .... 3 Cycling .... 4 Motorcycle .... 5 Other (specify) 6	
14c.4	Time travel (one way plus waiting time) to the clinic.	.... hour(s) .... minute(s) /_/_/_/	
14c.5	What methods are provided at the clinic? (Read out each method)	Yes No DK Pill .... 1 2 8 IUD .... 1 2 8 Injection .... 1 2 8 Condom .... 1 2 8 Sterilization .... 1 2 8 Vasectomy .... 1 2 8 Other .... 1 2 8 (specify)	

No.	Questions	Coding categories	Skip to
14E	Is there any pharmacy that sells contraceptive methods in the village?	Yes .... 1 (specify number) No 0	1 → *14E.1
14E.1	Location of the nearest pharmacy that sells contraceptive methods? Probe: How many	Location .... Number .... ☐☐	
*14E.1	When was the first pharmacy opened?	Year .... ☐☐ Number of ......Years ago ☐☐	
14E.2	Distance to the pharmacy.	In village .... 00 Distance .... km. ☐☐	00 → 14E.5
14E.3	Most common transport to the pharmacy.	Motorized .... 1 Boat .... 2 Walking .... 3 Cycling .... 4 Motorcycle .... 5 Other (specify) 6	
14E.4	Travel time (one way plus waiting time) to the pharmacy	.... hour(s) .... minute(s) ☐☐☐	
14E.5	What family planning methods are sold at the pharmacy? (Read each method)	Yes / No / DK Pill .... 1 2 8 Injection .... 1 2 8 Condom .... 1 2 8 Other .... 1 2 8 (specify)	
15	Is there a housewife group in the village?	Yes .... 1 No 2	2 → 17

No.	Questions	Coding cagegories	Skip to
16	Does the housewife group regularly prepare nutritious dishes?	Yes .... 1 No 2	 →17
16a	How often?	Number .... per year [ ][ ]	
17	Is there a weighing program for children under age 5 years old by the VHS in the village?	Yes .... 1 No 2	 →19
17a	How often?	Number .... per year [ ][ ]	
18	Do the mothers usually keep the growth chart?	Yes .... 1 No 2	
19	Does this village have a drug fund?	Yes .... 1 No 2	
20	Does this village have a sanitary fund?	Yes .... 1 No 2	
	Time finished	Hour(s) .... [ ][ ] Minute(s) .... [ ][ ]	

Appendix E

TDHS Technical Staff

Co-project Directors:

Napaporn Chayovan
Peerasit Kamnuansilpa
Pichit Pitaktepsombati

Research Associates:

Chanpen Saengthienchai
Siriwan Siriboon
Malinee Wongsith

Consultants:

Anne Cross
Jeanne Cushing
John Knodel
Roger Pearson
Guillermo Rojas
Prachoom Suwattee
Vijay Verma

TDHS Survey Staff

Survey Director:

Napaporn Chayovan

Supervisors:

Chanpen Saengtienchai
Sunee Sarip
Malinee Wongsith
Mayuree Sirithorn
Orawan Sribaljam

Assistants:

Kingkarn Chanthasoros
Mukda Jethanamast
Daw Lortakoon
Sophit Phongseri
Chavalit Poonkhum
Preeya Rungsopaskul
Ladda Suthanee
Archara Thawatwiboonpol

Interviewers:

Northern team:

Amornrate Duangchainan
Busara Katlungka
Darunee Klongklaw
Saipin Wetwikoon
Sureena Saethang
Harunya Somdangdeth
Malinee Suwawan

Northeast team:

Mantana Duangthong
Marasri Jongthaweekiat
Pothjanaporn Kanokkaew
Duangchai Thaisricote
Netnatee Khaodeedej
Phan Sookplam
Cheerawan Tabbun

Central team:

Kanyarat Lualon
Pranee Luengthanapol
Orawan Meeraksa
Wornood Woothutadom
Sureeporn Thitimontee
Warangkana Warakulnukrowh
Penporn Watthanatham

Southern team:

Khanistha Boonpean
Usanee Hararuck
Duangporn Nitichote
Sunate Thongdachakaiwut
Benyaporn Phaosuwan
Uraipan Tawichsri
Srisuda Thanapairoj

Bangkok team:

Jariya Chantaravarin
Supastra Kaopradith
Weeorn Klommit
Kanchana Yuncharoen
Kanyarat Leeravattanakul
Poungpetch Thanaprasit
Aree Thudsanaton

Office Editors and Keyers:

Mukda Jethanamast
Yaowalak Larkruangsup
Ampaisri Marutpongsathron
Praphatsorn Yuphoom
Preeya Rungsopaskul
Wipaporn Sanpanich
Achara Thawatwiboonpol

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