Yemen Arab Republic
Central Planning Organization
Department of Statistics

YEMEN ARAB REPUBLIC FERTILITY SURVEY 1979

Volume I

Survey Design and Findings

World Fertility Survey
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FOREWORD

Since the Yemen revolution in 1962, the Yemen Arab Republic has been passing through a period of considerable political, social and economic changes. The efficient administration of social and economic development programmes in a country with rapidly changing modes of life ultimately requires detailed information that can only be obtained from the classical sources, ie a full and accurate registration system, periodic censuses and surveys. Before 1975, the Yemen Arab Republic was in a position — typical of many developing countries — in which basic information on the population and its social and economic characteristics did not exist. In 1975, the Yemen Arab Republic had its first Census of Population and Housing taken, and some basic demographic data on its population have become available.

The development programmes currently under preparation will have to be based on input which includes estimates of various demographic parameters. These programmes, when implemented, will have far-reaching social and economic consequences. From a demographic viewpoint, it is expected that the medical care programmes currently in progress will, for example, result in lowering the level of infant and child mortality. Gradually, the Yemen Arab Republic could find itself in a situation in which mortality is declining while fertility maintains its relatively high level — with all the social and economic consequences of rapid population growth. If an effective population policy were drawn up to deal with such consequences, it would have to be based on detailed information on the various aspects of population dynamics.

It was in this context that the Central Planning Organization (CPO) conducted the Yemen Arab Republic Fertility Survey 1979 (YARFS) with the aim of providing planners and policy-makers with a comprehensive set of data on the demographic conditions in the Yemen. The survey, the first of its kind in the country, was conducted as part of the World Fertility Survey (WFS), a programme of the International Statistical Institute (ISI).

The successful implementation of the survey has only been made possible by the active and dedicated efforts of a large number of persons. I wish to thank the director and staff of the CPO Department of Statistics for their unceasing efforts throughout the various stages of the project. In particular, I would like to thank Mr Ali Al-Bahr, the then Deputy Chairman of CPO, and Mr Yahya Al-Qaizel, Director of the Department of Statistics, for their major role throughout the project. Thanks are also due to Mr Abdu Saleh Seif and Mrs Nahid Mahmoud, the executive survey directors; Mr Mohamad Al-Haj, the data processing director; Mr Hussein Ogla, the data processing manager; the supervisors and interviewers; the editors, coders and key-punching operators; and the computer programmers. I should also like to thank the regional governors and staff of various government agencies for the assistance they provided during the field operations.

On behalf of CPO, I wish to acknowledge my thanks to the WFS Project Director and staff for the technical assistance they provided; and to the Overseas Development Administration of the government of the United Kingdom for providing financial assistance.

I would also like to record my special thanks to Dr Mahmoud Khalil, WFS regional adviser, for his dedicated efforts during the design and execution stages; Dr Samir M. Farid, WFS co-ordinator, for his significant role during the various stages of this project and for his major contribution to this report; and Mr Nuri Ozsever, WFS data processing co-ordinator, for his dedicated efforts and for his contribution to volume II.

Thanks are also due to Dr Vijay Verma for his contribution to the sample design; Ms Samira Salby; Ms Jane Croft; Mr Martin Vaessen, Ms Christine Callum, Ms Lauralee Thompson and Dr John McDonald for their contributions at various stages of the study; and Ms Eva Symmons, Ms Betzy Dinesen and Mr David Whitelegge for their editorial assistance.

Last but not least, I gratefully acknowledge the help of the people we interviewed. It was their understanding and collaboration that made this important project possible.

FUAD KAID MOHAMED

Minister of Development/Chairman,
Central Planning Organization
Sana'a
22 September 1983

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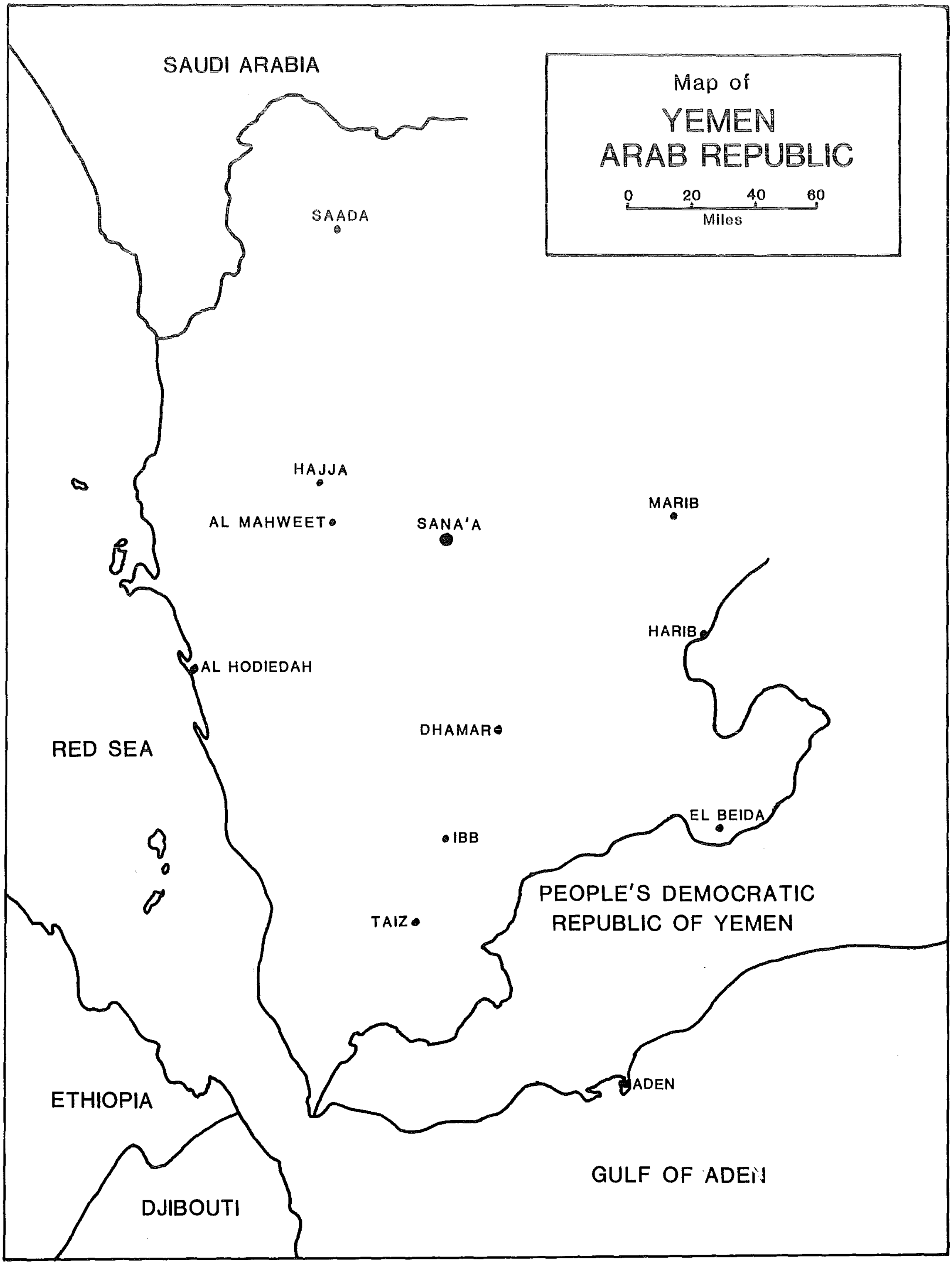
Map of
YEMEN
ARAB REPUBLIC
0
20
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60
Miles
SAUDI ARABIA
SAADA
HAJJA
AL MAHWEET
SANA'A
MARIB
HARIB
AL HODIEDAH
RED SEA
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PEOPLE'S DEMOCRATIC
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GULF OF ADEN

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PART I

BACKGROUND AND METHODOLOGY

CHAPTER 1

THE YEMENI SETTING

1.1 INTRODUCTION

The Yemen Arab Republic is situated in the south-western corner of the Arabian Peninsula. It is a rugged and mountainous country, bordered on the north by Saudi Arabia, on the south and south-east by the People's Democratic Republic of Yemen and on the west by the Red Sea. Its eastern border is marked by the desert region known as Rub'al-Khali (the Empty Quarter) which has not been completely mapped. It is estimated, however, that the country covers an area of approximately 200,000 square kilometres.

Census estimates give a total population of Yemen of 6.5 million in 1975. This figure includes about 1.2 million Yemenis abroad. About 88 per cent of the population are rural and depend on subsistence agriculture. The urban population is centered mainly in the three largest cities: Sana'a, the national capital, Ta'iz, in the Southern Highlands, and Al Hodiedah on the Red Sea.

Yemen's population is young, with 47 per cent of its inhabitants below age 15. The crude birth rate is high, estimated at about 53 per thousand, and the crude death rate is also high at about 23 per thousand. The rate of natural increase is calculated at about three per cent per year.

The overall population density is some 30 persons per square kilometre, with the greatest concentration in the Southern Highlands and the smallest in the Yemeni quarter of the great Arabian desert in the east. The nation is divided administratively into 11 *Mouhafazah* (governorates or provinces) in which primary authority for most governmental functions is vested. These are divided into 40 *Qada* (subprovinces) and further divided into 168 *Nahiya* (districts).

The most remarkable demographic trend in Yemen is the massive emigration of males to work in the Arab oil-producing states, particularly in Saudi Arabia after 1973. It is estimated that about one-third of males in the prime working age groups (15–34 years) are out of the country. This emigration of males has had a profound effect on economic and social life in Yemen.

1.2 HISTORICAL PERSPECTIVE

Like many areas in the Middle East, Yemen can look back on a long history of civilization and economic progress. The homeland of the legendary Queen of Sheba, and known to the writers of antiquity as 'Arabia Felix', it was famed in those days for its walled cities, lush fruit gardens and savory spices.

The first historically documented large-scale political units in Yemen were the kingdoms of the Minaeans and Sabaeans. They were founded during the eighth century BC and existed simultaneously for some 500–600 years. At their height, they dominated much of southern Arabia and controlled the Incense Trail, the routes over which Arabian frankincense and Indian and East African goods were transported across or around the Arabian Peninsula to the Mediterranean Basin. To control the overland and waterborne trade, the Minaeans and Sabaeans established colonies in northwestern Arabia and maintained supremacy at sea. Equally important, however, was the agricultural system that was developed by the skill and ingenuity of these people. Terraced fields made possible the full utilization of scarce land and rainfall, while dams, the most famous of which was located at Ma'arib on the eastern slope of the Yemeni mountain range, diverted and stored flood water for irrigation. It was the surplus production in agriculture that freed a relatively large part of the population to control and carry out trade, to build cities and develop a flourishing artisan industry.

The collapse of the two kingdoms came with the rise of the Himyarites (115 BC) who inherited the Minaeo-Sabaean culture and trade, and founded a kingdom which endured until the sixth century AD. Under the Himyarite rulers, however, the might of South Arabia began to decline. After the fall of Palmyra in the third century AD, the Himyarite tried to extend their influence to central and northern Arabia, in an attempt to insure the safety of the Incense Trail. But this expansion invited Persian interference which drove back the Himyarites to the south. The spread of Christianity encouraged the Christian Abyssinians (Ethiopians) to occupy the kingdom in the year AD 525. The Abyssinians were later driven out by the Persians, who in turn were superseded by the new and rapidly spreading Islamic order. Around AD 570, however, a severe earthquake caused the collapse of the great Ma'arib Dam. This historic catastrophe put much of the agricultural system in southern Arabia into disuse and signalled the end of a once great civilization.

Economic decline and stagnation continued in Yemen throughout the medieval and into modern times. The discovery of the sea route around Africa diverted most of the traditional trade, while later invasions and occupations by the Ottoman Turks dealt serious blows to the livelihood of the Yemeni people. While the economic strength of the country was eroded, the population itself kept growing over the centuries. The result was a steady decline in the standard of living and growing pressure to emigrate. Many Yemenis left their country during this period and settled down in other Arab countries, East Africa and even the Far East.

It was only twenty years ago that the stage was set for a fundamental change in the destiny of the Yemeni people. In September 1962, units of the Yemeni Army occupied the palace of the Imam, the feudalist ruler of the country. The revolutionary forces, supported by Egypt, rapidly gained control of Sana'a and other principal areas, and established the Yemen Arab Republic. Egypt sent troops and supplies to help combat the deposed Imam, who had fled north, where with substantial outside help, he raised Royalist forces to oppose the Republic. In 1967, Egyptian troops were withdrawn. By 1969 the civil war had drawn to a close, and during 1970 stability was reinstated when Royalist leaders accepted integration under the Republican regime.

1.3 PHYSICAL FEATURES

The mountains of Yemen were formed as a result of block faulting along a north-south axis parallel to the Red Sea and along an east-west axis parallel to the Gulf of Aden. This uplift formed the central mountain range which starts from around Taiz. The central ridge is drained to the west by seven major wadis, namely Wadi Mawr, Sordud, Siham, Rima'a, Zabeed, Risyan and Mawza, which flow into the Red Sea.

These and several other wadis run down steep mountain slopes, forming deep gorges which eventually enter the coastal plain known as the Tihama. The drainage to the east, to the Empty Quarter, passes over more gentle slopes. The main wadis in the area are Wadi Al-Jouf, Abidah and Hareeb.

Drainage towards the south and east of Dhamar and the Ibb-Taiz line flows into the Gulf of Aden where gradients are again very steep, with deep, narrow wadis. The main wadis of this region are Wadi Bana and Tuban.

On the basis of this particular topographic structure, the country can be conveniently divided into four physical divisions, each with its distinct climate and vegetation. These are the coastal lowland of Tihama along the Red Sea in the west, the foothills and semi-highlands of the central mountain range, the central mountain range and the eastern semi-desert plateau.

(a) The coastal lowland of Tihama

This region is 30–60 km wide and stretches along the Red Sea from Bab El-Mandab in the south to Saudi Arabia in the north. The elevation ranges from sea level to about 200 metres at the foothills. These undulating plains are drained by dispersed, wide shallow wadis running from the central mountain range into the Red Sea.

(b) The foothills and semi-highlands

The foothills and semi-highlands of the central mountain region are located at heights ranging from 200 m to 1500 m and are situated between the Tihama and the central highlands. This rugged landscape is dissected with long, steep slopes. Most of these wadis drain to the west on the Tihama, while the wadis to the south and east of Taiz drain to the south into the Gulf of Eden.

(c) The central highlands

This region comprises the higher reaches of the central mountain range, above an elevation of 1500 m. It extends from Ibb in the south to Saudi Arabia in the north. The highest land is found in a chain running between Ibb and Sana'a where mountain peaks frequently exceed 3000 m, including Yemen's highest mountain Nabi Sha'ayb (3760 m). The topography to the west is again very rugged, while the eastern slopes are gentle, terminating at the high tablelands of Sana's, Ma'abar, Dhamar and Yareem. These high plateaux are all above 2000 m.

(d) The eastern semi-desert plateau

This plateau slopes gently towards the east, forming rolling country which falls to an elevation of 1000 m, where it finally borders the Empty Quarter.

1.4 THE POPULATION OF YEMEN

At the time of the Yemeni revolution in 1962, there was no possibility of knowing the demographic or economic situation of the country. A first census was, however, conducted in February 1975 which established a fairly reliable statistical basis for the size and structure of Yemen's population. The census collected information on age, sex, marital status, educational attainment, and employment and occupational status. The 1975 census unfortunately did not contain the usual retrospective questions on fertility and mortality. The population census was supplemented by a housing census, enumerating the number of rooms in living quarters, type of tenure (rental, ownership), house facilities (water, electricity, etc) and type of housing (ordinary, cave, hut, public, etc).

The 1975 census was carried out on a *de facto* basis, ie each individual was recorded in the place he/she was at time of reference. The final results of the census show a total resident population of 5.26 million, and an estimated 1.23 million citizens who live outside the country, mainly in Saudi Arabia. Thus, the total population in February 1975 was officially estimated at 6.49 million (table 1.1).

About 86 per cent of the resident population (4.54 million) was actually enumerated. The remaining 14 per cent represent estimates of people who either were not reported to the census enumerators (under-enumeration) or who could not be reached because they were living in remote and inaccessible areas. Under-enumeration occurred mainly for social reasons, eg to conceal the number of women in a given household. A Swiss Technical Co-operation team estimated the under-enumerated and uncovered resident population using special surveys and aerial photographs. The official estimate of Yemen's total resident population (5.26 million) can therefore be considered to be quite accurate.

It should be noted that the figure reported in the 1975 census of 1.2 million Yemenis abroad is an estimate of the total number of Yemenis who have ever migrated, rather that the figure for Yemenis temporarily outside the country. It also appears from immigration statistics on Yemenis in the Gulf states that almost no Yemeni women accompany their male relatives abroad.

The emigration of males, especially in the last several years, has had profound effects on economic and social life in Yemen. The loss of manpower has increasingly constrained Yemen's economic development. Yet in the longer run, many of these emigrants are likely to return home, bringing with them skills they have acquired abroad. Even more important are the financial benefits of emigration. The rapid growth of worker's remittances has removed the previous foreign exchange constraint and greatly increased Yemen's national income and consumption levels of the resident population.

Table 1.1 The population of the Yemen Arab Republic according to the 1975 census

Resident population:	
Recorded (*de facto*)	4 540 230
Under enumerated	294 500
Uncovered	163 800
Total resident population	5 258 530
Migrant population	1 234 000
Total population	6 492 530

Source: Statistical Yearbook: 1979–80, Table 1.2

1.5 BASIC NEEDS

The 1975 census portrays a picture of a population just beginning to change, following centuries of near stagnation. Overall only 4.6 per cent of all households had electric light, almost none had access to clean drinking water inside the home, and 19 per cent of all households lived in accommodation described as huts, tents, caves or temporary dwellings. About 97 per cent of the women and 65 per cent of the men aged ten and over were illiterate.

Much of the government's efforts are, therefore, directed towards satisfying the people's basic needs for food, shelter and social services. Although social and economic development in Yemen is of a very recent origin, considerable progress has been made towards satisfying these basic needs.

Food supplies

The domestic economy of Yemen is still predominantly based on agriculture: in 1975/6 the sector accounted for close to one half of the GDP and employed over 70 per cent of the labour force. The role of agriculture is, however, changing very rapidly. After centuries of subsistence farming and efficient utilization of a meagre resource base through traditional cultivation techniques, farmers are now faced with new markets, labour shortages, high and fast-rising wages, relatively easy access to capital and changing consumer tastes.

Fast rising incomes (mainly from migrants' remittances) have apparently allowed a significant increase in per capita food consumption as well as an upgrading in the quality and nutritional value of food items. As a result, rising domestic food production has not kept pace with the rapid rise in food consumption. The government is now giving high priority to the establishment of secure food supplies. Recent studies indicate a very substantial potential for increasing output in high rainfall regions and on perenially irrigated land.

Health services

The government is giving special attention to improving health conditions in the country. The figures indicate that the crude death rate at present averages some 23 per thousand inhabitants, and that the infant mortality rate is about 19 per cent.

Official figures show that health service staff in 1980 included 603 physicians, 23 dentists, 1533 nurses, 613 medical assistants and 79 qualified midwives. Modern health establishments in 1980 included 26 hospitals, 34 health centres, 76 sub-centres, and 108 rural health units. The total number of beds in 1980 was 4141.

The government of Yemen currently places a strong emphasis on strengthening the public health system. The main objectives are to increase the number of medical staff; to modernize and expand hospitals; to spread modern health care to the rural areas; and to improve the implementation of the disease control programme.

Literacy and education

Yemen still has high illiteracy rates. In 1975 the rate of illiteracy for the population aged ten years and above was estimated at 65 per cent for men and 97 per cent for women, with an overall average rate of 83 per cent (table 1.2).

The dimensions of Yemen's education and training problems can be appreciated by noting that formal public education was introduced only in 1963, following the revolution, and did not become effective until the end of the civil war in 1970. Government objectives in education are essentially twofold: (a) to spread literacy and provide basic educational facilities (cultural objective); and (b) to meet the demand for technically qualified manpower (economic objective).

These objectives have been pursued vigorously and impressive achievements have been made. Thus, in 1979–80, some 335 000 students were enrolled in public primary schools (compared with 72 000 in 1969–70), 21 000 in preparatory schools, 9000 in secondary schools, about 2000 in teacher training institutes, and more than 4000 at Sana'a University. At the same time, an adult literacy programme provided elementary education to more than 10 000 persons of age 15 and above. The female ratio of total student enrolments is, however, still low, and amounted to 13 per cent in 1979–80 compared to 8 per cent in 1969–70. Of the 8307 teachers at all educational levels in 1979–80, 34 per cent were Yemenis, 55 per cent Egyptians and 11 per cent of other Arab nationalities.

Rural development

The government perceived the need for rural development early in the republican era, and in 1963 it issued a law providing for the establishment of Local Development Associations (LDA). The principal objective of this legislation was to mobilize local resources, both human and financial, for a massive rural development and social services programme. The LDAs are supported by the Confederation of Yemeni Development Associations (CYDA) which was established in 1973 and which operates under the direct supervision of the President of the Republic. So far the LDAs have undertaken the construction of rural access roads, water supply systems, schools, health facilities and electrification schemes. Yemen's LDAs are indeed a rare example of successful local development initiative in the Third World.

Urbanization

Urbanization is a recent phenomenon in Yemen. Until the end of the civil war, most of the country's main towns and cities were closely linked to their rural

Table 1.2 Distribution of the recorded resident population aged ten years and above according to educational status, 1975

Educational status	Males		Females		Total	
	Number	Per cent	Number	Per cent	Number	Per cent
Illiterate	869 366	65.0	1 539 603	97.3	2 408 969	82.6
Can read	144 160	10.8	11 393	0.7	155 553	5.3
Can read and write	288 546	21.6	20 694	1.3	309 240	10.6
Primary	13 606	1.0	2 357		15 950	0.5
Preparatory	8 267	0.6	911		9 178	0.3
Secondary	5 193	0.4	536	0.3	5 729	0.2
University	2 844	0.2	268		3 112	0.1
Not stated	5 956	0.4	5 881	0.4	11 837	0.4
Total	1 337 938	100	1 581 643	100	2 919 581	100

Source: Statistical Yearbook: 1979–80. Sana'a: Central Planning Organization, Department of Statistics hinterland, serving as regional market centres and suppliers of traditional crafts. With the rapid expansion of modern sectors since 1979, urban development has acquired a new dimension. Improved living conditions, especially schools and health services, and new employment opportunities have attracted an increasing number of rural dwellers to the country's main urban centres. But even though the urban population has more than doubled during the past decade, its relative size is still small. The 1975 census shows only five cities with a population of 17 000 or more; Sana'a, Taiz, Hodiedah, Dhamar and Ibb. Together they had 325 000 inhabitants, representing about 7 per cent of the population and about 63 per cent of the recorded urban population.

Table 1.3 Population of the five largest cities in Yemen according to the 1975 census[a]

City/town	Population
Sana'a	135 625
Ta'iz	79 720
Hodiedah	72 895
Dhamar	19 540
Ibb	17 496

[a]Figures refer only to recorded population.
Source: Statistical Yearbook: 1979–80

A comprehensive urban development programme has been prepared by an inter-ministerial committee with the collaboration of Central Planning Organization. Several projects sponsored by the government have already been started. These include the construction and maintenance of city streets; the provision of water supplies, sewage facilities and electricity; and the construction of adequate housing.

REFERENCES

This chapter draws upon information contained in the following publications:

—Central Planning Organization, Department of Statistics. *Statistical Yearbooks: 1970/71–1979/80.* Sana'a.

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CHAPTER 2

SURVEY DESIGN

2.1 INTRODUCTION

This chapter deals with the methodological and administrative aspects of the Yemen Arab Republic Fertility Survey and is divided into 11 sections. A statement of the main objectives of the survey is given in section 2.2. Sections 2.3 and 2.4 discuss respectively the development and the pre-testing of the questionnaires. This is followed by a description of the sample design in section 2.5. Section 2.6 discusses the organization and execution of the survey, including staffing, training and supervision. Section 2.7 outlines procedures followed for office editing and coding, and section 2.8 outlines the stages and procedures of data processing. Section 2.9 gives an indication of the frequency and kinds of non-response. Section 2.10 explains the use of the tables of sampling errors which are shown in appendix III. Finally, section 2.11 shows the survey timetable.

2.2 OBJECTIVES OF THE SURVEY

The 1979 Yemen Arab Republic Fertility Survey (YARFS) was undertaken by the Department of Statistics/Central Planning Organization (DOS/CPO) of the Government of the Yemen Arab Republic as part of the World Fertility Survey programme.

The World Fertility Survey (WFS) is an international programme of fertility research undertaken by the International Statistical Institute (ISI) with the collaboration of the United Nations and in co-operation with the International Union for the Scientific Study of Population. The main objectives of the WFS programme are to assist developing countries in carrying out well-planned and scientifically designed sample surveys in order to provide high quality data on fertility levels, trends and differentials.

The YARFS was designed to obtain data on nuptiality, fertility, mortality, migration, and other related factors, with the aim of enhancing understanding of the changing dynamics of the population of Yemen. The YARFS findings will provide a wealth of much needed demographic information that could be used as a guide to government action. The survey has also served as an effective mechanism in training personnel at various levels to carry out future surveys. The YARFS was undertaken with financial assistance from the Overseas Development Agency of the government of the United Kingdom through the ISI/WFS.

2.3 DEVELOPMENT OF THE QUESTIONNAIRES

2.3.1 WFS prototype documents

The World Fertility Survey has developed materials to aid countries participating in the WFS programme in carrying out their surveys. These materials include the *household schedule* for the screening interview, the *individual questionnaire*, various *modules* which can be incorporated into the individual or household questionnaires, and *manuals* containing guidelines for the various stages of the survey.

The *household schedule* fulfils three purposes. First, it provides a listing of household members, which is required in order to identify ever-married women eligible for the individual interview. Secondly, by collecting data on such matters as age, sex and marital status for each household member, it provides the researcher with denominators necessary for calculating certain demographic rates. Thirdly, it provides useful contextual data on factors which may relate to fertility, such as ownership of 'modern' objects, membership of cultural or socio-economic groups and the nature of housing conditions.

The *individual questionnaire* is intended for use in interviewing ever-married women in the childbearing years, residing in households. It is used to collect the minimum information needed to identify the factors affecting fertility, to analyse fertility differences and to elucidate fertility patterns.

In addition to the core questionnaire, there are various possibilities for expansion of the enquiry into related areas of particular interest. The WFS has devised a set of supplementary questionnaire materials known as *modules*. A module is a group of questions on a particular topic, constructed so as to be capable of integration into the household schedule and/or the individual questionnaire. Most of the modules deal with two kinds of variables: those which affect fertility directly, and those explanatory of fertility.

2.3.2 Preparation of the questionnaires

The first major task addressed by the DOS and WFS was deciding on the type and contents of the questionnaires to be used in the YARFS. The aim of the survey was to collect a set of data that would make possible a detailed analysis of the changing demographic conditions in Yemen. To this end, the data collected should serve two purposes:

1 It should make possible the estimation of trends, differentials and levels of nuptiality, fertility, mortality and migration, and thus to a significant extent compensate for the lack of a registration system in the country.

2 It should provide information on the basic factors affecting the components of population growth in Yemen. Demographic processes are influenced by a variety of factors of differing intensities, operating with or against one another. The investigation of such factors, even with a good registration system, could only be made possible by a special type of enquiry of the nature of the present survey.

However, it was recognized that it would be necessary to take particular care during the preparation of the questionnaire and the actual execution of the survey to minimize the frequency of non-response and to ensure that questions which might be considered offensive to respondents should not be included.

Thus, the questionnaires had to be so designed as to meet Yemen's needs for demographic data, while at the same time minimizing the possibility of inadequate response. With these considerations in mind, DOS decided to use the following two questionnaires in the YARFS:

- The expanded household schedule (incorporating the WFS general mortality module);
- The individual questionnaire (covering the WFS core questionnaire and incorporating the WFS module on factors other than contraception affecting fertility).

Both the expanded household schedule and the individual questionnaire were phrased in simplified classical Arabic. English translations are at appendices I and II. A description of the contents of the questionnaires is given below.

2.3.3 The expanded household schedule

This schedule, though primarily used to identify women eligible for the individual interview, was designed also for gathering data on nuptiality, fertility, mortality and migration. This was achieved by adding questions on lifetime fertility and on household members who had migrated and by incorporating into the household schedule the WFS general mortality module. This expanded household schedule was administered to a sample four times the size necessary to obtain the desired number of eligible women for the individual interview.

The expanded household schedule consisted of four blocks of questions.

Block A contained all the information on the identification of the sample household, the number of visits required to obtain the interview, details of field and administrative controls, summary data on the number of eligible respondents and the total number of persons in the household.

Block B included the following items for each household member or visitor:

- name
- relationship
- residence and presence 'last night'
- sex
- age
- information on survival of parents
- educational status
- marital status
- information on survival of first spouse
- number of live births
- information on last live birth
- information on migration
- identification of eligible respondents for the individual interview
- result of the individual interview.

The interviewer first listed all the usual residents of the household, starting with the head (as defined by the repondent). This was followed by special probes to list children or infants, non-family members such as servants, friends or lodgers, and temporary visitors.

The question on relationship serves, among other things, to identify the mother of each individual, which allows the application of the demographic technique known as the 'own children method' to estimate levels of fertility. Information on 'relationship' can also be used to construct variables such as 'household and family types' which can be used as additional explanatory variables in the analysis.

The questions on residence serve to identify both *de jure* and *de facto* populations. As either method involves some slippage, household composition was collected on both bases in order to obtain some estimate of enumeration error. The possible responses to the question on usual residence were: (1) Yes, (2) No, and (3) Emigrant. For each person reported as emigrant, the date of emigration and the name of the country of current residence were obtained.

The questions on survival of parents and whether the person is an eldest living offspring give information for estimating adult male and female mortality using the demographic technique known as the 'orphanhood method'.

The questions on literacy and educational attainment of members of the household aged seven or over serve as background variables in the analysis of demographic differentials.

The marital status section had four questions administered to members of the household aged ten or over. The first two questions provide an opportunity for carrying out analyses of nuptiality. This information for women is also needed for determining eligibility for the individual interview. The third and fourth questions in this section yield information needed for the application of the technique known as the 'widowhood method' used to obtain another set of estimates of male and female adult mortality.

For each ever-married woman in the household, the fertility data collected were the number of live births she had had in her lifetime and the date of birth, sex and survivorship of her most recent live birth. Data on lifetime fertility were collected along several dimensions to try to ensure that no live births were overlooked. The last live birth was dated in an attempt to overcome the telescoping phenomenon so often produced when women are simply asked if they have had a birth in the past 12 months. Estimates of infant and child mortality may be derived from proportions dying among children ever born. Alternative estimates may also be obtained from the question on the survival of the most recent live birth.

Block C included the remaining questions from the general mortality module. In this block were recorded deaths of household members during the preceding 24 months, by sex and age. When these are tabulated by month of occurrence, it is possible to extract the deaths occurring during the preceding 12 months.

Block D contained information on the characteristics of the dwelling and the presence in the household of modern durables. This information was collected to obtain a rough measure of the household's economic situation. Of course, this information is too limited to be readily accumulated into a measure of economic status. Nevertheless, some of the information enables a crude ranking to be made of all households from the poorest to the richest, while other questions obtain information on durables which are possessed mainly by those in the higher income brackets. This block also included questions on the language usually spoken by members of the household.

2.3.4 The individual questionnaire

The individual questionnaire for the YARFS consisted of the WFS core questionnaire and incorporated the WFS module on factors other than contraception affecting fertility. This questionnaire was designed to collect more detailed information from eligible women. It was administered to all eligible women in one-fourth of the sample households selected for the expanded household schedule.

Within these households, eligibility for the individual interview depended on three criteria. First, the woman had to be under 51 years of age. Secondly, she had to be ever married, that is married currently or previously. Thirdly, she should have slept in the household on the night preceding the interview, ie she should belong to the *de facto* population. Only women who satisfied all three conditions were eligible for the individual interview. It should be noted that in Yemen — as in almost all Arab countries — a distinction is made between formal or legal marriage as witnessed by the marriage contract — known as 'writing the book' — and the social marriage which marks the consummation of marriage, *zifaf*. The period between these two dates varies and can even extend to some years. There are usually two separate ceremonies, one for each event, though quite a number of marriages involve writing the book and the *zifaf* at the same time. In the YARFS, women who had been legally married but whose marriages had not been consummated were not considered eligible for the individual interview.

The individual questionnaire was divided into seven sections, with a cover sheet which contained information on identification of the sample household, the number of visits required to obtain the interview, the duration of the interview, and details about field and administrative controls. These sections are described below.

Section I. Respondent's background

In this section information was obtained on six major items: present residence, type of place in which the woman lived in her formative years, age, literacy, education, and language spoken.

There were two questions in this section relating to the age of the respondent. Age is, of course, the most important classificatory variable in any fertility survey. Recognizing the difficulty of obtaining accurate data on age, and to ensure that the interviewer would keep in mind this very imprtant characteristic of the interviewee throughout the whole interview, the following procedure was used.

The respondent was first asked to give her current age. She then asked to give her month and year of birth. The interviewer was specially trained to probe in detail where necessary (for example, by referring to other events in the respondent's life), and also to consult any documentary evidence available. Next, the interviewer plotted the respondent's birth date on the events chart so that this data could subsequently be compared with dates of other events. Finally, the interviewer recorded her comments regarding age reporting: whether the age was reported without further probing, whether it was obtained from some document, whether extensive probing was necessary, and whether the reporting was believed to be an estimate.

Section 2. Marriage history

Since almost all births in Yemen occur within wedlock, this section, unlike the WFS core questionnaire, preceded the sections of maternity history and knowledge and use of contraception. This departure from the WFS recommended core questionnaire is common to many other WFS surveys, particularly in the Middle East and Asia.

The product of this section is a complete marital history of the respondent. Information on nuptiality is important *per se* as well as an important component of any fertility survey. By obtaining dates of the start and termination of each marriage, a precise calculation can be made of the total time spent in marital union. This information may serve as a proxy for the length of exposure to the risk of pregnancy.

It should be noted that, in obtaining information on date of marriage, the interest was in the date of consummation of marriage and not of the date of the registration of the marriage contract.

Again, special attention was paid to the dating of events. If the calendar year of consummation of marriage could not be obtained, the respondent was asked to give her age at the time her marriage took place. In the case of former marriages, if the year of termination of a marriage could not be obtained, the respondent was asked to give the duration (in completed years) for which she and her husband lived together in that marriage until it was dissolved (by divorce, separation or the death of her husband).

The marital history questions were followed by a question on the respondent's age at menarche. If this age could not be obtained, the respondent was asked whether she had her first menstrual period before or after the start of her (first) marriage, and by how many years.

This section also included question on blood relationship and type of relation, if any, between the respondent and her current or last husband.

Section 3. Maternity history

The information collected in this section is at the heart of the survey and the section was so designed as to aid the respondent in providing the necessary information accurately.

The principal outputs of this section are:

- live births, by sex and date of occurrence;
- incidence of infant and child mortality;
- incidence of pregnancy wastage;
- proportion of women currently pregnant, with duration of pregnancy.

To achieve as complete a record as possible of the respondent's maternity history, the number of living children (by sex and whether living at home or away) was obtained first. This was followed by the number of dead children, if any, and then a probe to confirm the total number of live births so obtained. This was followed in turn by questions on current pregnancy, with duration and preference for the gender of the expected baby, and the total number of all other pregnancies that resulted in abortion or still birth. It should be noted that the question on current pregnancy was asked only of women who were 'currently married' or 'divorced, widowed or separated for nine or less months'.

This was followed by the 'live births and other pregnancies table'. Unlike the procedure proposed in the WFS core document, this table was designed on the basis of the integrated pregnancy history approach, as it was believed that this approach would yield more accurate data. Thus, for each live birth, starting with the first born, data were obtained on the name, sex, date of birth, and whether the child was still living. If the child was dead, it was determined for how long he/she had lived. If the calendar year of birth was not available, then —

depending upon the order of the child — the interval since marriage or since the previous birth was obtained. All births were plotted on the events chart so that any gross inconsistencies could be identified during the interview itself.

Once all births were recorded, the interviewer probed each birth interval for wasted pregnancies. For each birth interval, the interviewer asked the respondent if there had been any time during the interval when she was pregnant, and if so the number of such pregnancies. For each such pregnancy, information was obtained on the date of termination of pregnancy or the duration between the beginning of interval and the termination of pregnancy, and on the duration of pregnancy. For a pregnancy lasting for seven or more months, the respondent was asked whether the baby showed any sign of life after it was born; if the answer was yes, the sex of the baby was obtained.

The primary purpose of the questions on pregnancies reported to have resulted in still birth or abortion was to pick up pregnancies which may in fact have resulted in live births and been forgotten by the respondent because the child had lived for only a very short time. An ancillary object of these questions, and indeed of using the integrated pregnancy history approach, was to obtain some information on pregnancy wastage, although it was realized that the true incidence of this phenomenon cannot be estimated from these data alone because of the probability of under-reporting.

Section 4. Knowledge or use of contraception

As already mentioned in the preceding chapter, Yemen does not have a national family planning programme. However, no society has ever produced babies at a rate even approaching that of the biological maximum. In all societies some sort of fertility regulation is practised by women, whether consciously or not. Hence, one important aspect of a fertility survey is to examine those situations or practices which affect, or tend to affect, the number of children women normally have.

Section was concerned with the levels of acquaintance with, and use of, contraceptive methods. The respondent was first asked to name the contraceptive methods she knew. For these methods, she was asked if she had ever used them. For each method that she did not mention spontaneously, a brief description was read and the respondent was asked if she had ever heard of it. If she had, she was then asked if she had ever used the method. The sequence was concluded with a question on whether the respondent had ever heard of any other method apart from those already mentioned.

Section 5. Factors affecting fertility: lactation, contraceptive use and temporary separation

The pattern and level of fertility are determined not only by the use or non-use of contraception but also by a host of other 'intermediate' variables causally situated between fertility and the underlying socio-economic and cultural milieu.

This section incorporates the WFS module on factors other than contraception affecting fertility, which was so designed as to supplement the data collected in other sections of the questionnaire by gathering information on variables affecting exposure to intercourse and on variables that mitigate exposure to conception.

Thus, information was obtained on the following related topics:

- Breastfeeding duration and age of the child when additional food was given as a supplement to breastmilk.
- Post-partum amenorrhoea duration (ie duration of cessation of menstruation after birth).
- Post-partum abstinence duration (ie duration of refraining from sexual intercourse after the birth of a child).
- Duration of periods of temporary separation of spouses.
- Contraceptive use.
- Menstruation characteristics (regularity and duration of menstrual period, and menopausal status).
- Desired number of children.

Information on the first five items was confined to the open and the last closed pregnancy intervals. These intervals are defined as follows:[1]

- The open pregnancy interval is the interval between termination of the woman's last pregnancy and date of interview.
- The last closed interval is the interval between a woman's next-to-last pregnancy and her last pregnancy.

At the beginning of the section, the interviewer completed a table designed to determine the pregnancy interval(s) of the respondent. The design of this table is different from that recommended in the WFS module. This departure was introduced because it was thought that it would facilitate the interviewer's task. It should be pointed out that questions confined to the open preg-

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[1] A detailed exposition of these definitions is given in chapter 8.

nancy interval were restricted to currently married women.

Section 6. Work history

This section deals with the respondent's work history. In the first part of the section, detailed occupational information was obtained about the respodent's current or most recent work since marriage. This information permits investigation of the association between a woman's work status and her fertility.

In the second part of this section, information was obtained on the nature of the respondent's work before marriage. This information permits the study of the relationship between work, age at marriage and fertility. Total work experience, measured in years, was also obtained.

The periods for which information on work status may be analysed are before (first) marriage; since that time; and, for women who have had children, between marriage and the birth of the first child.

Section 7. Current (last) husband's background

In this section information was collected regarding the respondent's current (or last) husband in terms of age, literacy, education, type of place or residence in which he lived during his formative years, and employment. A question on the number of wives maintained by the husband was added to this section.

2.4 THE PRE-TEST

2.4.1 Objectives

Most surveys are preceded by a pilot study to test the questionnaires and the important survey documents and procedures. The YARFS pre-test was designed to fulfil the following objectives:

1. To give the technical staff a chance to practise execution of the survey on a small scale.
2. To test the questionnaires. The aim here was to ensure that the questions were in logical sequence, the translation comprehensible, and the pre-coded categories adequate and meaningful.
3. To obtain information about the operating characteristics of the interview such as its average duration, the number of interviews that an interviewer can do per day, etc.
4. To obtain an indication of general receptivity or resistance to the survey in general and to the potentially sensitive questions in particular.
5. To test the validity of the recommendation by WFS to use the team approach in data collection.
6. To test the possibility of tape-recording interviews.
7. To test the practicability of the procedures suggested by WFS for the mapping and listing of sample areas.

2.4.2 Training and execution

A two-week training course was held in Sana'a during June–July 1978. The National Director and Executive Survey Director together with experts from WFS acted as trainers. The training was attended by three senior technical staff, who were to supervise the execution of the main survey, and twelve female candidate interviewers who were recruited from DOS–CPO, the Ministry of Social Affairs, and the Ministry of Health. The organization and methods of training for the pre-test were essentially the same as those discussed in section 2.7 below.

The pre-test was carried out in six non-sample areas, three urban and three rural, in the governorates of Sana'a, Ta'iz and Hodeida. These areas were listed prior to the training course. Three teams each consisting of a supervisor, a field editor and three female interviewers carried out the fieldwork for the pre-test over a period of twelve days. In each governorate, the urban area was covered first and then the rural area. To ensure adequate feedback for the pre-test, the following field control sheets recommended by WFS were used: sample assignment and outcome; summary of results in the area; progress record for each interview; and interviewer's daily sheet.

2.4.3 Results of the pre-test

The total numbers of completed household schedules and individual questionnaires were 268 and 310 respectively. These questionnaires, together with the interviewer's reports and the interviewer debriefing sessions, were analysed.

The pre-test proved to be a success in the sense that no major modifications to the contents of the questionnaires or the phrasing of questions were required: the length and complexity of the questionnaires did not present problems; the reaction of the respondents was favourable; and no major problems with the potentially sensitive questions were encountered. The degree of co-operation was assessed as 'good' or 'very good' in 33 per cent of the interviews conducted. It was also found that the procedures suggested for the mapping and listing of sample areas were adequate.

As for content of questionnaires, a question on literacy was added to the educational status section in both the household schedule and the individual questionnaire; the question on current pregnancy in section 3 was restricted to women who were 'currently married' or 'divorced' or 'widowed for nine or less months'; some pre-coded boxes and extra probes were introduced in section 5; and questions relating to the open interval in section 5 were restricted to currently married women.

Manuals were then redrafted and the necessary changes dictated by the above-mentioned modifications were made. Questionnaires, manuals and other survey documents were then finalized and printed.

2.5 SAMPLE DESIGN

This section gives an outline of the Yemen Arab Republic Fertility Survey sample and describes the sample size, sample design, stratification, and stages of the sample. Appendix III gives the details of the sample design, selection, and implementation.

2.5.1 Sample size

Taking into account the objectives of the study, the available manpower and field conditions, the target for achieved sample size was 15 000 completed household questionnaires and 3750 completed individual questionnaires. 13 495 household questionnaires and 2605 individual questionnaires were completed. Non-response is discussed in section 2.9.

2.5.2 Sample frame

The YARFS sample was designed as a self-weighting stratified cluster sample. For the household sample (HS) all households in each selected cluster were included. Each cluster was then divided into four approximately equal sub-clusters and one of these was selected at random for the individual woman's survey. Within households in the sub-clusters selected for the individual interview, all eligible women were interviewed. Eligibility conditions for the individual interview were: ever-married woman aged 50 or under who slept in the household the night before the household interview, ie a de facto basis was adopted.

For the purpose of sample selection, the country was divided into rural and urban areas and a cluster sample was selected independently in each type of area. For both the rural and urban strata, the first stage of the sample consisted of the selection of primary sampling units (PSUs) with probability proportional to a measure of size (PPS). The rural stratum was explicity stratified by governorate and the PSUs for the rural stratum were Ozlah. The PSUs for the urban stratum were blocks. Each selected PSU was segmented into a predetermined number of approximately equal sized clusters, this number being in fact the size used in selecting the PSU. The next sampling stage consisted of the selection of a cluster from each selected PSU, with the intention of producing a self-weighting sample.

2.5.3 Weighting of the sample

Contrary to the original plan it was found necessary to compensate for coverage problems and variable non-response by cluster by introducing appropriate weights at the data processing stage. The weights have been 'normalized' in such a way that the sum of the weighted frequencies equals the sum of the unweighted frequencies. In the presentation of the results in this report, only weighted frequencies are shown.

2.6 ORGANIZATION AND EXECUTION OF THE SURVEY

2.6.1 The survey organization

As already mentioned, the organization and execution of the YARFS was the responsibility of the DOS. An *ad hoc* survey organization was formed within DOS to execute the YARFS. The survey headquarters were based on the DOS–CPO main building.

The survey organization consisted of the following three levels of personnel.

Level 1: directing staff

The Director General of the executing agency, DOS, served as the overall project national director. The day-to-day activities were supervised by the Chief of Social Statistics Unit of DOS, who served as executive survey director. The WFS advisers worked very closely with the directing staff during the preparatory, fieldwork, data processing and analysis stages.

Level 2: senior professional staff

Two assistant survey directors and two administrative co-ordinators were recruited from within the senior professional staff of the DOS; they assisted the directing staff in implementation of the work programme and closely supervised the office and field staff who carried out the detailed work.

Level 3: field and office staff

Three levels of field staff were recruited: field supervisors, field editors, and interviewers. All supervisors and most of the field editors, and male interviewers were recruited from DOS. Female interviewers were recruited from DOS–CPO, other government departments, and students at Sana'a University. Office staff responsible for editing and coding were regular DOS employees.

The Director of the CPO Computing Centre served as the data processing manager for the survey. During machine editing and variable recoding, he was assisted by two senior programmers from the CPD Computing Centre and a programmer from WFS.

2.6.2 Training of field staff

Supervisors and interviewers were trained centrally at the DOS–CPO in Sana'a. The supervisors' training was of the greatest importance, as they were the backbone of the fieldwork operations. They made detailed plans for the fieldwork, distributed the work load among the interviewers, and managed interviewer teams throughout the period of fieldwork.

The training was conducted in two phases. First, the field staff who were to carry out the household interview, for the part of the sample to which only the expanded household schedule was administered, were trained. Sixteen (male) supervisors attended an intensive one-week training course which covered the following areas: field practice, administrative duties, preparation of fieldwork plans, evaluation of interviewers' work, and control of fieldwork. This was followed by a one-week training course for sixty (male) interviewers.

In the second phase, a total of 12 (male) supervisors and 75 (female) interviewers were trained for a period of three weeks with the aim of constituting a field force for the individual survey of 12 male supervisors, 12 female field editors and 48 female interviewers. All supervisors were recruited from DOS–CPO. The female trainees were recruited from DOS–CPO, the Ministries of Education, Health, and Social Affairs, and Sana'a University. Selection of traineers was done by the YARFS directing staff, on the basis of examination of credentials, personal interviews, and the administration of an aptitude test to ensure the trainee's ability to follow a rigorous training course and to accept continuous fieldwork under difficult conditions. The training consisted of classroom lectures on the objectives and organization of the survey; explanation of the questionnairs; principles of interviewing, role-playing interviews and practice interviews. Periodically, tests were conducted to gauge the progress of the candidates. Teaching materials consisted of the basic survey documents (ie questionnaires and interviewers' and supervisors' instructional manuals) and poster-size blow-ups of sections 3 and 5 of the individual questionnaire.

2.6.3 Publicity

During the training of the field staff and the first few days of the fieldwork, the national newspapers published press releases prepared by the DOS–CPO which described the overall objectives of the survey and asked members of the public in general, and potential respondents in particular, for their co-operation. These press releases were also broadcast by the national radio and television networks.

The DOS Director General also informed the provincial governors and the leaders of areas in which the sample clusters were located of the objectives of the survey and the field operations that would be carried out in their areas, and requested these provincial authorities to provide adequate publicity for the survey and all the necessary assistance and co-operation to the field staff.

2.6.4 Main fieldwork

Fieldwork for the YARFS was carried out during the period June–November 1979. As previously mentioned, the household schedule was administered to all households in the sample, whereas the individual interview was administered only to one-fourth of the sample households. Fieldwork was undertaken in two stages. In the first stage (June–July 1979), 8 teams, each consisting of one male supervisor, one male field editor and three or four male enumerators, conducted the household interview for the three-quarters of the sample households in each cluster to which only the household schedule was administered. In the second stage (September–November 1979), 12 teams, each consisting of one male supervisor, one female field editor and four female interviewers, conducted both the household and the individual interviews, generally during a single visit, for the remaining quarter of the sample households in each cluster.

The day-to-day supervision of the fieldwork was carried out by field supervisors who were responsible for assigning the workload to each interviewer and for ensuring that enumeration had been carried out properly and accurately. Problems of unlocated households and refusals had to be solved by the supervisor as soon as possible and before the team moved to another area. The supervisors kept records of the number of household schedules and individual interviews completed using the supervisor's fieldwork control sheet; they also maintained contact with the survey headquarters.

The main duties of field editors were receiving completed questionnaires from interviewers, scrutinizing questionnaires and making sure that the interviewer conducted the interview properly, making spot-checks to ensure that interviewers had actually visited the correct households assigned to them, and checking that all individual respondents selected were indeed eligible and that the most important questions had been correctly answered and recorded.

The procedure followed for scrutinizing the individual questionnaires may be summarized as follows. The field editor herself thoroughly checked and corrected any obvious mistakes or slips. If there was any doubt, she consulted the interviewer. If the interviewer was unable to answer questions satisfactorily, she was asked to revisit the respondent to obtain the correct information. In order to maximize the quality of the survey, field supervisors functioned also as field editors in the evening.

During the initial fieldwork period in the second stage, each female interviewer was asked to visit two households only on each day, ie to complete two household schedules and about two individual questionnaires per day. Mistakes made by the interviewers were discussed with them so that they would not be repeated. The average daily assignment was then increased to three household schedules and three individual questionnaires. The average duration of the individual interview was about 20 minutes.

Each interviewer assigned a household questionnaire form to each sample address she visited whether or not she successfully contacted it or found a household there; the interviewer then recorded on the cover sheet the outcome of the visit. Similarly, when the interviewer made the first attempt to obtain the individual interview, she assigned a questionnaire to the case whether or not the respondent was successfully contacted. If the interviewer did not find a respondent at home during her visit to the household, she made up to two more visits or 'call-backs' to the household. However, 90 per cent of all eligible women in the sample were recorded as having been successfully interviewed during the first visit.

Throughout the fieldwork period, the directing staff and the senior professional staff made regular visits to the sample areas, checked the records which field supervisors were instructed to keep as regards quality control, re-organized staff deployment where necessary, and discussed any problems encountered during the field operations. These visits by senior staff from headquarters were essential for the efficient conduct of the fieldwork, and were of special importance for the morale of the teams.

2.7 OFFICE EDITING AND CODING

The editing operations began in the field when supervisors and field editors scrutinized the completed questionnaires received from the interviewers. Office editing was an independent operation complementary to editing in the field. It entailed verification of the answers to all questions and to certain combinations of questions, coding of 'open-ended' questions and checking of all skips in the questionnaire. All parts of the household schedule and the individual questionnaire were re-edited in the office. Special attention was paid to thorough re-editing of the marriage history, the live birth and other pregnancies tables, and all other age and date information.

The operation of coding involved principally the mechanical transfer of numbers from the questionnaire to coding boxes. Coding also entailed the application of coding categories for open-ended or semi-open-ended questions such as occupation.

Office editing and coding started after the completion of fieldwork. The editors and coders were organized into three teams, each consisting of a supervisor, two editors, two re-editors, one or two coders, and one code checker; they were recruited from among the supervisors, field editors and interviewers. The editing team attended a training course for one week, and the coding team was also trained for one week. The system followed was that of having the entire questionnaire edited and then re-edited. The questionnaires were then passed for coding and finally passed to the code checkers.

2.8 DATA PROCESSING

The data processing of the YARFS consisted of two stages. The first was to 'clean' the data by performing a series of comprehensive checks on its completeness and interval consistency, making appropriate corrections where necessary. The second stage was the production of analytical results, which involved the recoding of variables into the form required for analysis, as well as the production of actual statistical tabulations. The first stage of data processing was carried out at the CPO Computing Centre in Sana'a, while the second stage was done at WFS headquarters in London with the participation of CPO experts.

2.8.1 Preparation of clean tapes

After the completion of office editing and coding, the questionnaires were transferred to the Computing Centre for data entry. Data entry was done with 100 per cent key-verification, using a key-to-tape system.

Separate tapes, or files, for the household and individual questionnaire data were produced. These data were then checked and corrected for format and structure errors, to ensure that all required data (but only required data) were present, and for out-of-range and inconsistent responses. The files were also checked for completeness and consistency between the household and individual data.

The computer was used to locate errors but not to make corrections. During format structure and consistency editing, error printouts were produced from the computer. Correct values were looked up in the original questionnaires and written on to suitable update forms along with the identification of the record to be corrected. This work was done by the office editing and coding teams.

After all obvious inconsistencies had been removed by reference to the original questionnaires, an imputation procedure was used to fill in missing months of birth of the respondent and in the marriage and maternity histories. The method assumed that the year of the event was known, and that only the month was missing. When the date of an event was reported in terms of 'interval', the calendar year of occurrence of the event was obtained on a completed year assumption, ie by adding, for example, the interval between first marriage and the birth of the first child to the year of marriage. The imputation method was based on finding, for each event, a logical range of dates and then choosing a point randomly in this range. Table 2.1 shows the proportion of dates with missing months which had to be imputed. These month imputations were done by computer using a special program developed by WFS headquarters in London.

2.8.2 Variable recoding and tabulation

The individual questions asked in the WFS surveys often do not correspond one-for-one to the variables that are required for analysis; consequently, combining of variables, reduction of categories, etc, are required. This kind of variable construction yields a recode file, known as the 'standard recode' file. Such a file has been created for the YARFS data for the following three purposes:

1. To simplify the production of the basic tabulations.
2. To provide a general 'analysis' file for researchers wishing to do further analysis on the data.
3. To provide a standard set of variables similar to those available for other countries participating in the WFS, thus making comparative analysis possible.

The resulting file was the basis for the 'Standard Recode Tape for the Yemen Arab Republic Fertility Survey' which has been documented and archived at the DOS headquarters and at WFS headquarters.

Tabulations were prepared following the tabulation plan of the YARFS, based on the WFS 'Guidelines for Country Report No. 1'. For production of the tables, the package program COCENTS was used, while the para-

Table 2.1 Percentage of dates with missing months[a]

Event	Type of date reporting					Total	Percentage of dates with missing months
	Month and year	Year only	Age at event	Interval in months and years	Interval in years		
Respondent's date of birth	8	2 596	1	—	—	2 605	99.7
Dates of all marriages	220	2 134	695	—	—	3 049	92.8
Dates of dissolution of marriages	22	306	—	—	271	599	96.3
Date of first marriage	197	1 802	606	—	—	2 605	92.2
Date of current marriage	212	1 805	433	—	—	2 450	91.3
Dates of all pregnancies	1 157	8 899	—	436	75	10 567	84.5
Dates of first pregnancy	229	1 880	—	77	11	2 197	86.1
Date of next to last pregnancy	141	1 639	—	59	13	1 852	89.2
Date of last pregnancy	885	1 273	—	30	9	2 197	58.4

[a] Based on unweighted data

meter cards were generated with a special program, COCGEN, developed by WFS.

2.9 RESPONSE RATES

In any survey, voluntary or compulsory, the response is usually not absolutely complete, and the number of completed questionnaires is usually less than the intended number. This may be caused by non-coverage of certain sample areas, non-contact with selected households or respondents, or unavailability or unwillingness of respondents to participate in the survey.

In preceding sections, an account was given of the measures adopted to minimize the deficiency — that is the frequency of refusals and non-contacts — in the YARFS. This section examines the effectiveness of these measures as indicated by the frequency and kinds of non-response, separately for the household survey and the individual survey.

2.9.1 The household survey

As previously mentioned, the sample for the YARFS was designed so as to yield around 14 000 households with the aim of obtaining at least 13 000 completed household schedules. The application in the field of the sampling procedures described in section 2.5 yielded a sample of 13 495 households for the household survey. Household schedules were completed in 13 255 or 98.2 per cent of the total household sample. Table 2.2 summarizes the frequency and kinds of non-response for the household survey.

As may be seen, most of the non-response for the household survey resulted from cases in which the address was of a vacant dwelling or not of a dwelling. The number of completed household schedules represents about 94 per cent of the target figure for the first stage but only 72 per cent of the target for the second stage. The low figure shown for the second stage resulted from the loss of about 700 households mainly because of floods; of these over 100 households were in Sana'a governorate which was covered in the second stage.

2.9.2 The individual survey

As previously mentioned, one-fourth of the total sample households were to be selected for the individual survey. The number of households successfully interviewed in the second stage, for the household questionnaire, was 2694. As may be seen from table 2.3, in these households, 2809 ever-married women aged 50 or less were identified as eligible for the individual survey (ie an average number of eligible women per household equal to 1.043). The number of individual questionnaires successfully completed was 2605 or 92.7 per cent of the possible maximum.

2.9.3 Reliability of data

In addition to the frequency of non-response, there are several other factors that might affect the reliability of

Table 2.3 Summary of interview results for the individual survey

	Number	Per cent
Number of households selected	2694	—
Number of eligible women identified	2808	100
Result of individual interview		
1 Completed	2605	92.7
2 Not at home	78	2.8
3 Refused	27	1.0
4 Partly completed	91	3.2
5 Respondent does not speak Arabic	—	—
6 Other	8	0.3
Overall non-response	204	7.2

Table 2.2 Summary of interview results for the household survey

	First stage		Second stage		Total	
	Number	Per cent	Number	Per cent	Number	Per cent
Target	11 250	—	3 750	—	15 000	—
Number of vacant dwellings and cases in which address was not of a dwelling	661	—	208	—		869
Number of sample households	10 740	100	2 755	100	13 495	100
Results of household interview						
1 Completed	10 561	98.3	2 694	97.8	13 255	98.2
2 No competent respondent at home	68	0.6	10	0.4	78	0.6
3 Refused	37	0.3	14	0.5	51	0.4
4 Address not found	25	0.2	—	—	25	0.2
5 Other	49	0.5	37	1.3	86	0.6
Overall non-response	179	1.7	61	2.2	240	1.8

data collected. In the YARFS, information was collected on several aspects of the interview situation which might affect the reliability of a respondent's answers. An outline of these aspects is given below.

(a) Degree of co-operation

At the end of the individual interview, the interviewer recorded her observations of the overall interview situation and whether the respondent's degree of co-operation was poor, fair, good or very good. As may be seen from table 2.4, the co-operation of the respondents was ranked as very good or good in 57 per cent of the cases, as fair in 34 per cent, and as poor in only 6 per cent.

(b) Reliability of maternity history data

At the end of the maternity history section of the individual questionnaire, the interviewer recorded her assessment of the reliability of the respondent's answer. If the respondent was able to answer the questions with ease and directly, and if dates (months and years) of all pregnancies were obtained without difficulty, the reliability of answers was marked as 'good'. If the interviewer had to do a moderate amount of probing or correcting of answers, the reliability of answers was marked as 'fair'. Finally, if the interviewer had to do considerable probing for determination of the dates of pregnancies, or came to the conclusion that the respondent was not herself sure of many answers she gave, the reliability of answers was marked as 'poor'.

Table 2.4 Factors affecting the reliability of the individual survey data

	Number	Per cent
A Degree of co-operation		
(Interviewers' assessment)		
Poor	153	5.9
Fair	884	34.0
Good	1201	46.0
Very good	291	11.2
Not stated	76	2.9
Total	2605	100.0
B Reliability of answers in the maternity section		
(Interviewers' assessment)		
Poor	156	6.0
Fair	1038	39.9
Good	1395	53.5
Not stated	16	0.6
Total	2605	100.0

C Presence of other persons

Persons present	Marriage history		Maternity history	
	Number	Per cent	Number	Per cent
No one	838	32.2	752	29.0
Children under 10 years only	608	23.3	668	25.6
Husband only	86	3.3	87	3.3
Other males only	47	1.8	47	1.8
Other females only	705	27.1	740	28.5
Various combinations	321	12.3	311	11.9
Total	2605	100.0	2605	100.0

Table 2.4 shows that, according to the interviewers' assessments, the data collected in the maternity history section were of good quality; answers were ranked as good in 54 per cent of the cases, and as poor in only 6 per cent.

(c) Privacy of interview

The interviewers were instructed that it was very important to conduct the individual interview in private and that all the questions were to be answered by the respondent herself. The presence of other persons during the interview might embarrass the respondent and influence some of her answers.

In the individual interview, information was collected on the presence of other persons at the end of the marriage history section and again at the end of the maternity history section. Table 2.4 summarizes the results. As may be seen, information on the marriage and maternity histories was obtained in complete privacy in less than one-third of the cases, in the presence of children under ten years of age in about 25 per cent, and in the presence of the husband in only 3 per cent. Other females were present in about 28 per cent of the cases, and other males in less than one per cent.

It should be pointed out that interviewer's assessments of data reliability and privacy of interview are not in any way guarantees of good quality of data.

(d) Reliability of fertility intentions

Non-response to questions on ideal family size and number of additional children wanted was generally high. All respondents were asked about 'ideal family size'; only 56 per cent of them gave numerical answers while the remaining 44 per cent gave answers such as 'depends on God' or 'as many as possible'. Currently married, fecund women who expressed a desire to have more children were asked about the number of additional children they wanted to have; 58 per cent gave numerical answers, 29 per cent gave other answers and 13 per cent declined to state.

2.10 STANDARD ERRORS

For certain important statistics in the text the estimated standard error is given in appendix IV or in the form of a footnote. For example, in section 5.2.1, the estimated mean number of children ever born (over the entire sample) is given as 3.74 and its associated standard error is 0.09. Assuming that the survey responses themselves are accurate (ie zero non-sampling error), the standard error in the present context is a measure of the size of the expected (absolute) difference between the observed sample mean and the true population mean. The standard error is important since its knowledge allows a good estimate to be made of a range of values in which the true population should fall. Assuming that the survey responses themselves are accurate (ie zero non-sampling error), in 2 samples out of 3, the true population value of the variable of interest lies within one standard error or the estimated value, and in 19 samples out of 20 the true population value lies within two standard errors of the estimated value. Accordingly, an interval of plus or minus two standard errors around the sample estimate nearly always (19 times out of 20 or 95 per cent of the time) contains the true population value. The interval is called the 95 per cent confidence interval and is commonly chosen as giving a range of values in which the true (population) value should fall.

In the above example, the 95 per cent confidence interval is $3.74 \pm 2(0.09) = 3.56$ to 3.92; that is, with 95 per cent confidence it can be said that the total number of children ever born in the population lies between 3.56 and 3.92 children ever born.

Standard errors for the difference between pairs of estimates are also given in appendix IV or in the text; these are important for determining the likelihood that the observed difference is real or merely caused by sampling variation. In section 5.5.2, the percentage of (currently married) women pregnant at the time of the survey is shown to vary with age. For example, consider comparing the percentage pregnant for the age groups <25, 25–34 and 35–44. The estimated percentages were 20.95 and 24.02 for the age groups <25 and 35–34 respectively, giving an estimated difference of -3.07 per cent. This difference has an estimated standard error of 1.88 so that a 95 per cent confidence interval for the difference is $-3.07 \pm 2(1.88) = -6.83$ to 0.69. The estimated percentages were 24.02 and 17.17 for the age groups 25–34 and 35–44 respectively, giving an estimated difference of 6.25 per cent. This difference has an estimated standard error of 2.01 so that a 95 per cent confidence interval for the difference is $6.25 \pm 2(2.01) = 2.23$ to 10.27.

In general, it is reasonably certain that the sample reflects a real difference in the population if the 95 per cent confidence interval for the difference does not include the value zero. In statistical terminology, the difference is then said to be statistically significant at the 5 per cent level. On the other hand, the term 'not statistically significant' is used to describe a difference with a 95 per cent confidence interval which includes the value zero; in such cases there is no significant evidence that the observed difference in the sample reflects a difference in the population.

In the above example, the 95 per cent confidence interval for the estimated percentage difference between the age groups 25–34 and 35–44 does not include the value zero, so there does appear to be a real difference in the percentage pregnant between the age groups 25–34 and 35–44. The 95 per cent confidence interval for the estimated percentage difference between the age groups <25 and 25–34 does include the value zero, so the observed difference could be merely caused by sampling variation. A more detailed presentation of sampling errors may be found in appendix IV. Sampling errors have been calculated for the major variables in the YARFS, using the WFS computer program CLUSTERS. An outline of the precedures for estimating sampling errors together with the tables of sampling errors for the household survey and the individual survey are also given in appendix IV. Tables show the estimated sampling errors for means, percentages, proportions for subgroups or subsamples of the population.

2.11 TIMETABLE

The actual dates of performance of the main activities of the YARFS are shown below:

Activities	**Dates**
1 Project preparation and approval	August–September 1977
2 General preparation (questionnaires, sample design)	March–April 1978
3 Pre-test and questionnaire finalization	July–August 1978
4 Listing of sample areas	December 1978–March 1979
5 Training of field staff: Stage I	June 1979
6 Fieldwork: Stage I	June–July 1979
7 Training of field staff: stage II	August 1979
8 Fieldwork: Stage II	September–November 1979
9 Office editing and coding	November 1979–April 1980
10 Punching, preparation of clean tapes	May–September 1980 March 1981–March 1982
11 Variable recoding and tabulation	April–August 1982
12 Report writing (English edition)	October–December 1982
13 Translation of report into Arabic	January–July 1983
14 Finalisation of Arabic & English editions	August–September 1983
15 Printing	October–December 1983

PART II

COMMENTARY ON THE MAIN FINDINGS

CHAPTER 3

CHARACTERISTICS OF THE SURVEY POPULATION

3.1 INTRODUCTION

The 1979 Yemen Arab Republic Fertility Survey (YARFS had two components: the household survey and the individual survey. A large number of detailed tables from these two surveys have been prepared and are published in volume II of this report. In the following chapters, the major findings of the YARFS on nuptiality, fertility, mortality, family planning, factors affecting fertility and family size desires are presented in the form of summary tables, with cross-reference where appropriate to the detailed tables from which they are drawn.

This analysis is presented in terms of the sample as a whole as well as for different subgroups of the sample. These subgroups are defined by a number of background characteristics which are referred to as the 'explanatory variables' or the 'socio-economic characteristics' of the respondents. The objective of this chapter is to examine the data collected in the survey on these characteristics and to provide a demographic and socio-economic profile of the YARFS sample.

The chapter is divided into six sections. Section 3.2 gives a brief description of the population enumerated in the household survey, together with an indication of the quality of data on the important classificatory variable, age. Section 3.3 defines and describes the background variables used in the analysis of the YARFS data, and gives an indication of the relative size of the different subgroups. In section 3.4 the demographic composition of the background variables by age and by duration of marriage is analysed. Information collected in the YARFS household survey on characteristics of the dwelling and the presence in household of modern durables is covered in section 3.5. Finally, a brief description of standardization techniques used in the analysis is given in section 3.6.

3.2 POPULATION ENUMERATED IN THE HOUSEHOLD SURVEY

A total of 13 255 households were successfully interviewed for the household survey using the extended household schedule. Listing of household members was done on both a *de facto* (slept last night in household) and a *de jure* (usually resident in the household) basis.

The *de facto* population numbered 72 688 persons, while the *de jure* population was slightly higher at 73 318 persons. The average household size based on the *de facto* population was 5.48 persons.

The tabulation of the household survey data was based on the *de facto* population only, since the individual survey was restricted to ever-married women aged 50 or less who slept in the household the night preceding the date of interview. Thus, with the exception of table A2 in volume II of this report, all the household survey tables refer to the *de facto* population.

Table 3.1 and figure 3.1 show the per cent distribution of the *de facto* population enumerated in the 1979 household survey, according to age and sex. The same information is shown in table 3.2 but for broader age groupings.

The figures show a very young population for Yemen and conform to the pattern observed in many developing countries; thus, about 50 per cent of the males and 45 per cent of the females enumerated in the survey are under 15 years old. About 44 per cent of the females are in the age group 15–49.

Table 3.1 Per cent distribution of the *de facto* population enumerated in the 1979 YARFS household survey and in the 1975 census according to age and sex

Age	1979 YARFS household survey		1975 census		Sex ratio	
	Males	Females	Males	Females	1979 YARFS	1975 census
0–4	20.7	19.9	18.2	16.6	101	99.7
5–9	17.2	15.0	20.0	16.9	111	107.7
10–14	12.4	9.7	13.0	10.2	124	115.4
15–19	8.3	8.3	7.1	7.8	97	82.6
20–24	5.4	7.8	4.7	6.7	68	63.6
25–29	6.0	8.1	5.6	7.8	72	64.8
30–34	5.0	6.3	5.3	7.0	78	68.6
35–39	5.0	5.6	5.4	6.1	88	81.7
40–44	4.1	4.6	4.8	5.3	86	83.2
45–49	3.7	3.5	3.5	3.4	102	92.4
50–54	3.3	3.7	3.8	3.8	88	89.9
55–59	1.9	2.1	1.8	1.6	89	101.8
60+	7.0	5.4	6.8	6.8	126	93.0
All	100	100	100	100	97.5	91.0

Source: Table A1 and the 1980 *Statistical Year Book*

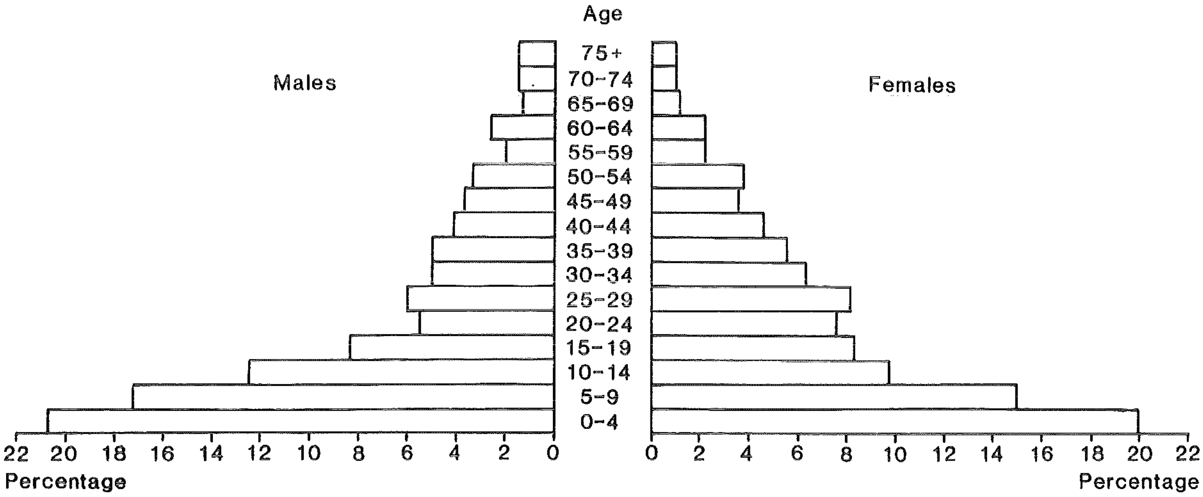

Figure 3.1 Age and sex distribution of the population enumerated in the YARFS household survey, 1979

Table 3.2 Per cent distribution of the *de facto* population enumerated in the 1979 household survey and in the 1975 census in broad age groups

Source	Age				All
	<15	15–49	50–59	60+	
YARFS					
Males	50.3	37.5	5.2	7.0	100
Females	44.6	44.2	5.8	5.4	100
Census					
Males	51.2	36.4	5.6	6.8	100
Females	43.7	44.1	5.4	6.8	100

Source: Table A1 and 1980 *Statistical Year Book*

Table 3.3 Distribution of the *de facto* population and the temporary emigrants enumerated in the 1979 household survey, according to age and sex

Age	*De facto* population		Temporary emigrants		Total	
	Males	Females	Males	Females	Males	Females
0–4	7 411	7 314	8	5	7 419	7 319
5–9	6 173	5 538	9	4	6 182	5 542
10	4 437	3 554	54	2	4 491	3 566
15	2 983	3 065	320	3	3 303	3 069
20	1 948	2 859	605	8	2 553	2 867
25	2 142	2 987	653	5	2 795	2 992
30	1 807	2 316	419	5	2 226	2 321
35	1 795	2 044	319	3	2 114	2 047
40	1 470	1 703	189	2	1 659	1 705
45	1 316	1 286	134	1	1 450	1 287
50	1 192	1 352	71	1	1 263	1 353
55	692	779	31	2	723	781
60	1 004	825	29	–	1 033	825
65	429	394	9	1	438	395
70+	1 081	780	11	1	1 092	781
All	35 878	36 810	2 860	42	38 738	36 852

The household survey shows an overall sex ratio (ie number of males per 100 females) of 97.5 per cent for the *de facto* population. If the number of temporary emigrants reported in the household survey (Table 3.3) is added to the *de facto* population, the sex ratio becomes 105.2 males per 100 females. On the basis of these figures, about 3.84 per cent of the usual residents in the sample households were 'temporary emigrants' on the interview date.

However, in Yemen, where most people are not aware of their exact age, there is the risk that errors in the reporting of age will occur. Further, age in some cases may not be known at all, and the interviewer may have to estimate it by reference to historical events or guess it by the mere physical appearance of the respondent.

Errors in the reporting of age have probably been more intensively examined by demographers than any other type of error because they are readily apparent and are relatively easy to quantify. Such errors fall into two classes: heaping at certain ages because of a preference for particular terminal digits (usually 0 and 5), and a systematic tendency for age to be over or understated. Systematic errors are more likely to distort the results because misstatement may be correlated with marital status or fertility. In the following paragraphs an attempt is made to assess the magnitude of errors in age reporting in the YARFS.

The distribution of the population enumerated in the YARFS household survey by single years of age (figure 3.2) shows very appreciable heaping at ages with terminal digits 0 and 5, and corresponding troughs at ages ending in 1 and 9. Somewhat less marked concentrations are found at ages ending in even numbers particularly 2 and 8.

Under normal conditions, the figures obtained for adjacent ages should be very close to each other. Even

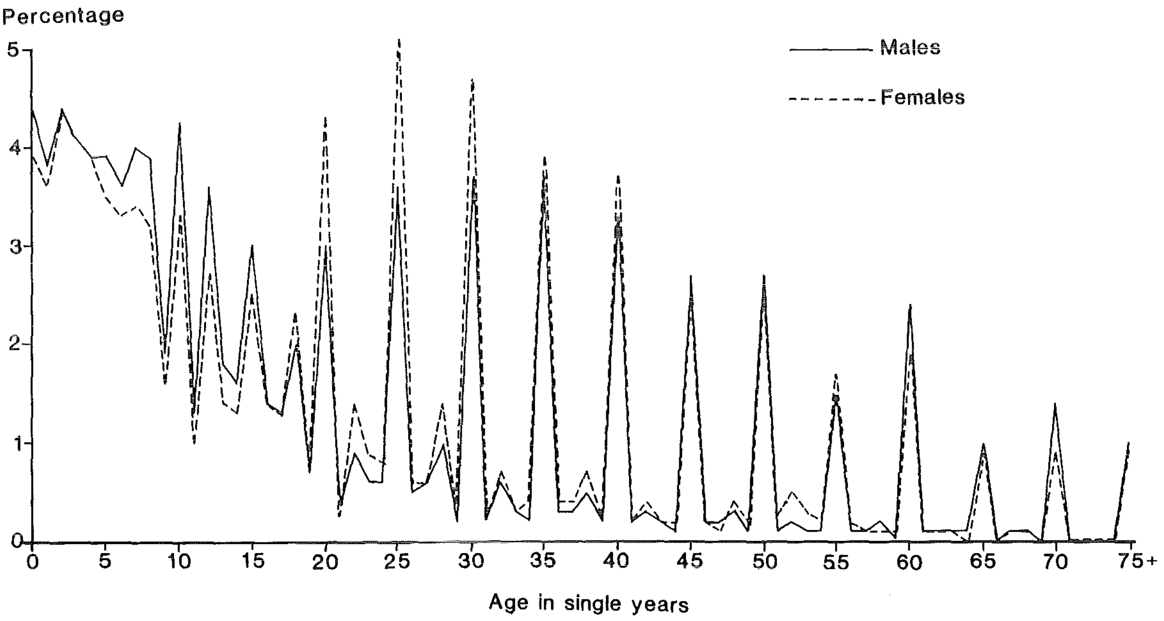

Figure 3.2 Percentage distribution of the population by sex and single years of age, household survey

though changes in the annual number of births, deaths and migrants may produce fluctuations from one single age to another, the very sharp fluctuations in the population distribution by age can only be explained by errors in the reporting of age.

Various indices have been developed for measuring heaping at individual or terminal digits. One simple way to measure digit preference is to assume that the true figures are evenly distributed, ie that there are nearly equal numbers at adjacent ages. For example, an index of heaping at a given age ending in 0 or 5 is the ratio of the number of persons reported at that age and the arithmetic average of the numbers reported in the five-year range centred at that age. A value for the index greater that unity represents heaping.

Table 3.4 shows the value of this index of age preference at terminal digits 0 and 5. The index at age 25, for example, is calculated as the population reported at age 25, divided by one-fifth of the total population reported at ages 23–27. Starting with age 20, very appreciable heaping at ages ending in 0 and 5 is observed for both males and females.

One way of detecting errors that are correlated with fertility is to examine the pattern of the mean number of children ever born by single years of age. Sudden increases in this number, particularly at the major age boundaries of 19/20/21, 24/25/26, etc suggests that age misreporting has occurred. Figure 3.3 shows the mean number of children ever born by single years of age as obtained from the individual survey. Under normal conditions, the curve should rise smoothly with no major irregularities. Figure 3.3, however, shows sudden peaks at certain ages, which indicate selective age misreporting.

Table 3.4 Index of age preference at certain terminal digits, 1979 household survey

Age	Males	Females
15	1.6	1.6
20	2.1	2.3
25	3.0	3.2
30	3.3	3.2
35	3.8	3.7
40	3.8	3.5
45	3.9	3.9
50	3.8	3.2
55	3.8	3.5
60	4.2	4.2

The heaping discussed above means that there are shifts in the age distribution of the respondents, but the direction and magnitude of these displacements are difficult to identify. However, the impact of the irregularities caused by age misreporting can be offset to some extent by presenting the results in terms of five or ten-year age groups.

3.3 DESCRIPTION OF THE EXPLANATORY VARIABLES

The main findings of the survey are presented in this report not only for the sample as a whole but also for different subgroups. These subgroups are defined by a

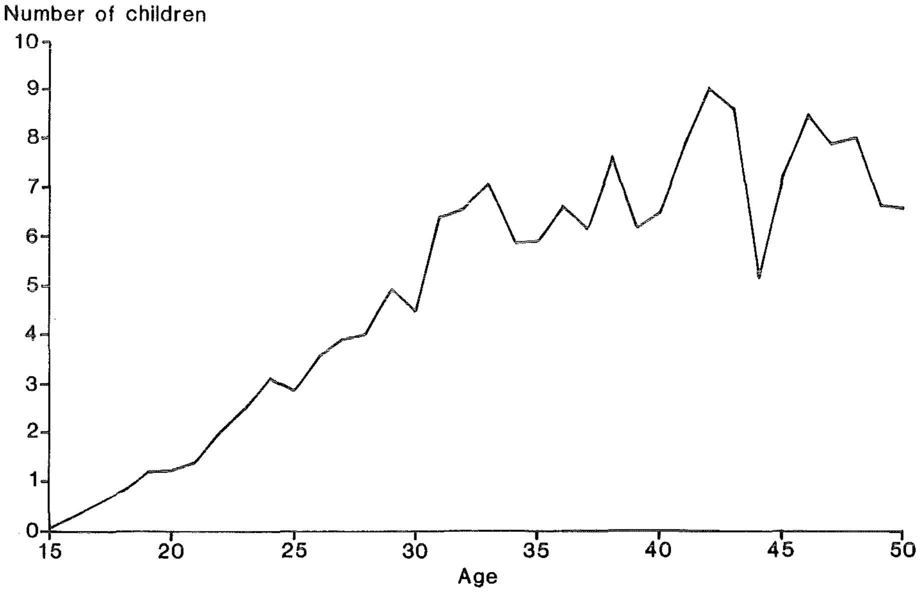

Figure 3.3 Mean number of children ever born to ever-married women by single years of age, according to the YARFS individual survey 1979

number of geographic and socio-economic variables, which are referred to as the 'socio-economic characteristics'.

The geographic characteristics included in the individual survey were childhood type of place of residence, current type of place of residence, and region of residence. The socio-economic characteristics were education of respondent and her spouse, occupation of her current or last husband, and the respondent's work experience both before and after marriage.

Table 3.5 shows the per cent distribution of ever-married women interviewed in the individual survey according to major background characteristics.

In preparing the present report, it was considered unnecessary to use all available variables, and accordingly only the following five variables have been used in most tabulations (see also section 3.3.6):

- Type of place of residence
- Region of residence
- Pattern of work
- Husband's level of education
- Husband's occupation.

A brief description of each of the five background characteristics used in the analysis is given below.

3.3.1 Type of place of residence

Sample areas were classified as 'urban' or 'rural' in accordance with a standard designation used by the Department of Statistics in the 1975 census. This classification is based mainly on a number of socio-economic characteristics related to the administrative or commercial importance of the locality.

According to the individual survey, about 12 per cent of ever-married women lived in urban areas and 88 per cent lived in rural areas.

3.3.2 Region of residence

Administratively, the Yemen Arab Republic, at the time of the survey, was divided into ten governorates. Following the recent division of the Ma'arib governorate into two governorates, Ma'arib and Al-Jawf, Yemen is now divided into eleven governorates. The governorates are the largest administrative units at the regional level. However, because of several physical similarities between a number of these governorates, they have been grouped, for the purposes of the present analysis, into the following four regions:

1. North: Sana'a, Dhamar, Al Mahweet and Sa'dah governorates
2. South: Ta'iz and Ibb governorates
3. West: Hajjah and Hodiedah governorates
4. East: Ma'arib and Al Beida governorates.

3.3.3 Pattern of work

Details about employment were obtained from each ever-married woman interviewed in the individual survey, both for her current or most recent work since

Table 3.5 Per cent distribution of ever-married women interviewed in the individual survey, according to background characteristics (Total number of ever-married women: 2605)

Background characteristic	Per cent	Background characteristic	Per cent	Background characteristic	Per cent
Type of residence		*Current or last occupation since marriage*		*Childhood place of residence*	
Urban	11.6	Prof., tech. and clerical	0.2	Urban	14.1
Rural	88.4	Sales	0.6	Rural	85.9
Region of residence		Agriculture	45.0	*Husband's childhood place of residence*	
North	33.6	Services	0.4	Urban	14.9
South	36.9	Manual	2.4	Rural	85.1
West	24.5	Did not work	51.4	*Husband's literacy*	
East	5.0	Not stated	–	Literate	40.2
Literacy		*Work status before marriage*		Illiterate	59.8
Literate	2.9	Family: paid in cash	0.2	*Husband's level of education*	
Illiterate	97.1	Family: paid in kind	0.2	No schooling	87.8
Level of education		Family: unpaid	38.2	Incomplete primary	4.9
No schooling	98.2	Other: paid in cash	1.1	Primary and over	7.3
Incomplete primary	1.0	Other: paid in kind	1.8	*Husband's occupation*	
Primary and over	0.8	Other: unpaid	0.2	Prof., tech. and clerical	5.6
Pattern of work		Self-employed	5.2	Sales	11.0
Before and after marriage	40.0	Did not work	53.1	Agriculture	36.0
After marriage only	8.6	*Last work status since marriage*		Services	8.0
Before marriage only	6.9	Family farm	33.9	Manual	37.9
Never worked	44.5	Family: paid in kind	–	Never worked	1.5
Occupation before first marriage		Family: unpaid	2.2	*Husband's work status*	
Prof., tech. and clerical	–	Other: paid in cash	1.2	Family: paid in cash	1.8
Sales	0.2	Other: paid in kind	2.9	Family: paid in kind	0.5
Agriculture	43.9	Other: unpaid	4.7	Family: unpaid	5.5
Services	0.4	Self-employed	3.6	Other: paid in cash	42.0
Manual	2.3	Did not work	51.4	Other: paid in kind	4.4
Did not work	53.1	*Place of work since marriage*		Self-employed	35.9
Not stated	–	Family farm	33.9	Never worked	1.5
		Other farm	8.0	Not stated	8.5
		At home	3.5		
		Away from home	3.3		
		Did not work	51.4		

marriage and for occupation before marriage. 'Work' is defined as an occupation apart from ordinary household duties, whether paid in cash or in kind or unpaid, whether for her own account or for a family member or for someone else, and whether done at home or away from home. The information collecting on timing of work has been summarized in the following four categories, two of which were further subdivided to form six groups.

1 Those who worked before and after marriage. Of the 1042 ever-married women who fall into this category, all but 39 are also currently working. The detailed tabulations were run separately for those who have worked before marriage and are currently working and those who worked before and after marriage but are not currently working. However, due to small cell frequencies, these two have been combined to form a single category in discussing the substantive findings.

2 Those who have worked since marriage but did not work before their first marriage. Of the 224 ever-married women who worked since marriage, all but 7 are currently working. Here again, though the detailed tabulations are presented separately for those currently working and those not currently working, the two have been combined into one category for the purposes of the present analysis.

3 Those who worked before their first marriage but not since marriage. This category includes 179 ever-married women or 7 per cent of the individual survey sample.

4 Those who never worked. Out of the 2605 ever-married women of the individual survey sample, 1159 or 45 per cent have never worked.

One advantage of creating such detailed categories lies in the fexibility it provides to the user of the data. By combining the six categories in different ways, one can create suitable groupings for discussion of particular results, for example, the dichotomy between those who have never worked and those who have worked.

3.3.4 Husband's level of education

The educational system in Yemen, is common with most of the Arab countries, has four tiers: primary, covering six years of schooling; preparatory, covering three years; secondary, also covering three years; and higher education, at institutes or university, which lasts in most cases for four years.

As may be seen from table 3.5, about 98 per cent of the ever-married women in the individual survey reported that they had not attended school. It was, therefore, decided to exclude the respondent's level of education from the analysis, and to use instead the respondent's current (or last) husband's level of education.

The main findings of the survey classified by husband's level of education will be presented in terms of three categories: no schooling — 87.8 per cent of the husbands; incomplete primary, ie those with less than six years of schooling — 4.9 per cent; and primary and over, ie those with six or more years of schooling — 7.3 per cent.

3.3.5 Husband's occupation

For currently married women this variable relates to the current (or most recent, if retired or unemployed) occupation of the husband; for women who are not currently married, the reference is to their last husband's occupation.

Responses to the question of husband's occupation have been coded using a single digit classification corresponding to WFS recommendations. In tabulations, only five broad categories, with a small residual category of 'never worked', have been used. These categories relate to the WFS system as follows:

Category	WFS category
Professional, technical, administrative managerial and clerical	1,2
Sales	3
Agricultural	4,5
Service	6,7
Manual	8,9

The reason for this amalgamation is that it makes the sample sizes adequate for detailed discussion of the results.

However, it should be recognized that there are inherent difficulties in any occupational classification. For example, the 'sales' category covers a range from a street vendor to a salaried salesman in a modern enterprise. The activities, requirements, and rewards associated with these jobs are very different. Similarly, there is a wide range of jobs and incomes within other occupational categories. The reader is therefore cautioned to be careful in interpreting differentials by occupational categories. Professional, technical and clerical workers accounted for about 6 per cent of the sample, service workers about 8 per cent, and sales workers about 11 per cent. The majority of husbands were classified as manual workers (38 per cent) or as agricultural workers (36 per cent).

3.3.6 Other variables

In some of the tabulations, particularly those presenting the differentials in age at marriage and early marital fertility, three other background variables have been used. These are woman's occupation before first marriage (defined in the same way as her husband's occupation); her childhood place of residence (urban or rural), defined as the woman's subjective impression of the place where she spent most of her childhood years; and work status before marriage.

3.4 DEMOGRAPHIC COMPOSITION OF THE BACKGROUND CATEGORIES

It is commonly observed that women with different background characteristics also differ in their distribution by age and marriage duration. Some of the differentials in fertility between groups with different background characteristics may simply be a reflection of these differences in demographic composition. For a critical understanding of the data, it is important to recognize the nature of these differences between categories of the background variables (even though an attempt is made to include explicit control by relevant demographic variables in the cross-tabulations discussed here).

If the distribution by age changes from one background category to another, there are several possible reasons. The first is that the category may have been subject to historical changes — for example, expanding in such a way that it contains an increasingly large proportion of younger women (as is true for higher educational levels). Secondly, since the sample is confined to ever-married women, categories in which women marry later tend to have a lower proportion of younger women (since many of the younger women are not yet married and hence not in the sample). Similar arguments apply to variations in distribution by marriage duration. Finally, these variations can also be caused by age-misreporting, the pattern of which may vary from one category to another and, for subgroups, by sampling fluctuations.

Table 3.6 Relative distribution of ever-married women according to current age and duration of marriage within categories of background variables

Background characteristic	Current age				Years since first marriage				
	<25	25—34	35—44	45+	<5	5—9	10—14	15—19	20+
Type of residence									
Urban	0.86	1.07	1.14	1.06	0.84	1.00	1.03	1.09	1.09
Rural	1.02	0.99	0.99	0.99	1.02	1.00	1.00	0.99	0.99
Region of residence									
North	1.00	1.02	1.03	0.86	1.10	0.89	1.11	0.95	0.94
South	1.06	1.07	0.92	0.68	1.03	1.03	0.92	1.14	0.91
West	0.88	0.90	1.09	1.73	0.86	1.02	0.96	0.89	1.25
East	1.18	0.90	0.95	0.79	0.81	1.43	1.13	0.86	0.80
Husband's level of education									
No schooling	0.94	1.03	1.06	1.03	0.93	0.98	1.03	1.06	1.04
Incomplete primary	1.35	0.76	0.72	1.25	1.41	1.07	1.00	0.62	0.78
Primary and over	1.54	0.82	0.54	0.48	1.61	1.21	0.70	0.52	0.64
Pattern of work									
Before and after marriage	1.01	1.00	0.98	1.04	0.97	1.05	1.09	0.92	0.98
After marriage only	0.72	1.09	1.17	1.43	0.75	0.68	0.88	1.44	1.38
Before marriage only	1.03	1.00	1.00	0.89	1.12	1.34	0.89	0.81	0.78
Never worked	1.04	0.99	0.99	0.91	1.06	0.96	0.96	1.03	0.98
Husband's occupation									
Prof., tech. and clerical	0.99	0.85	1.05	1.55	0.59	1.40	0.82	0.72	1.42
Sales	1.00	0.94	0.89	1.43	0.87	0.95	0.98	1.08	1.15
Agriculture	0.78	1.01	1.27	1.28	0.84	0.86	0.98	1.18	1.20
Services	0.82	1.21	1.11	0.66	0.74	1.01	1.32	1.11	1.00
Manual	1.16	1.04	0.82	0.60	1.16	1.15	1.03	0.87	0.77
Never worked	1.66	0.67	0.54	0.60	2.17	0.90	–	1.04	0.46
Per cent distribution of the total sample of ever-married women	36.5	35.1	19.5	8.75	25.5	20.5	15.7	15.2	23.0

Source: Tables 2.2.6 and 1.2.2

Table 3.6 illustrates differences in composition by age and marriage duration between various background variables categories. The figures show the proportion belonging to a particular age or marriage duration group within a specified background variable category, divided by that proportion in the total sample of ever-married women. The figures thus indicate the relative size of an age or marriage duration group in a particular category, compared to the proportion of that group in the whole sample. A figure larger than 1.0 means that the group is relatively over-represented in the given category.

For the sample as a whole, the per cent distribution of ever-married women by age and by marital duration is given in the last row of table 3.6. Over one-third of the women are aged 25–34, and one in four women has been married for less than five years.

The table shows thas the average age of urban women is slightly higher than that of rural women, though the difference is very small. Regional differences are more pronounced. Women under 25 years of age are relatively over-represented in the South and East regions, and under-represented in the West region.

Categories by level of education also differ greatly in age distribution. Women whose husbands have not been to school form an older group than those whose husbands have attended school. Women whose husbands have attended school are over-represented at ages under 25 and under-represented at ages 25 or over.

Figures on the categories of the variable 'pattern of work' suggest that women who worked after marriage tend to be older than women who worked before marriage only or those who never worked.

There are proportionately more women at ages over 35 and fewer under 35 among those whose husbands are in the professional, technical and clerical occupations; the reverse is true for women whose husbands are engaged in manual occupations.

Thus, strong associations exist between age and duration since first marriage and certain categories of the women's background characteristics. A common method of taking these differences into account is to study differentials in fertility or related topics only within specified marriage duration or age groups. These demographic controls should be sufficiently fine to eliminate any effect of compositional differences on the findings. In presenting the results the sample is divided, wherever relevant into five or ten-year groups by current age or marriage duration. These controls should be adequate.

When sample size does not permit sufficiently detailed cross-classification of the data, an alternative method of taking into account differences in composition by age or marriage duration, etc is direct standardization. This involves weighting the cases in such a way that the resulting distribution of the variable on which standardization is being done becomes the same for all categories being compared. Further details on the procedure are given in section 3.6.

3.5 HOUSING AND ENVIRONMENTAL CONDITIONS

Information on characteristics of the dwelling and on the presence of modern durables in the household was collected in the YARFS household survey in an attempt to obtain a rough measure of housing and environmental conditions of the sample households.

Table 3.7 shows the distribution of households by number of rooms in the household, household size and density per room, separately for the urban and rural communities and for each region. Average household size was 5.48 for the whole sample, and about 6.24 and 5.40 for the urban and rural areas, respectively. Households are larger in urban areas mainly because of rural/urban migration and the need to house relatives who have migrated to urban areas. Apart from being larger, the urban households occupied, on average, slightly more rooms than those in rural areas. The density per room was more or less the same in both urban and rural areas. Regional differences in household size are narrow. Average household size was greater than the national average in the North and East regions, about the national average in the West region, and lower than the national average in the South region.

Table 3.8 shows the per cent distribution of the sample households according to type of water supply, lighting, cooking fuel and toilet facilities, separately for the urban and rural communities and for each region.

About 11 per cent of the sample households had water piped inside their homes, and a further 7 per cent had water piped outside their homes. About 35 per cent of households obtained their water supply from a public well, 12 per cent from spring or rain, while the remaining 35 per cent obtained water from other sources. About 97 per cent of the sample urban households had piped water inside or outside the house, but only 10 per cent of rural households had access to piped water. Public wells were the source of water supply for 46 per cent of households in the North, 31 per cent in the South, 27 per cent in the West and 17 per cent in the East.

Electric lighting was used by 34 per cent of the sample households. About 82 per cent of the urban households, but only 29 per cent of the rural households, used electric lighting.

Overall, wood was the most common fuel used for cooking (87 per cent), with kerosene next (5 per cent). Gas however was the most common fuel in urban areas (44 per cent), while wood was used by 93 per cent of households in rural areas.

Toilet facilities varied considerably according to type of place of residence and region. Thus, the percentage of households having a private toilet was 97 per cent in urban areas against 25 per cent in rural areas.

Table 3.9 also shows that about 93 per cent of the households in the sample urban areas had radios and 73 per cent had television sets, as against 67 per cent and 10 per cent respectively, in rural areas.

Thus, urban areas had living conditions far superior to those in other areas, with the greater availability of

Table 3.7 Household size, rooms per household and density per room, according to type of place of residence and region, 1979 household survey

	Place of residence		Region of residence				Total
	Urban	Rural	North	South	West	East	
Average household size	6.24	5.40	5.65	5.27	5.49	5.73	5.48
Average number of rooms per household	2.76	2.40	2.67	2.36	2.06	3.11	2.43
Average number of persons per room	2.26	2.25	2.12	2.23	2.66	1.84	2.25
Number of rooms (%)							
1	18.4	25.4	15.9	25.5	40.4	6.3	24.7
2	30.2	37.3	38.0	37.5	34.2	27.9	36.6
3	25.1	21.1	24.5	21.6	14.3	34.6	21.5
4	15.1	8.6	11.4	9.1	4.8	17.9	9.3
5+	11.2	7.6	10.2	6.3	6.3	13.3	7.9
Number of households	1 289	11 981	4 893	4 758	3 110	508	13 269

Table 3.8 Per cent distribution of household by selected environmental indicators, according to type of place of residence and region, 1979 household survey

	Place of residence		Region				Total
	Urban	Rural	North	South	West	East	
Water supply							
Pipes: inside	80.4	3.9	8.7	8.9	19.5	10.1	11.4
Pipes: outside	16.7	6.4	8.8	7.6	5.3	5.9	7.4
Public well	0.5	38.4	45.8	30.5	26.6	16.9	34.7
Spring	–	4.4	2.2	8.5	0.5	0.0	4.0
Rain	–	8.9	15.6	6.1	0.1	0.0	8.0
Other	2.4	38.0	18.9	38.4	48.0	67.1	34.5
Total	100	100	100	100	100	100	100
Lighting							
Electricity	81.7	29.3	45.2	30.3	16.0	80.7	34.4
Kerosene lamps	7.8	22.5	11.8	19.6	41.3	1.4	21.1
Other	10.5	48.2	43.0	50.1	42.7	17.9	44.6
Total	100	100	100	100	100	100	100
Cooking fuel							
Electricity	1.4	0.3	0.5	0.3	0.5	0.2	0.4
Gas	44.4	0.5	3.5	4.4	2.3	4.5	4.7
Kerosene	22.3	3.6	1.2	4.3	14.4	1.2	5.4
Coal	0.6	0.0	0.0	0.1	0.3	0.2	0.1
Wood	30.5	92.7	89.4	89.9	76.2	93.5	86.6
Other	4.8	2.9	5.4	7.0	1.3	0.4	2.8
Total	100	100	100	100	100	100	100
Toilet facilities							
Private: flush	14.7	1.3	0.7	5.9	0.7	1.0	2.6
Private: pitlet	82.6	23.7	34.2	27.6	25.9	23.2	29.5
No private toilet	2.7	75.0	65.1	66.5	74.4	75.8	67.9
Total	100	100	100	100	100	100	100

Table 3.9 Percentage of households which have selected modern durables, according to type of place of residence and region of residence

	Types of place of residence		Region of residence				Total
	Urban	Rural	North	South	West	East	
Radio	92.7	67.0	69.2	72.9	61.9	86.2	69.5
Television	73.1	9.7	21.1	12.7	13.2	11.0	15.8
Refrigerator	40.0	0.6	3.1	3.7	8.1	1.0	4.4
Sewing machine	39.7	6.1	11.2	8.3	8.4	6.7	9.3
Telephone	19.2	0.5	2.0	1.9	3.9	0.2	2.4
Washing machine	43.6	0.7	4.9	3.9	6.7	1.6	4.8
Motor car	15.7	1.7	3.6	2.4	0.8	3.9	3.0
Taxi or van	10.5	4.1	6.1	3.5	3.2	11.8	4.7
Motor cycle	8.5	1.5	2.8	0.5	4.1	0.2	2.2

sewage disposal, the provision of piped water and electricity, and the presence in the household of some of the basic modern durables.

3.6 NOTE ON STANDARDIZATION

As has been noted above, the background or socio-economic variables define parts of the sample to be compared and contrasted in the study of differentials in fertility behaviour, preferences, and regulation. Comparisons across subpopulations are hampered by the statistical association that may exist between the variable which defines the subpopulations and some other variables. For example, in comparing mean parities of several educational categories, the conclusion will be more complex if education and marriage duration are associated. Marital duration has a clear, largely biological relationship to parity and if, say, the higher educational groups have a disproportionately high number of women with short marriage durations, then the high educational group will have low fertility for that reason alone.

In studying differentials, it is therefore necessary to control relevant demographic and other characteristics of the categories being compared. When sample size does not permit sufficiently detailed cross-classification of the data, an alternative method of taking into account differences in composition is direct standardization.[1]

Standardization is applied to cross-classification of a mean response by, say, a background variable (such as education) and a demographic variable (such as marital duration). In order to control for the latter for each level of the background variable a weighted average of the cell means is calculated. The weights used are proportional to the grouped distribution of the demographic variable in the population as a whole. For example, in comparing parity for different educational categories, the demographic variable 'marital duration' is controlled by cross-classifying mean parity by education and marital duration, and then calculating for each educational level a weighted average of the mean parities of each marriage duration group, with weights proportional to the marginal distribution of marital duration for the whole sample. In this way, the same distribution by marital duration is applied to each educational level. Except for the approximation resulting from working with grouped data, any observed differences in the 'standardized' means of each educational level are thus not the result of differences in marital duration between the categories being compared.

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[1] For more detailed discussion of the method, see T. W. Pullum (1978), 'Standardization', *WFS Technical Bulletins* no 3.

CHAPTER 4

NUPTIALITY

SUMMARY

The evidence from the YARFS suggests that there was little or no change in marriage patterns across the cohorts of women aged 25–29 to 45–49 years. Among younger cohorts, those aged 20–24 and below, there has been a trend towards postponement from the early teenages to the middle teenages. The singulate mean age at marriage calculated from the YARFS household survey is 21.8 years for males and 16.9 years for females.

Age at first marriage is strongly associated with type of place of residence and with educational attainment. It may be inferred that increasing educational opportunities for Yemeni women are largely responsible for the recent decline in very early marriage.

A relatively high proportion of all ever-married women reported dissolution of their first mariages (20 per cent). This proportion was the product of a high incidence of divorce and a relatively high incidence of widowhood. In fact, divorce was the cause of dissolution of first marriage in 70 per cent of all dissolved marriages. The results also show that divorce is the leading cause of dissolution of first marriage not only in the early years of marriage but also at longer marital durations. However, about 77 per cent of women whose first marriages were dissolved had remarried by the time of the survey.

Only five per cent of all currently married women reported having one or more co-wives. There is an indication of a decline in the prevalence of polygamous marriages among the younger cohorts.

A wide difference exists between ages of husbands and wives; on average, husbands are eight years older than their wives.

4.1 INTRODUCTION

Marriage, divorce and widowhood are demographic events that influence the course of population growth in Yemen. First marriage provides the primary social setting in which the biological event of childbearing occurs. While fecundity provides the biological potential for reproduction, age at first marriage and a variety of other factors interact with it to determine a woman's actual reproductive performance. Following her first entry into a marital union, the time she actually spends in the married state is governed by the prevalence of marital dissolution and remarriage. Within marriage, the degree of exposure to childbearing is influenced by a variety of factors such as temporary separation of spouses, coital frequency, adolescent subfecundity, primary and secondary sterility, post-partum amenorrhoea, and the prevalence and efficiency of contraceptive use.

Most of these factors were measured in the Yemen Arab Republic Fertility Survey. This chapter is confined to an analysis of the nuptiality data collected in the household and the individual surveys, and is organized in five sections. In section 4.2, recent trends and differentials in the age pattern and level of first marriage are analysed. Section 4.3 examines some aspects of marital stability. Finally, the prevalence of polygamous marriages and differences in ages of husbands and wives are discussed in sections 4.4 and 4.5, respectively. It should be recalled that information on date of marriage refers to the date when marriage was consummated and not the date on which marriage was arranged or agreed upon.

4.2 FIRST MARRIAGE

4.2.1 Singulate mean age at marriage

Demographic patterns, social norms and economic factors, all work intricately together to shape the character of marriage in a society. The elements involved in this process are wide-ranging and include such factors as preferred age differences between husbands and wives, the relative availability of men and women with desired characteristics, the costs of forming a household, the acceptability of divorce and remarriage, and education, employment and other opportunities that may be viewed as a temporary disincentive or alternative to marriage.

By way of general introduction to the analysis of nuptiality patterns in Yemen, data on the proportion single by five-year age groups from the household survey may be used to calculate a summary measure of the age at first marriage. This measure, introduced by Hajnal in 1953, is termed the *singulate mean age at marriage* (SMAM). It is interpreted to be the mean age at first marriage of those persons who marry by the age of 50, ie SMAM measures the mean number of years spent single among persons ultimately marrying. In this report, as is usual, it is calculated by adding the proportion currently single at succesive ages as though they referred to a single real cohort of men or women. The SMAM thus calculated summarizes the experience of all the persons enumerated in the different age groups at a given point in time and does not refer to any real cohort. The value of this singulate mean age at marriage calculated from the YARFS household survey data is 21.8 years for males and 16.9 years for females.

4.2.2 Proportions ever married

Nuptiality as a demographic event may be characterized by its age pattern and by its ultimate level. Trends in these two basic characteristics of nuptiality may be examined by linking data on nuptiality from the household survey with that obtained in the individual survey. Table 4.1 shows the cumulative proportions of women ever married by five-year age groups and by current age. The table shows a very young age pattern of first marriage for Yemeni women. Thus, among women currently aged 25–29, the proportion ever married was 18 per cent at ages under 15, 57 per cent at ages 15–19 and as much as 88 per cent at ages 20–24. A similar young age pattern of first marriage is also shown for the other age cohorts. The figures suggest that, apart from a small decline in very early marriage (under 15 years), over the last thirty years or so there has been very little or no change in the female average age at first marriage. This conclusion is also confirmed by an examination of trends in the ages at which certain proportions of successive birth cohorts were married. In table 4.2, figures are given showing the ages at which 10, 25, 50 and 75 per cent of women of successive birth cohorts had been married for the first time. The last column in table 4.3 shows the interquartile range of age at marriage, that is, the difference between the ages by which one-fourth and three-fourths of the women had entered into a first marriage (the difference between the first and third quartiles of age at first marriage).

Table 4.1 Cumulative percentage of women ever married by current age

Current age	Age at marriage						
	< 15	15–19	20–24	25–29	30–34	35–39	40–44
15–19	8.5	58.7					
20–24	14.6	57.9	91.3				
25–29	18.4	56.9	87.7	96.9			
30–34	19.1	63.8	86.5	95.7	97.6		
35–39	14.1	58.7	85.9	94.7	97.8	98.5	
40–44	20.1	61.4	84.7	96.1	97.8	98.0	98.0
45–49	14.3	55.3	81.7	93.7	97.7	98.5	98.8

Table 4.2 Ages by which 10, 25, 50 and 75 per cent of women were ever married, by current age and the interquartile range

Current age	Per cent ever married				Interquartile range
	10	25	50	75	
15–19	18.2	14.5	16.0	–	–
20–24	11.9	14.0	6.2	18.6	4.6
25–29	11.4	13.4	16.1	19.3	5.9
30–34	11.8	13.2	15.2	18.8	5.6
35–39	12.3	13.8	15.8	19.2	5.4
40–44	11.4	13.0	15.4	18.6	6.6
45–49	11.3	13.7	16.0	20.1	6.4

Source: Derived from table 4.2

The table shows very little change in the median age at first marriage (ie the age by which half of the women of any given cohort had entered into a first marriage), a rise of about one year in the ages at which 10 and 25 per cent of the women had ever married and a decline of about one year in the age at which 75 per cent of the women had married.

It may be noted that the figures in tables 4.2 and 4.3 show small irregularities which probably reflect errors in the reporting of date of first marriage or current age. In view of these difficulties, the safest interpretation of marriage trends is that there was little or no change in behaviour across cohorts aged 45–49 to 25–29 years. Among younger cohorts, those aged 20–24 and below, there has been a trend towards postponement of marriage from the early teenages to the middle teenages.

4.2.3 Differentials in age at first marriage

As previously mentioned, age at first marriage is a product of various socio-economic and demographic factors. Although cultural as well as other social systems may encourage and maintain the pattern of marriage at a young age, differentials by various social characteristics have usually been observed in different societies.

Attention is therefore paid to the question: does the place where people live or their educational background or their occupational status make a difference in age at marriage?

The population of Yemen is scattered; the Yemenis live on farms, in villages, and in a few central cities. Mean age at first marriage, as will be indicated, does indeed vary by type of place of residence, by region, by level of education and by economic activity.

Data from the household survey permit the investigation of group variation in age at marriage separately for males and for females, by four socio-economic characteristics: type of place of residence, region of residence, literacy, and educational status. Table 4.3 — based on the household survey — shows the proportions ever married for males and for females by age according to these four background variables. The table also shows the median age at first marriage, that is, the age by which 50 per cent of any given subgroup had entered first marriage.

The table shows significant differences in the timing of first marriage for both men and women between urban and rural communities. For men, the percentage ever married at ages 20–24 is 48 per cent for urban areas and 65 for rural areas. For women at ages 15–19, the percentage ever married increases from 42 in urban areas to 64 in rural areas.

There are also significant differences in the timing of first marriage according to region of residence. Thus, the youngest marriage pattern is shown for residents of the east region and the oldest is exhibited by those living in the west region, with a difference in the median age at first marriage of about two years for women and one year for men.

The table also shows an inverse relationship between level of education and age at first marriage, with a difference between the median age at first marriage for those who never attended school and those with primary

Table 4.3 Percentage of males and females who have ever married, by current age and socio-economic characteristics

Socio-economic characteristic	Current age								Median age at first marriage
	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	
A Males									
All		15.3	62.4	87.5	95.1	98.0	98.4	98.9	19.8
Type of residence									
Urban		8.7	47.7	79.6	91.2	95.5	97.9	98.1	21.4
Rural		16.4	64.6	88.5	95.6	98.3	98.5	99.0	19.6
Region of residence									
North		15.8	59.5	86.4	95.0	97.9	98.5	99.4	19.8
South		17.5	71.6	91.9	98.4	98.9	99.4	98.9	19.4
West		11.7	54.5	84.0	91.9	97.3	97.6	98.1	20.5
East		17.1	79.4	91.3	96.1	96.5	97.5	100.0	19.3
Literacy									
Literate		14.3	62.3	90.3	98.19	98.4	100.0	99.1	20.8
Illiterate		15.9	62.4	85.9	93.7	97.8	97.9	98.9	19.7
Level of education									
No schooling		16.9	64.8	88.6	95.3	98.1	98.4	99.0	19.6
Incomplete primary		10.2	47.9	92.4	100.0	93.0	100.0	100.0	22.5
Primary and over		10.5	51.8	73.5	91.7	98.8	100.0	97.1	22.6
B Females									
All	7.5	60.5	92.1	96.7	98.1	98.9	97.9	98.8	15.5
Type of residence									
Urban	2.3	42.1	81.6	92.9	96.2	99.1	94.2	97.6	17.5
Rural	8.4	63.5	93.2	97.1	98.3	98.9	98.4	98.9	15.5
Region of residence									
North	8.8	62.0	92.9	97.0	98.6	99.6	98.5	99.6	15.5
South	6.5	60.6	92.8	97.3	98.7	9.2	98.7	99.3	15.7
West	7.4	54.0	88.5	94.8	96.2	97.6	95.9	96.4	16.9
East	8.0	80.7	97.2	100.0	100.0	98.0	100.0	100.0	14.7
Literacy									
Literate	1.2	33.1	72.9	91.5	100.0	100.0	100.0	100.0	17.9
Illiterate	8.5	63.1	92.9	96.8	98.1	98.9	97.9	98.8	15.5
Level of education									
No schooling	6.6	63.0	92.9	96.8	98.1	98.9	97.9	98.8	15.5
Incomplete primary	1.1	42.4	79.3	100.0	100.0	100.0	100.0	100.0	16.7
Primary and over	0.0	22.6	55.3	83.3	100.0	100.0	100.0	100.0	22.1

or more education amounting to about three years among men and more than six years among women.

4.3 MARITAL STABILITY

In Yemen, just as formation of a marital union provides the social setting within which childbearing occurs, marital dissolution — either by the death of the husband or by divorce or separation — directly diminishes the likelihood of childbearing, unless an individual remarries. Remarriage may depend on factors such as a woman's age, the number of children she has already had, and the reason for her first marriage ending. The combination of first marriage, marriage dissolution and remarriage influences fertility in complex ways. For example, dissolution of a first marriage at an early age, followed almost immediately by remarriage, has a different effect on fertility from the effect of dissolution arising from divorce or widowhood at a later age with or without remarriage.

In this section, marital stability will be examined by considering the following four indicators:

- status of first marriage
- prevalence of remarriage following dissolution of the first marriage, and number of times married
- current marital status
- mean proportion of the time since first marriage spent in the married state

4.3.1 Status of first marriage

Table 4.4 shows the per cent distribution of all ever-married women according to status of first marriage. The figures reflect a relatively high level of marital instability in Yemen, produced by a high incidence of divorce at all durations of marriage and a relatively high incidence of widowhood at longer marital durations. Overall, 80 per cent of ever-married women are still in their first marriage. Of the remaining 20 per cent, 6 per cent had their first marriages dissolved by death of husband, and 14 per cent by divorce or separation.

The proportion of women whose first marriages had been dissolved shows the steady increase of dissolution with duration of marriage that would be expected simply on the basis of accumulated risk, but at a relatively high level; from about 7 per cent for women who entered first marriage less than 5 years ago to 23 per cent for women who first married 10–14 years ago and to as much as 24 per cent for those who first married 30 or more years ago. However, as table 4.6 shows, divorce is the leading cause of dissolution of first marriage not only in the early years of marriage but also at longer marital durations. For

Table 4.4 Per cent distribution of all ever-married women according to status of first marriage, by years since first marriage and by age at first marriage

Age at first marriage	Years since first marriage	Undissolved	Dissolved by			Total	Number of women
			Death of husband	Divorce or separation	Total		
All	All	80.3	5.7	14.0	19.7	100	2605
	<5	93.0	0.6	6.4	7.0	100	664
	5–9	85.9	2.1	12.0	14.1	100	534
	10–14	77.0	5.4	17.5	23.0	100	410
	15–19	77.2	6.9	15.9	22.8	100	397
	20–24	70.6	10.9	18.5	29.4	100	273
	25–29	61.9	16.8	21.3	38.1	100	159
	30+	60.3	15.5	24.3	39.7	100	167
<20	All	79.5	5.6	14.9	20.5	100	2236
	<5	93.6	0.2	6.2	6.4	100	533
	5–9	85.9	1.6	12.5	14.1	100	459
	10–14	75.7	5.7	18.5	24.3	100	358
	15–19	76.9	6.3	16.9	23.1	100	348
	20–24	70.0	10.7	19.2	30.0	100	229
	25–29	60.3	16.9	22.8	39.7	100	145
	30+	60.0	15.2	24.8	40.0	100	164
20+	All	84.9	6.3	8.8	15.1	100	368
	<5	90.3	2.5	7.2	9.7	100	131
	5–9	86.4	5.2	8.5	13.6	100	75
	10–14	86.2	3.7	10.1	13.8	100	52
	15–19	79.8	11.2	9.0	20.2	100	49
	20–24	73.7	11.8	14.6	26.3	100	44
	25–29	77.9	16.4	5.7	22.1	100	14
	30+	70.9	29.1	–	29.1	100	3

Source: Table 1.2.1

example, about 23 per cent of the women who first married 15–19 years ago had their first marriages dissolved, with divorce accounting for more than two-thirds of these dissolved marriages. Even among women who first married 30 or more years ago, divorce has contributed more than widowhood to dissolution of first marriage.

4.3.2 Remarriage and number of times married

Since a relatively high proportion of first marriages are still intact, the proportion of women marrying more than once is relatively low. This may be seen from table 4.5 which gives a summary picture of the overall pattern of remarriage. The first point to note is that most women (85 per cent) married only once, while 15 per cent married twice or more. Of the 20 per cent of women whose first marriage was dissolved, about four-fifths have remarried. The table also shows, among women whose first marriage was dissolved, that the proportion remarried increases from 37 per cent for women who first married less than 5 years ago to 75 and 88 per cent for those whose first marriage was 5–9 and 10–14 years ago, respectively.

Differentials by certain socio-economic characteristics in the proportion of women with dissolved first marriages and the percentage who remarried are shown in table 4.6. Marital dissolution appears to be more common among women living in rural areas than in urban areas, among inhabitants of the south region than those of other regions, and among the women whose husbands have occupations in the service sector than other wives. There is also a striking association between woman's pattern of work and dissolution but the causal nature of this relationship is ambiguous. Women who work may be more prone to dissolution; conversely women who lose their husbands may be forced by necessity to start work.

Table 4.6 Percentage of ever-married women whose first marriage was dissolved and percentage who remarried, by socio-economic characteristics

Socio-economic characteristic	Percentage of women whose first marriage was dissolved	Number of women whose first marriage was dissolved	Per cent remarried
All	19.7	2605	77.4
Type of residence			
Urban	15.5	302	67.9
Rural	20.3	2303	78.3
Region of residence			
North	18.7	876	77.7
South	23.0	960	77.6
West	16.5	639	74.7
East	17.9	130	85.1
Pattern of work			
Before and after marriage	20.5	1042	79.0
After marriage only	30.9	224	74.9
Before marriage only	16.4	179	86.7
Never worked	17.3	1159	75.1
Husband's level of education			
No schooling	20.5	2286	78.5
Incomplete primary	16.3	128	78.8
Primary and over	12.3	190	53.4
Husband's occupation			
Prof., tech. and clerical	19.5	147	78.9
Sales	17.9	287	73.4
Agriculture	21.9	939	78.0
Services	28.0	208	74.3
Manual	16.8	765	85.8

Source: Tables 1.2.2 and 1.3.2

It should be noted that the small number of cases involved hinders interpretation of data on remarriage. Nevertheless it may be seen that the proportion remarried is higher in rural than in urban areas. The proportion remarried among women whose husbands have 'no schooling' or 'incomplete primary education' is much higher than that among women whose husbands have completed at least primary education.

Table 4.5 Characteristics of remarriage

Years since first marriage	Number of marriages				Of women whose first marriage was dissolved, percentage who remarried	
	One	Two	Three or more	Total	Per cent	Number of women whose first marriage was dissolved
<5	97.4	2.5	0.1	100	37.0	47
5–9	89.5	10.5	0.0	100	74.7	75
10–14	79.8	19.7	0.5	100	88.2	94
15–19	80.6	17.5	1.8	100	85.2	90
20–24	77.6	20.1	2.4	100	76.4	80
25–29	69.5	26.7	3.9	100	80.1	61
30+	67.6	25.6	6.9	100	81.5	66
All	84.8	13.9	1.3	100	77.4	513

Source: Tables 1.3.1 and 1.3.2

4.3.3 Current marital status

The net effect of the three factors first marriage, dissolution of marriage and remarriage on current marital status is shown in table 4.7. The term marital status as used here classifies ever-married women according to three categories: currently married, widowed and divorced or separated.

As may be seen from table 4.7, at the time of the survey 94.3 per cent of all women in the sample were married, about 2.7 per cent widowed and 3.1 per cent divorced or separated. The proportion currently married decreases from about 95 per cent for those with marriage durations of less than 20 years to about 90 per cent for those with 20 or more years' marital duration, mainly due to the higher incidence of widowhood at longer marital durations.

4.3.4 Time spent in the married state

The proportion of time spent in the married state is shown in table 4.8, by current age and by age at first marriage. For any particular combination of current age and age-at-marriage, the proportion of time spent in the married state since first marriage consists of the sum of durations of all marriages divided by the total duration since first marriage; the result is expressed as a percentage. This proportion, therefore, summarizes the net effect of marriage dissolution and remarriage, and provides a general good indication of the woman's total duration of exposure to the risk of conception.

It has been observed that first marriage in Yemen is relatively unstable: from the survey data, about 20 per cent of first marriages had been dissolved; about 77 per cent of women whose first marriages were dissolved had remarried; and about 94 per cent of all ever-married women in the sample were currently married. This suggests that the effect of the high rate of dissolution of first marriage was compensated for by a relatively high rate of remarriage. It would, therefore, be expected that the proportion of time spent in the married state since first marriage for all ever-married women is also relatively high.

The figures in table 4.8 confirm this expectation. The proportions of time spent in the married state are uniformly high and do not vary substantially with either current age or age at marriage, except for the group of

Table 4.7 Per cent distribution of all ever-married women according to current marital status, by years since first marriage

Years since first marriage	Currently married	Currently not married			Total	Number of women
		Widowed	Divorced and separated	Total		
<5	95.4	0.6	4.0	4.6	100	664
5–9	96.1	0.9	3.0	3.9	100	534
10–14	96.0	1.6	2.4	4.0	100	410
15–19	95.2	1.5	3.3	4.8	100	397
20–24	89.6	7.9	2.6	10.4	100	273
25–29	90.0	8.3	1.7	10.0	100	159
30+	88.9	7.9	3.2	11.1	100	167
Total	94.3	2.7	3.1	5.7	100	2605

Source: Table 1.5.1

Table 4.8 Average percentage of time since first marriage which has been spent in the married state by all ever-married women, by age at first marriage and current age

Current age	Age at first marriage					All	Number of women
	<15	15–19	20–24	25–29	30+		
<20	94.8	98.7	–	–	–	95.8	442
20–24	95.3	95.1	97.8	–	–	95.3	511
25–29	93.2	95.6	94.5	100.0	–	94.2	526
30–34	94.3	94.5	98.1	99.1	84.1	94.7	388
35–39	92.7	95.5	95.0	96.3	88.3	94.1	306
40–44	90.6	96.4	93.1	100.0	100.0	93.0	203
45+	86.4	95.3	95.3	97.9	95.6	92.0	228
All	92.2	95.5	95.1	97.9	94.7	93.8	–
No. of women	1139	1097	287	62	19	–	2605

Source: Table 1.4.1

women who first married under the age of 15 and are currently over 45 years of age. The average percentage of time spent in the married state for all ever-married women is 94 per cent, declining from 96 per cent for women under 20 years of age to 92 per cent for women at ages 45–49. This suggests that marital dissolution is likely to have only a very minor depressing effect on the overall level of marital fertility in Yemen.

As mentioned in chapter 3, the two basic classificatory variables used in presentation and analysis of the results of the survey are age and duration (in years) since first marriage. The main reason for classifying the sample by duration since first marriage is to control for exposure to the risk of childbearing. Further, women marrying about the same time (ie women comprising a marriage cohort) often share certain values and experiences — for example, availability or non-availability of maternal and child health services — at similar points in their family-building process. This consideration is particularly important in Yemen where many of the relevant facilities are only of recent origin or are likely to become available only in the future.

The high proportion of time spent in the married state since first marriage shown by the figures in table 4.8 means that duration since first marriage is a satisfactory criterion of classification to the extent that it provides a good indication of the woman's total duration of exposure to the risk of conception.

Table 4.9 Distribution of currently married women by number of co-wives

Number of co-wives	Currently married women	
	Number	Per cent
0	2327	94.7
1	121	4.9
2	4	0.2
3	3	0.1
All women with co-wives	129	5.3
Total	2455	100

Table 4.10 Percentage of currently married women in a polygamous marriage

Current age	Percentage
<25	4.0
25–34	5.5
35–50	6.8
All	5.3

4.4 THE PREVALENCE OF POLYGAMOUS MARRIAGES

All currently married women were asked whether their husbands had other wives and, if so, how many. Out of 2455 currently married women, 128 or 5.3 per cent reported having one or more co-wives. As may be seen from table 4.9, most of these women (4.9 per cent) have one co-wife. The prevalence of polygamous marriages rises steadily with the current age of the respondent (table 4.10). While just 4 per cent of currently married women aged under 25 years are in a polygamous marriage, this proportion is nearly 7 per cent for those aged 35 and over. This age pattern may reflect a decline in the popularity of such marital unions among the younger cohorts, or it may reflect life-cycle effects, whereby the transition from monogamy to polygamy more commonly involves older women.

4.5 DIFFERENCES IN AGES OF HUSBANDS AND WIVES

Using information collected in the YARFS household survey on ages of husband and wife, a two-way distri-

Table 4.11 Per cent distribution of currently married women according to difference in age between themselves and husbands

Current age of wife	Difference in years (=husband's age − wife's age)						Total	Mean difference between ages of husband and wife
	Negative	0–4	5–9	10–14	15–19	20+		
10–14	1.2	40.6	32.6	20.7	1.6	3.3	100	7.25
15–19	1.7	51.4	32.4	10.3	2.6	1.6	100	5.90
20–24	3.8	41.9	36.6	11.7	3.8	2.3	100	6.70
25–29	3.6	36.3	36.3	14.3	4.7	4.6	100	7.55
30–34	4.2	26.0	37.4	17.1	7.4	7.9	100	9.05
35–39	5.9	28.1	33.6	16.6	7.8	8.0	100	9.00
40–44	4.9	22.5	30.6	20.9	8.3	12.7	100	10.30
45–49	6.6	28.4	31.4	15.1	10.1	8.4	100	9.25
All	4.2	34.0	34.6	15.1	6.0	6.1	100	7.85

bution of currently married women according to their current ages and to the difference in age between themselves and their husbands has been derived and is shown in table 4.11. It is clear that the Yemeni men very rarely marry women older than themselves. The wife was reported to be less than 5 years younger than her husband in 34 per cent of the cases, 5–9 years younger in a further 35 per cent of the cases and 10 or more years younger in 31 per cent of the cases.

The overall mean difference in ages of husbands and wives is almost eight years. This wide difference in age between husband and wife is due to the fact that, while Yemeni women tend to marry at very young ages, Yemeni men show a relatively late age pattern of marriage.

The pattern by cohort, though it varies irregularly, suggests some convergency over time in the ages of husbands and wives.

CHAPTER 5

FERTILITY

SUMMARY

Fertility in Yemen is high, with an estimated crude birth rate of about 53 live births per 1000 population during 1975–9, and with a reported total fertility rate of over eight children per woman during 1975–9.

For all ever-married women aged 50 or less, about 17 per cent are childless, 26 per cent have one or two live births, 21 per cent have three or four live births, 16 per cent either five or six live births, while the remaining 20 per cent have 7 or more live births.

The data suggest that primary sterility is low (1.7 per cent) but childlessness in the first few years of marriage is relatively high, due mainly to adolescent subfecundity. An apparent increase in early marital fertility is also evident and the data suggest that this rise has been caused chiefly by an increase in the proportion of women having a first live birth, whereas the speed of childbearing among fertile women has undergone little change. The results also suggest that very little, if any, change has taken place in fertility in the recent past.

Socio-economic differentials in fertility are generally narrow. The groups of women whose recent fertility is significantly lower than the national average constitute a small proportion of the total and such differentials, therefore, have had no appreciable impact on the overall level of fertility.

5.1 INTRODUCTION

The estimation of levels, differentials and trends in fertility is a primary objective of all fertility surveys. In addition to its descriptive utility, the identification of the direction and magnitude of fertility differentials is an essential first step towards an understanding of the determinants of fertility.

Special care was taken to devise and administer a set of carefully worded questions and interviewing procedures in order to obtain as accurate and reliable data as possible. There are two sources of data on fertility in the YARFS: the household survey and the individual survey. The procedures followed for collecting data on fertility have already been outlined in chapter 2.

Except in highly literate and numerate societies, retrospective birth history data of the type collected in the YARFS are rarely free from error. Error may take the form of a total omission of births, particularly by older women, or the misstatement of dates of birth. These two problems may be compounded by errors in the recorded ages of respondents themselves, which distort the age pattern of fertility. These types of error also tend to affect the pattern of differences in fertility between the various socio-economic groupings. Detection of the extent and precise nature of defects in the data requires a complex evaluation; this has not been attempted here and some of the findings reported in this chapter should therefore be regarded as preliminary and subject to subsequent adjustment.

The bulk of the analysis in this and later chapters is oriented towards birth cohorts and marriage cohorts. Birth cohorts identify women who were born in a given time period and were therefore in a particular age range at the time of the survey. Marriage cohorts identify the women who entered first marriage during a given time period and occupy the same interval of years since first marriage. The term 'marital duration' will refer to years since first marriage, even if marital dissolution, remarriage, etc has occurred since that initial event.

Women of about the same age have usually shared certain socializing experiences, such as the prevailing level of education, health conditions, political events, etc. Age is also a commonly applied classificatory variable in census and other survey work. Age is pertinent to fertility, in particular, and especially in countries such as Yemen where there are large numbers of births to older women, because it is related to fecundity. Fecundity is defined as biological capacity to conceive; it is known to rise sharply from menarche at about age 14 to a peak around age 20, followed by a gradual decline in the 30s which becomes abrupt in the early 40s with the onset of menopause. Few births occur after age 45.

Marital duration is also a useful variable because, by and large, it measures the accumulated years of exposure to the risk of childbearing (in Yemen, fertility before marriage is almost nil). Women in the same marriage cohort also tend to share common attitudes towards family size and contraception.

Demographers have developed a large number of measures to describe different aspects of fertility. There are two fundamental dimensions to any individual woman's childbearing: how many children she has had (the 'quantity' or 'level') and how quickly she has had them (the 'tempo'), and by extension these apply to any aggregate or subgroup as well. The central problem of fertility analysis is that these two dimensions cannot be fully separated. It is for this reason that the results using one measure will not always seem to correspond with the results based on another measure.

This chapter begins with a discussion of the level and pattern of cumulative fertility as indicated by the number of children ever born or current parity. This measure is based on a cross-sectional view at the time of the survey and makes no direct reference to the timing of fertility. Current parity by age, marital duration, age at first marriage, and selected background characteristics is discussed in section 5.2.

The pattern of early marital fertility — the rate of childbearing in the first five years of marriage — is considered in section 5.3. Measures employed in this section are the incidence of childlessness, the interval between marriage and first birth, and the mean number of births in the first five years of marriage according to background characteristics. Recent marital fertility, based on the number of births in the past five years to women who were continuously married during those five years, is analysed in section 5.4.

Section 5.5 discusses the level and pattern of current fertility. Three indicators of current fertility are employed: the proportion of women currently pregnant, age-specific fertility rates, and total fertility rates. Finally, fertility trends are discussed in section 5.6 using data derived from the retrospective maternity history collected in the individual survey.

5.2 CUMULATIVE FERTILITY

5.2.1 Introduction

In this section the number of children ever born up to the time of the survey is discussed. For each woman this number can be referred to as current parity. For younger women current parity will reflect their fertility during a limited period only, while for older women this measure comes close to their life-time fertility.

Table 5.1 Per cent distribution of ever-married and currently married women according to the number of children ever born

Number of children ever born	Ever-married women		Currently married women	
	All ages	Age 45–49	All ages	Age 45–49
0	16.6	1.7	16.3	1.5
1	14.1	3.1	13.9	2.2
2	12.2	3.0	12.5	3.3
3	10.6	5.8	10.6	4.7
4	10.6	8.1	10.6	6.5
5	8.6	10.1	8.5	10.7
6	7.6	12.1	7.7	12.9
7	6.2	12.6	5.9	12.1
8	5.0	11.2	5.0	11.9
9+	8.6	32.3	8.9	34.2
All	100.0	100.0	100.0	100.0
Mean parity	3.74	7.10	3.76	7.28
No. of women	2605	228	2455	207

Source: Tables 2.2.1A and 2.2.1B

Table 5.1 shows that the mean parity for all ever-married women is 3.74 and for currently married women 3.76, indicating that the effect of marriage dissolution on the fertility of the whole sample is negligible.

The distribution of the sample according to age of the woman, age at first marriage and marriage duration will however have a profound effect on total mean parity. This is evident from the proportion of women childless, which reaches 17 per cent for all women in the sample but only 2 per cent for those aged 45–49. Therefore it is necessary to study parity in conjunction with controls for age and age at first marriage to gain further insight in the pattern of fertility.

5.2.2 Completed fertility

Barring errors in age reporting and the omission of live births, the number of children ever born to women aged 45–49 will accurately reflect their life-time completed fertility. As shown by table 5.1, the ever-married women aged 45–49 had, on the average, 7 live births. Because of the continuous exposure to childbearing experienced by most of the currently married women, their mean parity is slightly higher than that of ever-married women.

Among ever-married women aged 45–49, nearly one-third had 9 or more live births, 46 per cent had from 5 to 8 live births and only 22 per cent had less than 5 live births, indicating a very high level of fertility experienced by these women during their life-time. The proportion of women aged 45–49 who had no children at all is below two per cent, reflecting a low level of primary sterility.

Completed fertility can also be described in terms of parity progression ratios (PPR). Of women who ever achieved specific parities, these ratios give the proportion who later had at least one more child. For example, the parity progression ratio for parity 4 is derived by dividing the number of women who reported having 5 or more live births by the number of women who had 4 or more live births. In table 5.2 it can be seen that over 98 per cent of ever married women did have a first child, and that up to parity 5 over 90 per cent of women went on to have another child. Even of women who already had 10 live births, 60 per cent went on to have an eleventh. For currently married women the proportions are only slightly higher due to the already mentioned low effect of marriage dissolution on fertility.

5.2.3 Parity within age groups

A tentative assessment of the quality of the data collected can be made by comparing the mean parity of women of different age groups as ascertained from the data collected in the household survey with the mean parity from the individual survey. Table 5.3 provides this comparison which reveals that the mean parity for women in the household survey is consistently and appreciably lower than the mean parity as calculated on the basis of the individual survey, in all age groups. The difference tends to increase as we move from the youngest to older cohorts and reaches a difference of one child for women at ages 45–49. It appears, therefore, that the household survey systematically underenumerated the number of live births and that the more live births a woman had, the more likely it was that one or more were not reported.

Table 5.2 Parity progression ratios, per 1000 ever-married and currently married women aged 45–49

Parity progression	Ever-married women	Currently married women
0 to 1	0.982	0.985
1 to 2	0.969	0.975
2 to 3	0.968	0.965
3 to 4	0.938	0.948
4 to 5	0.909	0.929
5 to 6	0.872	0.870
6 to 7	0.820	0.816
7 to 8	0.773	0.792
8 to 9	0.737	0.737
9 to 10	0.710	0.714
10 to 11	0.596	0.600
11 to 12	0.581	0.567

Source: Derived from tables 2.2.1A and 2.2.1B

Table 5.3 Mean number of children ever born to ever-married women by current age, household and individual surveys

Current age	Household survey	Individual survey
<20	0.5	0.6
20–24	1.6	1.8
25–29	3.0	3.4
30–34	4.4	5.1
35–39	5.6	6.1
40–44	5.9	6.6
45–49	6.1	7.1

As will be seen in the section on current fertility, the individual survey data also seem to have been subject to underenumeration of live births, thus ruling out the possibility that the differences referred to above are due to overenumeration in the individual survey.

The reason why this substantial difference has occurred may be that the information on fertility obtained in the household survey has been provided by somebody other than the woman concerned and that in the individual survey the information was based on more detailed probing than in the household survey.

Table 5.4 gives a more detailed picture of cumulative fertility by age. The high level of fertility in Yemen is evident at all ages, with women aged 20–24 already having a mean of 1.8 births, and nearly 6 per cent of them having 5 or more births. At ages 30–34 the mean number of births is already 5.1, with 58 per cent having 5 or more births and 10 per cent 9 or more.

5.2.4 Parity within age at marriage groups

Age at first marriage is an important determinant of fertility. On the one hand, in conjunction with current age, it defines the length of the risk of exposure to pregnancy. On the other hand, women marrying at very young ages will experience an initial period of low

Table 5.4 Per cent distribution of ever-married women according to the number of children ever born by current age

Current age	Number of children ever born						Total	Mean
	0	1–2	3–4	5–6	7–8	9+		
<20	59.6	36.6	3.5	0.2	0	0	100	0.6
20–24	21.2	49.2	24.1	4.8	0.8	0	100	1.8
25–29	5.7	32.2	35.9	19.3	5.7	1.2	100	3.4
30–34	4.7	12.7	24.7	30.3	18.1	9.6	100	5.1
35–39	1.6	8.0	18.8	27.2	25.6	18.7	100	6.1
40–44	2.3	6.3	19.0	20.7	26.5	25.2	100	6.6
45–49	1.7	6.1	13.9	22.2	23.8	32.3	100	7.1
All	16.6	26.3	21.2	16.2	11.2	8.6	100	3.7

Source: Table 2.2.1B

Table 5.5 Mean number of children ever born to ever-married women, by age at first marriage and by current age

Current age	Age at first marriage							All
	<15	15–17	18–19	20–21	22–24	25–29	30+	
<20	0.75	0.42	(0.20)	–	–	–	–	0.60
20–24	2.62	1.60	0.96	0.75	(0.18)	–	–	1.81
25–29	4.42	3.51	2.60	1.51	1.12	(0.81)	–	3.36
30–34	5.97	5.06	4.21	(3.92)	(2.87)	(2.03)	(1.77)	5.05
35–39	6.38	6.62	6.03	(5.20)	(5.65)	(3.76)	(3.76)	6.09
40–44	7.13	6.72	(4.62)	(6.70)	(6.41)	(4.05)	(2.36)	6.59
45+	7.83	6.71	(6.68)	(7.09)	(6.72)	(7.37)	(5.08)	7.10
All	4.19	3.38	3.20	3.35	3.52	4.10	(3.81)	3.74
No. of women	1139	798	300	166	121	62	19	2605
30+ standardized	6.67	6.12	5.28	5.40	5.04	3.94	3.08	

NOTE: () less than 30 cases.
Source: Table 2.2.4B

Table 5.6 Mean number of children ever born to ever-married women, by age at first marriage and by years since first marriage

Years since first marriage	Age at first marriage							All
	<15	15–17	18–19	20–21	22–24	25–29	30+	
<5	0.47	0.66	0.57	0.95	0.87	(1.26)	(3.07)	0.68
5–9	1.95	2.49	2.57	(2.10)	(2.61)	(2.69)	(2.58)	2.31
10–14	3.83	4.27	3.84	(5.58)	(4.90)	(4.10)	(3.96)	4.09
15–19	5.59	6.12	6.04	(5.78)	(6.07)	(6.27)	(5.24)	5.79
20–24	6.30	6.74	(5.03)	(7.35)	(6.94)	(7.78)	(9.00)	6.48
25–29	7.04	6.42	(7.44)	(6.90)	(6.75)	(6.00)	–	6.92
30+	7.65	7.00	(5.40)	(5.73)	–	–	–	7.24
All	4.19	3.38	3.20	3.35	3.52	4.10	(3.81)	3.74
Standardized by YSFM (<5–29)	3.27	3.61	3.39	3.87	3.83			

NOTE: () less than 30 cases.
Source: Table 2.2.3B

fertility due to adolescent subfecundity, while women marrying at 30 or more are likely to be less fecund. Table 5.5 provides data on cumulative fertility by current age and age at first marriage. Within each age group the mean parity declines steadily with increasing age at marriage, a decline caused by the fact that for any given age group the length of exposure to the risk of pregnancy decreases with increasing age at first marriage. Mean parity does not show a clear-cut relationship with age at first marriage for the sample as a whole, except for the considerable difference between the two age at marriage groups 'under 15' and '15–17'. This lack of relationship is partly due to the age distribution of women according to age at first marriage and partly to the bias towards women who married at young ages in the younger age groups. Taking only women of 30 years and over and standardizing by age, a clearer picture of the influence of age at first marriage emerges. Mean parity is then as follows:

Age at first marriage						
<15	15–17	18–19	20–21	22–24	25–29	30+
6.67	6.12	5.28	5.40	5.04	3.94	3.08

These differences are mainly due to the different length of exposure by age at marriage.

The influence of adolescent subfecundity can be seen in table 5.6, where mean parity is cross-tabulated by age at first marriage and years since first marriage, thus eliminating the possible effects of marriage duration.

For women with less than five years' marital duration, the mean parity tends to increase as age at first marriage rises, indicating the low fertility of women marrying at young ages during the early years of marriage. In fact women married at ages below 15 years have a consistently lower mean parity than women married at 15–17 for all marital durations below 25 years.

Standardization by years since first marriage shows that age at first marriage does not have any consistent effect on fertility. This is probably due to the very high proportion of women marrying at ages below 15 (44 per cent overall). Although standardization for years since first marriage will equalize mean exposure time for the different age at first marriage groups, this mean exposure time will include substantial subfecund periods for women marrying at very young ages. This may be the reason that only at marriage durations of 25 or more years, age at first marriage shows a negative relationship with fertility (see also table 5.9). It is also possible that some of the women who married at very young ages have overstated their age at first marriage, thus affecting the clear relationship which can normally be found between age at first marriage and fertility.

5.2.5 Differentials in cumulative fertility

One of the major aims of the YARFS was to examine the extent to which substantial differences in fertility exist between subgroups of the population. This examination represents a first step towards an understanding of the determinants of fertility in Yemen.

Table 5.7 shows the mean number of children ever born to ever-married women by age as reported in the household survey, according to three background characteristics. For each category, an understandardized and an age-standardized figure for mean parity is shown. As may be seen, the only significant difference is that between urban and rural women. The mean parity for rural women is lower than that for urban women in each age group. This unexpected result may be a result of serious omission of births by women residing in rural areas. In section 5.2.3 it was seen that reporting of fertility in the household survey was considerably less accurate than in the individual survey, and that being so, it does not seem unlikely that reporting in the rural areas was less accurate than in the urban areas.

The individual survey data allow the examination of fertility differentials by a number of other background characteristics. In table 5.8 the mean number of children ever born to ever-married women as reported in the individual survey is given by current age, and by years since first marriage, according to background characteristics. Here again substantial differences can be found between urban and rural women, with rural women having about 0.7 of a child less than urban women. The Eastern region shows the lowest fertility with 3.3 live births per woman, with all other regions having about 3.7. The figures also suggest the absence of any clear relationship between pattern of work and cumulative fertility, although women who never worked show slightly higher fertility (3.95).

Husband's level of education seems to be related to cumulative fertility. Thus women whose husbands had at least primary education have only 2.8 live births, as against 3.8 for those whose husbands had no schooling. With regard to husband's occupation, it may be seen that wives of manual workers have substantially lower fertility than those whose husbands are engaged in other occupations (3.3 live births as against an average of 4.1).

This latter finding seems as anomalous as the finding that mean achieved parity for rural women is lower than that for urban women. It may not be correct to explain such anomalies only in terms of omission of live births. For example, fertility is bound to be affected by the

Table 5.7 Mean number of children ever born to ever-married women, by age and by background characteristics, household survey

Background characteristic	Current age							All	
	15–19	20–24	25–29	30–34	35–39	40–44	45–49	Unstandardized	Standardized
All	4.49	1.59	3.04	4.41	5.60	5.91	6.13	3.62	–
Type of residence									
Urban	4.65	2.26	4.09	5.34	6.56	6.54	7.32	4.51	4.42
Rural	0.47	1.53	2.93	4.31	5.48	5.84	6.00	3.52	3.53
Region of residence									
North	0.55	1.56	2.91	4.17	5.26	5.86	6.00	3.52	3.49
South	0.47	1.56	3.10	4.78	5.96	6.31	6.45	3.77	3.80
West	0.43	1.69	3.17	4.35	5.60	5.49	5.88	3.64	3.58
East	0.37	1.60	3.07	3.83	5.57	5.74	5.97	3.20	3.48
Literacy									
Literate	0.63	1.85	3.58	4.34	5.37	5.96	5.22	2.70	3.67
Illiterate	0.48	1.58	3.03	4.41	5.60	5.92	6.16	3.64	3.62

Table 5.8 Mean number of children ever born reported in the individual survey to ever-married women, by (A) current age, and (B) years since first marriage, according to socio-economic characteristics

Socio-economic characteristic	A Current age				B Years since first marriage						All	
	<25	25–34	35–44	45+	<5	5–9	10–14	15–19	20–24	25+	Un-standardized	Standardized
All	1.25	4.07	6.29	7.10	0.68	2.31	4.09	5.79	6.48	7.08	3.74	–
Type of residence												
Urban	1.43	4.60	6.31	8.10	0.76	2.64	4.75	6.70	6.27	(8.01)	4.31	4.38
Rural	1.23	4.00	6.28	6.96	0.67	2.26	4.00	5.66	6.53	7.01	3.66	3.66
Region of residence												
North	1.19	4.15	6.63	7.44	0.78	2.27	4.25	6.0		0.43	3.32	3.82
South	1.28	4.40	6.56	7.13	0.66	2.27	4.18	5.79	6.83	7.38	3.74	3.70
West	1.20	3.47	5.56	6.88	0.54	2.40	3.83	5.31	5.86	6.46	3.70	3.71
East	1.48	3.57	(5.91)	(6.89)	(0.61)	2.30	(3.58)	5.38	4.73	(7.82)	3.33	3.34
Pattern of work												
Before and after marriage	1.19	3.75	6.17	6.65	0.63	2.10	3.83	5.58	6.37	6.80	3.49	3.49
After marriage only	1.08	3.96	5.44	5.98	0.66	1.75	3.69	4.96	5.75	5.92	3.76	3.71
Before marriage only	1.11	3.59	6.06	(9.41)	0.61	2.41	(4.92)	(6.02)	6.39	(8.10)	3.59	3.64
Never worked	1.33	4.46	6.61	7.58	0.73	2.57	4.31	6.16	6.75	7.59	3.93	3.95
Husband's level of education												
No schooling	1.26	4.07	6.32	7.04	0.69	2.25	4.06	5.80	6.50	7.09	3.84	3.84
Incomplete primary	1.13	3.74	(5.96)	(8.20)	0.52	2.67	4.07	5.51	6.78	(7.88)	3.23	3.17
Primary and over	1.19	4.42	(5.70)	(6.84)	0.69	2.67	4.71	5.90	6.00	(5.85)	2.83	2.82
Husband's occupation												
Prof., tech. and clerical	1.91	4.10	6.07	(6.16)	(1.06)	2.53	(3.76)	(5.09)	(6.58)	(6.07)	3.99	4.01
Sales	1.26	5.06	7.50	7.36	0.76	2.12	4.66	6.64	7.66	7.60	4.39	4.37
Agriculture	1.21	4.00	6.16	6.79	0.71	2.43	4.13	5.47	6.29	6.99	4.05	4.05
Services	1.67	4.25	5.50	(10.26)	0.72	2.59	3.99	6.40	(5.47)	7.94	4.11	4.08
Manual	1.17	3.88	6.33	7.60	0.63	2.10	4.07	5.85	6.56	7.20	3.32	3.32

NOTE: ( ) less than 30 cases.
Source: Tables 2.2.5 and 2.2.6

recent massive emigration of young males to work in the Arab oil-producing states. At this stage there is no further information on this issue, but further investigation of the effect of temporary migration on fertility is extremely important and will be undertaken shortly.

5.3 EARLY MARITAL FERTILITY: THE FIRST FIVE YEARS

5.3.1 Introduction

This section will examine indicators of the rate of childbearing in the first five years of marriage. Such an examination is important in two respects, in permitting, first, the study of trends, if any, in the tempo of the early fertility of different marriage cohorts, and, secondly, the study of the relationship between age at marriage and fertility in the early stages of childbearing.

The analysis is, of course, restricted to ever-married women whose first marriage occurred at least five years ago. Women who first married during the five years preceding the survey are excluded, to avoid the biases caused by incomplete exposure. Three indicators of early marital fertility will be considered: the incidence of childlessness, the interval between first marriage and first birth, and the mean number of children born in the first five years of marriage.

It should be noted that the analysis of the first birth interval is complicated by the fact that calendar month was not reported for 86 per cent of first births and had to be randomly imputed. Further, the calendar year of first marriage was not reported in 23 per cent of cases and had to be indirectly ascertained from answers to a question on age at first marriage. This lack of precise information reduces the analytical power of this measure and a cautious approach is therefore necessary.

5.3.2 Childlessness in the first five years

Table 5.9 shows that as many as 34 per cent of women were still childless after five years of marriage. When childlessness is examined according to age at first marriage, a distinct pattern emerges. About 40 per cent of women who married very early, below the age of 15, were still childless after five years of marriage. This percentage is higher than that for any other age at marriage group, and is more than three times that of women who married at ages 22–24 who had the lowest percentage of childless marriages (12 per cent).

This pattern is not surprising because women who marry very early are more likely to experience a delayed first birth because of adolescent subfecundity, while those who marry very late are more likely to have experienced the decline in fecundity associated with age. What is noteworthy about these figures is, however, the high level of childlessness in the first few years of marriage. This may be explained by errors in date reporting as well as a failure on the part of some women to distinguish between having 'no children at all' and having 'no living children'. It is worth noting, however, that a very sharp reduction in the proportion of women still childless after five years of marriage is shown by the more recent marriage cohorts. Thus, after five years of marriage, about 45 per cent of the women who first married 20 or more years ago were childless; this percentage declines to 32 per cent among women who married 10–19 years ago, and to 24 per cent among women who married 5–9 years ago. Rising age at first marriage is partially responsible for this trend but the magnitude of the difference also suggests reporting errors in the date of marriage or first birth, particularly on the part of older women.

5.3.3 First birth interval

After five years of marriage, the mean interval between first marriage and first birth is as high as 28 months (table 5.9). The highest mean is shown for women who married before age 15 (31 months) and the lowest for women married at ages 22–24 (23 months). Of the women who had a first birth within the first five years of marriage, 12 per cent had delivered by the end of the first year, 48 per cent within the first two years and 70 per cent within the first three years.

Data relating to the timing of first births for three marriage cohorts appear in panel B of table 5.9 which suggests that for those women who actually had children within the first five years of marriage, the tempo of reproduction has not changed, being equal for all durations since first marriage.

5.3.4 Number of births in first five years

Table 5.10 indicates that early marital fertility has increased over time from an average of 1.1 live births for those married 20 or more years ago to 1.4 for those

Table 5.9 Per cent distribution of women who first married at least five years ago according to interval between first marriage and first birth, by (A) age at first marriage, and (B) years since first marriage

	Length of interval in months						All	Mean interval length	No. of women
	<12	12–23	24–35	36–47	48–59	Per cent childless			
A Age at first marriage									
<15	5.3	18.1	14.2	11.1	11.3	40.0	100	30.5	944
15–17	10.8	27.0	13.3	10.6	7.6	30.8	100	26.2	543
18–19	8.8	31.8	10.9	10.5	8.0	30.0	100	25.3	217
20–21	10.4	29.9	18.5	8.5	8.7	24.1	100	25.8	94
22–24	17.9	35.9	16.7	7.5	9.6	12.3	100	22.9	81
25–29	13.6	34.8	15.7	7.8	10.0	18.0	100	24.3	51
30+	17.3	15.0	19.2	20.8	0.0	27.8	100	24.3	11
B Years since first marriage									
5–9	9.6	29.8	14.2	11.8	11.1	23.6	100	27.4	534
10–19	8.3	24.5	14.0	11.1	9.9	32.2	100	27.8	807
20+	7.22	17.7	13.6	8.8	7.9	44.8	100	28.1	599
All	8.3	23.8	13.9	10.6	9.6	33.7	100	27.7	1940

Table 5.10 Mean number of children born within first five years of marriage by age at first marriage and by years since first marriage, confined to women who first married at least five years ago

Years since first marriage	Age at first marriage							All
	<15	15–17	18–19	20–21	22–24	25–29	30+	
5–9	1.09	1.38	1.80	(1.37)	(1.97)	(2.06)	(1.63)	1.40
10–19	1.12	1.49	1.46	1.78	1.97	(1.75)	(1.17)	1.33
20+	0.96	1.08	0.80	1.56	(2.03)	(1.14)	(3.00)	1.05
All	1.06	1.34	1.43	1.61	1.98	1.76	(1.43)	1.23

Source: Table 2.1.2

married 5–9 years ago. However, when women who remained childless throughout the first five years of marriage are excluded from the calculation of the mean number of births, an average of 1.9 births in the first five years of marriage is obtained for each of the three marriage cohorts considered. This suggests that the apparent rise in early marital fertility has been caused mainly by an increase in the proportion of women having a first birth, whereas the speed of reproduction among fertile women has undergone little, if any, change.

The fertility variations within age at first marriage groups according to years since first marriage cannot be readily explained, and are undoubtedly due to the misreporting of the timing of events. Given the overall lack of change, it is quite unlikely that women who married at ages 18–19, 5–9 years ago, had on average one more child in the first five years of marriage than women who married at the same ages, 20 or more years ago.

5.3.5 Differentials in early marital fertility

Differentials in early marital fertility will be affected by the possible reporting errors already mentioned in the foregoing sections. In order to avoid this effect as far as possible, differentials will be considered only for those women who married 10–19 years ago. Leaving out women who married 20 or more years ago will undoubtedly decrease the misdating or under-reporting of early births.

The group of women who married 10–19 years ago had a mean of 1.33 live births in the first five years of marriage (table 5.11). Women living in urban areas had about 0.3 of a child more than women living in rural areas (1.57 and 1.29, respectively). Early marital fertility is highest in the North (1.42) and lowest in the East (1.09), with the South and West falling in between with 1.28 and 1.20 live births, respectively.

The higher the education of the husband, the higher the achieved fertility in the first five years of marriage (1.32 for women whose husbands had primary education or higher). With reference to husband's occupation, the lowest level of fertility is shown for women whose husbands are engaged in agricultural occupations (1.23) and the highest for those whose husbands are in professional occupations (1.66).

These differentials generally hold for the different age at marriage groups. Given the near total absence of contraception in Yemen and the fact that the figures refer to the earliest reproductive period, these apparent differentials may arise from factors related to health and nutrition, or from a misreporting or omission of events, or, indeed, from an unknown mixture of both.

Table 5.11 Mean number of children ever born in the first five years of marriage for women first married 10–19 years ago, by age at first marriage and socio-economic characteristics

Socio-economic characteristic	Age at first marriage				All
	<15	15–17	18–19	20+	
All	1.12	1.49	1.46	1.79	1.33
Type of residence					
Urban	1.41	(1.70)	(1.46)	2.02	1.57
Rural	1.08	1.46	1.46	1.75	1.29
Region of residence					
North	1.10	1.63	1.60	1.91	1.42
South	1.25	1.34	(1.65)	1.70	1.34
West	0.91	1.45	(1.16)	1.82	1.23
East	0.86	(1.52)	(1.37)	1.05	1.09
Pattern of work					
Before and after marriage	0.98	1.48	1.59	1.59	1.25
After marriage only	0.84	(1.33)	1.15	(0.96)	1.00
Before marriage only	(1.35)	(1.57)	(1.43)	(1.89)	1.51
Never worked	1.28	1.52	1.39	2.13	1.44
Husband's level of education					
No schooling	1.10	1.48	1.46	1.79	1.32
Incomplete primary	(1.22)	(1.10)	(1.71)	(1.81)	1.36
Primary and over	(1.31)	(1.87)	(1.00)	(2.00)	1.52
Husband's occupation					
Prof., tech. and clerical	(1.80)	(1.58)	(1.54)	(1.26)	1.66
Sales	1.30	(1.77)	(2.25)	(2.47)	1.65
Agriculture	1.09	1.22	1.30	1.64	1.23
Services	1.16	(1.72)	(0.84)	(1.93)	1.36
Manual	0.99	1.69	(1.51)	(1.99)	1.30

NOTE: () less than 30 cases.
Source: Table 2.1.2

5.4 RECENT MARITAL FERTILITY: THE PAST FIVE YEARS

5.4.1 Introduction

This section focuses on the mean number of live births in the five years preceding the survey for those women who were continuously married during that period. The measure is analogous to fertility in the first five years of marriage and, in fact, for women married continuously for only five years it should be identical. The virtue of this measure lies in the ease of computation, but its disadvantage stems from the fact that, among younger age groups, it selects systematically for women who married at younger ages.

5.4.2 Number of births in the past five years

Those women who were continuously married during the past five years had, on average, 1.65 live births during

Table 5.12 Mean number of live births in the past five years to women continuously married during that interval, according to current age, age at first marriage and number of living children

Panel A			Panel B		Panel C	
Age 5 years ago	Current age	Births in the past 5 years	Age at first marriage	Births in the past 5 years	Number of living children 5 years ago	Births in the past 5 years
<15	<20	1.51	<15	1.65	0	1.70
15–19	20–24	1.85	15–17	1.65	1	2.00
20–24	25–29	1.97	18–19	1.68	2	1.66
25–29	30–34	1.84	20–21	1.56	3	1.52
30–34	35–39	1.61	22–24	1.54	4	1.67
35–39	40–44	1.12	25–29	1.77	5	1.25
40+	45+	0.94	30+	1.80	6	1.29
					7	1.10
					8	(1.34)
					9+	(1.27)

Overall mean: 1.65

Source: Tables 2.4.1 and 2.4.2

that period. Table 5.12 further shows that the age pattern of fertility in the past five years follows an inverted U-shape curve. It is, however, surprising that women in their forties had had, on average, nearly one live birth during the past five years, a figure which is exceptionally high.

Age at first marriage does not seem to have a clear effect on the level of fertility in the past five years, although the mean number of live births in the past five years tends to decline as the number of living children the woman has had at the beginning of the period rises. However, even women of parity 6 and higher at the beginning of that period still produced more than one child during the past five years.

Table 5.13 provides information on the fertility of the past five years according to the order of this period in a woman's married life. The figures show that there is hardly any change in fertility in the past five years whether that interval constituted the first, second, third or even fourth five-year period in the woman's married life.

As previously mentioned, the mean number of children ever born to all ever-married women is 3.7. Thus, women who were continuously in the married state during the past five years contributed during that interval about 45 per cent of the average fertility for all ever-married women in the sample. This improbable finding can only be the result of both displacement and omission of births.

5.4.3 Differentials in recent fertility

The mean number of live births in the past five years for those women who were continuously married during that period is shown by background characteristics of the woman in table 5.14. After standardization by age, few differentials of sizeable magnitude can be observed. The most interesting aspect is perhaps the absence of any differentials in recent fertility by urban/rural residence or

Table 5.13 Mean number of children ever born in the past five years to women who have been continuously in the married state during that period, by age at first marriage and order of that five-year period in marriage

Age at first marriage	Order of the past 5-year period in marriage							All	
	1st	2nd	3rd	4th	5th	6th	7th	Mean	No. of women
<15	1.5	1.8	2.0	1.8	1.4	1.2	1.0	1.7	840
15–17	1.8	2.0	1.9	1.6	1.0	0.8	–	1.7	481
18–19	2.5	2.1	1.8	1.7	1.0	0.6	–	2.0	201
20–21	1.9	2.0	1.9	1.4	0.9	–	–	1.6	82
22–24	*	1.9	2.2	1.1	0.8	–	–	1.5	73
25–29	2.2	1.9	*	1.7	–	–	–	1.8	49
All									
Mean	1.8	1.9	1.9	1.7	1.2	0.9	1.0	1.7	–
No. of women	185	440	348	335	199	161	65	–	1737

*Less than 30 cases.
Source: Table 2.4.6

Table 5.14 Mean number of children born in the past five years to women who have been continuously in the married state during that interval, according to socio-economic characteristics

Socio-economic characteristic	Mean		No. of women
	Un-standardized	Standardized by age	
All	1.65		1737
Type of residence			
Urban	1.65	1.67	214
Rural	1.65	1.65	1523
Region of residence			
North	1.69	1.68	566
South	1.69	1.65	627
West	1.51	1.60	451
East	1.75	1.73	93
Pattern of work			
Before and after marriage	1.55	1.55	699
After marriage only	1.57	1.58	151
Before marriage only	1.83	1.78	112
Never worked	1.73	1.72	774
Husband's level of education			
No schooling	1.64	1.65	1562
Incomplete primary	1.74	1.80	76
Primary and over	1.67	1.54	99
Husband's occupation			
Prof., tech. and clerical	1.40	1.48	106
Sales	1.69	1.73	203
Agriculture	1.56	1.61	660
Services	1.76	1.72	145
Manual	1.75	1.70	486

Source: Table 2.4.3A

by region; almost all women have had between 1.6 and 1.7 live births. Recent fertility is significantly lower than average among women who worked after marriage (1.56), those whose husbands have at least primary education (1.54), and woman whose husbands are engaged in professional or clerical occupations (1.48).

5.5 CURRENT FERTILITY

5.5.1 Introduction

So far attention has been focused on completed fertility and cumulative fertility for certain segments of the woman's reproductive period. In this section attention will be focused on the pattern and level of current fertility, ie fertility in the 12-month period preceding the survey. This information is perhaps of most practical importance and relevance for planning and policy-making through its impact on current and future population growth. Three measures of current fertility will be presented: the proportion of women currently pregnant, age-specific fertility rates and total fertility rates.

5.5.2 Proportion of women currently pregnant

As is shown in table 5.15 the overall proportion of currently married women reporting a current pregnancy at the time of the survey was 20.4 per cent. The proportion rises from 16 per cent for women under 20 years of age to 26 per cent for those aged 25–29, thereafter the proportion declines slowly to about 21 per cent for women in their thirties and then declines rapidly with age until it reaches 8.5 per cent for women aged 45–49.

The data on current pregnancy shows an inconsistency in the sense that the proportion pregnant at ages 35–39 is higher than at ages 30–34 (22.4 to 20.9 per cent). Given the near absence of contraceptive use, this does not conform with the expectation of declining fecundity with increasing age and is probably caused by under-reporting of pregnancies in the age group 30–34 or by age misreporting.

The level of current pregnancies should be the most up-to-date indicator of current fertility. Generally speaking, however, women find it difficult to recognize a pregnancy in its early stages and reporting of current pregnancies is therefore generally incomplete.

Table 5.16 shows the distribution of current pregnancies according to the duration of the pregnancy. It is clear that substantial under-reporting of pregnancies has taken place at durations of 1 and 9 months. Assuming that pregnancies of durations of 2–8 months were reported accurately, it may be estimated that the level of current pregnancies is under-reported by about 13 per

Table 5.15 Percentage of currently married women reporting a current pregnancy, by current age

Current age	Percentage
<20	16.1
20–24	25.2
25–29	26.3
30–34	20.9
35–39	22.4
40–44	10.8
45+	8.5

Percentage of all currently married women 20.4

Number of currently married women 2455

Source: Table 2.4.5

Table 5.16 Per cent distribution of current pregnancies according to the duration of pregnancy in months

Duration of pregnancy									All
1	2	3	4	5	6	7	8	9	
1.2	13.0	15.8	11.0	13.8	12.0	11.2	12.6	9.5	100

cent, {1 − 7/(9 × 0.893)}. This estimate of under-reporting would mean that about 23 per cent of currently married women are currently pregnant.

On the basis of that level of current pregnancies, a married woman would have (5 × 0.23/.75) = 1.53 live births during five years where 0.75 years reflects the average gestation period of nine months. This is only a crude estimate, because it does not take into account the impact of foetal losses. As shown in the preceding section, the mean number of live births in the past five years was 1.65, and this would imply an annual percentage of pregnancies of at least 25 per cent.

5.5.3 Level of current fertility

Several measures of fertility are used in this section: age-specific fertility rates, total fertility rates and age-specific marital fertility rates. An age-specific fertility rate (ASFR) is the ratio of the births occurring to women of a particular age in a specified time period, usually a year, and the total number of years spent by the women in that age group during the same period. These rates can be calculated by single years of age or by grouping of years, usually standard five-year age groups.

The age-specific marital fertility rates are calculated in similar fashion but are restricted to births occurring to married women and to years spent in the married state.

The total fertility rate (TFR) is the sum of the age-specific fertility rates over the childbearing ages (15–49). The TFR represents the number of live births that would occur to a woman if she were to experience throughout her reproductive years the age-specific fertility rates of a given period. The estimation of these rates from a retrospective sample survey could be subject to appreciable sampling fluctuations as well as non-sampling errors resulting from omission of births or misstatement of ages and dates.

The estimation of the ASFRs from the individual survey was achieved by classifying the births to ever-married women by date of birth. Those occurring in the relevant period before the survey date (excluding month of interview) were distributed by the age of mother at maternity.

These births constituted the numerator in the calculation of the ASFRs. The number of births thus obtained for any given age group was divided by the number of woman-years lived in the same age group during the same period. This rate was then multiplied by the proportion of ever-married women in the same age group, obtained from the household survey data, to give a rate for all women regardless of marital status.

Age-specific fertility rates were also derived from the household survey, through the data on date of last live birth. The numerators were derived using the same procedures applied to the individual survey data. The denominators were based on the age distribution of women (irrespective of marital status) enumerated in the household survey.

It should be noted that it was not possible to classify all last births reported in the household survey according to the month of occurrence. There were 1405 last live births (9.8 per cent of the total) who could only be classified as having occurred in the previous calendar year. As the household survey took place in June–July 1979, half of the number of births classified as having occurred sometime during 1978 (ie month of birth not reported) were taken to have occurred in the last 12 months. The rates thus obtained from the household survey are shown in table 5.17, and refer to the 12-month period before the survey. The table also shows the age-specific fertility rates from the individual survey for the period 0–4 years preceding the interview data.

The total fertility rate is 8.51 from the individual survey and 8.05 from the household survey. The major difference in the age pattern of fertility is the much higher rate at ages 15–19 and at 40–44 in the individual survey than in the household survey.

Table 5.18 shows that the total marital fertility rate (TMFR) for the period 0–4 years before the survey was 9.8. When the calculation is restricted to ages 20–49 the TMFR is 8.4. This may be compared with a figure of 9.4 observed among Hutterite women married before 1921 and whose fertility is among the highest recorded. It seems therefore that the fertility of Yemeni women is very close to what may be described as 'natural fertility'.

The data from the YARFS on fertility during the five-year period preceding the survey yield a crude birth rate equivalent to 55 live births per 1000 persons. The household survey gives a sex ratio of 97.5 males per 100

Table 5.17 Age-specific fertility rates per 1000 women for the household and individual survey

Age at maternity	Household survey (last 12 months)	Individual survey (0–4 years before the survey)
15–19	115.7	177.8
20–24	333.9	345.0
25–29	364.4	345.2
30–34	326.6	334.4
35–39	247.2	228.6
40–44	145.2	196.5
45–49	77.0	74.7
TFR	8.05	8.51

Table 5.18 Age-specific marital fertility rates per 1000 women for five-year periods

Age at maternity	Years before the survey						
	0–4	5–9	10–14	15–19	20–24	25–29	30–34
15–19	283.8	299.0	290.3	330.3	248.5	236.3	173.7
20–24	395.6	364.4	326.2	324.0	282.1	262.5	–
25–29	372.7	393.0	322.8	326.8	296.7	–	–
30–34	356.1	340.7	294.1	377.5	–	–	–
35–39	251.5	302.0	293.9	–	–	–	–
40–44	215.2	243.9	–	–	–	–	–
45–49	81.2	–	–	–	–	–	–
TMFR[a]	9.78	10.12	9.26	9.89			

[a]Missing values were imputed by taking the nearest available value.

females for the *de facto* population. If the number of temporary emigrants is added to the *de facto* population, the sex ratio becomes 105.1 males per 100 females. Thus, when the crude birth rate is calculated on the basis of the total population enumerated in the survey, ie including temporary emigrants, an estimate of 53 live births per 1000 persons is obtained. Similar results are obtained when the calculation is restricted to births occurring in the 12-month period preceding the survey.

Table 5.19 Age-specific fertility rates per 1000 women for five-year period before the survey

Age at maternity	Years before the survey						
	0–4	5–9	10–14	15–19	20–24	25–29	30–34
15–19	177.8	167.4	185.4	205.0	151.6	131.0	102.0
20–24	345.0	307.3	273.6	268.8	219.4	242.3	–
25–29	345.2	366.8	299.2	293.1	290.0	–	–
30–34	334.4	320.0	277.6	356.6	–	–	–
35–39	228.6	276.4	279.3	–	–	–	–
40–44	196.5	225.6	–	–	–	–	–
45–49	74.7	–	–	–	–	–	–
TFR[a]	8.51	8.69	8.07	8.52			
TFR (15–39)[a]	7.15	7.19	6.57	7.02	6.48		

[a]Missing values were imputed by taking the nearest available value.

5.6 FERTILITY TRENDS

In this section fertility trends are investigated using the data obtained through the maternity history of the YARFS individual survey. From this information, three sets of fertility rates have been constructed: the first gives fertility rates classified by age of mother at maternity and five-year period (age–period rates), the second shows fertility rates classified by current age of the woman and age at maternity (cohort–age rates), and the third set gives the mean numbers of children born by exact specified ages to different birth cohorts (estimated by cumulating the cohort–age rates). These three sets of rates are shown in tables 5.19, 5.20 and 5.21, respectively.

The first set of age–period fertility rates implies an increase in the level of fertility at ages 20–34 during the 1970s. This apparent trend should not be accepted at face value, as it depends on the reliability of the estimates, each of which is surrounded by an element of uncertainty. A preliminary analysis of the entire YARFS maternity history data does not support this trend of recent increase in fertility. If the missing values in table 5.19 are filled in by assigning the rate for the more recent time period, the estimated total fertility rates are 8.5, 8.1, 8.7 and 8.5 for the periods 1960–4, 1965–9, 1970–4 and 1975–9, respectively.

It should be emphasized that these retrospective estimates are sensitive to omission of births and misdating of birth dates. It is clear that heaping of births has occurred in the periods 0–4 and 5–9 years prior to the survey as a result of a tendency on the part of the older women to understate their ages. Conversely, rates for the more distant past (20 or more years ago) are low by comparison and it seems likely that many births belonging to the period have been misplaced and shifted into the more recent periods because of understatement of their ages by mothers. Minor displacement from the most recent period, 0–4 years before the survey, to the period 5–9 years may also have taken place. The impression of an

Table 5.20 Age-specific fertility rates per 1000 women, by current age and age at maternity

Age of women at interview	Approximate period of birth of women	Age at maternity						
		15–19	20–24	25–29	30–34	35–39	40–44	45–49
15–19	1960–64	156.4[a]	156.4[a]					
20–24	1955–59	178.4	366.6[a]					
25–29	1950–54	178.0	328.6	358.2[a]				
30–35	1945–49	203.0	303.5	351.7	393.2[a]			
35–39	1940–44	177.9	267.0	347.2	324.3	255.0		
44–44	1935–39	147.2	244.4	300.0	302.9	230.0	161.3[a]	
45–49	1930–34	122.1	229.7	278.4	285.1	277.5	214.8	74.7[a]

[a]Truncated exposure.

Table 5.21 Mean number of children born, per woman, by exact specified ages according to current age

Age of women at interview	Approximate period of birth of women	Age (exact years)						
		20	25	30	35	40	45	50
15–19	1961–64	0.78[a]						
20–24	1955–59	0.89	2.73					
25–29	1950–54	0.89	2.53	4.32[a]				
30–34	1945–49	1.02	2.53	4.29	6.26[a]			
35–39	1940–44	0.89	2.22	3.96	5.59	6.68[a]		
40–44	1935–39	0.74	1.96	3.46	4.97	6.12	6.39[a]	
45–49	1930–34	0.61	1.76	3.15	4.58	5.65	6.72	7.10[a]

[a]Truncated exposure.

increase in fertility in the 1970s is almost certainly a reflection of errors rather than a genuine trend.

Similar conclusions could be drawn from the cohort–age rates shown in tables 5.20 and 5.21 which give the impression of increasing fertility from the oldest cohort of women aged 45–49 to those now aged 20–24. However, much if not all of this cohort trend is caused by misdating or omission of births. For instance, for the oldest cohort, the fertility rates for the age groups 30–34 and 35–39 are greater than the fertility rate for the age group 20–24 when fecundity is at its peak. This implausible age pattern of fertility can be attributed to omission by these women of their earliest births or understatement of the ages of their children. It seems, therefore, that very little change has taken place in fertility in the last three decades or so. A thorough evaluation of the maternity history data will, however, be required in an attempt to identify any genuine trend in fertility from the obvious distortions of data defects

CHAPTER 6

MORTALITY

SUMMARY

The YARFS data suggest that infant and child mortality in Yemen are high. The age pattern of mortality in childhood is one in which a large proportion of deaths occur in the first year of life. Estimates derived from the birth histories indicate that more than 160 out of every thousand live births die in infancy and 240 between birth and the age of five years. There is evidence to suggest that this under-represents mortality and that an infant mortality rate of at least 170, and possibly as high as 190, deaths per thousand live births would be more realistic. This corresponds to a mortality regime in which more than one in four children born will die before reaching their fifth birthday. Infant mortality appears to be higher among males than females, although this may be due to the understatement of female deaths. It is females who are reported to have the greater likelihood of dying between the ages of one and five years. Although the present mortality level is high, it has fallen significantly in the last two decades.

There are substantial differentials in child mortality. It is lower in urban than in rural areas, and in the South region, and for children of women whose husbands are educated, or in white collar occupations. The largest differentials in infant and child mortality are those related to the length of the previous birth interval, demonstrating an association between child survivorship and reproductive behaviour.

Adult mortality is low relative to child mortality, and there appears to be no difference between that of males and females. The indirect estimates of adult mortality along with infant mortality rates of 17 and 19 per cent correspond respectively to crude death rates of 21 and 23 deaths per thousand population or 20 and 22, after allowing for the under-representation of young men in the age structure.

6.1 INTRODUCTION

This chapter analyses the mortality levels prevailing among the survey population. It is well known that mortality and fertility are closely interrelated, although the nature of the relationship is complex. In a society with high and virtually uncontrolled fertility, an infant death tends to shorten the time to the next pregnancy, while short intervals between consecutive births represent a hazard to the mother's health as well as lower chances of survival for each child. The improved health conditions associated with a substantial fall in mortality may give rise to some increase in fertility, though such a fall would normally precede and accompany declining fertility. It has been shown that current fertility levels in Yemen are high, with little or no prospect of decline. In this chapter the level and recent trends in child and adult mortality are examined. Also considered are some of the factors associated with differential chances of surviving the first years of life and their relation to reproductive behaviour.

The YARFS collected information which can be used to estimate levels and trends in both child and adult mortality. Child mortality can be estimated directly from the birth histories of the individual survey, which included the date of each live birth as well as the survival status and the age at death if the child had died. In addition, both the individual and household surveys ascertained the number of living children, the number of children who had died and, from this, the number of children ever born for all ever-married women. Indirect estimates of child mortality can be derived from the proportions of children who have died.

Questions relating to adult mortality were included in the household survey. These took the form of questions on the survivorship and the deaths of household members. The questions on the survivorship of the parents of each household member were asked and, for those who had been married more than once, questions about survivorship of the first spouse. Indirect estimates of adult mortality can be derived from the recorded proportions orphaned, and, for the ever-married, the proportions whose first spouse was alive. The questions on deaths of household members asked for the sex and age of all those household members who had died in the previous 24 months. In theory, the resulting figures divided by the population at risk should give death rates by age and sex. In practice, deaths are seldom completely reported and an adjustment is needed to bring them up to a realistic level.

The sections that follow are a preliminary analysis of the levels and trends in mortality revealed by the YARFS and do not go into the full detail that the data allow. Section 6.2 reviews the prevalence of child loss among the survey women. Levels and trends in infant and child mortality are examined in section 6.3 and differentials in these in section 6.4. Finally, recent trends in adult mortality and its relationship to child mortality are analysed in section 6.5 and summary indices of mortality are presented.

6.2 PREVALENCE OF CHILD LOSS

The impact of child mortality among the survey population is analysed in this section in two ways. First, the differences between fertility, the average number of live births per woman, and family size, defined as the average number of children living at the time of the survey, are examined. There follows a survey of the concentration of the experience of losing a child through death. This shows the extent to which the death of a child is a common feature of the family-building process.

The reported mean numbers of children ever born and living and the percentage of children who have died are shown by age of the mother for the individual and household surveys in table 6.1. The parities reported by older women seem too low, especially in the household survey. This is most probably due to omission in the reporting of live births. Since it is most likely that the unrecorded live births include a disproportionate number of infants who died shortly after birth, the result is an understatement of the percentages of children who have died.

Table 6.1 Mean number of children ever born and children living and the percentage of children who have died, by age group of women in the individual survey and the household survey

Age group of women	Children ever born per woman	Living children per woman	Percentage of children ever born who have died
A Individual survey[a]			
15–19	0.4	0.2	21.7
20–24	1.7	1.2	21.0
25–29	3.3	2.4	23.8
30–34	5.0	3.5	28.3
35–39	6.0	4.2	29.1
40–44	6.5	4.2	32.9
45–49	7.0	4.5	34.9
B Household survey			
15–19	0.3	0.2	19.6
20–24	1.5	1.2	19.1
25–29	2.9	2.3	22.1
30–34	4.3	3.2	25.0
35–39	5.5	4.0	27.6
40–44	5.8	4.0	31.3
45–49	6.1	4.1	31.6

[a] Means calculated by assuming the same proportions of women ever married as in the household survey.

Aside from this, table 6.1 shows the high fertility among Yemeni women to be translated through high mortality into a much smaller family size. Women aged 30–34 years in the individual survey reported an average of 5 live births and only 3.5 living children, while those in the oldest age group reported that out of 7 live births only 4.5 were still alive.

Child survivorship data is presented by parity in table 6.2 for those ever-married women in the individual survey with up to eight live births. Since women with more that eight live births comprise 9 per cent of all ever-married women and since mortality rises with parity, table 6.2 must be seen as an understatement of the overall mortality experience. The table gives the percentage distribution by parity of women according to whether all their children have survived, or whether one, two or more of them have died. 84 per cent of women with only one live birth report the child to be still alive. As may be expected, the percentage of women whose children have all survived declines with parity. Fewer than 50 per cent of women with four live births report a family size of four living children and only 10 per cent of women of parity eight have not lost a child through death. More than half of those women with five or more children who have lost a child through death have lost more than one. In fact, three-quarters of all women of parity eight have experienced the death of more than one child. The picture that emerges from tables 6.1 and 6.2 is one of a society in which the level of child mortality is high and in which mortality plays a significant role in the family-building process.

Table 6.2 Percentage distribution of women in the individual survey by number of deceased children and parity

Percentage by number of children who have died	Children ever born								
	1	2	3	4	5	6	7	8	Parity 1–8
0	84	65	55	42	33	28	18	11	49
1	16	31	30	33	28	21	22	14	19
2 or more	–	4	15	25	39	51	60	75	32
Total	100	100	100	100	100	100	100	100	100

6.3 INFANT AND CHILD MORTALITY

The level of mortality in infancy and childhood is an important indicator of the health of the population. In the context of persisting high fertility, it is a crucial factor in determining the rate at which the population is growing. The YARFS permits direct and indirect estimation of infant and child mortality. In this section the estimates are considered in an attempt to establish the level, recent trends and age pattern of mortality among infants and children in Yemen.

Infant mortality is defined as the probability that a live born child will die before reaching its first birthday. In this chapter it is presented as a rate per thousand live births. Infant deaths are further divided into those occurring in the neo-natal and post-neonatal periods, the neo-natal period referring to the first four weeks of life. The subdivision is designed to separate most of the congenital deaths and deaths associated with pregnancy and delivery from those resulting from a hostile environment. It is the latter that are considered to be most preventable and hence most easily eliminated or reduced.

Child mortality is the probability of dying between or before selected ages of childhood. In this chapter it will refer variously to the probability that a child will die in its first two or five years of life, or in the years between its first, second and fifth birthdays. The results are presented in terms of rates per thousand live births or per thousand survivors to the respective birthday.

Infant and child mortality can be calculated from the number of deaths by age out of a cohort of live births. The birth histories collected in the individual survey include the date of each live birth and the age at death of children who have died. From this information present and past mortality levels among infants and young children in Yemen can be estimated.

The past 25 years of infant and child mortality, derived from the birth histories, is shown in table 6.3 and illustrated in figure 6.1. The table presents five-year period mortality rates which describe the probabilities of dying for all children exposed during the five-year interval. In figure 6.1(a), the mortality rates shown in table 6.3 for mortality between birth and ages one, two and five years are assumed to be located at the midpoint of the five-year interval. Since the estimates of mortality between 20 and 24 years before the survey are based on so few children exposed, the commentary confines itself to the 20-year period before the survey. A substantial reduction in mortality at all ages of childhood between the 1950s and the late 1970s is indicated. The results suggest that about 230 out of every thousand children born in the early 1960s and exposed to the prevailing mortality rates would die in infancy and 370 before their fifth birthday. This compares with 160 infant deaths and nearly 240 deaths in the first five years of life per thousand children born in the late 1970s. The fall in mortality appears to have been most marked between the late 1960s and the early 1970s, with a much smaller reduction between then and 1979.

While the mortality in the five years before the survey represents a reduction of more than 30 per cent of that prevailing fifteen years earlier, it nevertheless represents a very high level of mortality. One out of every seventeen children born is expected to die in the first four weeks of life, one in six during the first year, and nearly one-quarter of all children born are expected to die before their fifth birthday. Such a level of uncertainty about the survival of each child means that parents cannot effec-

Table 6.3 Trends in infant and child mortality derived from the birth histories of the individual survey

Years before the survey	Female					Male					Both sexes				
	0–4	5–9	10–14	15–19	20–24	0–4	5–9	10–14	15–19	20–24	0–4	5–9	10–14	15–19	20–24
Neo-natal	57	51	59	59	(50)	60	69	85	78	(110)	58	60	73	69	80
Post-neonatal	100	102	135	(151)	(128)	106	113	132	(170)	(160)	103	108	133	161	(144)
q(1)	156	152	194	(210)	(178)	166	182	217	(248)	(270)	162	168	207	230	(224)
q(2)	192	212	268	(276)	(276)	201	228	281	(325)	(335)	196	220	276	301	(306)
q(5)	235	270	(333)	(336)	(381)	238	281	(344)	(407)	(419)	237	275	339	(373)	(401)
(1)q(1)	42	70	91	(84)	(119)	41	56	83	(102)	(88)	42	63	87	93	(105)
(3)q(2)	53	73	(89)	(83)	(145)	47	69	(88)	(122)	(127)	50	71	88	(102)	(136)
(4)q(1)	93	138	(172)	(160)	(247)	87	121	(163)	(212)	(204)	89	129	167	(186)	(227)

NOTES: Neo-natal mortality refers to deaths in the first four weeks of life per thousand live births.
Post-neonatal mortality refers to deaths between four weeks and one year per thousand live births.
q(x) refers to deaths between birth and age x years per thousand live births.
(n)q(x) refers to deaths between ages x and x+n years per thousand survivors to age x.

Figures in brackets are based on less than 500 children exposed.

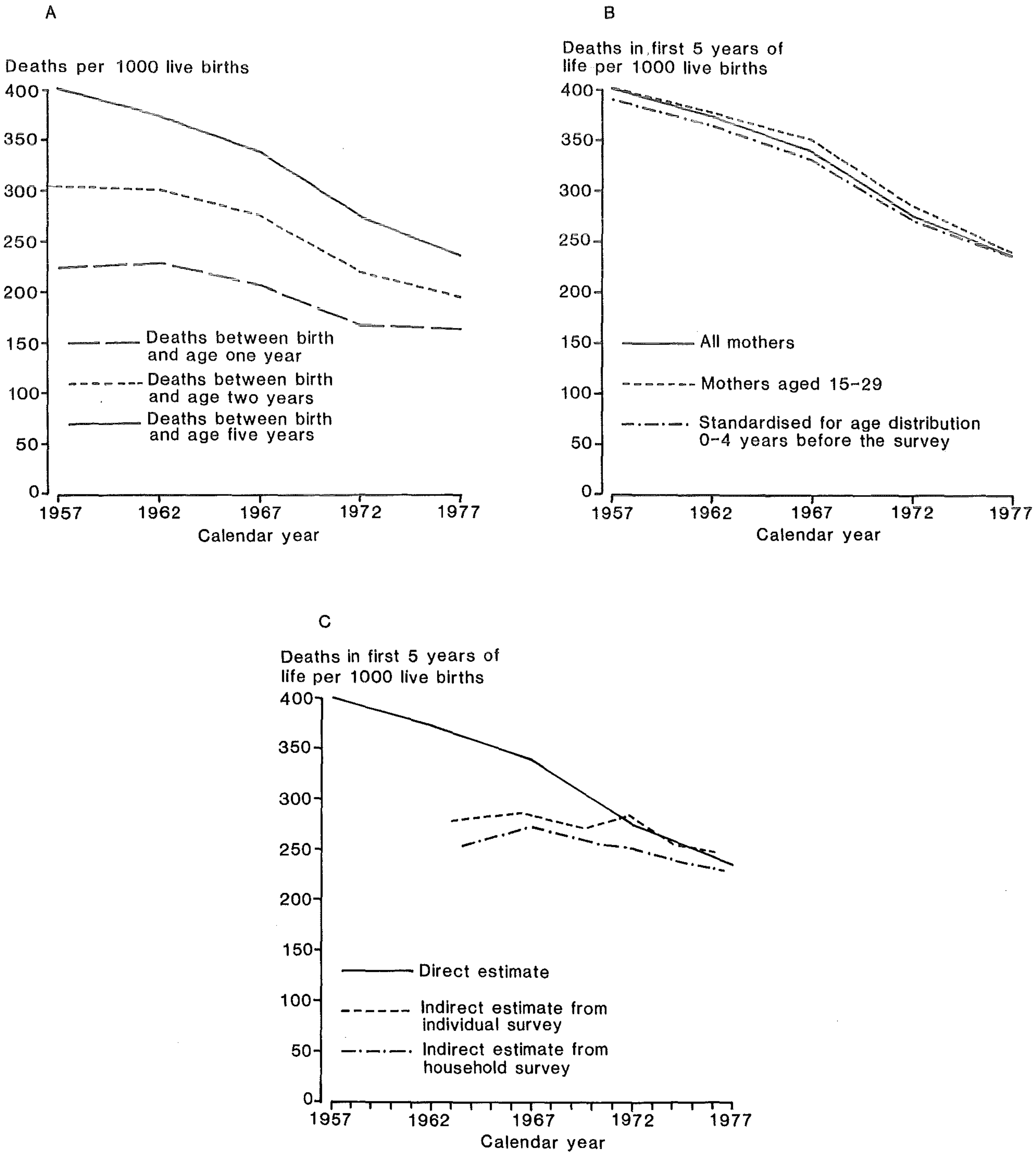

Figure 6.1 Estimated trends in infant and child mortality

tively determine or control family size. The level of infant and child mortality in Yemen must therefore be a significant factor in perpetuating high fertility.

Birth history estimates of infant and child mortality are liable to be distorted by a number of factors. Among the more important of these are reporting errors, the selectivity of past estimates according to age of mother, and the relatively small sample size. Before proceeding to the analysis of mortality differentials, this section concludes with a consideration of the likely impact of these on the estimates derived from the YARFS. It is hoped to establish that the results presented so far do not seriously misrepresent the recent history of child mortality in Yemen.

The reporting errors most likely to affect mortality estimates are the omission of live births and subsequent deaths, and the misreporting of age at death. These are commonly encountered where high fertility and mortality are found with low levels of literacy. Live births followed by neo-natal deaths are the ones most likely to be omitted from the birth histories, especially if they occurred many years before the interview. Similarly the reporting of age at death is likely to be least reliable for deaths in the most distant past. As a result the birth history estimates of infant and child mortality may be too low and the age pattern of mortality distorted. This applies in particular to estimates of past mortality.

Table 6.3 indicates a moderate reduction in neo-natal deaths, from around 70 deaths per thousand live births in the period 10–20 years before the survey to about 60 in the 10 years between the late 1960s and 1970s. The lack of any downward trend in the female neo-natal mortality rate would suggest that it was females who died in early infancy who were most likely to have been omitted in the birth histories. It was noted earlier that the reported parities for older women were somewhat lower than might have been expected, given the prevailing fertility levels. This would also indicate the omission of live births and deaths. As for the reporting of age at death, the age patterns of mortality in the 2 five-year intervals preceding the survey are compared in table 6.4 with a number of model life tables. The table presents model estimates of mortality in the first one and two years of life that correspond with birth history estimates of the overall probability of dying between birth and age five years.

The age pattern of mortality in the five years before the survey seems to be best represented by the West family of the Coale–Demeny regional life-table system and by Brass's logit–life-table system based on the general standard. This pattern is characterized by high infant, as opposed to later child, mortality. The age pattern of mortality five years earlier seems to conform more closely to Coale–Demeny's South family and to Brass's system based on the African standard, a pattern characterized by low infant mortality. Though not shown in the table, the reported age patterns of mortality for deaths more than ten years before the survey also conform to this pattern. This apparent change in the distribution of deaths in the first five years of life may in part be attributed to errors in reporting. The omission of early neo-natal deaths in the past would disproportionately depress the estimate of infant mortality. A commonly observed tendency for infant deaths to be reported as deaths at age one year would also understate the real level of infant mortality and would inflate the estimates of mortality in the second year of life. The possibility of a real change in the age pattern of mortality arising, for example, out of changes in breastfeeding, however, cannot be discounted, although it is not possible to pursue this here.

A second source of bias in the birth history estimates of mortality lies in their dependence on smaller sample sizes in the age groups of mothers for periods further back in time. Reports of live births and deaths that occurred 25 years before the survey are based on women aged between 40 and 50 at the time of interview, who would then have been between 15 and 25 years of age. An indication of the nature and extent of this bias can be seen in table 6.5 and figure 6.1(b) in which estimates of mortality that are standardized for age of mother are compared with the unstandardized rates. On the whole the estimates based on women under 30 years of age exceed those derived from the broader age groups of women. This is due to the excess mortality experienced by children born to women under 20 years of age. It might therefore be supposed that selectivity by age of mother

Table 6.4 The age pattern of infant and child mortality derived from the birth histories compared with that in selected model life tables

Years before the survey	0–4 q(5)=237		5–9 q(5)=275	
	q(1)	q(2)	q(1)	q(2)
Brass logit–life-table system based on:				
General standard	154	198	183	232
African standard	135	186	160	218
Coale–Demeney regional model life-table system:				
North	140	178	163	209
South	144	194	162	223
East	175	208	201	240
West	158	199	184	231
Birth history estimates	162	196	168	220

NOTE: q(x) refers to deaths between birth and age x years per thousand live births.

Table 6.5 Trends in childhood mortality derived from the birth histories of the individual survey and standardized for the age distribution of mothers

Deaths before age five per thousand live births	Years before the survey				
	0–4	5–9	10–14	15–19	20–24
Mothers aged 15–29 at birth of the child	240	285	350	(378)	(401)
Mothers standardized for the age distribution and relative mortality less than 5 years before survey	237	273	331	366	390
All women	237	275	339	(373)	(401)

NOTE: Figures in brackets are based on less than 500 children exposed.

results in an upward bias in the estimates of past mortality.

The second set of standardized mortality rates represents a rather crude attempt to adjust for this selectivity. They are all based on the age distribution of mothers that obtained during the five years before the survey. The estimates of mortality for children born to older women were derived by reweighting the rates for younger mothers. The weights were obtained by averaging the ratios of older to younger mothers' mortality rates in the five years before the survey. It is clear from the figure that this procedure does result in lower estimates of child mortality for the years prior to the late 1960s. However the difference in the estimates are not excessive, never amounting to more than 10 childhood deaths per thousand live births. It would therefore seem that the upward bias introduced by selectivity for age of mother does not effect a serious distortion in the trend in child mortality in Yemen. Finally it was noted that the birth history estimates of infant and child mortality are based on a relatively small sample size of 2605 ever-married women. This represents, however, the mortality experience of nearly 10 000 children. The sampling errors for estimates at the national level are not large, especially in the context of such high levels of overall mortality. Small sample sizes may, however, jeopardize the analysis of differentials in mortality among subgroups of the population. It might seem desirable to derive estimates of mortality from the household survey, which included more than 14 500 ever-married women in the age group 15–49 years.

Though birth histories were not collected in the household survey, the number of children ever born and children who had died were established for all ever-married women. Indirect estimates of infant and child mortality can be derived from the proportions of children who have died for five-year age groups of women. The technique assumes an unchanging fertility and allows a linear period decline in mortality. The proportions of children dead are converted into probabilities of dying between birth and selected ages by multiplying factors which are based on the assumed fertility pattern and are roughly equal to 1.0.[1] The set of probabilities of dying and the time to which they refer, assuming mortality to be represented by Brass's logit–life-table system, based on the general standard, are shown for both the individual and household surveys in table 6.6. Also shown are the values of mortality between birth and age five years that correspond to each derived probability of dying.

Table 6.6 Indirect estimates of child mortality derived from the proportions of children who have died by age group of women in the individual and household surveys

	Age group of women from whom the estimates were derived					
	20–24	25–29	30–34	35–39	40–44	45–49
A Individual survey						
x	2	3	5	10	15	20
q(x)	209	235	282	292	322	341
q(5)	249	255	282	271	285	279
Calendar year	1976.2	1974.2	1971.2	1969.4	1966.5	1963.0
$P^2/P^3=0.513$						
B Household survey						
x	2	3	5	10	15	20
q(x)	192	219	250	278	308	311
q(5)	230	238	250	258	272	252
Calendar year	1976.2	1974.6	1972.3	1969.9	1967.0	1963.5
$P^2/P^3=0.498$						

NOTES: P^2/P^3 is the ratio of reported parities for women aged 20–24 and 25–29 years.
q(x) is the deaths per thousand live births between birth and age x years.
q(5) refers to the deaths per thousand live births between birth and age five years that correspond to each q(x) in the Brass logit–life-table system based on the general standard.

The trends in the indirect estimates of mortality in the first five years of life from the individual and household surveys, along with the birth history estimates, are illustrated in figure 6.1(c). The closeness of the direct and indirect estimates from the individual survey for mortality in the ten years or so preceding it is encouraging. As for the years prior to this, both sets of indirect estimates seem to be depressed by the inappropriateness of the assumed age pattern of mortality in describing the relation between child and adult mortality in Yemen. The model assumes much higher adult mortality than is believed to be the case (see Section 6.5). The indirect estimates for earlier years are the ones based on older women and must also be depressed by the omission of live births and deaths.

It is disappointing that all the estimates of mortality derived from the household survey are so much lower than those derived from the individual survey. This must be attributed to poorer reporting in the household survey. It relied on information provided by the head of the household and did not go into the full detail of the birth histories. Reporting in the household survey seems to have been better in urban households and those in the South region. In each of these cases the household survey estimate of recent child mortality exceeds that derived from the birth histories of the individual survey.

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[1] For a fuller description of the technique see Feeney, G. (1980). Estimating Infant Mortality Trends from Child Survivorship Data. *Population Studies 34(1)*.

Applying the ratios between household and birth history estimates of urban and South mortality to the national birth history estimates for the five years before the survey results, respectively, in 290 and 250 deaths per thousand live births between birth and age five years. This compares with the birth history estimate of 237 childhood deaths per thousand live births. The question of differential reporting by subgroups in the household survey is not pursued here. The evidence presented suggests, however, that the birth history estimates underestimate the real level of infant and child mortality in Yemen.

In conclusion, the YARFS confirms that Yemen experiences very high infant and child mortality, though it appears to have fallen significantly during the past two decades. The age pattern of child mortality appears to be one of high infant mortality, as compared with later child mortality. From the birth histories, it appears that about one in every six children born will die in the first year of life and one in four before its fifth birthday. This compares with about one death out of every 4.5 live births in the first year of life and one in 2.5 in the first five years of life during the late 1960s. There is evidence to suggest that these figures represent upper bounds on the real prospects of survival among Yemeni infants and children.

6.4 DIFFERENTIALS IN INFANT AND CHILD MORTALITY

There is a considerable variation in the levels of infant and child mortality in Yemen. Nearly one in two mothers between the ages of 15 and 49 years have experienced the loss of a child through death and one in three have lost two children or more. In this section the factors that might be associated with these variations are considered. The first group of factors is child-based or intra-familial. and relates to the sex of the child, the mother's age, birth order and length of the previous birth interval. The second group comprises the more family-based characteristics: urban or rural residence, region of residence, and husbands' education and occupation. While most of these factors are clearly not independent, the present analysis confines itself to considering in turn the relation of each with child mortality and no attempt is made to identify joint effects.

6.4.1 Sex of child

Birth history estimates of mortality among male and female children are shown in table 6.3. As a general rule mortality in infancy and childhood is higher among boys than among girls. This seems to be true with regard to infant mortality in Yemen, even though excess female mortality may be concealed by the disproportionate omission of female deaths. The reverse is true of mortality between ages one and four years. As a result, the differences in the male and female chances of surviving the first five years of life during the late 1970s are negligible, although the nature of reporting errors suggests that female mortality may in fact exceed male mortality. The preference for male children may effect a reversal in the usual sex differential in mortality, especially between ages one and five years. These are years when a child is particularly susceptible to the debilitating and potentially fatal effects of the interplay of infection and malnutrition. The excess female mortality suggests that they receive less care as regards nutrition and exposure to the onset and consequences of disease than do their male counterparts.

It is difficult to measure the sex differential in mortality in the past. The low and unchanging levels of female neonatal mortality indicates the omission of female births and deaths. Indirect estimates from the household survey suggest that during the early 1970s, 255 out of every thousand male live births and 221 out of every thousand female live births would die in the first five years of life. (These were calculated as an average of the mortality represented by women in the age groups 20–34 years.) Birth history estimates for roughly the same period are 256 male and 249 female deaths per thousand live births of each sex. This disparity in female mortality, in conjunction with the household survey sex ratios for children ever born of 115 male per 100 female births, indicates a substantial understatement of female births and deaths in the household survey. In this context, it would be surprising if there were not also some under-reporting of female mortality in the birth histories for periods further in the past. Hence it is likely that the excess male mortality in past years is exaggerated and no reliable conclusions about the trends in the sex differential in mortality can be drawn at this stage.

6.4.2 Mother's age and birth order and the length of the previous birth interval

The relation between mother's age and child survival was referred to briefly in section 6.3. It is shown more clearly in table 6.7. The table presents birth history estimates of mortality during the ten years preceding the survey according to mother's age, birth order and the length of the previous birth interval. Children born to women under 20 years of age are much more likely to die in the first five years of life than those born to women aged 20 years or more. They are particularly at risk in infancy, especially during the neo-natal period. The lowest mortality was reported for children born to women aged

Table 6.7 Infant and child mortality during the ten years before the survey by mother's age at birth, birth order and the length of the previous birth interval

	Neonatal	Post-neonatal	q(1)	q(2)	q(5)	(1)q(1)	(3)q(2)	(4)q(1)
Mother's age at birth								
<20	85	119	204	232	289	35	75	108
20–29	55	105	159	207	249	57	52	107
30–39	50	93	143	187	234	51	58	106
40 or more	(54)	(110)	(164)	(199)	(245)	(41)	(55)	(95)
Birth order								
1	80	106	186	219	268	41	62	101
2–3	56	96	152	190	240	45	61	104
4–6	43	105	149	200	246	61	57	114
7 or higher	70	120	189	232	274	53	53	104
Length in years of previous birth interval								
Less than 2, all children	69	152	221	280	342	75	84	153
Less than 2, previous child survived	52	132	184	245	308	72	82	149
2–3	39	55	94	125	156	34	35	69
4 or more	22	43	65	86	104	19	(19)	37
All births	59	105	164	207	253	51	58	106

NOTE: Figures in brackets are based on less than 500 children exposed.

30–39 years, while the remaining children had a level of mortality slightly in excess of this.

Similar variations are observed in the prospects of survival according to birth order. Firt-born children and those born to women with at least six previous births are least likely to survive to their fifth birthday and both groups are especially vulnerable during infancy.

The factor that differentiates most strikingly and consistently the survival chances of infants and children is the length of the previous birth interval. One in three children born less than two years after the previous birth died in the first five years of life, compared with less than one in six of those born after an interval of two years or more. The relationship applies to all age groups of children who die in infancy and childhood, with the post-neonatal and childhood mortality rates of children born after a short interval being the highest mortality recorded in the table. It may be argued that the observed relationship is simply an indirect effect of the association between the mortality of consecutive children. The death of the first child shortens the interval to the next pregnancy and hence an apparent association between interval length and mortality. To answer this objection, the table includes mortality rates for children born after a short interval in which the previous child survived. It is evident that the exclusion of the deceased children only slightly weakens the relationship between mortality and the length of the previous interval. It should be noted that short intervals, and hence a much lower chance of survival, are not simply the experience of a minority of children. Just over one half of the intervals included in the table were less than two years in length.

The relationships described here between mortality and mother's age, birth order and the length of the previous interval are to some extent interdependent. First births are likely to be over-represented among births to young mothers and hence high levels of neonatal mortality are reported both for first births and among young mothers. Equally, short birth intervals denote a generally faster pace of reproduction and are often characteristic of women who attain the highest parities. Repeated shortly spaced pregnancies, as well as the presence of a number of very young children in the household, must adversely affect a woman's physical, emotional and economic capacity to provide adequate care for each child. This relative deprivation is apparently translated into a lower chance of survival. Ascribing causal mechanisms to each of the factors associated with reproductive behaviour and analysing their relationships with socio-economic and environmental factors is a task beyond the scope of this first report.

6.4.3 Residence

The effect of urban or rural residence and of region of residence on infant and child mortality can be seen in table 6.8. The table presents birth history estimates of mortality in the ten years before the survey as well as household survey estimates of mortality between birth and age five years. The household survey estimates were derived from the mortality experience of women aged 20–34 years and are assumed to apply roughly to the same period.

The birth history estimates suggest infant and child mortality to be consistently lower in urban than in

Table 6.8 Infant and child mortality during the ten years before the survey by residence and husband's education and occupation

	Birth history estimates								Household survey
	Neo-natal	Post-neonatal	q(1)	q(2)	q(5)	(1)q(1)	(3)q(2)	(4)q(1)	q(5)[a]
Type of residence									
Urban	48	77	125	157	190	36	37	73	233
Rural	61	109	170	214	263	53	62	112	240
Region of residence									
North	73	131	204	256	302	65	62	123	259
South	43	89	132	167	210	41	51	89	223
West	64	104	168	209	264	50	69	116	240
East	(63)	(56)	(118)	(148)	(190)	(35)	(49)	(82)	198
Husband's education									
None	61	105	166	209	257	51	65	109	–
Less than primary	36	91	126	176	221	56	57	108	–
Primary and over	47	112	161	188	218	36	37	69	–
Husband's occupation									
Prof., tech. and clerical	37	62	99	123	140	27	18	46	–
Sales and service	53	117	170	208	251	46	54	98	–
Manual	62	93	155	196	248	49	64	109	–
Agricultural	63	112	175	222	272	57	63	117	–
All women	59	105	164	207	253	51	58	106	239

[a] Household survey estimate of q(5) derived from the average mortality level in the logit–life-table system implied by the proportions of children dead for women in the age group 20–34 years

NOTE: Figures in brackets are based on less than 500 children exposed.

rural areas. Just over one in four children born to women living in rural areas were reported to have died in the first five years of life, compared with just under one in five urban children. Urban residence appears to affect favourably chances of survival at all ages of childhood. The household survey estimates indicate higher urban mortality than do the birth histories, with the reverse being the case for rural mortality. If one assumes under-reporting of deaths among rural households in the household survey, the urban discrepancy may be indicative of a higher overall level of mortality than emerges from the individual survey, and children living in urban areas of Yemen must be considered as exposed to a high mortality regime.

Both household and individual survey estimates of mortality by region of residence indicate that the prospects of survival for children born in the South are superior to those for children born in the North. The birth histories indicate a greater differential mortality, with 210 deaths in the first five years of life per thousand children born in the South compared with 302 for children born in the North. Both sets of estimates indicate mortality in the West to be intermediate between that of the North and South, and mortality in the East to be lowest of all. It is suspected that this apparently lower mortality is not real and results from poor reporting in this region in both surveys.

6.4.4 Husband's education and occupation

Socio-economic differentials in mortality can also be seen in table 6.8 in which birth history estimates according to husband's education and occupation are presented. Children born to women whose husbands have no education have the lowest chances of surviving. The effect of level of education on mortality in the first five years of life appears, surprisingly, to be negligible. However a distinctly lower mortality between ages one and five years is observed among children of women whose husbands have at least primary education. Women whose husbands have no education, and to some extent women with less that primary education are believed to have understated the number of children who died in infancy.

The lower levels of mortality associated with husband's occupation are somewhat clearer. Children of women whose husbands are in professional, technical or clerical occupations enjoy the best prospects of survival. The highest mortality was reported among the children of women whose husbands work in agriculture, while those with husbands in manual work or in sales and services report slightly lower mortality than this.

The observed differentials in mortality according to residence and socio-economic status are evidently interrelated. Men working in the modern white collar sector are most likely to be living in urban areas while, obviously, most of those in agriculture live in the countryside. Similarly the most educated men are likely to be employed in professional, technical or clerical jobs and to be living in the city. Although it is not possible to pursue the point here, it is likely that some of this differential mortality arises out of, and in turn determines, differentials in the family-building process.

6.5 ADULT MORTALITY

In this section the indirect estimates of adult mortality derived from data on orphanhood and widowhood are followed by a brief appraisal of the mortality based on the deaths of household members. Finally, the levels of child and adult mortality are compared and the implied level and pattern of mortality among Yemen population identified.

6.5.1 Orphanhood and widowhood

Adult mortality can be estimated from the proportions by age with mother or father alive and also from the proportions by age of the ever-married population with first spouse alive. The method of estimation is based on the same principle as that employed in estimating child mortality from the proportions of children who have died. In the case of orphanhood, the length of exposure to dying, namely the age of the respondent, is fixed and the age at onset of exposure must be derived from the data. For widowhood, both the length of exposure and the age at onset of exposure must be estimated. The probabilities of surviving are calculated as a weighted average of the proportions in adjacent age groups with mother, father or spouse alive. The techniques assume the same mortality schedule as in the estimation of child mortality and both have been recently extended to incorporate a linear mortality decline in the period rates.

The age at onset of exposure for maternal orphanhood is the average age of mothers at the birth of the respondents. This is assumed to be equal to the mean age of women who bore a child during the 12 months preceding the survey. Similarly the age at onset of exposure for paternal orphanhood is assumed to be equal to this mean age plus the average age difference between husbands and wives. The estimates of adult mortality are quite sensitive to choice of age at onset of exposure, and the estimates of these are in turn sensitive to patterns of age misstatement, such as those observed in chapter 3. To minimize the effects of the latter, the mean age of mothers was derived from the individual rather than the household survey. Two sets of estimates of male adult mortality were derived from the orphanhood data based on different assumed age differences between spouses. The first, equal to the mean age difference reported in the individual survey, is in theory the better measure, though it is most vulnerable to the effects of age misstatement. The second measure, the difference between male and female singulate mean ages at marriage, is less affected by age misstatement, but it tends to underestimate the real age difference between spouses due to the exclusion of second or later marriages. In the case of widowhood, the age at onset of exposure for each sex is the age at which they married. It is assumed to be equal to an estimate of the mean age at which the current ever-married population were married. The length of exposure is assumed equal to the spouse's current age minus the singulate mean age at marriage.

The proportions of respondents with mother alive and of ever-married male respondents with first spouse alive, along with the derived survival ratios, are shown in table 6.9. Table 6.10 presents orphanhood and widowhood estimates of adult male mortality. Also shown in each

Table 6.9 Orphanhood and widowhood estimates of adult female mortality derived from the household survey

A Maternal orphanhood

Age group of respondent	Proportion with mother alive	Central age, N	$\frac{l(25+N)}{l(25)}$	e(15)	Calendar year
5–9	961	10	952	50.3	1975.6
10–14	934	15	928	50.8	1973.7
15–19	900	20	896	50.7	1971.9
20–24	832	25	836	49.1	1970.2
25–29	743	30	755	47.7	1968.5
30–34	641	35	664	47.2	1967.1
35–39	508	40	531	46.0	1965.4
40–44	366	45	376	44.6	1963.8
45–49	282	–	–	–	–

Mean age of mothers at birth of their children = 28.3 years

B Male widowhood

Age group of men	Proportion with first wife alive	Central age, N	$\frac{l(N-5)}{l(17-5)}$	e(15)	Calendar year
25–29	963	30	946	44.5	1976.2
30–34	928	35	913	45.8	1973.9
35–39	896	40	869	44.4	1971.6
40–44	835	45	821	43.9	1969.3
45–49	801	50	781	44.4	1967.3
50–54	748	55	742	45.3	1965.7
55–59	730	60	709	47.0	1964.4
60–64	670	65	657	48.1	1963.5
65–69	632	–	–	–	–

Singulate mean age at marriage, males = 21.8 years
Time period mean age at marriage, females = 17.2 years

NOTES: e̊(15) is the expectation of life at age 15 years that corresponds to the estimated survival ratios in the Brass one parameter logit–life-table system.
Proportion and survival ratios refer to rates per thousand population.

Table 6.10 Orphanhood and widowhood estimates of adult male mortality derived from the household survey

A Paternal orphanhood

Age group of respondent	Proportion with father alive	Central age, N	$\frac{l(35+N)}{l(32.5)}$		e(15)		Calendar year
			a	b	a	b	
5–9	945	10	926	920	50.4	52.0	1974
10–14	903	15	880	865	50.0	51.6	1973
15–19	840	20	811	785	49.1	50.8	1971
20–24	753	25	706	649	47.7	49.2	1969
25–29	624	30	561	494	46.0	48.3	1967
30–34	496	35	389	293	44.1	46.0	1964
35–39	343	40	218	143	41.8	45.1	1963
40–44	218	–	–	–	–	–	–

a Mean age of the fathers at the birth of their children assumed to be equal to 33.2 years.
b Mean age of the fathers at the birth of their children assumed to be equal to 36.2 years.

B Female widowhood

Age group of women	Proportion with first husband alive	Central age, N	$\frac{l(N+5)}{l(22.5)}$	e(15)	Calendar year
20–24	978	25	970	51.9	1976
25–29	960	30	943	50.4	1974
30–34	920	35	907	49.3	1971
35–39	887	40	855	47.8	1969
40–44	809	45	793	47.0	1967
45–49	770	50	718	46.3	1965
50–54	656	55	617	45.5	1964
55–59	576	60	517	45.8	1962
60–64	472	–	–	–	–

Singulate mean age at marriage, females = 16.9 years
Time period mean age of marriage, males = 21.0 years

NOTES: e(15) is the expectation of life at age 15 years that corresponds to the estimated survival ratios in the logit–life-table system.
Proportions and survival ratios refer to rates per thousand population.

table are the expectations of life at age 15 which match the survival ratios, as well as the dates to which they refer under the assumed mortality decline. The two sets of orphanhood estimates and the widowhood estimates of male expectations of life at age 15, together with the orphanhood estimates of adult female mortality are shown in figure 6.2. The widowhood estimates of female mortality seem most unreliable, indicating a much lower and falling trend in the expectation of life than that implied by the orphanhood data. They were therefore not included in the figure. The figure indicates a gradual and steady increase in the expectation of life at age 15 for both men and women, from about 46.5 years in the mid-1960s to more than 50 years in the late 1970s. The latter figure, based on the experience of the younger respondents, may overestimate the real prospects of survival. Orphanhood in particular may be understated through reporting on a parent other than the natural parent, especially when the subject is still living in the family home. Despite this, some decline in adult mortality is clearly indicated. For male mortality, the widowhood estimates and the orphanhood estimates which assume the smaller age difference between husband and wife are encouragingly close. An unusual feature of the data on adult mortality is that men and women appear to share similar chances of survival, whereas in most societies women have much lower mortality than men. There is no obvious reason why respondents should either consistently report fathers alive who were in fact dead, or mothers dead when in fact they were still alive. The explanation of the unusual similarity between male and female adult mortality does not therefore seem to be found in reporting errors. It seems that the low status of women in Yemen, in conjunction with the debilitating effects of repeated pregnancies, results in their losing the advantage of lower mortality usually associated with women.

The YARFS sought to collect information on all deaths of household members occurring during the 24 months before the survey. Altogether 1841 deaths were reported. Taking half of these as an estimate of annual deaths gives a rather low crude death rate of 12.7 deaths per 1000 population. Crude rates of 14.6 for males and

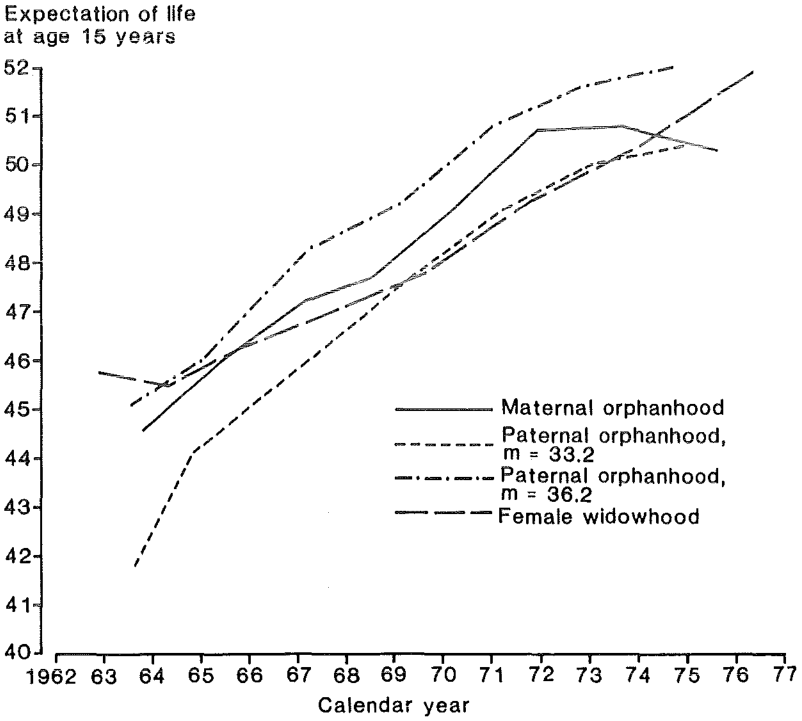

Figure 6.2 Orphanhood and widowhood estimates of the trends in expectation of life at age 15

10.8 for females suggest that female deaths were less well reported than male deaths. The fact that much lower levels of adult mortality are implied by the data on household deaths than by the data on orphanhood and widowhood supports the contention that under-reporting of household deaths has occurred. If, for example, a level of adult mortality corresponding to an expectation of life at age 15 equal to 50 years were assumed, this implies that less than one in three adult deaths were reported in the household schedule. Though there are techniques which adjust for under-recording of deaths, their application is complicated here by the effects of migration on the age structure of the male population and by substantial misreporting of age at death. A more detailed analysis of the information on the deaths of household members is beyond the scope of this volume.

6.5.2 Child and adult mortality

The relation between the levels of child and adult mortality can be assessed by reference to a standard mortality schedule. One of the two model life-table systems that best described the age pattern of child mortality was Brass's logit–life-table system based on the general standard. This was also the mortality schedule assumed in estimating adult mortality from orphanhood and widowhood. The mortality levels implied by child and adult mortality in this system can therefore be compared. From the birth histories, it was estimated that in the five years before the survey, 237 out of every thousand children born would die in the first five years of life. In the logit–life-table system, this corresponds to an expectation of life at age 15 equal to 43 years. The expectation of life at age 15 implied by the adult mortality estimates for the same period is close to 50 years. This indicates that adult mortality in Yemen is low relative to the level of child mortality when compared with the logit–life-table system.

From the respective estimates of child and adult mortality, summary indices of mortality for the Yemen population can be derived. With mortality below age 10 years equal to that reported in the birth histories and that over age 10 represented by the model life table with expectation of life at age 15 equal to 50 years, a crude death rate of 20 deaths per thousand population is obtained. In this case the expectation of life at birth would be 48 years for each sex. The slightly higher expectation of life at age 15 of 51.4 years implies a crude death rate of 19 deaths per thousand population and an expectation of life at birth of 50 years. Although the crude death rate is slightly inflated by about one death per thousand inhabitants, owing to the under-representation of young men in the age structure, these figures most probably underestimate the real level of mortality. It was noted in the section on infant and child mortality that disparities between the household and individual survey estimates for urban areas and the South region strongly suggest that the individual survey underestimates mortality in childhood. Were one to increase the birth history estimates according to the ratios of the household and individual survey estimates of South and urban mortality, and, assuming the higher adult mortality estimate, crude death rates of 21 and 23 deaths per thousand population, or 20 and 22 after adjusting for migration, are obtained. These correspond to expectations of life at birth of around 45 years.

To conclude, it is clear that mortality in Yemen is high, with an annual crude death rate of more that 20 deaths per thousand population and an expectation of life at birth somewhere around 45 years. More precise estimation is a task for further analysis.

CHAPTER 7

FAMILY PLANNING

SUMMARY

The YARFS findings indicate a widespread unawareness of family planning methods among Yemeni women: only 25 per cent of ever-married women reported that they had heard of some method of contraception. Among these women, the pill is by far the most widely known method, followed by injection. Knowledge of traditional methods, as reported by respondents, is very negligible. Only about 3 per cent of ever-married women reported ever having used some sort of contraceptive. Among currently married and non-pregnant women (ie exposed women), only 1.7 per cent are currently using contraception.

There are substantial differences in awareness and use of family planning according to the socio-economic characteristics of the respondents. The level of contraceptive knowledge reaches 75 per cent among women living in urban areas, 69 per cent among women whose husbands are engaged in professional or clerical occupations and 62 per cent among those women who are married to men with primary or more education. Current use reaches 10 per cent among women residing in urban areas.

7.1 INTRODUCTION

The pattern and level of fertility is determined by a large number of physiological and biological factors, one of which is contraception, the deliberate attempt to limit births or postpone pregnancy. Besides contraception, there are a number of other 'intermediate' determinants of conception, such as breastfeeding, and post-partum amenorrhoea, although breastfeeding is usually not deliberately used to control the level of fertility.

The YARFS collected information on knowledge and use of family planning and on some non-contraceptive factors affecting fertility. This chapter considers overall levels of awareness and use of family planning and reviews differentials in these variables.

At the outset, it should be pointed out that the government of the Yemen Arab Republic perceives family planning, from the standpoint of its wide social implications, as a means of improving family welfare and individual health. Given the very high levels of perinatal, infant and child mortality, the Yemeni administration perceives as premature any discussion or policy formulation with regard to fertility regulation unrelated to family health and welfare. Very recently, however, the Ministry of Health has started to provide family planning services, to those who want them, within the maternal and child welfare centres located in the urban areas. It is also believed that some physicians in urban areas provide family planning advice privately.

7.2 CONTRACEPTIVE TERMINOLOGY

In the YARFS, 11 methods of contraception, which are common to most WFS surveys, plus a category labelled 'other', were included in section 4 of the individual questionnaire. These methods were classified into two major types. The first, referred to as 'efficient' or 'modern', are the pill, IUD, condom, injection, male and female sterilization and other scientific methods. The remainder, douche, rhythm, withdrawal and abstinence, were termed 'inefficient' or 'traditional' methods.

7.3 KNOWLEDGE OF CONTRACEPTION

A necessary condition for use of contraception is that the population must be knowledgeable about family planning methods, but this does not in itself ensure use. Knowledge is defined here as having heard of any method or any specific method to delay or avoid pregnancy. No reference is made to knowledge of how to use a method or (when relevant) where to obtain it.

In the YARFS, as in most of the WFS surveys, knowledge of contraception was ascertained at two levels. The first, referred to as 'spontaneous' knowledge, was obtained by asking a direct question:

> As you know, there are various ways that a couple can delay the next pregnancy or avoid pregnancy. Do you know of, or have you heard of, any of these ways or methods?

If the woman answered affirmatively, she was then asked to name the method(s) she knew of. Each method not mentioned spontaneously was then described briefly, and the respondent was asked, 'Have you heard of this method?'. However, a respondent is classified as having heard of a method regardless of whether she mentions it spontaneously or only after some probing.

Table 7.1 shows the percentage of ever-married women who have heard of any method of contraception, classified by current age and number of living children. The overall level of knowledge of family planning methods is low among Yemeni women. Only 25 per cent of the women reported that they had heard of some method of contraception. The level of knowledge increases with age, with women under 25 years reporting the lowest level of knowledge (22 per cent), and women aged 45 or more reporting the highest level (31 per cent). This pattern, however, is reversed when family size is controlled. Thus, the standardized level of knowledge decreases from 27 per cent among women aged under 25 to 25 per cent for women aged 25–34 and to 22 per cent for women aged 35–44.

The percentages of women who have heard of specific contraceptive methods within two broad categories of number of living children (less than four and four or more) are shown in table 7.2. The pill is by far the most widely known method, with about one-quarter of the respondents having heard of it, followed by injection, with about one-sixth of the respondents having heard of it. Female sterilization, IUD and condom are known only to about 5 per cent, 3 per cent and 2 per cent of the respondents, respectively. The figures in table 7.2 also show that knowledge of traditional methods is negligible.

The findings of the survey, however, show that substantial variations in awareness of contraception exist between subgroups of the sample. Table 7.3 gives the percentages of women who have heard of any method of contraception according to the socio-economic characteristics of the respondents. The age standardized percentages are not shown, as it was found that standardization does not alter the crude proportions very much. As expected, urban women are much more knowledgeable of family planning methods than rural women. While three-quarters of urban women reported that they had heard of some method of family planning, only one-fifth did so in rural areas. Differentials in the levels of awareness of contraception by region of residence are also readily apparent from the table. Residents of the South region have the highest level of knowledge (33 per cent), followed by those living in the North and West regions (21 per cent), while women living in the East have the lowest (10 per cent).

Table 7.2 Percentage of ever-married women who have heard of specific contraceptive methods, by number of living children

Method	Number of living children		All
	Less than 4	4 or more	
Modern methods			
Pill	20.0	29.8	23.3
IUD	2.6	5.0	3.4
Condom	1.9	2.9	2.3
Injection	13.5	20.8	16.0
Male sterilization	2.5	3.8	2.9
Female sterilization	4.1	6.3	4.9
Other female scientific	0.1	0.2	0.1
Traditional methods			
Rhythm	0.9	1.0	1.0
Withdrawal	0.8	2.1	1.2
Douche	0.2	0.6	0.4
Abstinence	0.4	1.3	0.7
Other	0.7	1.3	0.9

Source: Table 4.2.1A

In terms of education, there is a clear difference in the level of knowledge according to husband's level of education: the level rises from 21 per cent among women whose husbands have not been to school to 52 per cent among women whose husbands have had some education.

Women who worked before and after marriage have the lowest level of knowledge (11 per cent) in the

Table 7.1 Percentage of ever-married women who have ever heard of any contraceptive method, by current age and number of living children

Age	Number of living children								All	
	0	1	2	3	4	5	6	7+	Unstandardized	Standardized
<25	16.7	21.9	26.0	39.1	(38.3)	(30.5)	(44.4)	–	22.1	26.6
25–34	19.5	14.3	18.4	27.1	24.6	37.5	44.0	41.36	25.0	24.5
35–44	(12.0)	20.5	18.9	25.8	21.7	23.5	32.9	39.89	26.6	21.7
45+	(10.2)	(40.7)	(13.2)	(31.0)	28.0	32.7	25.5	45.91	31.5	26.3
All	16.8	20.4	20.8	29.6	25.1	31.8	35.1	41.88	24.8	–

NOTE: Brackets indicate less than 30 cases.
Source: Table 4.2.2

Table 7.3 Percentage of ever-married women who have heard of any contraceptive method, including sterilization, by age and socio-economic characteristics

Socio-economic characteristic	Current age				All
	<25	25–34	35–44	45+	
All	22.1	25.0	26.6	31.5	24.8
Type of residence					
Urban	73.6	72.2	75.6	(91.8)	75.2
Rural	16.4	18.4	19.3	23.1	18.2
Region of residence					
North	18.8	19.5	25.2	28.0	21.0
South	31.6	33.3	32.8	35.6	32.7
West	14.3	21.1	23.2	32.6	21.1
East	5.4	13.9	12.4	19.8	10.4
Pattern of work					
Before and after marriage	7.4	13.2	11.9	19.1	11.3
After marriage only	24.0	16.4	20.9	(11.7)	18.9
Before marriage only	20.7	32.4	33.2	(32.5)	28.2
Never worked	34.8	36.4	40.0	50.2	37.6
Husband's level of education					
No schooling	16.5	21.6	24.9	27.1	21.0
Incomplete primary	28.8	48.2	(36.8)	(58.7)	38.2
Primary and over	58.3	62.7	(59.6)	(100.0)	61.5
Husband's occupation					
Prof., tech. and clerical	67.1	64.7	64.9	(89.4)	68.9
Sales	29.5	41.4	44.5	39.8	37.4
Agriculture	3.0	12.6	16.2	14.2	10.9
Services	33.4	34.5	32.7	(45.9)	34.4
Manual	26.3	26.4	28.4	41.5	27.5

NOTE: Brackets indicate less than 30 cases.
Source: Table 4.2.2

category of pattern of work. This finding reflects the predominantly rural background of these women. The highest level of knowledge is found among women who have never worked (38 per cent) and those who worked before but not after marriage (28 per cent).

The percentages classified by the variable 'occupation of husband' clearly show that the highest level of knowledge is found among women whose husbands are either professional or clerical workers (69 per cent). The wives of sales workers (37 per cent) and those of service workers (34 per cent) have approximately the same level of knowledge, while only more than one-quarter of the women whose husbands are engaged in manual occupations know about family planning. At the other extreme, women whose husbands are engaged in agriculture have the lowest level of awareness of family planning (11 per cent).

7.4 EVER-USE OF CONTRACEPTION

The individual questionnaire of the YARFS included a series of questions on ever-use of contraception. For each method the respondent had ever heard of, she was asked, 'Have you ever used this method?' or some variant of this question. Table 7.4 gives the percentage of ever-married women who have ever used any contraceptive method, classified by age and number of living children. Overall 3 per cent of ever-married women reported ever-use of contraception, either modern or traditional methods. Apart from women under 25 years of age, the level of ever-use of contraception remains stable at around 4 per cent at different age groups.

As for knowledge, ever-use of contraception varies between subgroups of the population. The proportions of women who had ever used contraception according to the socio-economic characteristics within four broad age groups and for all ages are given in table 7.5. As may be seen, the level of ever-use exceeds 10 per cent only among women residing in urban areas (15 per cent), women whose husbands are engaged in professional and clerical occupations (13 per cent), and women whose husbands have completed at least primary education.

7.5 CURRENT USE OF CONTRACEPTION

In the individual questionnaire, all women who had reported ever-use of contraception and were currently

Table 7.4 Percentage of ever-married women who have ever used any contraceptive method, by current age and number of living children

	Current age				Total
	<25	25–34	35–44	45+	
Percentage ever used	1.9	3.8	3.9	3.9	3.1

	Number of living children										Total
	0	1	2	3	4	5	6	7	8	9+	
Percentage ever used	0.8	1.0	3.0	2.9	4.2	4.8	7.6	6.8	13.6	9.3	3.1

Source: Table 4.3.2

Table 7.5 Percentage of ever-married women who have ever used any contraceptive method, by current age and socio-economic characteristics

Socio-economic characteristic	Current age				All
	<25	25–34	35–44	45+	
All	1.9	3.8	3.9	3.9	3.1
Type of residence					
Urban	10.9	18.6	15.8	(8.8)	14.7
Rural	0.9	1.8	2.1	3.2	1.6
Region of residence					
North	2.2	4.6	5.7	7.9	4.2
South	3.1	3.7	4.7	6.3	3.8
West	0.0	3.1	1.1	0.0	1.2
East	0.0	2.4	(0.0)	(0.0)	0.8
Pattern of work					
Before and after marriage	0.8	1.3	0.9	1.0	1.0
After marriage only	3.3	4.3	3.6	(0.0)	3.3
Before marriage only	0.4	5.0	2.2	(8.5)	3.0
Never worked	3.0	5.9	6.9	7.3	5.1
Husband's level of education					
No schooling	1.1	2.7	3.1	3.9	2.3
Incomplete primary	3.4	8.5	(9.9)	(0.0)	5.3
Primary and over	7.0	17.9	(17.6)	(8.9)	11.3
Husband's occupation					
Prof., tech. and clerical	7.3	17.6	17.0	(9.5)	12.7
Sales	3.5	8.4	14.9	2.4	7.0
Agriculture	0.4	0.6	0.8	2.7	0.8
Services	3.3	9.8	1.6	(0.0)	5.5
Manual	1.3	2.4	2.9	8.0	2.3

NOTE: Brackets indicate less than 30 cases.
Source: Table 4.3.2

Table 7.6 Percentage of exposed women who are currently using contraception, including sterilization, by socio-economic characteristics

Socio-economic characteristic	Current age		All
	25–34	35–44	
All	2.0	3.4	1.7
Type of residence			
Urban	10.7	(22.7)	9.9
Rural	0.9	1.2	0.7
Region of residence			
North	3.1	6.2	2.8
South	1.9	3.0	1.6
West	1.2	0.0	0.4
East	0.0	(0.0)	0.0
Pattern of work			
Before and after marriage	0.4	0.6	0.4
After marriage only	1.7	5.4	2.7
Before marriage only	0.0	(0.0)	0.3
Never worked	4.2	6.3	3.1
Husband's level of education			
No schooling	1.2	2.6	1.2
Incomplete primary	(11.2)	(0.0)	4.4
Primary and over	8.7	(32.8)	5.8
Husband's occupation			
Prof., tech. and clerical	5.2	(18.5)	5.9
Sales	6.4	12.7	5.6
Agriculture	0.0	0.0	0.2
Services	5.1	(0.0)	2.1
Manual	1.7	4.2	1.5

NOTE: Brackets indicate less than 30 cases.
Source: Table 4.4.5

married and non-pregnant were asked the question, 'Are you or your husband using a method to keep you from getting pregnant?'. If the response was 'yes', they were asked to specify the method they were using. The user-rates are computed by relating women who are currently using contraception (numerator) to all currently married, non-pregnant women who considered themselves to be fecund (denominator). These women are said to be exposed.

The level of current use is very negligible, with only 1.7 per cent of exposed women currently using contraception. The level of current use is even lower (about 1 per cent) if it is expressed as a percentage of all currently married women. As may be seen from table 7.6, this small group of current users is made up mainly of women living in urban areas (10 per cent), women whose husbands have at least primary education (6 per cent) and women whose husbands are engaged in professional, clerical or sales occupations (6 per cent). However, since the socio-economic characteristics of these women are interrelated, further in-depth analysis is needed to determine the association of each variable with use, separate from the contribution of other background variables.

CHAPTER 8

NON-CONTRACEPTIVE FACTORS AFFECTING FERTILITY

SUMMARY

Fertility in Yemen is only marginally reduced by the impact of the non-contraceptive factors. The period of post-partum sexual abstinence is generally short. It is only breastfeeding that inhibits fertility in Yemen, by extending the period during which a woman is not at risk of conception. Most children are breastfed, but breastfeeding is not unusually prolonged and the mean duration of 13.5 months adds only a few months to the anovulatory period.

Comparing the reports of women by age might suggest a slight reduction in the proportion of children breastfed. Younger women were more likely to wean their infants during the first 6 months of life and less likely to report extended periods of breastfeeding of 18 months or more. While this may simply be an age effect or an effect of differential reporting by age, it may also signify a real decline in the duration of breastfeeding, and hence in the period of non-exposure. Other things being equal, shorter interpregnancy intervals would ensue, though in practice this may be mitigated by the effects of factors such as the decline in infant mortality and a possible increase in contraceptive use.

Women in the more modern sector of Yemen, that is urban women, and those whose husbands have a primary education, or who work in professional, technical, or clerical occupations exhibit shorter durations of abstinence and they reported breastfeeding their children for a shorter period of time. It was women in the East region who reported prolonged breastfeeding and the longest period of abstinence.

8.1 INTRODUCTION

In a context of early and almost universal marriage, with contraception virtually absent and reproduction a woman's primary role, Yemen is a society characterized by unusually high fertility. Short birth intervals, in particular, result in an average number of children born per woman which is higher in Yemen than in many societies resembling it in terms of age at marriage and contraceptive use. The explanation for this is to be found largely in the norms governing behaviour in the months after childbirth rather than in physiological factors, such as low levels of sterility and pregnancy wastage. Most important are the delay in the return of ovulation, which is associated with breastfeeding, and the length of the period after a birth before sexual relations are resumed. Customs vary in these respects: at one extreme breastfeeding is prolonged and sexual abstinence is maintained for some months after breastfeeding ceases, at the other, the period of post-partum abstinence is minimal and the child is quite young when it is weaned. Both are consistent with a generally pro-natalist outlook, though the difference in terms of fertility outcome may be considerable. Though it is usually of less importance than breastfeeding and post-partum sexual abstinence, the temporary separation of spouses may also affect the interpregnancy interval. This is particularly relevant to the fertility of Yemen, where the periodic migration of men to Saudi Arabia and the other Gulf states is common.

It is the aim of this chapter to describe the situation in Yemen, as revealed by the YARFS, and to assess the impact of each of the non-contraceptive factors on fertility. Though an emphasis is placed on current practice at the societal level, regional and socio-economic differentials are also considered, and an attempt is made to detect recent trends and their likely fertility effects.

The individual survey of YARFS included a series of questions about the non-contraceptive factors in relation to the open and the last closed pregnancy intervals. The open interval refers to the number of months that have elapsed between the end of the last pregnancy and the survey date, while the closed interval is the number of months between the end of the next to last and the last pregnancies. For women who were currently pregnant, their closed interval is the interval between the end of their last pregnancy and their current pregnancy, so that under this definition currently pregnant women have no open interval. Women were asked how long it was after their last and next to last pregnancies before they resumed sexual relations. They were also asked when menstruation returned after each of these pregnancies and, in the case of those ending in a live birth, whether and for how long the child was breastfed, and whether with and without the addition of other foods. An attempt was also made to ascertain the length of time during which the couple were separated during the open and closed intervals. Aside from items specific to the inter-pregnancy intervals, questions on age at menarche and self-reporting fecundity status were also included in the individual survey in order to obtain a general view of the reproductive cycle.

There were 1921 women with a closed pregnancy interval and 1746 with an open interval. Ninety-two per cent of the former and 93 per cent of the latter began with a live birth, so that information on breastfeeding was potentially available in regard to 1769 and 1628 children in the closed and open intervals. Altogether, 22 per cent of children born at the beginning of the closed interval and 13 per cent of those born at the beginning of the open interval were no longer alive by the time of the survey.

A number of problems are associated with trying to ascertain the effects of non-contraceptive factors on fertility by means of a retrospective survey, most of them concerned with the quality of reporting. The poor reporting of age and of the dates of vital events in the YARFS has been referred to often in this report. Trying to measure the length of pregnancy intervals in months is especially uncertain since it relies on the reporting of dates of past pregnancies in years and months. In fact, as can be seen in table 8.1, the calendar month and year was reported for only 44 per cent of the open and 15 per cent of the closed intervals. For almost all of the remainder, the calendar year only was given. The percentages reporting year and month were highest among the younger women, due to their slightly higher levels of literacy and to the fact that they were reporting events that had occurred more recently than was the case for older women.

As regards factors such as duration of sexual abstinence or of breastfeeding, women were asked to respond in terms of months since the end of the pregnancy. An advantage of this approach is that it relates to time in a way which may be more familiar to the respondents. However, the distribution of responses is still characterized by heaping at certain durations. While this may simply be digit preference for specific durations, it may equally represent customary practice in respect of abstinence or breastfeeding. Interpretation of the figures is further confounded by the fact that women may have answered in terms of the customary behaviour regardless of whether it was actually adhered to. While the pattern of reporting by duration is noted during the course of this chapter, no rigorous attempts are made either to check its authenticity or apply adjustment procedures.

In the remainder of this chapter, the effects of non-contraceptive factors on the inter-pregnancy interval are considered in turn, and finally the data on reproductive potential during the life cycle are presented. Post-partum sexual abstinence is examined in section 8.2 and breastfeeding and amenorrhoea in section 8.3. Next the effects of marital instability and temporary separation of spouses are considered in section 8.4 before a review of each of the components of the interpregnancy interval in section 8.5. Finally, age at menarche and self-reported fecundity status are presented in section 8.6 in a discussion of reproductive potential.

Table 8.1 Percentage of interpregnancy intervals for which calendar year and month are stated, by current age of women

Current age of women	Closed interval			Open interval			Months since last pregnancy
	Start and end reported in		Number of women	Start reported in		Number of women[a]	
	Years + months	Other		Years + months	Other		
<20	31.1	68.9	94	67.6	32.4	142	9.8
20–24	25.3	74.7	305	57.4	42.6	291	12.5
25–29	16.8	83.2	450	46.9	53.1	360	15.5
30–34	14.0	86.0	360	45.2	54.8	281	19.2
35–39	10.9	89.1	298	41.3	58.7	206	30.3
40–44	8.8	91.2	196	28.8	71.2	160	48.8
45+	4.5	95.5	218	17.3	82.7	185	73.6
All ages	15.2	84.8	1921	44.3	55.7	1626	26.9

[a] Currently married women.
Source: Tables 6.6.8, 6.8.4

8.2 POST-PARTUM SEXUAL ABSTINENCE

As a Muslim country, Yemen may be expected to follow the Islamic custom of a 40-day period of post-partum sexual abstinence. This being so, sexual relations would generally be resumed before the return of ovulation and the effect of sexual abstinence on the interpregnancy interval would be negligible. The extent to which this is true among women in Yemen and among different subgroups of the population is examined in this section.

Women in the YARFS were asked to state how long they had abstained from sexual relations at the beginning of the closed and open intervals. While the answer of 40 days was accepted, a probe was included in an attempt to establish real rather than the expected practice. The distribution of the duration of abstinence reported for the closed interval can be seen in table 8.2. Sixty per cent of women reported having abstained for a period of 40 days. Nearly two-thirds of the remainder reported a period of abstinence of less than three months, and the mean duration of sexual abstinence for all women was only 2.5 months.

These figures confirm that, if the reporting is accurate, the practice of Yemeni women roughly accords with Islamic custom. The open interval indicated fewer women abstaining in the first two months after confinement and more abstaining in the period three months or more than in the closed interval, a result of reporting errors in the two intervals and the selectivity of women by length of the open interval. However, at duration two months, 21 per cent of women in the open interval and 28 per cent of those in the closed interval were reported to be still abstaining, and it seems that the figures for the open interval do not refute the hypothesis of the short period of abstinence centred on 40 days.

Table 8.2 Distribution of women according to duration of post-partum abstinence in the last closed pregnancy interval

Duration x (completed months)	Number of women	Percentage	Percentage abstained at least x months
0	9	0.5	100.0
1	193	10.1	99.5
40 days	1168	61.2	89.4
2	277	14.5	28.3
3	57	3.0	13.8
4	19	1.0	10.8
5	28	1.5	9.8
6	8	0.4	8.3
7–8	16	0.8	7.9
9–11	16	0.8	7.1
12	54	2.8	6.2
13–24	50	2.6	3.4
25 or more	15	0.8	0.8
Total 1911			

Mean length of abstinence = 2.5 months
Median length of abstinence = 1.3 months

NOTE: There were 11 women for whom the period of abstinence was not stated. Percentages were based on the total of the rounded weighted figures = 1910.
Source: Table 6.4.1–1

Table 8.3 shows the pattern of sexual abstinence in the last closed pregnancy interval by current age of women. The longest period of abstinence, 3.4 months, is to be found among the youngest women, only half of whom reported abstaining for a period of 40 days. Women over 40 years of age reported the shortest mean duration of abstinence of 2.0 months which is only in part accounted for by the larger proportion who abstained for 40 days. While there seems to be an association between age and duration of post-partum sexual abstinence, this does not necessarily signify a trend. The quality of reporting is better among younger women, they are at a different stage of their reproductive cycle and are reporting on the most recent pregnancies whose outcome was more likely to be a surviving live birth. In any case, the differences in reported duration of abstinence by age are quite small and all age groups are characterized by short periods of sexual abstinence which have a negligible effect on the length of the interpregnancy interval.

The reported durations of post-partum sexual abstinence by residence and socio-economic status are shown in table 8.4. Most striking are the short durations, around 1.5 months, among the urban women and those with the most educated husbands, or with husbands who work in white collar occupations. About four out of five in these groups claimed that it was 40 days after the end of the pregnancy before sexual relations were resumed. While this may reflect real or merely expected practice, it certainly indicates a greater awareness of Islamic stricture among the modern sections of the population. At the other extreme, the longest reported duration of abstinence of 4.1 months is to be found among women in

Table 8.3 Post-partum abstinence in the last closed pregnancy interval by current age of women

Current age of women	Per cent who abstained 40 days	Per cent who were still abstaining after		Mean duration (months)
		2 months	3 months	
<25	49.4	36.8	21.7	3.4
25–34	62.7	28.9	13.0	2.4
35–44	64.8	23.2	10.9	2.3
45+	68.8	21.6	8.7	2.0
All	61.1	28.3	13.8	2.5

Source: Table 6.4.1–1

Table 8.4 Mean duration of post-partum sexual abstinence in the last closed pregnancy interval by residence and socio-economic status

	Current age		All	Per cent who abstained for 40 days
	<30	30+		
Type of residence				
Urban	1.5	1.1	1.3	87
Rural	3.1	2.4	2.7	58
Region of residence				
North	2.5	2.6	2.5	67
South	3.7	2.3	2.9	58
West	1.8	1.6	1.7	61
East	4.6	3.6	4.1	51
Pattern of work				
Before and after marriage	3.2	2.7	2.9	47
After marriage only	3.1	2.5	2.7	63
Before marriage only	2.9	1.6	2.2	61
Never worked	2.7	1.8	2.2	73
Husband's education				
No schooling	3.0	2.3	2.6	60
Incomplete primary	3.8	2.3	3.1	64
Primary and over	1.9	1.6	1.8	80
Husband's occupation				
Prof., tech. and clerical	2.2	1.1	1.6	78
Sales and services	3.2	1.7	2.4	65
Agricultural	2.1	2.1	2.1	60
Manual	3.2	2.8	3.0	62
Total	2.9	2.2	2.5	61

Source: Table 6.4.2

the East region, only half of whom answered 40 days. A noticeable feature of the table is that almost without exception the age differential in duration of abstinence is maintained across all residential and socio-economic subgroups.

To conclude, the duration of sexual abstinence among couples in Yemen is short, and has a negligible effect on the length of the interpregnancy interval. Though there appear to be variations in length of abstinence by residence and socio-economic status, they are not sufficient to affect the period of anovulation and postpone exposure to the risk of conception.

8.3 BREASTFEEDING AND AMENORRHOEA

Breastfeeding is an important factor in relation to both child morbidity and mortality and, through its effect on birthspacing, to fertility. An infant who is breastfed is provided with important immunities as well as the essential nutrients to sustain it through the first few months of life. It becomes vulnerable when it is weaned, especially when supplementary foods are introduced too late, and are inadequate or unsuitable. A trend has been observed in many societies from breastfeeding in favour of bottle feeding, especially as milk substitutes become readily available, a trend that can jeopardize the life of the infant. This is especially so where levels of literacy are low, where scarcity and poverty mean that children do not obtain sufficient food and where sanitary conditions are poor and clean water not easily available.

Apart from promoting the health of the infant, breastfeeding also has an important physiological role in relation to reproduction. The suckling infant stimulates a hormonal response which effects a delay in the return of ovulation. Additional months of breastfeeding may therefore extend the period of non-exposure to the risk of conception and lengthen the interval between pregnancies. It is believed that the effect is related to the intensity of suckling and is strongest when the child is breastfed on demand without supplementation. While on average breastfeeding postpones the return of ovulation, individual experience varies quite considerably. The effect is non-linear, diminishing with the age of the child, so that breastfeeding is not perceived as a very effective method of contraception, nor indeed is it in reality. In practice, when the period of sexual abstinence is as short as it is in Yemen, it is often the advent of the next pregnancy that prompts weaning, in the belief that continued breastfeeding would be harmful to the foetus or to the living child. Furthermore, when pregnancy intervals are short and artificial milk substitutes become easily available, the prospect of early weaning may seem attractive to a mother who has several young children to feed and who feels she lacks the physical resources to breastfeed the young infant effectively. The Koran advises that a child should be two years old when it is weaned, though in light of this discussion prolonged breastfeeding would not be expected among Yemeni women, nor could a shift in favour of earlier weaning be discounted.

The child health and fertility effects of breastfeeding are clearly not independent of one another. If an early infant death interrupts breastfeeding, the return of ovulation is hastened and the pregnancy interval reduced. Short birth intervals are themselves associated with higher mortality risks for the second child. At the same time, early weaning may increase the risk of an infant death. While recognizing this interdependence, the concern of this section is to establish the effect of lactation on the length of the interpregnancy interval in circumstances where the cessation of breastfeeding is not prompted by an infant death. The analysis is therefore largely confined to those closed intervals which began with a live birth that survived for at least one year. Information was also collected about the open interval, but the analysis of it presents specific problems of interpretation and it is referred to only briefly in this section.

Two aspects of breastfeeding are studied here: first the duration of full breastfeeding, defined as the length of time for which the child was given only breastmilk without any supplementary foods, and secondly the duration of breastfeeding, defined as the total length of time for which the child was breastfed. Also studied is the duration of amenorrhoea derived from women's reports on the months that elapsed before the return of menstruation. An examination of the length of amenorrhoea associated with different durations of breastfeeding will give some indication of the effect of lactation on fertility in Yemen. Factors such as nutritional status may also influence the amenorrhoeic period, but the effect is much less pronounced and it cannot be dealt with here. The results on breastfeeding and amenorrhoea for all women and for women by current age are presented first, and the section concludes with a study of residential and socio-economic differentials.

The duration in completed months of full breastfeeding in the closed interval is shown in table 8.5. The table is confined to closed intervals in which the penultimate pregnancy was a live birth that survived for at least one year. Five per cent of children were not breastfed, nearly 10 per cent were reported to have been breastfed without supplementation for at least one year, and the mean duration of full breastfeeding was equal to 7.2 months. The durations of full breastfeeding are fairly evenly distributed in the first nine months of life, with some peaking on one and five months, each of which were reported by about 10 per cent of women. The most common response to the question was a period of one year which accounted for nearly 20 per cent of the closed intervals.

The distribution of women by duration of breastfeeding in the same closed intervals can be seen in table 8.6. The striking feature of the table, which is vividly illustrated in figure 8.1, is that roughly one-quarter of women claimed to have breastfed for each of 12 and 24 months. Compared with this, there is little evidence of marked preference for other durations. Just over one in five children were breastfed for less than six months and one in four for two years or more. On average women reported breastfeeding for a period of 13.5 months, indicating that children were breastfed with supplementation for about six months before being weaned.

The problems associated with analysis of the open interval are illustrated in table 8.7, which compares the

Table 8.5 Distribution of women according to the duration of full breastfeeding in the last closed pregnancy interval, confined to women whose penultimate pregnancy was a live birth that survived at least 12 months

Duration, x completed months	Number of women	Percentage	Percentage breastfed at least x months
Not breastfed	77	5.3	100.0
0	64	4.4	94.7
1	136	9.3	90.4
2	96	6.6	81.1
3	93	6.4	74.5
4	76	5.2	68.2
5	151	10.3	63.0
6	103	7.0	52.7
7	92	6.3	45.6
8	63	4.3	39.3
9	77	5.3	35.0
10–11	30	2.1	29.8
12	274	18.7	27.7
13–17	27	1.8	9.0
18	18	1.2	7.2
19–23	14	1.0	5.9
24	73	5.0	5.0
Total	1464		

Mean length of full breastfeeding = 7.2 months
Median length of full breastfeeding = 6.4 months

NOTE: The total excludes 22 responses 'until child died' and 1 'not stated'. Percentages were based on the total of the rounded weighted figures = 1464.
Source: Table 6.1.2–1

Table 8.6 Distribution of women according to the duration of breastfeeding in the last closed pregnancy interval, confined to women whose penultimate pregnancy was a live birth that survived at least 12 months

Duration, x completed months	Number of women	Percentage	Percentage breastfed at least x months
Not breastfed	77	5.3	100.0
0	11	0.8	94.7
1	50	3.4	94.0
2	57	3.9	90.5
3	51	3.5	86.6
4	44	3.0	83.2
5	55	3.8	80.1
6	48	3.3	76.4
7	31	2.1	73.1
8	31	2.1	71.0
9	43	2.9	68.8
10–11	18	1.2	65.8
12	336	23.0	64.6
13–17	89	6.1	41.6
18	91	6.2	35.5
19–23	29	2.0	29.3
24	363	24.9	27.3
25 or more	36	2.5	2.5
Total	1454		

Mean length of full breastfeeding = 13.5 months
Median length of full breastfeeding = 12.6 months

NOTE: The table excludes 28 responses 'until child died' and 2 'not stated'. Percentages were based on the total of rounded weighted figures = 1460.
Source: Table 6.2.2–1

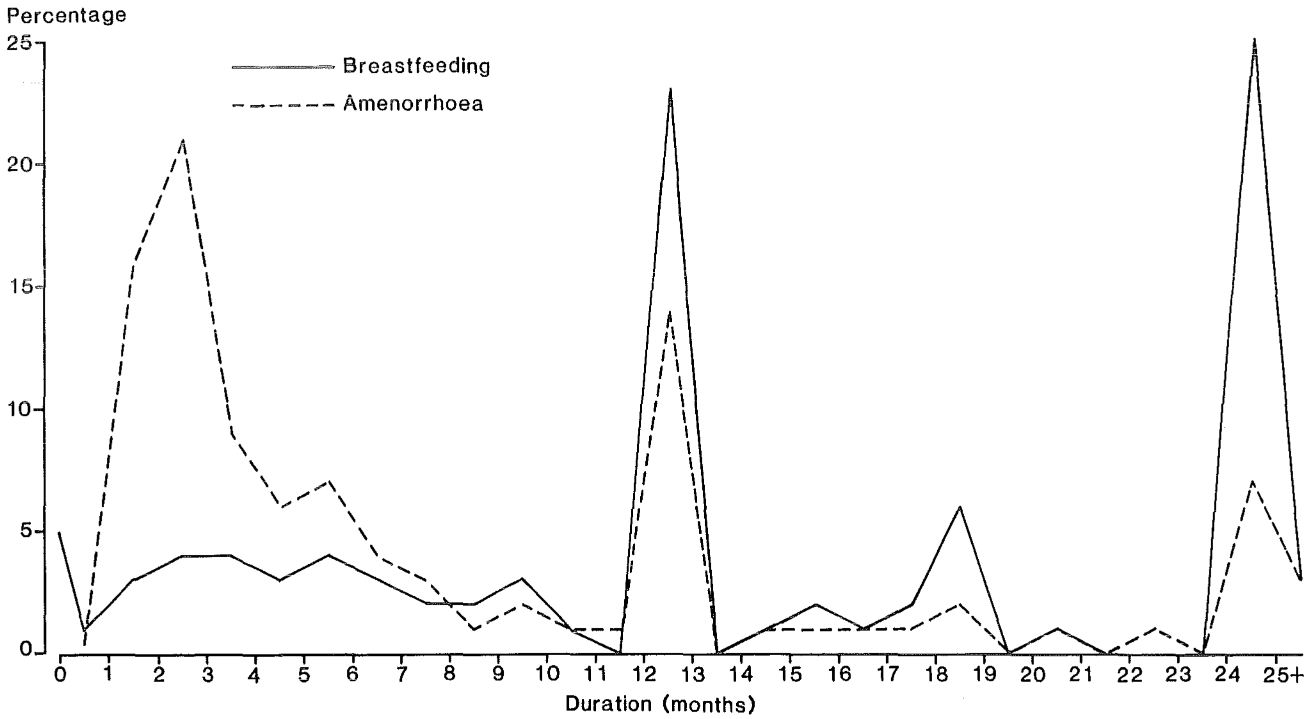

Figure 8.1 Per cent distribution of women according to durations of breastfeeding and amenorrhoea in the last closed interval

Table 8.7 Comparison of percentage of women still breastfeeding from different sources for all intervals beginning with a live birth

Months since birth(x)	Percentage still breastfeeding after x months		
	Closed interval	Births in last 3 years	Open interval
0	91	96	96
1	90	78	78
2	86	77	77
3	81	74	76
4	78	70	73
5	74	73	77
6	71	71	76
7	67	49	58
8	65	57	67
9	63	38	55
10	61	29	43
11	60	33	48
12	59	39	50
13	39	29	45
14	38	39	60
15	37	42	69
16	36	33	51
17	34	31	53
18	33	30	50
19	27	23	38
20	27	34	55
21	26	43	55
22	26	12	25
23	25	12	45
24	25	9	35
25	2	6	14
36	1	3	13

NOTE: The table excludes responses 'until child died'.
Source: Tables 6.2.1–1, 6.2.4

distributions of women still breastfeeding according to retrospective and current status data. The table refers to all pregnancies which ended in a live birth, regardless of survivorship status. The retrospective data consist of the cumulative percentage of live births still breastfed by months since birth in the closed interval. Two sets of current status data are presented, first the percentage still breastfeeding at the time of the survey by months since the beginning of the open interval, and secondly the percentage still breastfeeding at the time of the survey by months since birth for all live births occurring during the preceding three years. The latter was included in an attempt to counter the selection bias inherent in the interval data, which operates in favour of short closed and long open birth intervals. Women who breastfeed longest have longer birth intervals and are therefore likely to be disproportionately represented in open intervals of longer duration. This is evident in the table, with much higher proportions still breastfeeding at intervals of more than a year in the open than in the closed intervals. The other current status and the retrospective data are not too dissimilar and this suggests that, despite the heaping on certain durations, the retrospective data do not seriously distort estimates of the duration of breastfeeding.

The concern of this section is the impact of breastfeeding on the length of the anovulatory period. A reasonable proxy for this is the period of post-partum amenorrhoea which, in the absence of lactation, would last for about two months. The additional contribution of breastfeeding can be seen in table 8.8, which shows the distribution in months of the length of amenorrhoea in the closed pregnancy interval. In this case the figures refer to all closed intervals. As can be seen in table 8.8 and is illustrated in fugure 8.1, Yemen is characterized by relatively short durations of post-partum amenorrhoea. Nearly 60 per cent of women reported that menstruation returned within 6 months of the end of the pregnancy and the mean duration for all women was 7.9 months. There appears to be some heaping on durations of 12 months and 24 months, though it is much less marked than for durations of breastfeeding, and accounts respectively for only 14 and 7 per cent of women. This may be an indication that a reasonable number of those women who stated that they breastfed for exactly one or two years were reporting on their actual behaviour.

The relation between the length of breastfeeding and the duration of amenorrhoea can be seen in table 8.9 which refers to all closed intervals that began with a live birth. There is a steady progression in the duration of amenorrhoea with length of breastfeeding, ranging from 4 months among those who breastfed for less than three months to over 13 months among those who breastfed for two years or more. The relationship may be a little distorted by the simultaneous preference for exactly 12 or 24 months in the reporting of durations of post-partum amenorrhoea and breastfeeding. The table suggests that breastfeeding in Yemen postpones the return of menses, and hence extends the period of non-exposure, by up to six months.

Table 8.8 Distribution of women according to the duration of amenorrhoea in the last closed pregnancy interval

Duration, x completed months	Number of women	Percentage	Percentage amenorrhoeic after x months
0	8	0.4	100.0
1	297	15.5	99.6
2	392	20.5	84.0
3	166	8.7	63.5
4	115	6.0	54.8
5	128	6.7	48.8
6	70	3.7	42.1
7	58	3.0	38.4
8	27	1.4	35.4
9	38	2.0	34.0
10–11	25	1.3	32.0
12	267	14.0	30.7
13–17	55	2.9	16.7
18	37	1.9	13.8
19–23	34	1.8	11.9
24	138	7.2	10.1
25 or more	55	2.9	2.9
Total	1911		

Mean duration of amenorrhoea = 7.9 months
Median duration of amenorrhoea = 5.8 months

NOTE: Total excludes 10 women for whom the period of amenorrhoea was not stated. Percentages were based on the total of the rounded weighted figures = 1910.
Source: Table 6.3.1–1

Table 8.9 Mean duration of amenorrhoea by length of breastfeeding in the last closed pregnancy interval

	Current age		All
	< 30	30+	
Non-live birth	3.6	4.5	4.1
Not breastfed	3.2	9.7	6.3
Breastfed (months)			
0–2	3.2	5.2	4.2
3–5	4.3	5.3	4.8
6–11	4.7	5.2	4.9
12–17	8.4	8.2	8.2
18–23	9.5	11.3	10.5
24+	14.1	13.4	13.7
All	7.0	8.6	7.9

Source: Table 6.3.1–2

A model has been developed which attempts to quantify the inhibiting effects of a set of intermediate variables, namely proportions married, contraception, induced abortion and post-partum infecundability, on the level of fertility.[1] The period of post-partum infecundability is derived by means of a simple formula using the mean duration of breastfeeding, while another simple formula converts this into a measure of its inhibiting effect. Under the model, the mean duration of breastfeeding in the closed interval, 13.5 months, corresponds to a period of post-partum infecundability of 8.2 months, which is encouragingly close to the reported period of amenorrhoea. It is estimated that this period of post-partum infecundability accounts for a 25 per cent reduction in the level of fertility that could be obtained in the absence of lactation.

The durations of breastfeeding and post-partum amenorrhoea reported in the closed interval by current age are shown in table 8.10. They present a coherent picture with the durations of amenorrhoea fairly close to the period during which the infant was breastfed without supplementation. The durations increase with age, women aged under 25 years reporting on average 11 months of breastfeeding and a duration of 6 months before the return of menstruation, compared with 16 and 9 months respec-

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[1] See Bongaarts, J. (1978). Framework for Analyzing the Proximate Determinants of Fertility. *Population and Development Review.*

Table 8.10 Duration of breastfeeding and amenorrhoea in the last closed pregnancy interval by current age of women

	Current age				All
	<25	25–34	35–44	45+	
Per cent not breastfed	8	5	5	3	5
Full breastfeeding[a]					
Per cent breastfed (months)					
<6	51	45	34	28	41
6–11	20	27	22	30	25
12+	21	23	39	39	29
Mean duration	5.7	6.7	8.2	9.1	7.2
Per cent who stated 12 months	13	16	26	23	18
Breastfeeding[a]					
Per cent breastfed (months)					
<6	27	19	13	11	18
6–11	14	12	10	8	11
12+	51	64	72	78	66
Mean duration	11.1	13.1	14.9	16.0	13.5
Per cent who stated 12 months	19	22	25	26	23
Per cent who stated 24 months	18	23	17	34	25
Amenorrhoea[b]					
Per cent amenorrhoeic (months)					
<6	67	57	56	48	58
6–11	12	12	10	12	11
12+	21	31	34	40	31
Mean duration	5.7	8.1	8.6	9.5	7.9
Per cent exactly 12 months	14	12	16	17	14
Per cent exactly 24 months	3	7	10	11	7

[a] Intervals in which the penultimate pregnancy was a live birth that survived at least 12 months.
[b] All closed pregnancy intervals.
Source: Tables 6.1.2–1, 6.2.–1, 6.3.1–1

tively for women over 45 years of age. This may reflect a relationship between age and breastfeeding or it may arise from better reporting on the part of younger women. The fact that 60 per cent of women aged 45 years and over, as against less than 40 per cent of those under 25 years, claimed to have breastfed their penultimate child for exactly 12 or 24 months supports the argument of better reporting. At the same time, 30 per cent of younger women reported breastfeeding for less than 6 months compared with only 10 per cent of women in the oldest age group. In view of this and the steady decline in reported durations of breastfeeding with age, a trend towards earlier weaning should not be discounted.

Further evidence of a declining trend in the duration of breastfeeding is provided in table 8.11, which shows durations of breastfeeding by residence and socio-economic status for women in two broad age groups. Among urban women and those whose husbands were most educated or who were working in white collar occupations, fewer children were breastfed and a greater proportion were breastfed for less than six months compared with other subgroups of the population. Meanwhile the longest duration of breastfeeding was reported among women living in the East region. Again it could be argued that differential reporting may account for some of these observed relationships. However, if a change were to take place, it is among the groups described above that it would be expected to appear first. The fact that the largest age differentials are also to be found among women in the more modern sectors substantiates this hypothesis.

To sum up, the duration of breastfeeding in Yemen is not unusually prolonged, lasting on average a little over one year. The effect of this is to extend the period of post-partum amenorrhoea by nearly six months beyond what it would be in the absence of lactation. There is some indication of a decline in the duration of breastfeeding among younger women, especially those in the more modern sectors, though the further examination of this question is beyond the scope of this report.

Table 8.11 Mean duration of breastfeeding in the last closed pregnancy interval by residence and socio-economic status

	Per cent of live births					Mean duration (months)		
	Not breast-fed	Breastfed (months)			Total	Current age		All
		<6	6–11	12+		<30	30+	
Type of residence								
Urban	7	34	14	45	100	6.6	11.7	9.6
Rural	5	16	11	68	100	12.8	15.1	14.1
Region of residence								
North	6	17	8	69	100	13.4	16.0	14.8
South	7	22	14	57	100	10.1	13.7	12.0
West	3	18	13	66	100	12.1	13.7	13.1
East	0	6	10	84	100	17.5	18.3	17.9
Pattern of work								
Before and after marriage	5	9	10	76	100	14.5	16.5	15.5
After marriage only	6	17	15	62	100	10.7	16.0	14.4
Before marriage only	3	23	11	63	100	11.2	14.1	12.9
Never worked	6	25	13	56	100	10.1	13.1	11.8
Husband's education								
No schooling	4	17	11	68	100	12.9	14.8	14.0
Incomplete primary	10	31	6	53	100	8.7	14.0	11.4
Primary and over	11	31	25	33	100	5.8	11.8	8.3
Husband's occupation								
Prof., tech. and clerical	10	28	19	43	100	7.0	11.3	9.2
Sales and services	5	26	12	57	100	10.9	14.0	12.6
Agriculture	4	9	11	76	100	14.4	15.7	15.2
Manual	7	22	12	59	100	10.6	14.5	12.6

Source: Table 6.2.3

8.4 MARITAL STABILITY AND TEMPORARY SEPARATION OF SPOUSES

Both permanent dissolution of a marriage and temporary separation of spouses due to employment, sickness or other reasons can lengthen the interpregnancy interval. Marital dissolution occurred in 3 per cent of the closed intervals, leaving 97 per cent of women who were continuously married throughout. This figure is practically constant with age, rising only slightly to 98 per cent among women under 25 years old. In these circumstances, it may be concluded that marital dissolution followed by remarriage has a negligible effect in lengthening the intervals between pregnancies.

The temporary separation of spouses may be expected to have some impact in Yemen, where large numbers of men migrate in search of the more lucrative employment opportunities offered in nearby oil-producing states. Women in the individual survey were asked about all periods of separation of at least three months that occurred during the interpregnancy interval. The percentage distribution of the total length of absence by current age is shown in table 8.12. Ten per cent of women reported one or more periods of separation during the closed interval, with 7 per cent separated for less than a year and 3 per cent for one year or more. The mean length of separation for all women was only 0.8 months. As can be seen in table 8.12, it was the youngest women whose husbands were most likely to be absent in the closed interval. In the age group 20–24 years, 20 per cent of husbands were absent for a period of at least 3 months during the interval, and the mean duration of absence for all women in the age group was equal to 1.5 months. Though significant in many respects, this is unlikely to have much impact on the interpregnancy intervals. Tem-

Table 8.12 Duration of temporary absence of spouse during the last closed pregnancy interval by current age of women

Current age of women	Per cent of women			Mean duration of absence (months)
	None[a]	3–11 months	12+ months	
<20	89.3	5.3	5.4	1.2
20–24	80.5	16.6	2.9	1.5
25–29	87.5	8.0	4.5	1.1
30–34	91.9	6.1	2.0	0.6
35–39	92.4	5.7	1.9	0.7
40–44	95.2	3.4	1.4	0.4
45+	96.6	2.6	0.8	0.3
All	90.0	7.4	2.7	0.8

[a] Women who reported no absence of 3 months or more.
Source: Table 6.5.2–2

porary absence was least common in the urban areas of Yemen, where an average of only 0.2 months of separation was recorded. In conclusion, it would seem that, while the temporary separation of spouses is relatively common, on its own it probably has little effect on the length of the interpregnancy interval.

8.5 LENGTH OF EXPOSURE AND INTERPREGNANCY INTERVALS

In this section two components of the interpregnancy interval are considered: the period of non-exposure to the risk of conception due to amenorrhoea, sexual abstinence and temporary separation and the period of exposure, which is defined as the total length of time between the beginning of the interval and the date of the next conception less the period of non-exposure. The third component of the interpregnancy interval is the gestation period associated with the pregnancy.

The mean length of exposure and non-exposure in the closed pregnancy interval is shown by current age of women in table 8.13, for all intervals, and for those in which the beginning and end were reported in months and years. The length of non-exposure for women whose husbands were temporarily absent during the interval could only be estimated if the month and year of the first separation were also given. The majority of such women were unable to report dates, and thus were excluded from the table. As a result, the figures in table 8.13 refer only to 1693 women and are not strictly a summary of the individual tables on post-partum abstinence, amenorrhoea and temporary separation.

The mean length of non-exposure in the closed interval which can be attributed to abstinence, amenorrhoea and temporary separation is 7.4 months. Among women aged 25 and over, it fluctuates between 7 and 8.5 months, while for women under 25 years of age the period of non-exposure is less than 6 months. The period of non-exposure is almost the same as the period of post-partum amenorrhoea, an indication that breastfeeding is practically the only volitional factor that affects the interpregnancy interval among Yemeni women. Since this only extended the average period of post-partum amenorrhoea by at most 6 months, fertility in Yemen is characterized by quite a short period of non-exposure to the risk of conception. The effect of confining the analysis to the small minority of women who reported events in calendar months and years is to reduce the period of non-exposure to an average of 5.7 months and the lactational component of post-partum amenorrhoea to about 4 months.

The mean length of exposure for all women was 14.2 months, while for those who reported in months and years it was only 8 months. Regardless of the form in which intervals were recorded, exposure is much more strongly related to age than is the period of non-exposure, rising from between 4 and 6 months among women under 20 years of age to more than 15 months among the older women. This can be partly explained by the corresponding decline in fecundability. The mean length of exposure among women who practised contraception in the closed interval was 30 months compared with 14 months for non-users. This marked differential between users and non-users persists regardless of age among all women aged under 45 years. However, since only 2 per cent of women reported the use of contraception in the closed interval, its effect on the average length of exposure is negligible.

Table 8.13 also shows the mean length of interval to conception and mean total interpregnancy interval for those women who reported the interval dates in months and years. The mean interpregnancy interval for all such women was short, amounting to less than two years. The

Table 8.13 Mean length of exposure and non-exposure in the last closed pregnancy interval by current age of women and whether beginning and end of interval stated in calendar year and months

Current age of women	All intervals			Intervals in which month and year stated			
	Non-exposure	Exposure	Interval to conception	Non-exposure	Exposure	Interval to conception	Interpregnancy interval
<20	5.1	5.8	10.9	3.8	4.3	8.1	17.1
20–24	5.6	8.8	14.4	5.8	4.9	10.7	19.4
25–29	7.2	11.7	18.9	6.1	5.9	12.0	20.8
30–34	7.9	15.3	23.2	6.8	12.3	19.1	28.0
35–39	8.5	17.3	25.8	6.2	15.7	21.9	30.5
40–44	7.1	22.4	29.5	5.9	3.6	9.5	17.3
45+	8.4	15.4	23.8	6.6	14.5	21.1	28.1
All	7.4	14.2	21.6	5.7	8.0	13.7	22.4
No. of women		1693			253		

Source: Tables 6.6.1, 6.6.3–1 and 6.6

younger women reported an average of only one and a half years between pregnancies, while the length of the interval was closer to two and a half years for women aged 35 years or more. The figures indicate that about 24 per cent of time in the last closed pregnancy interval was spent in the unexposed state, about 36 per cent in the exposed state, while gestation accounted for the remainder.

8.6 AGE AT MENARCHE, SELF-REPORTED FECUNDITY AND EXPOSURE STATUS

In addition to the factors specific to interpregnancy intervals, information was also collected in the YARFS on some factors relating to a woman's reproductive potential during the life cycle. These are age at menarche and self-reported fecundity status, that is whether the woman considered herself able to bear further children.

The reported age at menarche, which marks the beginning of a woman's fecund life, is shown by current age of women in table 8.14. Ages 14 and 15 years were most commonly given in answer to this question, and the mean age at menarche for all women was 14.4 years. This is a little higher than may be observed among women in societies that are culturally similar to Yemen and this is possibly associated with the effect of factors such as nutritional status on physical development. The mean age at menarche is almost constant among women of different ages, indicating that there has been little change in the past three decades.

Table 8.14 Age at menarche by current age of women

Current age	Age at menarche (per cent)					Total	Mean age	No. of women
	10–12	13	14	15	16+			
<20	9	11	26	36	18	100	14.5	376
20–24	10	14	19	38	19	100	14.5	479
25–34	13	11	22	37	17	100	14.5	868
35+	12	11	24	39	14	100	14.4	696
All	12	11	22	38	17	100	14.4	2418

Source: Table 6.7.1

Table 8.15 summarizes the data on self-reported fecundity status among all currently married women. Eighty-five per cent of all women reported themselves to be fecund. The proportion reporting themselves to be fecund declined with age, but even among women over 45 years of age, over 40 per cent considered themselves able to bear more children. As thay are based on the self-reporting of fecundity status, figures such as these are likely to overestimate fecundity and understate menopausal infecundity, especially in a society like Yemen in which a woman's esteem is so closely allied to childbearing.

Data describing the status of all evermarried women, in terms of exposure to risk of conception at the time of the survey, indicate that a high proportion of women, 20 per cent, were reported to be currently pregnant. Of the other unexposed women, 6 per cent were either widowed or divorced, less than a quarter of one per cent were sterilized, 12 per cent reported themselves to be infecund, and 21 per cent were still amenorrhoeic. The remainder, 42 per cent, were exposed to the risk of conception at the time of the survey.

Table 8.15 Self-reported fecundity status of all currently married women by current age

Current age of women	Per cent who reported themselves to be					Total	Currently married as per cent of all ever married women
	Fecund	Infecund	Menopausal	Sterilized	Pre-menarche		
<20	86.9	1.8	–	–	11.3	100	96.6
20–24	95.9	3.9	0.2	–	–	100	94.5
25–29	96.6	3.2	0.2	–	–	100	97.1
30–34	90.3	8.8	0.7	0.2	–	100	94.8
35–39	82.4	12.7	3.4	1.5	–	100	89.5
40–44	64.9	25.2	9.9	–	–	100	86.2
45+	41.7	40.0	17.8	0.5	–	100	90.8
All	85.2	9.8	2.8	0.2	2.0	100	94.2

Source: Table 6.7.2

CHAPTER 9

FAMILY SIZE PREFERENCES

SUMMARY

Yemeni women prefer large families. The overall proportion of currently married, fecund women who want to stop childbearing is only 19 per cent. This proportion increases steadily with age and with family size, but even among women with eight living children, only five out of ten want to cease childbearing.

The mean number of additional children desired is 2.8. This mean varies between 4.1 children for women with no living children and 1.9 for women with four living children.

The overall mean number of children desired is 5.4. Out of every ten women, six desire to have between 4 and 7 children, two desire to have 8 or more children and only two desire to have 3 or less children. The great majority of women, 73 per cent, stated a desired number of children in excess of their actual number of children.

The results suggest that the Yemeni women consider it important to have at least one child of each sex; beyond that, there is a preference for sons, but a large proportion would be content with either sex if the family is already balanced.

Among the women who never used contraception and who want no more children, only a very small minority (6 per cent) intend to use contraception in the future.

9.1 INTRODUCTION

One of the aims of the YARFS was to consider women's attitudes and ideals which might help to explain different patterns of family formation. Thus, although the questionnaire used in the YARFS was strongly oriented towards the measurement of overt behaviour, it also contained key questions that would measure attitudes towards childbearing.

In the preceding chapters, fertility behaviour has been examined from several angles. This chapter introduces the attitudinal dimensions of childbearing. At the outset it should be pointed out that the analysis is based on statements of opinions and attitudes which are not necessarily related to actual and intended behaviour. Data on fertility preferences collected in a population largely uninformed of methods of controlling fertility to a desired level may have low predictive value. Further, the concept of a desired level of fertility in a religious society with a high degree of fatalism as regards family size may have little intrinsic meaning. The results must, therefore, be interpreted with caution.

Five principal attitudinal dimensions of childbearing will be analysed in this chapter: desire for additional children; number of additional children wanted; desired size of completed family; preferences for the sex of children; and intention to use contraception in the future.

9.2 DESIRE FOR ADDITIONAL CHILDREN

The first attitudinal dimension of childbearing attempts to divide the survey respondents into two groups: those who wish to have no more children than the number they have at the time of the interview and those who wish to increase the size of their family beyond the number of children they already have.

All currently married, fecund women were asked if they wanted to have another child sometime. The possible responses were: (1) yes, (2) no, and (3) undecided. If the woman or her husband had been sterilized for contraceptive reasons, a 'no' response was automatically assigned. Of the 2144 women who were currently married and believed themselves capable of having (more) children at the time of the survey, 73 per cent said 'yes', 19 per cent said 'no' and the remaining 8 per cent were undecided.

Table 9.1 gives the proportion of women wanting no more children classified by current age, current family size (ie number of living children), and marital duration. As may be seen, the underlying pattern is that a woman's desire to cease childbearing increases with age, marital duration and number of living children. But the small proportions of women wanting no more children reflect a pro-natalist attitude: among women aged 30–34, only three out of ten want to cease childbearing, among women who first married 20–24 years ago, only four out

Table 9.1 Percentage of currently married, fecund women who want no more children, by age, number of living children (including any current pregnancy) and years since first marriage

Current age	Percentage who want no more children	Years since first marriage	Percentage who want no more children	Number of living children	Percentage who want no more children
<20	9.0	<5	6.6	0	5.6
20–24	8.7	5–9	11.6	1	4.7
25–29	16.9	10–14	20.2	2	11.3
30–34	26.5	15–19	29.2	3	20.0
35–39	27.6	20–24	41.5	4	24.7
40–44	42.1	25–29	39.1	5	35.0
45+	50.5	30+	46.4	6	46.5
				7	51.5
				8	49.7
				9+	(56.8)

Overall percentage: 19.0

Source: Tables 3.1.1 and 3.1.2

of ten want no more children, and even among women with eight living children, only five out of ten want to cease childbearing.

A detailed examination of the pattern of results show that the proportion wanting no more children is, understandably, very low among women with no surviving children (5.6 per cent) or with one surviving child (4.7 per cent), but that it increases steadily until it reaches about 50 per cent among women with seven or eight surviving children.

The proportion of women desiring no additional children also increases systematically with age, as expected, varying from about 9 per cent for women aged under 25 to 51 per cent for women aged 45–49. This simple relationship between age and preference, however, is not always held within a given family size, and this suggests that the number of surviving children is a rather more important determinant of attitude towards future childbearing than age.

The analysis of differentials in the desire to stop childbearing by socio-economic characteristics is complicated by the facts that family size preference, as noted above, is influenced by age and current family size, and that the age–current family size compositions vary by background characteristics. This problem could be overcome by the use of standardization techniques, but in view of the fact that only 19 per cent of the currently married, fecund women wanted to cease childbearing, and that the great majority of respondents lived in rural areas (88 per cent), and had no formal education (98 per cent), the age–current family size cross-tabulations result in sample sizes that are too small to justify standardization.

Data on the desire to cease childbearing by socio-economic characteristics are shown in table 3.1.3 of volume II of this report. A summary of these data is given in table 9.2. The proportion of women wanting no more children is 29 per cent in urban areas, compared with only 18 per cent in rural areas. The desire to cease childbearing is highest among women whose husbands are engaged in professional and technical occupations (25 per cent), and lowest among women whose husbands are engaged in agricultural or manual occupations (18 per cent). When number of living children was controlled, the results (not shown here) did not differ in any significant way from the figures shown in table 9.2.

Table 9.2 Percentage of currently married, fecund women who want no more children, by age and socio-economic characteristics

Socio-economic characteristic	Current age				All
	<25	25–34	35–44	45+	
All	8.8	20.6	32.7	50.5	19.0
Type of residence					
Urban	16.9	25.5	48.6	(77.5)	28.7
Rural	8.0	20.1	30.5	46.9	17.8
Region of residence					
North	8.0	22.2	32.9	61.8	20.2
South	9.9	22.7	41.7	(57.3)	20.8
West	7.7	13.8	20.8	(45.4)	14.4
East	11.2	23.8	(23.9)	(8.4)	17.2
Pattern of work					
Before and after marriage	8.4	21.4	30.9	41.4	18.5
After marriage only	7.0	14.2	24.3	(43.2)	15.3
Before marriage only	7.2	12.8	(25.3)	54.3	14.3
Never worked	9.7	22.7	37.7	62.2	20.9
Husband's level of education					
No schooling	7.4	20.8	32.5	49.6	18.9
Incomplete primary	15.3	28.2	13.9	49.5	20.6
Primary and over	15.7	15.8	66.1	74.5	19.4
Husband's occupation					
Prof., tech. and clerical	17.4	22.9	(49.0)	(35.3)	25.3
Sales	3.9	30.7	46.6	(49.4)	22.8
Agriculture	8.3	17.3	29.2	55.7	18.6
Services	10.0	25.2	(27.6)	(57.4)	21.6
Manual	9.1	21.2	32.8	(45.5)	18.1

NOTE: ( ) less than 30 cases.
Source: Table 3.1.3

9.3 ADDITIONAL NUMBER OF CHILDREN WANTED

Women who answered 'yes' to the question on desire for more children were subsequently asked how many children they wanted. Table 9.3 shows the mean additional number of children wanted by currently married, fecund women, classified by age, marital duration and current family size. After the inclusion of women wanting no more children with the value of zero, the overall mean additional number of children wanted is 2.8 children. As the current age of the woman increases, the mean additional number of children wanted decreases. The same pattern is found if marital duration or current family size are considered. The table shows, however, that current family size has the greatest effect on the mean additional number of children wanted: women with no living children desire a mean of 4.2 children, while women with four living children desire a mean of 2.9 children. The pro-natalist climate of opinion noted above is evident even among women with high parities. Thus, women with eight living children want an average addition of 1.7 children.

Data in table 9.4 on differentials in the mean additional number of children wanted by background characteristics indicate that this mean is highest among the rural residents, women living in the South, and women whose husbands are engaged in agricultural or manual occupations. Here again, standardization of these means by number of living children does not yield different results from those shown in table 9.4.

Table 9.3 Mean additional number of children desired by currently married, fecund women, by age, years since first marriage and number of living children (including any current pregnancy)[a]

Current age	Mean	Years since first marriage	Mean	No. of living children	Mean
<20	3.55	<5	3.70	0	4.05
20–24	3.52	5–9	3.12	1	3.77
25–29	2.73	10–14	2.45	2	3.15
30–34	2.26	15–19	2.32	3	2.49
35–39	2.11	20–24	1.40	4	1.92
40–44	1.63	25–29	1.76	5	1.67
45+	1.03	30+	1.60	6	1.04
				7	1.54
				8	1.75
				9+	2.90

Overall mean additional number of children desired = 2.77

[a] Women who want no more children or who have been sterilized for contraceptive purposes have been assigned a value of zero and are included in the mean.
Source: Table 3.2.3 and 3.2.4

Table 9.4 Mean additional number of children desired by currently married, fecund women, by age and socio-economic characteristics

Socio-economic characteristic	Current age				All
	<25	25–34	35–44	45+	
All	3.54	2.54	1.93	1.03	2.77
Type of residence					
Urban	2.09	2.15	1.66	(0.0)	1.94
Rural	3.72	2.60	1.98	1.19	2.89
Region of residence					
North	3.13	2.05	1.23	(0.48)	2.24
South	3.98	2.82	2.46	(2.03)	3.22
West	3.09	2.56	1.79	(0.85)	2.52
East	(2.22)	(2.21)	(1.46)	(0.0)	2.04
Pattern of work					
Before and after marriage	3.72	2.50	1.91	(1.74)	2.86
After marriage only	4.03	3.09	(2.14)	(0.38)	3.05
Before marriage only	3.83	2.92	(4.11)	(2.07)	3.46
Never worked	3.29	2.42	1.48	(0.20)	2.56
Husband's level of education					
No schooling	3.68	2.54	1.97	0.98	2.79
Incomplete primary	3.07	(2.83)	(1.02)	(0.0)	2.75
Primary and over	2.85	2.34	(1.08)	2.55	2.58
Husband's occupation					
Prof., tech. and clerical	1.83	(1.64)	(2.10)	(2.55)	1.84
Sales	4.27	2.56	(1.57)	(1.59)	3.09
Agriculture	3.53	2.56	2.17	(0.87)	2.67
Services	3.46	2.91	(1.99)	(0.0)	2.89
Manual	3.63	2.60	1.33	(1.26)	2.85

NOTE: ( ) Less than 30 cases.
Source: Table 3.2.5

9.4 DESIRED FAMILY SIZE

The third attitudinal dimension of childbearing considered in the YARFS relates to the total number of children a woman would ideally like to have 'if she could choose exactly', irrespective of whether she can accomplish it, and irrespective of the number of children she already has.

Thus, all ever-married women, irrespective of their fecundity status, were asked: 'If you could choose exactly the number of children to have in your whole life, how many children would that be?'. If the respondent queried the meaning of 'choose exactly the number of children', the interviewer said that it was what she liked it to mean. If she liked, she could assume that she was younger and just married, or that her or her husband's health was better, etc. This question, therefore, was intended to relate to the respondent's personal wishes, rather than to a more generalized ideal or norm. Responses were probably coloured by past experiences, present fecundity and other conditions, and even the possible desire to 'say the right thing', and this should be borne in mind.

Out of the 2455 currently married women, only 56 per cent gave numeric answers, while the remaining 44 per cent gave non-numeric answers such as 'it depends what God gives' or 'as many as possible'.

The analysis presented in this section will be restricted to all currently married women who gave numeric answers.[1] Table 9.5 gives the mean total number of children desired by currently married women classified by current age, marital duration, and current family size. The overall mean number of children desired is 5.4. This mean rises with age, marital duration and current family size. Women at ages 15–19 desire to have 4.5 children; those aged 25–29, 5.5 children; and those at ages 30–34 and 35–39 around 6 children. Women married for less than five years desire to have 4.6 children, while women with 15–19 years of marital duration desire to have more than 6 children. The table shows, however, that current family size has the greatest effect on desired family size. Women with no children or with one or two living children desire to have about 4.6 children; those with five living children desire 6.0 children and those with eight living children desire 8.4 children.

Figures in table 3.3.2A in volume II of this report suggest that the modal or most popular family size desired is 4 children, about 20 per cent of all women giving this as their ideal. This is followed by the desire for 5 and 6 children by 18 and 15 per cent of the women, respectively. It is worth noting that the proportion of women giving 9 or more children as their desired family size amounts to as much as 12 per cent. This means that out of ten women, six desire to have between 4 and 7 children; two desire to have 8 or more children and only two desire to have 3 or less children.

The modal family size desired shifts towards a larger size preference with increasing age or marital duration. For instance, it increases from 4 children among women at ages 15–19 and 20–24 to 5 for women aged 25–29. In part, this finding might reflect a decline in family size preference on the part of the younger cohorts of women; but it might also reflect the influence of achieved fertility on desired family size. Women with large families may rationalize their fertility performance by stating the number of children they have as their preference.

To investigate this latter point, figures are given in table 9.6 showing whether desired family size exceeds, equals, or is less than actual family size. The table shows that only two out of ten currently married women gave a desired family size that was equal to their actual family size, and this proportion varies within a narrow range across different family sizes. The great majority of women, 73 per cent, stated a desired number of children in excess of their actual number of children, though this proportion shows a rapid decline with increases in the number of living children. The great majority of women with five or fewer living children stated a preference for a number larger than the number they have. Thus, the so-called 'rationalization effect', where a woman adjusts her desired number so that it equals or comes close to the number of children she actually has, does not seem to be valid for Yemeni women.

The overall proportion who stated a desired family size less than their actual size is small (6 per cent). It can be argued that this proportion is underestimated because women are reluctant to imply that some of their children

Table 9.5 Mean total number of children desired by all currently married women, by current age, marital duration and number of living children (including any current pregnancy)

Current age	Mean	Years since first marriage	Mean	No. of living children	Mean
<20	4.51	<5	4.60	0	4.54
20–24	5.07	5–9	5.14	1	4.73
25–29	5.46	10–14	5.30	2	4.69
30–34	5.86	15–19	6.40	3	5.16
35–39	6.09	20–24	5.94	4	5.69
40–44	5.77	25–29	5.72	5	6.00
45+	5.88	30+	6.22	6	6.24
				7	7.55
				8	8.41
				9+	(9.33)

Overall mean total number of children desired (by currently married women) = 5.40

Source: Tables 3.3.4A and 3.3.5A

Table 9.6 Comparison between desired and actual number of children of currently married women, by number of living children

Number of living children	Desired exceeds actual number	Desired equals actual number	Desired less than actual number	Total	Mean desired number of children	Number of women
0	98.2	1.8	–	100	4.6	261
1	92.1	7.3	0.6	100	4.7	257
2	79.0	19.2	1.8	100	4.8	210
3	65.0	27.1	7.9	100	5.3	184
4	63.1	32.1	4.8	100	5.7	160
5	50.1	37.6	12.3	100	6.2	105
6	32.0	50.1	17.9	100	6.2	97
7	49.7	29.3	21.0	100	8.0	50
8	45.4	27.6	27.0	100	8.3	32
9+	34.8	52.2	13.0	100	9.8	23
All	73.3	20.9	5.8	100	5.4	1378

Source: Derived from table 3.3.3A

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[1] The number of currently married women was 2455; of these 1378 or 56 per cent gave numeric answers.

are unwanted. Despite this uncertainty of interpretation, the evidence suggests that only a small number of Yemeni women with six or more living children do not want such large families.

9.5 CONSISTENCY OF NUMBER PREFERENCE INDICATORS

In the preceding sections three aspects of preference for number of children have been examined separately. In table 9.7 figures on these three indicators are assembled for an internal comparison. Since all currently married, fecund women were asked the fertility preference questions, it is of interest to see how far the responses to various questions are internally consistent.

The figures in panels A and B of table 9.7 are comparable since they indicate the proportion of women who feel that their preferred family size has been achieved. The results suggest that there is some inconsistency between actual and expected fertility behaviour and family size ideals in Yemen. For example, the proportion of women whose current family size is greater than or equal to their desired family size is 27 per cent, but only 19 per cent of the currently married, fecund women expressed a desire to stop childbearing.

The comparison of means in panels C and D (mean desired family size versus number of living children plus mean additional number of children wanted) shows a similar inconsistency between family size ideals and expected fertility behaviour. For most women, means in panel C are lower than those in panel D which by definition cannot be lower than actual family size. However, the data furnished in table 9.7 reflect a pronatalist attitude and a preference for large family sizes among the majority of Yemeni women.

9.6 PREFERENCES FOR THE SEX OF CHILDREN

The three attitudinal dimensions of childbearing considered in the preceding sections relate essentially to preferences for the number of children. Number preferences operate within a complex of other circumstances and preferences, and among the many factors contributing to the process of deciding family size is the possible complicating effect of sex composition of children. In many societies, the sex composition of living children is an important consideration. Broadly speaking, only three types of sex preference are common. The first is for a certain minimum number of boys, the second is for a balanced sex composition of boys and girls, and the third is a combination of balance and male preference.

Four aspects of preferences for certain combinations of sons and daughters may be indicated using the data collected in the YARFS. The first three aspects relate to the possible effects of the sex composition of the current family on (1) the proportion of women who want no more children; (2) the additional number of children wanted; and (3) the desired family size. The fourth aspect relates to the preferred sex of the next child as explicitly stated by those women who wanted more children.

The analysis presented in this section is restricted to currently married, fecund, non-pregnant women. Women who are currently pregnant are not included in the analysis in this section because of the difficulty of describing current sex composition. Since the sex of the unborn child is not known, the inclusion of pregnant women would cause the current family size to differ from the number of sons plus the number of daughters. This anomaly is avoided by confining the analysis to non-pregnant women.

Table 9.8 gives a summary of sex-preference indicators according to the sex composition of the current family.

Table 9.7 Consistencies between fertility preference indicators for currently married, fecund women, according to number of living children

Variable	Number of living children										All
	0	1	2	3	4	5	6	7	8	9+	
A Percentage who want no more children	5.6	4.7	11.3	20.0	24.7	35.0	46.5	51.5	49.7	56.8	19.0
B Percentage whose current family size is greater than or equal to their desired family size	1.8	7.9	21.0	35.0	36.9	49.9	68.0	50.3	54.6	65.2	26.7
C Mean desired family size	4.6	4.7	4.8	5.3	5.7	6.2	6.2	8.0	8.3	9.8	5.4
D Number of living children plus mean number of additional children wanted	4.1	4.8	5.2	5.5	5.9	6.7	7.0	8.5	9.7	11.9	5.5

Table 9.8 Sex preference indicators for currently married, fecund, non-pregnant women, according to sex composition of current family

Current sex composition	Currently married women		Percentage of women wanting no more children	Mean additional number of children desired	Mean desired family size	Percentage preferring next child to be		
–	Number	Per cent				Boy	Girl	Either
No living children	352	21.4	5.6	4.1	4.5	18.1	5.0	76.9
All boys	297	18.1	9.6	3.1	4.8	8.5	21.8	69.7
All girls	228	13.9	6.5	3.6	5.0	36.5	1.6	61.9
Mixed boys and girls								
Total	766	46.6	31.0	2.1	5.9	19.3	7.3	73.4
No. of boys = no. of girls	223	13.6	24.1	2.6	5.2	17.9	7.0	75.1
No. of boys > no. of girls	288	17.5	33.9	2.0	6.2	15.5	8.2	76.3
No. of boys < no. of girls	255	15.5	33.7	1.8	6.4	25.1	6.7	68.2
Total	1643	100.0	18.3	2.8	5.4	19.6	8.4	72.0

Source: Tables 3.4.1; 3.4.3A; 3.4.3B; 3.4.5; 3.4.6A

As may be seen, out of 1643 currently married, fecund, non-pregnant women, 21 per cent have no children, 18 per cent have only boys, 14 per cent have only girls. The remaining 47 per cent have both boys and girls, the percentage being made up of 14 per cent with equal numbers of boys and girls, 18 per cent with more boys than girls and 15 per cent with fewer boys than girls.

Women with boys only or girls only represent 'extremely unbalanced' sex composition, women with unequal numbers of boys and girls represent 'unbalanced' sex composition, and women with equal numbers of boys and girls represent 'balanced' sex composition. The figures in table 9.8 suggest that the sex composition is extremely unbalanced for 32 per cent of the women, unbalanced for 33 per cent, and balanced for 14 per cent, while the remaining 21 per cent of women have no living children. It should, however, be noted that a perfect balance can be found only among women who have an even number of living children.

Table 9.8 also reveals a strong preference for sons. For example, women who have equal numbers of boys and girls and who want to have another child prefer their next child to be a boy. Further, women with no living children, with girls only, or with fewer boys than girls prefer, on average, their next child to be a boy. A preference for the next child to be a girl is found only among women with boys only.

A noteworthy finding here is that a large proportion of women are actually indifferent, and would be equally happy with either a boy or a girl. This suggests that Yemeni women consider it important to have at least one child of each sex; beyond that, there is a preference for sons, but a large proportion would be content with either sex if the family is already balanced.

The question remains whether these sex preferences are strong enough to modify the preferences for specific family sizes.

A detailed examination of the data on the preferred sex of the next child among women who want to have more children, according to the sex composition of the current family size, suggests the following:

1 when there are no children, the dominant preference is for a boy;
2 when there are more boys than girls, the preference is in most cases for a boy;
3 when there are more girls than boys or equal numbers, the dominant preference is for a boy;
4 when there are no boys and one girl, the desire for a son is much greater than that corresponding desire for a daughter when there is one boy and no girl.

Thus, the optimal family building pattern suggested by the data is that:

- the first child should be a son;
- the second child a daughter;
- the third child a son; and
- the fourth child a son or a daughter

9.7 INTENTIONS TO USE CONTRACEPTION IN THE FUTURE

The fifth attitudinal dimension of childbearing relates to the proportion of women who have never used contraception and who are likely to do so in the future. Currently married, fecund women who had never used contraception were asked, 'Do you think you and your husband may use any family planning method at any time in the future so that you will not become pregnant?'.

The percentages of respondents intending future use are shown in table 9.9 and are based on all currently

Table 9.9 Of currently married, fecund women who never used any method, the percentage who report an intention to use in the future, by age, number of living children and years since first marriage

Current age	Percentage who intend to use	Number of living children	Percentage who intend to use	Years since first marriage	Percentage who intend to use
<20	4.0	0	3.1	<10	3.8
20–24	3.7	1	2.4	10–19	6.4
25–29	4.9	2	3.9	20–29	5.5
30–34	5.2	3	4.5	30+	1.4
35–39	6.8	4	8.6		
40–44	6.4	5	3.7		
45+	4.7	6	9.2		
		7+	8.5		

Overall percentage: 4.8

Source: Tables 4.5.1, 4.5.2 and 4.5.3

married, fecund respondents who had never used any method of contraception. Overall, only 5 per cent of these women indicated that they intended to use contraception sometime in the future. The proportion of intended users remains nearly constant across age.

The overall pattern of ever-use and intended use across age groups is shown in table 9.10. The proportion given in this table is based on all currently married, fecund women. Only 3 per cent of women of all ages have used contraception and a further 5 per cent intend use; the remainder (nearly 92 per cent) do not intend use. This latter proportion varies little across age groups.

Table 9.10 Percentage of currently married, fecund women who report (a) ever-use, (b) intention for future use, and (c) intention never to use contraceptives, by age

Current age	Ever use	Intends future use	Does not intend future use	Total
<25	1.5	3.8	94.6	100
25–34	3.8	5.1	91.2	100
35–44	3.7	6.7	89.6	100
45+	4.5	4.7	90.8	100
All	2.8	4.8	92.3	100

Source: Table 5.3.3

In table 9.11 a comparison is made between fertility preferences and contraceptive knowledge and behaviour, with the aim of examining the extent to which women who state that they want no more children protect themselves by use of contraception. Women who expressed a desire to stop having children do show a higher percentage currently using contraception, with 5.6 per cent using a modern method. The comparable figures for women undecided or wanting another child are 1.6 and 0.7 per cent, respectively. With only 5.6 per cent of the women who want no more children using efficient contraceptive methods, there appears to be a high level of inconsistency between reported attitude and behaviour of these women. Nearly nine out of every ten women are not taking any measures to realize their stated goal.

Table 9.11 Per cent distribution of exposed women according to current contraceptive status, by desire for more children

Desire for children	Number of living children	No method currently used	Inefficient method	Efficient method	Total	Number of women
Future births wanted	<3	99.4	0.0	0.6	100	822
	3	99.8	0.2	0.0	100	155
	4	97.8	0.6	1.6	100	127
	5+	98.4	0.0	1.6	100	151
	All	99.2	0.1	0.7	100	1255
Future birth not wanted	<3	95.6	0.0	4.4	100	66
	3	97.8	0.0	2.2	100	46
	4	96.0	0.0	4.0	100	51
	5+	92.1	0.0	7.9	100	138
	All	94.4	0.0	5.6	100	300
Undecided	All	99.0	0.0	1.0	100	84
All	<3	99.2	0.0	0.8	100	912
	3	99.4	0.1	0.5	100	220
	4	97.2	0.4	2.5	100	200
	5+	95.7	0.0	4.3	100	308
	All	98.3	0.1	1.6	100	1640

Source: Table 5.2.1

CHAPTER 10

SUMMARY AND CONCLUSIONS

The Yemen Arab Republic Fertility Survey (YARFS) was conducted in 1979 by the Department of Statistics/Central Planning Organization (DOS/CPO), as part of the World Fertility Survey programme (WFS). The principal objective of the survey was to gather information which would permit a detailed analysis of the changing demographic conditions in Yemen. To this end, two questionnaires were used: a household schedule, used for listing household members, along with basic information about their sex, age, marital status, fertility, mortality and migration; and an individual questionnaire, for gathering detailed information on ever-married women aged less than 51 years who had been identified in the household schedule.

Although it has not been possible to perform complex analyses in this First Report, the measures of nuptiality, fertility and mortality examined reveal a great deal about the demographic situation in Yemen. In this concluding chapter, the many important results discussed at length in earlier chapters will be brought together in an attempt to create a concise, if preliminary, demographic picture of Yemen.

A fundamental purpose of both the household and the individual surveys was to provide information on the demographic and socio-economic context within which the fertility behaviour of Yemeni families take place. Other factors which also have considerable effects on fertility behaviour, such as the cultural and political contexts, cannot be dealt with directly by a fertility survey. Further analysis of the data presented here will no doubt fit these findings into the wider cultural framework of Yemeni society.

The age and sex composition derived from the household survey shows that Yemen has a very young population, a pattern observed in many developing countries. About 50 per cent of the males and 45 per cent of the females enumerated are less than 15 years old. Nearly 44 per cent of the females are in the age range 15–49 years, usually referred to as the 'reproductive ages'. Demographically, the young population is evidence of high levels of population growth in the recent past, and the large numbers of women in the childbearing ages portends high birth rates in the forseeable future.

The household survey also indicates that whereas modern household amenities, such as piped water, electric lighting and private toilet facilities are not particularly prevalent overall, urban households are far more likely to have them than rural households. For example, overall 18 per cent of households had water piped either inside or outside their homes. Almost all urban households have piped water (97 per cent), while very few rural households do (10 per cent).

Several important socio-economic and demographic changes are also documented. There has, for example, been a considerable increase in educational attainment for both men and women. However, literacy levels for even the youngest groups of women (those aged 10–15 years) are still low (11 per cent literate). Another important change has been the gradual but steady increase in the expectation of life at age 15 for both men and women, from about 46.5 years in the mid-1960s to more than 50 years in the late 1970s. An even more dramatic decline in infant and child mortality has also taken place but current levels are still very high.

It is evident, then, that although the demographic setting in Yemen remains largely a traditional one, some of the social and economic changes which have occurred since the 1962 revolution have had an impact. This impact, however, will have been strongest in the more modern sector of Yemeni society, which is as yet rather small. This is documented by the individual survey, which reveals considerable detail about the women interviewed, and enables a socio-economic profile of ever-married women to be constructed. Most of these women live in rural areas (88 per cent), have had no schooling at all (98 per cent), are married to men similarly with no schooling (88 per cent), have not been employed since their first marriage (51 per cent), and have husbands employed in either agricultural (36 per cent) or manual (38 per cent) occupations. It is against this background that the analysis of fertility in Yemen takes place.

The process of childbearing for Yemeni women is set in motion with marriage, since conception is confined almost exclusively to women in the married state. The younger a women is when she marries, the longer is the period of her life during which she is likely to bear children, and, hence, the more children she will probably have. The age at marriage for women in Yemen is low (16.9 years) and does not appear to have changed across groups of women aged 25 years and older. Among younger women, however, there is evidence of a trend away from marriage in the very early teenage years. The large differentials in age at marriage according to level of education suggest that increasing educational opportunities for Yemeni women are largely responsible for this recent decline in very early marriages. This change has as yet had little or no effect on overall fertility levels, but if the trend continues, the effects could become important.

After marriage, the childbearing process can be disrupted by marital dissolution or separation of spouses. Although dissolution of first marriages is relatively high in Yemen (20 per cent of first marriages are dissolved), the remarriage rate is also high. The result of this is that marital dissolution is likely to have only a minor depressing effect on the overall level of marital fertility for Yemeni women, according to data on the proportion of time spent in the married state. This generalization applies also to the effects of separation of spouses which is caused by the temporary emigration of husbands for the purposes of employment. Although large numbers of men emigrate (the household survey suggests a figure approaching 4 per cent of the total population, consisting almost entirely of males), the majority of the resulting separations last less than one year and in all likelihood have virtually no impact on overall fertility levels. The nuptiality patterns prevailing in Yemen, therefore, are conducive to high levels of fertility.

The actual fertility of Yemeni women was measured in several ways in the individual survey in order to assess historical patterns as well as recent trends and differentials. With respect to the number of children ever born at the time of the survey date (cumulative fertility), the figures in excess of 6.5 children ever born for women aged over 40 and nearly 2.0 children for women aged 20–24 indicate a pattern of high fertility. Among women aged 45–49, most of whom have completed their childbearing, about one-third have 9 or more children. Figures on births in the 12-month period preceding the survey date (current fertility) serve to underscore this pattern of high fertility. The total fertility rate (TFR), for example, is 8.5. This can be interpreted as the total number of live births a woman would have if she were to go through her reproductive years bearing children at the rates prevailing at the time of the survey. This figure suggests that the fertility of Yemeni women is very close to the highest recorded. Moreover, unlike age at first marriage, socio-economic differentials in fertility are generally narrow, and do not form any consistent pattern. If anything, there have been slight increases over time in fertility during the early years of marriage; and, according to some measures, women in the more modern sector (ie urban women with educated husbands) show slightly higher fertility levels than other women.

Several measures of fertility aspiration were obtained in the YARFS, and these help to explain the very high fertility rates. Yemeni women overwhelmingly indicate that they prefer large families. Overall, less than 20 per cent of women expressed the wish to stop having children, and, more importantly, only about half of the women who had 8 children at the time of the survey wanted to stop. Again, few major differentials in fertility aspirations by background characteristics are evident. The pervasive pro-natalist attitude is further exemplified by the fact that when women were asked how many children they would like if they could choose exactly, considerably more women stated a desired family size greater than their actual number than a size smaller, regardless of the number of living children the woman had at the time of the survey.

Given these attitudes, it is not surprising that the YARFS findings indicate very little awareness of family planning among the survey respondents. Only 25 per cent of ever-married women reported having heard of some method of contraception, principally the pill. Even fewer women (3 per cent) have ever used contraception, while less than 2 per cent of currently married, non-pregnant women were currently using a method at the time of the survey. There are, however, substantial differentials in these figures according to the socio-economic characteristics of the respondent: levels of knowledge and use are highest for urban women, those whose husbands have white collar jobs, and those whose husbands have at least primary education. But even among these relatively select women, current use does not exceed 10 per cent.

Since Yemeni women are not using contraception to cease childbearing, the number of children born during the reproductive years will primarily be a function of the length of time that elapses between one birth and the next pregnancy. The longer the average interval, the fewer children a woman will bear during the approximately 30 years of her reproductive life. Each interval can be thought of as consisting of two components: the period of non-exposure to the risk of conception due to non-contraceptive factors (mostly of biological origin), and the period of exposure, when the woman is able to become pregnant. The average length of the interval from one birth to the next conception in Yemen is 21.6 months, a little over one-third of which (7.4 months) is spent in the state of non-exposure. A fundamental factor that can affect the length of the period of exposure is contraceptive use, but this undoubtedly plays a negligible role in Yemen. Non-contraceptive factors affecting fertility, then, assume considerable importance in the analysis of the fertility of Yemeni women.

Non-contraceptive factors examined in the survey include the length of time before menstruation and ovulation return after a birth (post-partum amenorrhoea), and the period of abstaining from sexual relations after a birth (post-partum abstinence). In the absence of breastfeeding, ovulation usually returns within about two months of a birth. When ovulation returns, the woman is able to conceive again. Breastfeeding, however, lengthens the period of post-partum amenorrhoea, due to the suppressing effect that suckling has on ovulation. Although most children are breastfed in Yemen (only 5 per cent of women with at least two pregnancies did not breastfeed their penultimate child at all), the average period of breastfeeding (13.5 months) is not particularly prolonged. Since it is not customary to abstain from sexual relations for longer than 40 days in Yemen, this can be seen as having no effect on the length of birth intervals. Thus, the only volitional factor which seems to operate towards lengthening birth intervals is breastfeeding, and the period of non-exposure is roughly equivalent to the period of post-partum amenorrhoea alone. This lactation-induced extension of the average period of amenorrhoea amounts to at most 6 months. Fertility in Yemen can therefore be seen as being characterized by quite short periods of non-exposure to the risk of conception.

Moreover, an analysis of patterns and trends in breastfeeding by age groups and various background variables reveals that women in the more modern sector of society breastfeed their children for shorter periods of time than other women, and that the trend towards shorter durations of breastfeeding among younger women is pervasive and pronounced. This apparent decline in the average duration of breastfeeding could bring about an increase in overall fertility by acting to shorten birth intervals. Since there is no indication of a counteracting increase in the use of contraception, this might explain, in part, not only the apparent trend toward an increase in early marital fertility, but also the slightly higher levels of fertility observed among urban women and those with educated husbands.

Another effect of shorter birth intervals is higher levels of infant and child mortality. Estimates derived from the birth histories in the individual survey indicate that perhaps as many as 170 or even 190 out of every thousand live births die in the first year of life (this is the infant mortality rate), and that another 80 die before the age of five years. Although there are expected differentials in child mortality according to the socio-economic status of the parents, the largest differentials shown in Yemen are those related to the length of the previous birth interval. One in three children born less than two years after the previous birth died in the first five years of life, compared to roughly one in six of those born after an interval of two or three years, and one in ten born after four or more years. There is also evidence that repeated pregnancies are taking their toll on Yemeni women as well. An unusual feature of the data on adult mortality in Yemen is that men and women appear to share similar chances of survival, whereas in most societies women have much lower mortality than men. Although there is no doubt a complex of reasons for this, the fertility regime of the average Yemeni woman cannot be ruled out as a contributing factor.

In conclusion, it can be said that the YARFS has documented that changes are indeed taking place in Yemen. With the current annual growth rate of about 3.0 per cent, the population of Yemen will double in about 23 years. Population planning is, therefore, one aspect of very special importance that should be considered in the development process. The connection between population growth, population planning and development programmes may be complex, but it needs to be recognized in planning for the progress and welfare of the Yemeni people.

APPENDIX I

HOUSEHOLD SCHEDULE

Note

The household schedule originally appeared as a four-page leaflet, with pages 102 and 103 forming a double-page spread and reading straight across. This spread could not be reproduced in the present volume.

YEMEN ARAB REPUBLIC
CENTRAL PLANNING ORGANIZATION
DEPARTMENT OF STATISTICS
WITH THE COLLABORATION OF
INTERNATIONAL STATISTICAL INSTITUTE
WORLD FERTILITY SURVEY

YEMEN ARAB REPUBLIC FERTILITY SURVEY
1979
HOUSEHOLD SCHEDULE

I. IDENTIFICATION

1. Mohafaza	______	7. Card Type No.	______
2. Nahiya	______	8. Cluster No.	______
3. City/Village	______	9. Dwelling No.	______
4. Street	______	10. Household No. within	______
5. Dwelling number (if any)	______	11. Dwelling	
6. OR: Name of Dwelling's Owner	______	12. Line Number	______

1 [1][0]
3 ☐☐☐
6 ☐☐☐
9 ☐
10 [0][0]

INTERVIEWER CALLS	1	2	3	OBSERVATIONS
1. Date of Visit				
2. Interviewer's Name				
3. Result *				

12 ☐
13 ☐☐ 15 ☐☐
17 ☐☐
19 ☐

* TO INTERVIEWER: *Write down in Item 12, one of the following:*

1. Completed *2. No eligible member at home* *3. Deferred* *4. Refused*

5. Dwelling Vacant *6. Address not found or inaccessible* *7. Other (Specify)*

	FIELD SCRUTINIZED	RE-INTERVIEWED OR SPOT-CHECKED	OFFICE EDITING	CODING
Name				
Date of Editing/Coding				
Signature				

THIS INFORMATION
IS CONFIDENTIAL

☐1 ☐1 ☐☐☐ ☐☐☐ ☐
1 3 6 9

II. INFORMATION ON HOUSEHOLD MEMBERS

SERIAL NO. OF MEMBERS	NAMES OF HOUSEHOLD MEMBERS	RELATIONSHIP				RESIDENCE				NOTE: If the answer to both questions 3 and 4 is "No", delete information on this line and proceed to the next person listed.	SEX		AGE		MORTALITY (Circle appropriate Code)								NOTE: The following questions are for those aged seven years and over.	EDUCATIONAL STATUS									NOTE: The following questions are for those aged 10 years and over.
	1	2				3		4			5		6		7		8		9		10			11		12		13		14			
	a) Names of usual residents even if they are not present in household during the visit. b) Visitors slept in household last night.	What is the relationship of this person to the head of the household?	Generation No.	Couple No.	Line No. of Mother	Does this person usually live here?		Did this person sleep here last night ?			Is this person male or female ?		How old is (he/she) ?		Is (his/her) father still alive?		Is(he/she)the eldest living child to(his/her)father?		Is (his/her) mother still alive?		Is(he/she)the eldest living child to(his/her)mother?			Can (he/she) read and write ?		Has (he/she) ever been to school ?		If 'YES' to 11 ASK					
																												What was the highest certificate (he/she) obtained ?		What was the highest year of schooling (he/she) successfully completed?			
						(Y/N) Emigrant		Y	N		M	F			Y	N	Y	N	Y	N	Y	N		Y	N	Y	N						
10 11	▨	▨	12	13	14/15	▨	16	▨	17		▨	18	19	20	▨	21	▨	22	▨	23	▨	24		▨	25	▨	26	▨	27	▨	28	29	
0 1		Head																															
0 2																																	
0 3																																	
0 4																																	
0 5																																	
0 6																																	
0 7																																	
0 8																																	
0 9																																	
1 0																																	
1 1																																	
1 2																																	
1 3																																	
1 4																																	
1 5																																	

TO INTERVIEWERS	Just to make sure you have listed all members in the household, ask the following questions:					
		1. Are there any persons, such as small children or infants that we have not listed ?	Yes ☐	(Enter each in table)	No ☐
		2. Are there any other people who may not be member of your family who usually live here ?	Yes ☐	(Enter each in table)	No ☐
		3. Do you have any guests or visitors temporarily staying with you ? -	Yes ☐	(Enter each in table)	No ☐

SERIAL NO.OF MEMBERS	MARITAL STATUS										NOTE: *The following questions are for ever-married women.*	NUMBER OF LIVE BIRTHS								INFORMATION ON MOST RECENT LIVE-BIRTH			INTER-VIEWER	MIGRATION		INTER-VIEWER
	15		16				17		18			19	20	21	22	23	24	25	26	27	28	29	30	31	32	33
	Has (he/she) ever been married?		If Answer to 15 is "Yes": Ask: Is(he/she)now married, widowed, divorced or separated?				Has(he/she)been married more than once?		If "Yes" to 17: Is (his first wife/her first husband) alive?			Does she have any children of her own living now with her? If "Yes" How many sons and how many daughters?		Does she have any children of her own who do not live with her? If "Yes" how many sons and how many daughters?		Has she ever given birth to a child who later died? If "Yes": How many sons and how many daughters?		NOTE: Add 19-24 for each sex separately and record sum and re-check totals.		In what month and year did her last birth occur?	Was that a boy or a girl?	Is that child still living?	Give line number of person answering column 19-29	In what year did (NAME: from cols. 1 & 3) migrate?	In what country does (he/she) live now?	Write line number of women Eligible for Individual Interview
	Y	N	M	W	D	S	Y	N	Y	N		S	D	S	D	S	D	S	D		(B/G)	(Y /N)				
		30				31		32		33		34 35	36 37	38 39	40 41	42 43	44 45	46 47	48 49	M Y 50 51 52 53	54	55	56 57	58 59	60 61	62/63
01																										
02																										
03																										
04																										
05																										
06																										
07																										
08																										
09																										
10																										
11																										
12																										
13																										
14																										
15																										
(Proceed to the next question)																										
(Proceed to the next question)																										

If continuation sheet used tick here ☐

15. Number of males	16. Number of females	17. Household size	18. Number of eligible women:	19. Household Selected for Individual Interview: YES 1 NO 2
20 ☐☐	22 ☐☐	24 ☐☐	26 ☐	27 ☐

III. CHARACTERISTICS OF THE HOUSEHOLD

1. Material used in dwelling's construction:	1 Stone	2 Cement	3 Bricks 4 Mud Bricks	28 ☐
2. No. of rooms used by the household ______________ Rooms				29 ☐
3. Lighting	1 Electricity	2 Gas/Kerosene	3 Other: ______	30 ☐
4. Cooking Fuel	1 Electricity	2 Gas	3 Kerosene	31 ☐
	4 Coal	5 Wood	6 Other: ______	
5. Type of water supply	1 Tap inside	2 Tap outside	3 Spring	32 ☐
	4 River	5 Rain	6 Other (specify)	
6. Toilet Facilities	1 Private: Flash Sewage	2 Latrine	3 No Toilet	33 ☐
7. Does the household have one of the following objects?	Private Car	Y	N	34 ☐
	Taxi or Van	Y	N	35 ☐
	Motorcycle/Bicycle	Y	N	36 ☐
	Refrigerator	Y	N	37 ☐
	Washing Machine	Y	N	38 ☐
	Radio	Y	N	39 ☐
	Television	Y	N	40 ☐
	Sewing Machine	Y	N	41 ☐
	Telephone	Y	N	42 ☐
7. What is the language usually apoken in the household ?	1 Arabic	2 Other (specify) ______________		43 ☐

IV. MEMBERS OF THE HOUSEHOLD WHO HAVE DIED IN THE LAST 24 MONTHS

NAME	Relationship to Household Head			SEX	Age at Death in Completed Years		Date of Death			
				M F			Month		Year	
▨	▨	44	45	46	47	48	49	50	51	52
1.										
▨	▨	53	54	55	56	57	58	59	60	61
2.										
▨	▨	62	63	64	65	66	67	68	69	70
3.										
▨	▨	71	72	73	74	75	76	77	78	79
4.										

INTERVIEWER'S OBSERVATIONS:

APPENDIX II

INDIVIDUAL QUESTIONNAIRE FOR EVER-MARRIED WOMEN

YEMEN ARAB REPUBLIC

PRIME MINISTER'S OFFICE
CENTRAL PLANNING ORGANISATION
DEPARTMENT OF STATISTICS

WITH THE COLLABORATION OF

INTERNATIONAL STATISTICAL INSTITUTE

WORLD FERTILITY SURVEY

YEMEN ARAB REPUBLIC FERTILITY SURVEY
1979

INDIVIDUAL QUESTIONNAIRE

YEMEN ARAB REPUBLIC

PRIME MINISTER'S OFFICE
CENTRAL PLANNING ORGANIZATION
DEPARTMENT OF STATISTICS

WITH THE COLLABORATION OF

INTERNATIONAL STATISTICAL INSTITUTE

YEMEN ARAB REPUBLIC FERTILITY SURVEY 1979

INDIVIDUAL QUESTIONNAIRE

(For Ever-Married Women Under the Age of 51)

INDENTIFICATION

1. Governorate: ____________
2. Nahiya: ____________
3. City/Village: ____________
4. Cluster Number: ____________
5. Dwelling Unit Number: ____________
6. Household Number within Dwelling Unit: ____________
7. Line Number of Women: ____________

Interviewer Calls	1	2	3
Date			
Interviewer Name			
Time Started			
Time Ended			
Duration			
Result*			

Next Visit: Date
Time

* Result Codes:
1. Completed
2. Not at home
3. Deferred
4. Refused
5. Partly completed
6. Does not speak Arabic but ....
7. Other (SPECIFY) ....

	Field Editing	Reinterviewed or Spot Checked	Office Editing	Coding
Name:				
Date:				
Signature:				

1

☐2☐1 1
☐☐☐ 3
☐☐☐ 6
☐ 9 ☐☐ 10
☐ 12
☐☐ 13 ☐☐ 15
☐☐ 17
☐☐☐ 19
☐ 22

SECTION 1. RESPONDENT'S BACKGROUND

2

LOCATION OF INTERVIEW (Place Name) ____________________

101. Do you live in this house?

YES [1] NO [2]

☐ 23

102. Do you live in ____________________ (Place Name)

YES [1] NO [2]

☐ 24

103. Where do you live? ____________________

Governorate's Capital [1] City [2] Village [3] Hamlet [4]

☐ 25

104. Have you always lived in ____________________ (Place Name)

YES [1] NO [2]

☐ 26

105. What kind of area would you say (this, that) was when you were growing up, say to age 12? Was it:

Governorate's Capital [1] City [2]

106. What kind of area would you say (this, that) was when you were growing up, say to age 12? Was it:

Village [3] Hamlet [4]

☐ 27

107. How old are you now? (Record best estimate) ________ (Years)

☐☐ 28

108. Can you tell me in what month and year you were born?

________ , 19____

(Month) (Year)

M ☐☐ 30 Y ☐☐ 32

INTERVIEWER: PROBE AND CORRECT ANY INCONSISTENCY

109. Have you ever attended school?

YES $\boxed{1}$

NO $\boxed{2}$
(SKIP TO 113)

110. What was the highest certificate you earned: primary, preparatory secondary or high institute or university?

No Certificate $\boxed{1}$ Primary $\boxed{2}$ Preparatory $\boxed{3}$

Secondary $\boxed{4}$ Higher Institute or University $\boxed{5}$ Other ________

111. What was the highest grade you completed? ________________

112. *INTERVIEWER: CIRCLE APPROPRIATE BOX*

Less Than 6 Years Schooling $\boxed{1}$

6 or More Years Schooling $\boxed{2}$
(SKIP TO 114)

113. Can you read and write? Can you read, say, a newspaper or a magazine, can you read and write, say, a message?

Read and Write $\boxed{1}$ Read Only $\boxed{2}$ Neither Read Nor Write $\boxed{3}$

114. What language do you usually speak at home?

Arabic $\boxed{1}$ Other ________
(SPECIFY)

3

☐ 34

☐ 35

☐ 36

☐ 38

☐ 39

☐ 40

SECTION 2. MARRIAGE HISTORY

201. Now I have some questions about your married life. Are you now married, widowed, divorced or separated?

Married 1 Widowed 2 Divorced 3 Separated 4

202. Were you married only once, or more than once?

Once 1 (SKIP TO TABLE ASK 209 - 212)

More Than Once 2 (SKIP TO 208)

203. In what month and year did you and your husband start living together (Zifaf)?

________, 19____
(Month) (Year)

D.K. ☐

203a. How old were you at that time?

________(Record best estimate)
(Age)

204. Does your husband ordinarily live in your household?

YES 1 NO 2

205. Is he away only for the time being or have you stopped living together for good?

Away for time being inside Yemen 1 (SKIP TO 207)

Away for time being outside Yemen 2 (SKIP TO 207)

Stopped for good 3

206. In what month and year did you stop living together?

________, 19____ D.K. ☐
(Month) (Year)

(SKIP TO 207)

206a How long did this marriage last?

________, 19____
(Month) (Year)

(To 207) (To 207)

4

3 1

☐☐☐ 3

☐☐☐ 6

☐ 9 ☐☐ 10

☐ 11

☐ 13

M ☐☐ 14 Y ☐☐ 16

☐ 18

☐ 19

☐☐ 20 ☐☐ 22

207. Have you been married more than once?

YES ☐1 → 208

NO ☐2 (SKIP TO 213)

☐ 24

208. How many times have you been married altogether?

_______________ (Number of times)

☐ 25

INTERVIEWER: FOR EACH PAST MARRIAGE ASK 209-212, THEN SKIP TO 213 (IF CURRENTLY MARRIED, THE NUMBER OF ENTRIES WILL BE ONE LESS THAN THE ANSWER TO 208).

FORMER MARRIAGE

Marriage Order	210. In what month & year did you start living together with your (first, second,) husband. If dates are unknown ask: How old were you at that time?	210. How did the marriage end?	211. If Divorce or Separation: In what month & year did you stop living together? If D.K. ask: How many years did you live together?	212. If Death: In what month & year did he die? If D.K. Ask: How many years did you live together before his death?
1	_______, 19____ (Month) (Year) Age: ________ (Years)	Death ☐1 → 212 Divorce ☐2 → Separation ☐3 →	_______, 19____ (Month) (Year) ________ (Duration in years)	_______, 19____ (Month) (Year) ________ (Duration in years)
2	_______, 19____ (Month) (Year) Age: ________ (Years)	Death ☐1 → 212 Divorce ☐2 → Separation ☐3 →	_______, 19____ (Month) (Year) ________ (Duration in years)	_______, 19____ (Month) (Year) ________ (Duration in years)
3	_______, 19____ (Month) (Year) Age: ________ (Years)	Death ☐1 → 212 Divorce ☐2 → Separation ☐3 →	_______, 19____ (Month) (Year) ________ (Duration in years)	_______, 19____ (Month) (Year) ________ (Duration in years)
4	_______, 19____ (Month) (Year) Age: ________ (Years)	Death ☐1 → 212 Divorce ☐2 → Separation ☐3 →	_______, 19____ (Month) (Year) ________ (Duration in years)	_______, 19____ (Month) (Year) ________ (Duration in years)

M ☐☐ 26 Y ☐☐ 28 , ☐ 30
M ☐☐ 31 Y ☐☐ 33

M ☐☐ 35 Y ☐☐ 37 ☐ 39
M ☐☐ 40 Y ☐☐ 42

M ☐☐ 44 Y ☐☐ 46 ☐ 48
M ☐☐ 49 Y ☐☐ 51

M ☐☐ 53 Y ☐☐ 55 ☐ 57
M ☐☐ 58 Y ☐☐ 60

6

213. How old were you when you had your first menstrual period?

_______ (Years old) (SKIP TO 216)

Has not yet begun 66 (SKIP TO 216)

D.K. 77

☐☐ 62

214. Did your first menstrual period start before or after the beginning of your (first) married life?

Before 1

After 2

D.K. 3 (SKIP TO 216)

☐ 64

215. For how long (before or after) you started your (first) married life did your first period come? _______ (Years)

☐☐ 65

216. *INTERVIEWER: CIRCLE APPROPRIATE BOX (SEE 201, 205)*

Widowed/Divorced/Separated 1 (SKIP TO 218)

Currently Married 2

☐ 67

217. Is there a blood relationship between you and your current husband?

YES 1 (SKIP TO 219)

NO 2 (SKIP TO 220)

☐ 68

218. Was there a blood relationship between you and your last husband?

YES 1

NO 2 (SKIP TO 220)

☐ 69

219. What kind of relation?

____

☐ 70

220. *INTERVIEWER: CIRCLE APPROPRIATE BOX*

Presence of others at this point
(Tick all that apply)

No others	0
Children under 10	1
Husband	2
Other males	4
Other females	8

☐☐ 71

7

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1
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6
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9 10

SECTION 3: MATERNITY HISTORY

301. Now I would like to talk about a different subject. Have you ever given birth to any children?

YES 1 (SKIP TO 303)

NO 2

☐ 12

302. Have you ever given birth to any boy or girl who later died, even if the child lived for only a short time?

YES 1 (SKIP TO 312)

NO 2 (SKIP TO 313 AND RECORD ZERO FOR TOTAL)

☐ 13

303. We would like to get a complete record of all the babies you have given birth to, in all your life.
Do you have any sons you have given birth to who are now living with you?

YES 1

NO 2 (SKIP TO 305)

☐ 14

304. How many live with you? ____________

☐☐ 15

305. Do you have any sons you have given birth to who do not live with you?

YES 1

NO 2 (SKIP TO 307)

☐ 17

306. How many do not live with you? ____________

☐☐ 18

307. Do you have any daughters you have given birth to who are now living with you?

YES 1

NO 2 (SKIP TO 309)

☐ 20

308. How many live with you? ____________

☐☐ 21

309. Do you have any daughters you have given birth to who do not live with you?

YES 1

NO 2 (SKIP TO 311)

☐ 23

310. How many do not live with you? ____________ ☐☐ 24

311. Have you ever given birth to any boy or girl who later died, even if the child lived for only a short time? ☐ 26

YES [1]

NO [2]
(SKIP TO 313)

312. How many of your children have died? ____________ ☐☐ 27

313. *INTERVIEWER: SUM ANSWERS TO 304, 306, 308, 310, 312.*
ENTER TOTAL HERE: ____________ *(SUM)* ☐☐ 29
NOW ASK:

Just to make sure I have this right, you have given birth to ________ (SUM) children. Is this correct?

YES ☐

NO ☐
(PROBE AND CORRECT RESPONSES AS NECESSARY)

314. *INTERVIEWER: CIRCLE APPROPRIATE BOX (SEE 201, 206, 211, 212)* ☐ 31

CURRENTLY MARRIED [1]

WIDOWED/DIVORCED/SEPARATED FOR NINE MONTHS OR LESS [2]

DIVORCED/WIDOWED SEPARATED FOR MORE THAN NINE MONTHS [3]
(SKIP TO 318)

315. Are you pregnant now? ☐ 32

YES [1]

NO [2]
(SKIP TO 318)

D.K. [3]
(SKIP TO 318)

316. For how many months have you been pregnant? ☐ 33
__________ (MONTHS)

317. Would you prefer to have a boy or a girl? ☐ 34

BOY [1] GIRL [2] EITHER [3] OTHER __________
(SPECIFY)

318. *INTERVIEWER: CIRCLE APPROPRIATE BOX (SEE 313, 315)*

No live birth and not currently pregnant 1	No live birth and currently pregnant 2	One or more live birth 3
319. Have your ever been pregnant? IF NO PROBE: I mean, have you ever had a pregnancy, even one that lasted for just a few weeks or a few months? YES 1 (SKIP TO 322) NO 2 (SKIP TO 336	320. Aside from your current pregnancy, have there been any other times you were pregnant? IF NO PROBE: I mean have you ever had a pregnancy that lasted for just a few weeks or a few months? YES 1 (SKIP TO 322) NO 2 (SKIP TO 336)	

321. In addition to the time(s) you have told, have there been any other times you were pregnant? (IF NO PROBE: I mean have you ever had a pregnancy that lasted for just a few weeks or a few months?)

YES 1

NO 2 (SKIP TO 322 AND WRITE ZERO)

322. How many such pregnancies have you had? ____________ (NUMBER)

323. *INTERVIEWER:*

1. *IF NO LIVE BIRTH (ZERO IN 313) AND THERE IS ONE OR MORE PREGNANCIES SKIP TO 329; THE FIRST PERIOD FROM MARRIAGE TO THE DATE OF INTERVIEW (IF NOT CURRENTLY PREGNANT) OR TO THE BEGINNING OF CURRENT PREGNANCY (IF CURRENTLY PREGNANT). CIRCLE "YES" AND CONTINUE.*

2. *IF ONE LIVE BIRTH, SKIP TO 324 AND GO ON, THEN ASK 329 ETC. FOR EACH PERIOD (FROM MARRIAGE TO FIRST BIRTH, FROM FIRST LIVE BIRTH TO THE INTERVIEW (IF NOT CURRENTLY PREGNANT) OR TO THE BEGINNING OF CURRENT PREGNANCY (IF CURRENTLY PREGNANT).*

3. *OTHERWISE, SAY: NOW I WANT TO ASK YOU SOME QUESTIONS ABOUT EACH OF YOUR LIVE BIRTHS STARTING WITH THE FIRST LIVE BIRTH. ASK 324-328 FOR EACH LIVE BIRTH. THEN SKIP TO 329 FOR EACH PERIOD FROM FIRST LIVE BIRTH, BETWEEN EACH TWO LIVE BIRTHS AND FROM THE LAST ONE TO THE DATE OF INTERVIEW OR TO THE BEGINNING OF CURRENT PREGNANCY. ASK 330-335 FOR EACH PREGNANCY. IF TWINS, USE ONE LINE EACH AND CONNECT WITH A BRACKET AT THE RIGHT.*

☐ 35

☐ 36

☐ 37

☐☐ 38

LIVE BIRTHS

BIRTH ORDER	ASK 324 - 328 FOR EACH LIVE BIRTH					
	324. NAME	325. Is (name) a boy or a girl ?	326. In what month and year was (Name) born ? If D.K. ask: How many months and/or years after (marriage, first child, second child...) was (Name) born?	327. He/she is alive ?	328. If dead, for how long did the child live ?	5 1 1 ☐☐☐ 3 ☐☐☐ 6 ☐ ☐☐ 9 10
01	________ (Name)	Boy 1 Girl 2	________, 19____ (Month) (Year) (Check with the date of marriage) After: ____ ____ (Months) (Years) (From marriage)	Yes 1 (Skip to next. If no live birth, skip to 329 if applicable) No 2 →	______, ______ (Month) (Year) (Skip to next. If no live birth, skip to 329 if applicable)	☐ 12 M ☐☐ Y ☐☐ 13 15 ☐ 17 M ☐☐ Y ☐☐ 18 20
02	________ (Name)	Boy 1 Girl 2	________, 19____ (Month) (Year) (Check with the date of birth of first child) After: ____ ____ (Months) (Years) (From birth of first child)	Yes 1 (Skip to next. If no live birth, skip to 329 if applicable) No 2 →	______, ______ (Month) (Year) (Skip to next. If no live birth, skip to 329 if applicable)	☐ 22 M ☐☐ Y ☐☐ 23 25 ☐ 27 M ☐☐ Y ☐☐ 28 30
03	________ (Name)	Boy 1 Girl 2	________, 19____ (Month) (Year) (Check with the date of birth of second child) After: ____ ____ (Months) (Years) (From birth of second child)	Yes 1 (Skip to next. If no live birth, skip to 329 if applicable) No 2 →	______, ______ (Month) (Year) (Skip to next. If no live birth, skip to 329 if applicable)	☐ 32 M ☐☐ Y ☐☐ 33 35 ☐ 37 M ☐☐ Y ☐☐ 38 40

OTHER PREGNANCIES

11

ASK FOR EACH INTERVIEW			Ask 331-335 for Each Pregnancy Ended by Still Birth or Abortion					☐6 ☐1 1 ☐☐☐ 3 ☐☐☐ 6 ☐ ☐☐ 9 10
329. Have you ever had a pregnancy even one that lasted just a few weeks or a few months between (specify the interval). (For the last interval ask: After your last birth or before your current pregnancy).		330. How many such pregnancies have you had ?	331. In what month and year did your (first such, second such...) pregnancy end ? If D.K. ask: After how many months and/or years from marriage, first child, second child...	332. How many months did that pregnancy last ?	333. If 7 months or more, ask: Did the baby cry or show any other sign of life after it was born ?	334. If 'YES' in 333 ask: Was the baby a boy or a girl ?	335. Have you ever had another pregnancy of that kind between (specify the interval)	
Between marriage and first child	Yes 1 → No 2 (Skip to next interval if applicable)	(Times)	_____, 19___ (Month) (Year) After: (Months) (Years) (From Marriage)	(Months) Less than 7 months: (skip to 335) More than 7 months →	Yes 1 → No 2 (Skip to 335)	Boy 1 Girl 2	Yes 1 (Repeat 331-335) No 2 (Skip to next interval)	☐ 12 ☐ 13 M ☐☐ 14 Y ☐☐ 16 ☐ 18 ☐ 19 ☐ 20 ☐ 21
			_____, 19___ (Month) (Year) After: (Months) (Years) (From Marriage)	(Months) Less than 7 months: (skip to 335) More than 7 months →	Yes 1 → No 2 (Skip to 335)	Boy 1 Girl 2	Yes 1 (Repeat 331-335) No 2 (Skip to next interval)	M ☐☐ 22 Y ☐☐ 24 ☐ 26 ☐ 27 ☐ 28 ☐ 29
Between first and second child	Yes 1 → No 2 (Skip to next interval if applicable)	(Times)	_____, 19___ (Month) (Year) After: (Months) (Years) (From First Child)	(Months) Less than 7 months: (skip to 335) More than 7 months →	Yes 1 → No 2	Boy 1 Girl 2	Yes 1 (Repeat 331-335) No 2 (Skip to next interval)	☐ 30 ☐ 31 M ☐☐ 32 Y ☐☐ 34 ☐ 36 ☐ 37 ☐ 38 ☐ 39
			_____, 19___ (Month) (Year) After: (Months) (Years) (From First Child)	(Months) Less than 7 months: (skip to 335) More than 7 months →	Yes 1 → No 2	Boy 1 Girl 2	Yes 1 (Repeat 331-335) No 2 (Skip to next interval)	M ☐☐ 40 Y ☐☐ 42 ☐ 44 ☐ 45 ☐ 46 ☐ 47
Between second and third child	Yes 1 → No 2 (Skip to next interval if applicable)	(Times)	_____, 19___ (Month) (Year) After: (Months) (Years) (From Second Child)	(Months) Less than 7 months: (skip to 335) More than 7 months →	Yes 1 → No 2	Boy 1 Girl 2	Yes 1 (Repeat 331-335) No 2 (Skip to next interval)	☐ 48 ☐ 49 M ☐☐ 50 Y ☐☐ 52 ☐ 54 ☐ 55 ☐ 56 ☐ 57
			_____, 19___ (Month) (Year) After: (Months) (Years) (From Second Child)	(Months) Less than 7 months: (skip to 335) More than 7 months →	Yes 1 → No 2	Boy 1 Girl 2	Yes 1 (Repeat 331-335) No 2 (Skip to next interval)	M ☐☐ 58 Y ☐☐ 60 ☐ 62 ☐ 63 ☐ 64 ☐ 65

BIRTH ORDER	ASK 324 - 328 FOR EACH LIVE BIRTH					
	324. NAME	325. Is (name) a boy or a girl ?	326. In what month and year was (Name) born ? If D.K. ask: How many months and/or years after (marriage, first child, second child...)	327. He/she is alive ?	328. If dead, for how long did the child live ?	5 2 1 ☐☐☐ 3 ☐☐☐ 6 ☐ 9 ☐☐ 10
04	______ (Name)	Boy ☐1 Girl ☐2	______, 19____ (Month) (Year) (Check with the date of birth of third child After: ______ ______ (Months) (Years) (From birth of third child)	Yes ☐1 (Skip to next. If no live birth, skip to 329 if applicable) No ☐2 →	______, ______ (Month) (Year) (Skip to next. If no live birth, skip to 329 if applicable)	☐ 12 M ☐☐ 13 Y ☐☐ 15 ☐ 17 M ☐☐ 18 Y ☐☐ 20
05	______ (Name)	Boy ☐1 Girl ☐2	______, 19____ (Month) (Year) (Check with the date of birth of fourth child After: ______ ______ (Months) (Years) (From birth of fourth child)	Yes ☐1 (Skip to next. If no live birth, skip to 329 if applicable) No ☐2 →	______, ______ (Month) (Year) (Skip to next. If no live birth, skip to 329 if applicable)	☐ 22 M ☐☐ 23 Y ☐☐ 25 ☐ 27 M ☐☐ 28 Y ☐☐ 30
06	______ (Name)	Boy ☐1 Girl ☐2	______, 19____ (Month) (Year) (Check with the date of birth of fifth child After: ______ ______ (Months) (Years) (From birth of fifth child)	Yes ☐1 (Skip to next. If no live birth, skip to 329 if applicable) No ☐2 →	______, ______ (Month) (Year) (Skip to next. If no live birth, skip to 329 if applicable)	☐ 32 M ☐☐ 33 Y ☐☐ 35 ☐ 37 M ☐☐ 38 Y ☐☐ 40

OTHER PREGNANCIES

13

ASK FOR EACH INTERVIEW			Ask 331-335 for Each Pregnancy Ended by Still Birth or Abortion					
329. Have you ever had a pregnancy even one that lasted just a few weeks or a few months between (specify the interval). (For the last interval ask: After your last birth or before your current pregnancy).		330. How many such pregnancies have you had ?	331. In what month and year did your (first such, second such,..) pregnancy end ? If D.K. ask: After how many months and/or years from marriage, first child, second child...	332. How many months did that pregnancy last ?	333. If 7 months or more, ask: Did the baby cry or show any other sign of life after it was born ?	334. If 'YES' in 333 ask: Was the baby a boy or a girl ?	335. Have you ever had another pregnancy of that kind between (specify the interval)	6 2 1 3 6 9 10
Between third and fourth	Yes 1 → No 2 (Skip to next interval if applicable)	(Times)	______, 19____ (Month) (Year) After: (Months) (Years) (From Third Child)	(Months) Less than 7 months: (skip to 335) More than 7 months →	Yes 1 → No 2 (Skip to 335)	Boy 1 Girl 2	Yes 1 (Repeat 331-335) No 2 (Skip to next interval)	12 13 M 14 Y 16 18 19 20 21
			______, 19____ (Month) (Year) After: (Months) (Years) (From Third Child)	(Months) Less than 7 months: (skip to 335) More than 7 months →	Yes 1 → No 2 (Skip to 335)	Boy 1 Girl 2	Yes 1 (Repeat 331-335) No 2 (Skip to next interval)	M 22 Y 24 26 27 28 29
Between fourth and fifth	Yes 1 → No 2 (Skip to next interval if applicable)	(Times)	______, 19____ (Month) (Year) After: (Months) (Years) (From Fourth Child	(Months) Less than 7 months: (skip to 335) More than 7 months →	Yes 1 → No 2	Boy 1 Girl 2	Yes 1 (Repeat 331-335) No 2 (Skip to next interval)	30 31 M 32 Y 34 36 37 38 39
			______, 19____ (Month) (Year) After: (Months) (Years) (From Fourth Child	(Months) Less than 7 months: (skip to 335) More than 7 months →	Yes 1 → No 2	Boy 1 Girl 2	Yes 1 (Repeat 331-335) No 2 (Skip to next interval)	M 40 Y 42 44 45 46 47
Between fifth and sixth	Yes 1 → No 2 (Skip to next interval if applicable)	(Times)	______, 19____ (Month) (Year) After: (Months) (Years) (From Fifth Child)	(Months) Less than 7 months: (skip to 335) More than 7 months →	Yes 1 → No 2	Boy 1 Girl 2	Yes 1 (Repeat 331-335) No 2 (Skip to next interval)	48 49 M 50 Y 52 54 55 56 57
			______, 19____ (Month) (Year) After: (Months) (Years) (From Fifth Child)	(Months) Less than 7 months: (skip to 335) More than 7 months →	Yes 1 → No 2	Boy 1 Girl 2	Yes 1 (Repeat 331-335) No 2 (Skip to next interval)	M 58 Y 60 62 63 64 65

	ASK 324 - 328 FOR EACH LIVE BIRTH				
BIRTH ORDER	324. NAME	325. Is (name) a boy or a girl ?	326. In what month and year was (Name) born ? If D.K. ask: How many months and/or years after (marriage, first child, second child...)	327. He/she is alive ?	328. If dead, for how long did the child live ?
07	_____ (Name)	Boy ☐1 Girl ☐2	_____, 19___ (Month) (Year) (Check with the date of birth of sixth child After: _____ _____ (Months) (Years) (From birth of sixth child)	Yes ☐1 (Skip to next. If no live birth, skip to 329 if applicable) No ☐2 →	_____, _____ (Month) (Year) (Skip to next. If no live birth, skip to 329 if applicable)
08	_____ (Name)	Boy ☐1 Girl ☐2	_____, 19___ (Month) (Year) (Check with the date of birth of seventh child) After: _____ _____ (Months) (Years) (From birth of seventh child)	Yes ☐1 (Skip to next. If no live birth, skip to 329 if applicable) No ☐2 →	_____, _____ (Month) (Year) (Skip to next. If no live birth, skip to 329 if applicable)
09	_____ (Name)	Boy ☐1 Girl ☐2	_____, 19___ (Month) (Year) (Check with the date of birth of eighth child) After: _____ _____ (Months) (Years) (From birth of eighth child)	Yes ☐1 (Skip to next. If no live birth, skip to 329 if applicable) No ☐2 →	_____, _____ (Month) (Year) (Skip to next. If no live birth, skip to 329 if applicable)

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27 M ☐☐ Y ☐☐
28 30

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32 M ☐☐ Y ☐☐
33 35

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37 M ☐☐ Y ☐☐
38 40

OTHER PREGNANCIES

ASK FOR EACH INTERVIEW			Ask 331-335 for Each Pregnancy Ended by Still Birth or Abortion				
329. Have you ever had a pregnancy even one that lasted just a few weeks or a few months between (specify the interval). (For the last interval ask: After your last birth or before your current pregnancy).		330. How many such pregnancies have you had ?	331. In what month and year did your (first such, second such...) pregnancy end ? If D.K. ask: After how many months and/or years from marriage, first child, second child...	332. How many months did that pregnancy last ?	333. If 7 months or more, ask: Did the baby cry or show any other sign of life after it was born ?	334. If 'YES' in 333 ask: Was the baby a boy or a girl ?	335. Have you ever had another pregnancy of that kind between (specify the interval)
Between sixth and seventh	Yes ☐1 → No ☐2 (Skip to next interval if applicable)	(Times)	______, 19____ (Month) (Year) After: ______ ______ (Months) (Years) (From Sixth Child)	______ (Months) Less than 7 months: (skip to 335) More than 7 months →	Yes ☐1 → No ☐2 (Skip to 335)	Boy ☐1 Girl ☐2	Yes ☐1 (Repeat 331-335) No ☐2 (Skip to next interval)
			______, 19____ (Month) (Year) After: ______ ______ (Months) (Years) (From Sixth Child)	______ (Months) Less than 7 months: (skip to 335) More than 7 months →	Yes ☐1 → No ☐2 (Skip to 335)	Boy ☐1 Girl ☐2	Yes ☐1 (Repeat 331-335) No ☐2 (Skip to next interval)
Between seventh and eighth	Yes ☐1 → No ☐2 (Skip to next interval if applicable)	(Times)	______, 19____ (Month) (Year) After: ______ ______ (Months) (Years) (From Seventh Child)	______ (Months) Less than 7 months: (skip to 335) More than 7 months →	Yes ☐1 → No ☐2	Boy ☐1 Girl ☐2	Yes ☐1 (Repeat 331-335) No ☐2 (Skip to next interval)
			______, 19____ (Month) (Year) After: ______ ______ (Months) (Years) (From Seventh Child)	______ (Months) Less than 7 months: (skip to 335) More than 7 months →	Yes ☐1 → No ☐2	Boy ☐1 Girl ☐2	Yes ☐1 (Repeat 331-335) No ☐2 (Skip to next interval)
Between eighth and ninth	Yes ☐1 → No ☐2 (Skip to next interval if applicable)	(Times)	______, 19____ (Month) (Year) After: ______ ______ (Months) (Years) (From Eighth Child)	______ (Months) Less than 7 months: (skip to 335) More than 7 months →	Yes ☐1 → No ☐2	Boy ☐1 Girl ☐2	Yes ☐1 (Repeat 331-335) No ☐2 (Skip to next interval)
			______, 19____ (Month) (Year) After: ______ ______ (Months) (Years) (From Eighth Child)	______ (Months) Less than 7 months: (skip to 335) More than 7 months →	Yes ☐1 → No ☐2	Boy ☐1 Girl ☐2	Yes ☐1 (Repeat 331-335) No ☐2 (Skip to next interval)

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M ☐☐ 22 Y ☐☐ 24
☐ 26 ☐ 27 ☐ 28 ☐ 29

☐ 30 ☐ 31
M ☐☐ 32 Y ☐☐ 34
☐ 36 ☐ 37 ☐ 38 ☐ 39

M ☐☐ 40 Y ☐☐ 42
☐ 44 ☐ 45 ☐ 46 ☐ 47

☐ 48 ☐ 49
M ☐☐ 50 Y ☐☐ 52
☐ 54 ☐ 55 ☐ 56 ☐ 57

M ☐☐ 58 Y ☐☐ 60
☐ 62 ☐ 63 ☐ 64 ☐ 65

LIVE BIRTHS

16

BIRTH ORDER	ASK 324 - 328 FOR EACH LIVE BIRTH				
	324. NAME	325. Is (name) a boy or a girl ?	326. In what month and year was (Name) born ? If D.K. ask: How many months and/or years after (marriage, first child, second child...)	327. He/she is alive ?	328. If dead, for how long did the child live ?
10	________ (Name)	Boy ☐1 Girl ☐2	________, 19____ (Month) (Year) (Check with the date of birth of ninth child) After: ________ ________ (Months) (Years) (From birth of ninth child)	Yes ☐1 (Skip to next. If no live birth, skip to 329 if applicable) No ☐2 →	________, ________ (Month) (Year) (Skip to next. If no live birth, skip to 329 if applicable)
11	________ (Name)	Boy ☐1 Girl ☐2	________, 19____ (Month) (Year) (Check with the date of birth of tenth child) After: ________ ________ (Months) (Years) (From birth of tenth child)	Yes ☐1 (Skip to next. If no live birth, skip to 329 if applicable) No ☐2 →	________, ________ (Month) (Year) (Skip to next. If no live birth, skip to 329 if applicable)
12	________ (Name)	Boy ☐1 Girl ☐2	________, 19____ (Month) (Year) (Check with the date of birth of eleventh child) After: ________ ________ (Months) (Years) (From birth of eleventh child)	Yes ☐1 (Skip to next. If no live birth, skip to 329 if applicable) No ☐2 →	________, ________ (Month) (Year) (Skip to next. If no live birth, skip to 329 if applicable)

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M ☐☐ Y ☐☐
38 40

OTHER PREGNANCIES

ASK FOR EACH INTERVIEW			Ask 331-335 for Each Pregnancy Ended by Still Birth or Abortion				
329. Have you ever had a pregnancy even one that lasted just a few weeks or a few months between (specify the interval). (For the last interval ask: After your last birth or before your current pregnancy).		330. How many such pregnancies have you had ?	331. In what month and year did your (first such, second such...) pregnancy end ? If D.K. ask: After how many months and/or years from marriage, first child, second child...	332. How many months did that pregnancy last ?	333. If 7 months or more, ask: Did the baby cry or show any other sign of life after it was born ?	334. If 'YES' in 333 ask: Was the baby a boy or a girl ?	335. Have you ever had another pregnancy of that kind between (specify the interval)
Between ninth and tenth	Yes ☐ 1 → No ☐ 2 (Skip to next interval if applicable)	(Times)	____, 19____ (Month) (Year) After: (Months) (Years) (From 9th Child)	(Months) Less than 7 months: (skip to 335) More than 7 months →	Yes ☐ 1 → No ☐ 2 (Skip to 335)	Boy ☐ 1 Girl ☐ 2	Yes ☐ 1 (Repeat 331-335) No ☐ 2 (Skip to next interval)
			____, 19____ (Month) (Year) After: (Months) (Years) (From 9th Child)	(Months) Less than 7 months: (skip to 335) More than 7 months →	Yes ☐ 1 → No ☐ 2 (Skip to 335)	Boy ☐ 1 Girl ☐ 2	Yes ☐ 1 (Repeat 331-335) No ☐ 2 (Skip to next interval)
Between 10th and 11th	Yes ☐ 1 → No ☐ 2 (Skip to next interval if applicable)	(Times)	____, 19____ (Month) (Year) After: (Months) (Years) (From 10th Child)	(Months) Less than 7 months: (skip to 335) More than 7 months →	Yes ☐ 1 → No ☐ 2	Boy ☐ 1 Girl ☐ 2	Yes ☐ 1 (Repeat 331-335) No ☐ 2 (Skip to next interval)
			____, 19____ (Month) (Year) After: (Months) (Years) (From 10th Child)	(Months) Less than 7 months: (skip to 335) More than 7 months →	Yes ☐ 1 → No ☐ 2	Boy ☐ 1 Girl ☐ 2	Yes ☐ 1 (Repeat 331-335) No ☐ 2 (Skip to next interval)
Between 11th and 12th	Yes ☐ 1 → No ☐ 2 (Skip to next interval if applicable)	(Times)	____, 19____ (Month) (Year) After: (Months) (Years) (From 11th Child)	(Months) Less than 7 months: (skip to 335) More than 7 months →	Yes ☐ 1 → No ☐ 2	Boy ☐ 1 Girl ☐ 2	Yes ☐ 1 (Repeat 331-335) No ☐ 2 (Skip to next interval)
			____, 19____ (Month) (Year) After: (Months) (Years) (From 11th Child)	(Months) Less than 7 months: (skip to 335) More than 7 months →	Yes ☐ 1 → No ☐ 2	Boy ☐ 1 Girl ☐ 2	Yes ☐ 1 (Repeat 331-335) No ☐ 2 (Skip to next interval)

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M ☐☐ Y ☐☐
50 52
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54 55 56 57
M ☐☐ Y ☐☐
58 60
☐ ☐ ☐ ☐
62 63 64 65

LIVE BIRTHS

BIRTH ORDER	ASK 324 - 328 FOR EACH LIVE BIRTH					
	324. NAME	325. Is (name) a boy or a girl ?	326. In what month and year was (Name) born ? If D.K. ask: How many months and/or years after (marriage, first child, second child...)	327. He/she is alive ?	328. If dead, for how long did the child live ?	5 5 1 ☐☐☐ 3 ☐☐☐ 6 ☐ ☐☐ 9 10
13	________ (Name)	Boy 1 Girl 2	________, 19____ (Month) (Year) (Check with the date of birth of twelfth child) After: ____ ____ (Months) (Years) (From birth of twelfth child)	Yes 1 (Skip to next. If no live birth, skip to 329 if applicable) No 2 →	____, ____ (Month) (Year) (Skip to next. If no live birth, skip to 329 if applicable)	☐ 12 M ☐☐ Y ☐☐ 13 15 ☐ 17 M ☐☐ Y ☐☐ 18 20
14	________ (Name)	Boy 1 Girl 2	________, 19____ (Month) (Year) (Check with the date of birth of thirteenth child) After: ____ ____ (Months) (Years) (From birth of thirteenth child)	Yes 1 (Skip to next. If no live birth, skip to 329 if applicable) No 2 →	____, ____ (Month) (Year) (Skip to next. If no live birth, skip to 329 if applicable)	☐ 22 M ☐☐ Y ☐☐ 23 25 ☐ 27 M ☐☐ Y ☐☐ 28 30
15	________ (Name)	Boy 1 Girl 2	________, 19____ (Month) (Year) (Check with the date of birth of fourteenth child) After: ____ ____ (Months) (Years) (From birth of fourteenth child)	Yes 1 (Skip to next. If no live birth, skip to 329 if applicable) No 2 →	____, ____ (Month) (Year) (Skip to next. If no live birth, skip to 329 if applicable)	☐ 32 M ☐☐ Y ☐☐ 33 35 ☐ 37 M ☐☐ Y ☐☐ 38 40

OTHER PREGNANCIES

ASK FOR EACH INTERVIEW			Ask 331-335 for Each Pregnancy Ended by Still Birth or Abortion					
329. Have you ever had a pregnancy even one that lasted just a few weeks or a few months between (specify the interval). (For the last interval ask: After your last birth or before your current pregnancy).		330. How many such pregnancies have you had ?	331. In what month and year did your (first such, second such...) pregnancy end ? If D.K. ask: After how many months and/or years from marriage, first child, second child...	332. How many months did that pregnancy last ?	333. If 7 months or more, ask: Did the baby cry or show any other sign of life after it was born ?	334. If 'YES' in 333 ask: Was the baby a boy or a girl ?	335. Have you ever had another pregnancy of that kind between (specify the interval)	6 5 1 ☐☐☐ 3 ☐☐☐ 6 ☐ 9 ☐☐ 10
Between 12th and 13th	Yes 1 → No 2 (Skip to next interval if applicable)	(Times)	(Month), 19 (Year) After: (Months) (Years) (From 12th Child)	(Months) Less than 7 months: (skip to 335) More than 7 months →	Yes 1 → No 2 (Skip to 335)	Boy 1 Girl 2	Yes 1 (Repeat 331-335) No 2 (Skip to next interval)	☐ 12 ☐ 13 M ☐☐ 14 Y ☐☐ 16 ☐ 18 ☐ 19 ☐ 20 ☐ 21
			(Month), 19 (Year) After: (Months) (Years) (From 12th Child)	(Months) Less than 7 months: (skip to 335) More than 7 months →	Yes 1 → No 2 (Skip to 335)	Boy 1 Girl 2	Yes 1 (Repeat 331-335) No 2 (Skip to next interval)	M ☐☐ 22 Y ☐☐ 24 ☐ 26 ☐ 27 ☐ 28 ☐ 29
Between 13th and 14th	Yes 1 → No 2 (Skip to next interval if applicable).	(Times)	(Month), 19 (Year) After: (Months) (Years) (From 13th Child)	(Months) Less than 7 months: (skip to 335) More than 7 months →	Yes 1 → No 2	Boy 1 Girl 2	Yes 1 (Repeat 331-335) No 2 (Skip to next interval)	☐ 30 ☐ 31 M ☐☐ 32 Y ☐☐ 34 ☐ 36 ☐ 37 ☐ 38 ☐ 39
			(Month), 19 (Year) After: (Months) (Years) (From 13th Child)	(Months) Less than 7 months: (skip to 335) More than 7 months →	Yes 1 → No 2	Boy 1 Girl 2	Yes 1 (Repeat 331-335) No 2 (Skip to next interval)	M ☐☐ 40 Y ☐☐ 42 ☐ 44 ☐ 45 ☐ 46 ☐ 47
Between 14th and 15th	Yes 1 → No 2 (Skip to next interval if applicable)	(Times)	(Month), 19 (Year) After: (Months) (Years) (From 14th Child)	(Months) Less than 7 months: (skip to 335) More than 7 months →	Yes 1 → No 2	Boy 1 Girl 2	Yes 1 (Repeat 331-335) No 2 (Skip to next interval)	☐ 48 ☐ 49 M ☐☐ 50 Y ☐☐ 52 ☐ 54 ☐ 55 ☐ 56 ☐ 57
			(Month), 19 (Year) After: (Months) (Years) (From 14th Child)	(Months) Less than 7 months: (skip to 335) More than 7 months →	Yes 1 → No 2	Boy 1 Girl 2	Yes 1 (Repeat 331-335) No 2 (Skip to next interval)	M ☐☐ 58 Y ☐☐ 60 ☐ 62 ☐ 63 ☐ 64 ☐ 65

LIVE BIRTHS

20

BIRTH ORDER	ASK 324 - 328 FOR EACH LIVE BIRTH					
	324. NAME	325. Is (name) a boy or a girl ?	326. In what month and year was (Name) born ? If D.K. ask: How many months and/or years after (marriage, first child, second child...)	327. He/she is alive ?	328. If dead, for how long did the child live ?	5 6 1 ☐☐☐ 3 ☐☐☐ 6 ☐ 9 ☐☐ 10
16	______ (Name)	Boy 1 Girl 2	______, 19______ (Month) (Year) (Check with the date of birth of fifteenth child) After: ______ ______ (Months) (Years) (From birth of fifteenth child)	Yes 1 (Skip to next. If no live birth, skip to 329 if applicable) No 2 →	______, ______ (Month) (Year) (Skip to next. If no live birth, skip to 329 if applicable)	☐ 12 M ☐☐ 13 Y ☐☐ 15 ☐ 17 M ☐☐ 18 Y ☐☐ 20
17	______ (Name)	Boy 1 Girl 2	______, 19______ (Month) (Year) (Check with the date of birth of sixteenth child) After: ______ ______ (Months) (Years) (From birth of sixteenth child)	Yes 1 (Skip to next. If no live birth, skip to 329 if applicable) No 2 →	______, ______ (Month) (Year) (Skip to next. If no live birth, skip to 329 if applicable)	☐ 22 M ☐☐ 23 Y ☐☐ 25 ☐ 27 M ☐☐ 28 Y ☐☐ 30
18	______ (Name)	Boy 1 Girl 2	______, 19______ (Month) (Year) (Check with the date of birth of seventeenth child) After: ______ ______ (Months) (Years) (From birth of seventeenth child)	Yes 1 (Skip to next. If no live birth, skip to 329 if applicable) No 2 →	______, ______ (Month) (Year) (Skip to next. If no live birth, skip to 329 if applicable)	☐ 32 M ☐☐ 33 Y ☐☐ 35 ☐ 37 M ☐☐ 38 Y ☐☐ 40

OTHER PREGNANCIES

21

	ASK FOR EACH INTERVIEW		Ask 331-335 for Each Pregnancy Ended by Still Birth or Abortion					6 6 1 ☐☐☐ 3 ☐☐☐ 6 ☐ 9 ☐☐ 10
	329. Have you ever had a pregnancy even one that lasted just a few weeks or a few months between (specify the interval). (For the last interval ask: After your last birth or before your current pregnancy).	330. How many such pregnancies have you had ?	331. In what month and year did your (first such, second such...) pregnancy end ? If D.K. ask: After how many months and/or years from marriage, first child, second child...	332. How many months did that pregnancy last ?	333. If 7 months or more, ask: Did the baby cry or show any other sign of life after it was born ?	334. If 'YES' in 333 ask: Was the baby a boy or a girl ?	335. Have you ever had another pregnancy of that kind between (specify the interval)	
Between 15th and 16th	Yes 1 → No 2 (Skip to next interval if applicable)	(Times)	______, 19____ (Month) (Year) After: ______ ______ (Months) (Years) (From 15th Child)	______ (Months) Less than 7 months: (skip to 335) More than 7 months →	Yes 1 → No 2 (Skip to 335)	Boy 1 Girl 2	Yes 1 (Repeat 331-335) No 2 (Skip to next interval)	☐ 12 ☐ 13 M ☐☐ 14 Y ☐☐ 16 ☐ 18 ☐ 19 ☐ 20 ☐ 21
			______, 19____ (Month) (Year) After: ______ ______ (Months) (Years) (From 15th Child)	______ (Months) Less than 7 months: (skip to 335) More than 7 months →	Yes 1 → No 2 (Skip to 335)	Boy 1 Girl 2	Yes 1 (Repeat 331-335) No 2 (Skip to next interval)	M ☐☐ 22 Y ☐☐ 24 ☐ 26 ☐ 27 ☐ 28 ☐ 29
Between 16th and 17th	Yes 1 → No 2 (Skip to next interval if applicable)	(Times)	______, 19____ (Month) (Year) After: ______ ______ (Months) (Years) (From 16th Child)	______ (Months) Less than 7 months: (skip to 335) More than 7 months →	Yes 1 → No 2	Boy 1 Girl 2	Yes 1 (Repeat 331-335) No 2 (Skip to next interval)	☐ 30 ☐ 31 M ☐☐ 32 Y ☐☐ 34 ☐ 36 ☐ 37 ☐ 38 ☐ 39
			______, 19____ (Month) (Year) After: ______ ______ (Months) (Years) (From 16th Child)	______ (Months) Less than 7 months: (skip to 335) More than 7 months →	Yes 1 → No 2	Boy 1 Girl 2	Yes 1 (Repeat 331-335) No 2 (Skip to next interval)	M ☐☐ 40 Y ☐☐ 42 ☐ 44 ☐ 45 ☐ 46 ☐ 47
Between 17th and 18th	Yes 1 → No 2 (Skip to next interval if applicable)	(Times)	______, 19____ (Month) (Year) After: ______ ______ (Months) (Years) (From 17th Child)	______ (Months) Less than 7 months: (skip to 335) More than 7 months →	Yes 1 → No 2	Boy 1 Girl 2	Yes 1 (Repeat 331-335) No 2 (Skip to next interval)	☐ 48 ☐ 49 M ☐☐ 50 Y ☐☐ 52 ☐ 54 ☐ 55 ☐ 56 ☐ 57
			______, 19____ (Month) (Year) After: ______ ______ (Months) (Years) (From 17th Child)	______ (Months) Less than 7 months: (skip to 335) More than 7 months →	Yes 1 → No 2	Boy 1 Girl 2	Yes 1 (Repeat 331-335) No 2 (Skip to next interval)	M ☐☐ 58 Y ☐☐ 60 ☐ 62 ☐ 63 ☐ 64 ☐ 65

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☐☐	13

336. Reliability of answers in Section 3.

INTERVIEWER: CIRCLE APPROPRIATE BOX

Good 1 Fair 2 Poor 3

337. Presence of others at this point.

(CIRCLE ALL THAT APPLY)

No others	0
Children under 10	1
Husband	2
Other males	4
Other females	8

SECTION 4 CONTRACEPTIVE KNOWLEDGE AND USE

401. Now I want to talk about somewhat different topic. As you know, there are various ways that a couple can delay the next pregnancy or avoid pregnancy. Do you know of, or have you heard of, any of these methods?

YES 1 NO 2

(SKIP TO INSTRUCTION ABOVE 404)

402. Which methods do you know of? ______________________________

PROBE: Do you know of any others?

INTERVIEWER: RECORD ANSWER AND THEN PROCEED TO CIRCLE BOX(ES) IN COL. 1 CORRESPONDING TO THE METHOD(S) MENTIONED. FOR EACH METHOD SO CIRCLED, EXCEPT STERLIZATION, ASK:

403. Have you ever used (method)?

(REFER TO METHOD IN SAME WORDS USED BY R. IN 402. CIRCLE APPROPRIATE BOX IN COL. 3 CORRESPONDING TO THE PARTICULAR METHOD).

NOW ASK 404-420 IN TURN? SKIPPING THOSE METHODS CIRCLED IN COL. 1 PREFACE THE QUESTIONING WITH:

There are some other methods which you have not mentioned, and I would like to find out if you might have heard of them.

Col. 1 From 402	For those who said "No" to 401, preface Q.404 with: Just to make sure, let me describe some methods to see if you have heard of them	Col. 2 Ever heard of	Col. 3 Ever used
0 Pill	404. One way a woman can delay the next pregnancy, or avoid getting pregnant, is to take a pill every day. Have you ever heard of this method? (Circle appropriate box in Col. 2). If "No" skip to next uncircled method. If "Yes": Have you ever used this method? (Circle appropriate box in Col. 3).	Yes 1 No 2	Yes 1 No 2
0 Injection	405. Another way a woman can avoid getting pregnant is to take an "Injection". Have you ever heard of this method? (As above). If "Yes": Have you ever used this method? (As above).	Yes 1 No 2	Yes 1 No 2

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1

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17 18

Col. 1		Col. 2	Col. 3
From 402		Ever heard of	Ever used
☐ 0 IUD	406. A woman may have a loop or coil of plastic or metal the intrauterine device (IUD), inserted in her womb by a doctor and left there. Have you ever heard of this method? (As above). If "Yes": Have you ever used this method (As above).	Yes ☐ 1 No ☐ 2	Yes ☐ 1 No ☐ 2
☐ 0 Other Female Scientific	407. Women may also use other methods to avoid getting pregnant, such as placing a diaphragm or tampon or sponge in themselves before sex, or using foam tablets or jelly or cream. Have you ever heard of any of these methods? If "Yes": Have you ever used any of these methods?	Yes ☐ 1 No ☐ 2	Yes ☐ 1 No ☐ 2
☐ 0 Douche	408. Some women wash themselves immediately after sex, with water or perhaps some other liquid. Have you ever heard of this method to avoid getting pregnant? If "Yes": Have you ever used this method?	Yes ☐ 1 No ☐ 2	Yes ☐ 1 No ☐ 2
☐ 0 Condom	409. There are also some methods men use so that their wives will not get pregnant. Some men wear a condom during sex. Have you ever heard of this method? If "Yes": Did you and your husband ever use this method?	Yes ☐ 1 No ☐ 2	Yes ☐ 1 No ☐ 2
☐ 0 Rhythm	410. Some couples avoid having sex on particular days of the month when the woman is most able to become pregnant. This is called the safe period or rhythm method? Have you ever heard of this method? If "Yes": Did you and your husband ever do this?	Yes ☐ 1 No ☐ 2	Yes ☐ 1 No ☐ 2
☐ 0 Withdrawal	411. Some men practise withdrawal, that is they are careful and pull out before climax. Have you ever heard of this method? If "Yes": Did you and your husband ever use this method?	Yes ☐ 1 No ☐ 2	Yes ☐ 1 No ☐ 2
☐ 0 Abstain	412. Another way is to go without sex for several months or longer to avoid getting pregnant. Have you ever heard of this method? If "Yes": Have you ever used this method to avoid getting pregnant?	Yes ☐ 1 No ☐ 2	Yes ☐ 1 No ☐ 2

☐ 19 ☐ 20

☐ 21 ☐ 22

☐ 23 ☐ 24

☐ 25 ☐ 26

☐ 27 ☐ 28

☐ 29 ☐ 30

☐ 31 ☐ 32

Col. 1		Col. 2	Col. 3
From 402		Ever heard of	Ever used
0 Female Sterilisation	413 Some women have an operation in order not to have any more children. Have you ever heard of this method? (Circle response in Col. 2). If YES — If NO skip to next uncircled method 414. *INTERVIEWER: (SEE 315)* Currently pregnant 1 (SKIP TO NEXT UNCIRCLED METHOD) — Not currently pregnant 2 415. Have you ever had such an operation? YES 1 — NO 2 (SKIP TO NEXT UNCIRCLED METHOD) 416. Was one purpose of that operation to prevent you having any more children? YES 1 — NO 2 (SKIP TO NEXT UNCIRCLED METHOD)	Yes 1 No 2	
0 Male Sterilisation	417. Some men have an operation in order not to have any more children. Have you ever heard of this method? (Circle response in Col. 2) If YES — If No skip to 420 418. *INTERVIEWER: (SEE 201 204 AND 205)* Currently married 1 — Separated, widowed or divorced 2 (SKIP TP 420) 419. Has your husband had such an operation? YES 1 — NO 2 (GO TO 420)	Yes 1 No 2	

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☐ 39

Col. 1		Col. 2	Col. 3
From 402		Ever heard of	Ever used
OTHER METHODS	420. Have you ever heard of any other methods which men or women use to avoid pregnancy? YES 1 → What methods have you heard of? (List each method below) NO 2 (SKIP TO 421)	▨	▨
0	SPECIFY (1): Ask: Did you and your husband ever use this method so that you would not get pregnant? (Circle response in Col. 3)	▨	Yes 1 No 2
0	SPECIFY (2): Ask: Did you and your husband ever use this method so that you would not get pregnant? (Circle response in Col. 3)	▨	Yes 1 No 2
0	SPECIFY (3): Ask: Did you and your husband ever use this method so that you would not get pregnant? (Circle response in Col. 3)	▨	Yes 1 No 2

402a. *INTERVIEWER:* Enter the number of "other methods" _________(Method)

421. *INTERVIEWER:* Circle appropriate box (See 415, 419)

Husband or wife sterilized 1

421a. At least one "Yes" in Col. 3 (Has used a method)	Not a single "Yes" in Col. 3 (Has never used a method)
1 (SKIP TO 501)	2 (SKIP TO 501)

Neither husband nor wife sterilized 2

421a. At least one "Yes" in Col. 3 (Has used a method)	Not a single "Yes" in Col. 3 (Has never used a method)
3 (SKIP TO **501**)	4 → 422

422. I want to make sure I have the correct information: Have you ever done anything or tried in any way to delay or avoid getting pregnant?

YES 1 → 423
NO 2 (SKIP TO 501)

423. What method was that? ______________________________

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☐☐ 42 ☐ 44
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☐☐ 50 ☐ 52
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1

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9 10

SECTION 5: LACTATION, CONTRACEPTIVE USE AND TEMPORARY ABSENCES

501. *INTERVIEWER: CIRCLE APPROPRIATE BOX (SEE 315)*

NOT CURRENTLY PREGNANT OR D.K. 1

CURRENTLY PREGNANT 2
(SKIP TO 533)

☐
12

502. *INTERVIEWER: CIRCLE APPROPRIATE BOX (SEE 323 AND LIVE BIRTHS AND OTHER PREGNANCIES TABLE)*

HAS HAD ONE OR MORE PREGNANCIES 1

NEVER PREGNANT 2
(SKIP TO 557)

☐
13

503. *INTERVIEWER: CIRCLE APPROPRIATE BOX (SEE 201, 205)*

CURRENTLY MARRIED 1

WIDOWED, DIVORCED, SEPARATED 2
(SKIP TO 530)

☐
14

504. *INTERVIEWER: CIRCLE APPROPRIATE BOX (SEE 414, 418)*

NEITHER HUSBAND NOR WIFE STERILIZED 1

HUSBAND OR WIFE STERILIZED 2
(SKIP TO 530)

☐
15

Last Pregnancy (See Live Births and Other Pregnancies Table)

505. *INTERVIEWER: RECORD DATE OF BIRTH OF LAST CHILD (OR PREGNANCY TERMINATION) PROBE AGAIN IF MONTH AND YEAR NOT STATED*

________, 19____ or ________
(MONTH) (YEAR) YEARS AGO

NAME: ______________________ (if available)

M Y
☐☐ ☐☐
16 18

506. *INTERVIEWER: CIRCLE APPROPRIATE BOX (SEE 325, 328)*

LIVE BIRTH CHILD ALIVE 1

LIVE BIRTH CHILD DEAD 2

NON LIVE BIRTH OR ABORTION 3
(SKIP TO 514)

☐
20

(To 507) (To 507)

OPEN INTERVAL

FOR CURRENTLY MARRIED WOMEN WITH AT LEAST ONE PREGNANCY WHO ARE NOT CURRENTLY PREGNANT (EXCLUDING THOSE WHO OR WHOSE HUSBANDS ARE STERILIZED)

507. Now I would like to ask you about the period since the birth of ____________ (Name of last child, or "Your most recent child who later died"). Did you breast-feed ____________ (Name of last child, or "Your most recent child")?

YES 1 NO 2 (SKIP TO 511) ☐ 21

508. For how many months altogether did you breast-feed him/her?

PROBE: How many months old was he/she when you completely stopped breast-feeding him/her?

____________ (MONTHS) STILL BREAST-FEEDING 8 6 (SKIP TO 510) UNTIL HE/SHE DIED 8 7 (SKIP TO 510) ☐☐ 22

509. After ____________ months had you completely stopped breast-feeding your child even once a day?

YES 1 NO 2 (Correct 508 as necessary then proceed to 510) ☐ 24

510. How many months old was the child when you began giving him/her additional food along with breast-feeding?

____________ (MONTHS) NO ADDITIONAL FOOD GIVEN YET 8 6 CHILD DIED BEFORE GIVEN OTHER FOOD 8 7 ☐☐ 25

511. For how many months after the birth of this child did you go without sexual relations?

PROBE: How many months old was the child when you resumed sexual relations?

______ (DAYS) (SKIP TO 513) ______ (MONTHS) (SKIP TO 513) NOT STARTED YET 8 6 40 DAYS 8 7 ☐☐ 27

512. Try to remember whether the interval without sexual relations was exactly forty days or less or more?

______ (DAYS ______ (MONTHS) 40 DAYS 8 7 ☐☐ 29

(PROBE well and record interval)

OPEN INTERVAL (CONT.)

513. How many months after the birth of this child did your period come back?

_______________ (MONTHS) (SKIP TO 517)

PERIOD NOT BACK YET 86 (SKIP TO 517)

☐☐ 31

514. Now I would like to ask you about the period since the last time you were pregnant. For how many months after the end of this pregnancy did you go without sexual relations?

_______________ (DAYS)

_______________ (MONTHS)

(SKIP TO 516)

NOT STARTED YET 86 (SKIP TO 516)

40 DAYS 87

☐☐ 33

515. Try to remember whether the interval without sexual relations was exactly forty days or less or more?

_______________ (DAYS)

_______________ (MONTHS)

(PROBE WELL AND RECORD INTERVAL)

40 DAYS 87

☐☐ 35

516. How many months after the end of the pregnancy did your period come back?

_______________ (MONTHS)

PERIOD NOT BACK YET 86

☐☐ 37

517. *INTERVIEWER: CIRCLE APPROPRIATE BOX (SEE 511, 514)*

SEXUAL RELATIONS RESUMED 1

SEXUAL RELATIONS NOT RESUMED YET 2 (SKIP TO 530)

☐ 39

518. *INTERVIEWER: CIRCLE APPROPRIATE BOX (SEE 420a, 421)*

HAS USED A CONTRACEPTIVE METHOD 1

HAS NEVER USED A CONTRACEPTIVE METHOD 2 (SKIP TO 523)

☐ 40

519. Are you or your husband currently using a method to keep you from getting pregnant?

YES 1

NO 2 (SKIP TO 521)

☐ 41

520. What method are you using?

_______________________________ (METHOD)

(SKIP TO 523)

☐☐ 42

OPEN INTERVAL (CONT.)

521. Have you or your husband used a contraceptive method since the birth of ______________ (name of last child, or your last pregnancy).

YES 1 ↓ NO 2 (SKIP TO 523)

☐ 44

522. What was the last method you or your husband used?
__________________ (METHOD)

☐☐ 45

523. Since the birth of ______________ (name of last child, or since your last pregnancy) have there been any times when you and your husband were apart from each other for three months or more?

YES 1 ↓ NO 2 (SKIP TO 530)

☐ 47

523a. How many times ? ___________ (TIMES)

☐ 48

524. When were you temporarily apart for the first time for three months or more?

__________ 19____ or __________
(MONTHS) (YEAR) (YEARS AGO)

M ☐☐ 49 Y ☐☐ 51

525. Was that date before or after the birth of ______________ (name of last child (or the end of your last pregnancy))?

BEFORE 1 ↓ AFTER 2 ↓

☐ 53

INTERVIEWER: RECORD INFORMATION ON EACH SEPARATION STARTING WITH THE FIRST ONE:

526. How many months were you apart for (the first, second, ... etc.) time?	527. During that time you were continuously apart without seeing each other, is that right?	528. Since your last pregnancy were there any other times when you were temporarily apart for three months or more?	
________ (Months)	YES ☐ → NO ☐ (Probe and correct)	YES 1 (Repeat 526-528) NO 2 (Go to 529)	☐☐ ☐ 54 56
________ (Months)	YES ☐ → NO ☐ (Probe and correct)	YES 1 (Repeat 526-528) NO 2 (Go to 529)	☐☐ ☐ 57 59
________ (Months)	YES ☐ → NO ☐ (Probe and correct)	YES 1 (Repeat 526-528) NO 2 (Go to 529)	☐☐ ☐ 60 62
________ (Months)	YES ☐ → NO ☐ (Probe and correct)	YES 1 (Repeat 526-528) NO 2 (Go to 529)	☐☐ ☐ 63 65

529. Have you returned to live together after this absence?

YES 1 NO 2

(Proceed to 530)

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66

32

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1

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3

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6 9

☐☐
10

☐
12

LAST CLOSED INTERVAL

FOR EVER-MARRIED WOMEN NOT CURRENTLY PREGNANT, WITH TWO OR MORE PREGNANCIES, AND CURRENTLY PREGNANT WOMEN WITH ONE OR MORE PREVIOUS PREGNANCIES.

530. *INTERVIEWER: CIRCLE APPROPRIATE BOX (SEE LIVE BIRTHS AND OTHER PREGNANCIES TABLE)*

ONLY ONE PREGNANCY ☐1 (SKIP TO 571)

TWO OR MORE PREGNANCIES ☐2

Next to last Pregnancy (See Live Births and Other Pregnancies Table)

531. *INTERVIEWER: RECORD DATE OF BIRTH OR PREGNANCY TERMINATION (PROBE AGAIN IF MONTH AND YEAR NOT STATED)*

_________ 19_____ or _________
(Months) (Year) (Year)

Name: ____________________ (If available)

M ☐☐ Y ☐☐
13 15

532. *INTERVIEWER: CIRCLE APPROPRIATE BOX (SEE 325, 328)*

LIVE BIRTH CHILD ALIVE ☐1 (SKIP TO 537)

LIVE BIRTH CHILD DEAD ☐2 (SKIP TO 537)

NON-LIVE BIRTH, ABORTION ☐3 (SKIP TO 544)

☐
17

533. *INTERVIEWER: CIRCLE APPROPRIATE BOX (SEE 315, 332)*

CURRENT PREGNANCY IS FIRST ONE ☐1 (SKIP TO 557)

ONE OR MORE PREVIOUS PREGNANCIES ☐2

☐
18

Pregnancy Before the Current One (See Live Births and Other Pregnancies Table)

534. *INTERVIEWER: RECORD DATE OF BIRTH OR PREGNANCY TERMINATION (PROBE AGAIN IF MONTH AND YEAR NOT STATED)*

_________ 19_____ or _________
(Months) (Year) (Year)

Name: ____________________ (If available)

M ☐☐ Y ☐☐
19 21

535. *INTERVIEWER: CIRCLE APPROPRIATE BOX (SEE 325, 328)*

LIVE BIRTH CHILD ALIVE ☐1 (SKIP TO 536)

LIVE BIRTH CHILD DEAD ☐2 (SKIP TO 536)

NON-LIVE BIRTH OR ABORTION ☐3 (SKIP TO 544)

☐
23

LAST CLOSED INTERVAL (CONT.)

536. Now I would like to ask you about the period after the birth of ________________ (name of last child or "your last birth"), did you breast-feed ____________________ (name, or your last child)?

YES 1 (SKIP TO 538) NO 2 (SKIP TO 541)

☐ 24

537. Now I would like to ask you about the period after the birth of ________________ (name of next-to-last child, or "your next-to-last child"). Did you breast-feed ____ ____________ (name, or "your child born before your last child")?

YES 1 ↓ NO 2 (SKIP TO 541)

☐ 25

538. For how many months altogether did you breast-feed him/her?

PROBE: How many months old was he/she when you completely stopped breast-feeding him/her?

__________ (MONTHS) STILL BREAST-FEEDING 8 6 (SKIP TO 540) UNTIL HE/SHE DIED 8 7 (SKIP TO 540)

☐☐ 26

539. After __________ months had you completely stopped breast-feeding your child even once a day?

YES 1 ↓ NO 2 (Correct 538 as necessary then proceed to 540)

☐ 28

540. How many months was the child when you began giving him/her additional food along with breast-feeding?

__________ (MONTHS) NO ADDITIONAL FOOD GIVEN YET 8 6 CHILD DIED BEFORE GIVEN OTHER FOODS 3 7

☐☐ 29

541. For how long after the birth of this child did you go without sexual relations?

PROBE: How many months old was the child when you resumed sexual relations?

______ (DAYS) __________ (MONTHS) (SKIP TO 543) 40 DAYS 8 7 ↓

☐☐ 31

LAST CLOSED INTERVAL (CONT.)

542. Try to remember whether the interval without sexual relations was exactly forty days or less or more?

40 DAYS [8 7]

_______ _______
(DAYS) (MONTHS)

☐☐ 33

INTERVIEWER: PROBE WELL AND RECORD INTERVAL

543. How many months after the birth of this child did your period come back?

____
(MONTHS)
(SKIP TO 547)

PERIOD NEVER CAME BACK, BECAME PREGNANT AGAIN [8 7]
(SKIP TO 547)

☐☐ 35

544. Now I would like to ask you about the time since the termination of your (next-to-last pregnancy or pregnancy before the current one). For how many months did you go without sexual relations?

_______ _______
(DAYS) (MONTHS)
(SKIP TO 546)

40 DAYS [8 7] ↓

☐☐ 37

545. Try to remember whether the interval without sexual relations was exactly forty days or less or more?

40 DAYS [8 7]

_______ _______
(DAYS) (MONTHS)

☐☐ 39

(PROBE well and record)

546. How many months after the end of (that, your next-to-last) pregnancy did your period come back?

____
(MONTHS)

PERIOD NEVER CAME BACK, BECAME PREGNANT AGAIN [8 7]

☐☐ 41

547. *INTERVIEWER: CIRCLE APPROPRIATE BOX (SEE 420a, 421)*

HAS USED A CONTRACEPTIVE METHOD [1] ↓

HAS NEVER USED A CONTRACEPTIVE METHOD [2]
(SKIP TO 550)

☐ 43

LAST CLOSED INTERVAL (CONT.)

548. Was there any time in the interval between your last two pregnancies when you or your husband were using a method to keep you from getting pregnant?

YES 1 NO 2 (SKIP TO 550) ☐ 44

549. What was the method you used?

______________________________ (METHOD) ☐☐ 45

550. During the time between your (last and current, last two) pregnancies were there any times when you and your husband were apart from each other for three months or more?

YES 1 NO 2 (SKIP TO 571) ☐ 47

550a. How many times? ____________ (TIMES) ☐ 48

551. During this interval when were you temporarily apart for the first time for three months or more?

__________ (MONTHS) 19______ (YEAR) or ____________ (YEARS AGO) ☐☐ 49 ☐☐ 51

552. Did that absence start before or after the birth of ______________ (name of next-to-last child) or (the end of your next-to-last pregnancy)?

BEFORE 1 AFTER 2 ☐ 53

INTERVIEWER: RECORD INFORMATION ON EACH SEPARATION STARTING WITH THE FIRST ONE.

LAST CLOSED INTERVAL (CONT.)

553. How many months were you apart for (the first, second, ... time?	554. During that time you were continuously apart without seeing each other, is that right?	555. Were you already pregnant when that absence began?	556. Were there any other times during the interval between your (last two, last and current) pregnancies when you were temporarily apart for 3 months or more?	
______ (MONTHS)	YES ☐ → NO ☐ (Probe and correct)	YES ☐ (SKIP TO 571) NO ☐ →	YES 1 (Repeat 553-556) NO 2 (SKIP TO 571)	☐☐ ☐ 54 56
______ (MONTHS)	YES ☐ → NO ☐ (Probe and correct)	YES ☐ (SKIP TO 571) NO ☐ →	YES 1 (Repeat 553-556) NO 2 (SKIP TO 571)	☐☐ ☐ 57 59
______ (MONTHS)	YES ☐ → NO ☐ (Probe and	YES ☐ (SKIP TO 571) NO ☐ →	YES 1 (Repeat 553-556) NO 2 (SKIP TO 571)	☐☐ ☐ 60 62
______ (MONTHS)	YES ☐ → NO ☐ (Probe and	YES ☐ (SKIP TO 571) NO ☐ →	YES 1 (Repeat 553-556) NO 2 (SKIP TO 571)	☐☐ ☐ 63 65

8 3

OPEN AND CLOSED INTERVALS

FOR EVER MARRIED WOMEN WHO HAVE NEVER HAD A PREGNANCY OR ARE CURRENTLY PREGNANT FOR THE FIRST TIME

557. *INTERVIEWER: CIRCLE APPROPRIATE BOX (SEE 201, 205)*

CURRENTLY MARRIED 1

SEPARATED, WIDOWED, DIVORCED 2 (SKIP TO 571)

558. *INTERVIEWER: CIRCLE APPROPRIATE BOX (SEE 414, 418)*

HUSBAND OR WIFE STERILIZED 1 (SKIP TO 571)

NEITHER HUSBAND NOR WIFE STERILIZED 2

559. *INTERVIEWER: CIRCLE APPROPRIATE BOX (SEE 420a, 421)*

HAS USED A CONTRACEPTIVE METHOD 1

HAS NEVER USED A CONTRACEPTIVE METHOD 2 (SKIP TO 564)

560. *INTERVIEWER: SEE 315*

CURRENTLY PREGNANT 1 (SKIP TO 563)

NOT CURRENTLY PREGNANT OR D.K. 2

561. Are you or your husband currently using a method to keep you from getting pregnant?

YES 1

NO 2 (SKIP TO 563)

562. What method are you using? ______________________ (METHOD) (SKIP TO 564)

563. What was the last contraceptive method you used? ________________________ (METHOD)

564. Thinking over your marriage, were there any times when you and your husband were apart from each other for three months or more?

YES 1

NO 2 (SKIP TO 571)

564a. How many times? ______________________________

☐☐☐ 1

☐☐☐ 3 ☐ 6 9

☐☐ 10

☐ 12

☐ 13

☐ 14

☐ 15

☐ 16

☐☐ 17

☐☐ 19

☐ 21

☐ 22

565. When were you temporarily apart for the first time for three months or more?

☐☐ ☐☐
23 25

_________ 19_____ or _________
(MONTHS) (YEAR) (YEARS AGO)

INTERVIEWER: CHECK THAT THE DATE GIVEN IS AFTER THE DATE IN 203.

566. How many months were you apart for the (first, second, ... time?	567. During that time you were continuously apart without seeing each other, is that right?	568. *If currently pregnant*, ask: Were you already pregnant when that absence began?	569. Were there any other times when you were temporarily apart for 3 months or more?	
_________ (MONTHS)	YES [1] NO [2] (Probe and correct)	YES [0] (SKIP TO 571) NO ☐ →	YES [1] (Repeat 566-569) NO [2] (SKIP TO 570)	☐☐ ☐ 27 29
_________ (MONTHS)	YES [1] NO [2] (Probe and correct)	YES [0] (SKIP TO 571) NO ☐ →	YES [1] (Repeat 566-569) NO [2] (SKIP TO 570)	☐☐ ☐ 30 32
_________ (MONTHS)	YES [1] NO [2] (Probe and correct)	YES [0] (SKIP TO 571) NO ☐ →	YES [1] (Repeat 566-569) NO [2] (SKIP TO 570)	☐☐ ☐ 33 35
_________ (MONTHS)	YES [1] NO [2] (Probe and correct)	YES [0] (SKIP TO 571) NO ☐ →	YES [1] (Repeat 566-569) NO [2] (SKIP TO 570)	☐☐ ☐ 36 38

570. Have you and your husband returned to live together after this absence?

YES [1] NO [2]

☐
39

571. Now I want to ask about your menstrual periods. Do your periods usually come at regular intervals?

YES [1] NO [2] NO LONGER MENSTRUATING [3]
(SKIP TO 574)

☐
40

572. Is the time between your periods usually about a month, or more than a month?

ABOUT ONE MONTH [1] MORE THAN ONE MONTH [2]

☐
41

573. For how many days do your periods usually last? _________ DAYS)

☐
42

574. *INTERVIEWER: CHECK APPROPRIATE BOX (SEE 315, 414, 418)*

HUSBAND OR WIFE STERILIZED ☐1 (SKIP TO 588)
CURRENTLY PREGNANT ☐2 (SKIP TO 579)
ALL OTHERS ☐3

☐ 43

575. *INTERVIEWER: CIRCLE APPROPRIATE BOX (SEE 201, 205)*

CURRENTLY MARRIED ☐1
SEPARATED, DIVORCED, WIDOWED ☐2 (SKIP TO 588)

☐ 44

576. As far as you know, is it physically possible for you and your husband to have a child supposing you wanted one?

YES ☐1 (SKIP TO 578)
NO ☐2

☐ 45

577. Do you think you are in the menopause?

YES ☐1
NO ☐2
D.K. ☐3

(ALL SKIP TO 588)

☐ 46

578. *INTERVIEWER: CIRCLE APPROPRIATE BOX (SEE 313)*

NO LIVE BIRTH ☐1 (SKIP TO 581)
ONE OR MORE LIVE BIRTH ☐2 (SKIP TO 583)

☐ 47

579. Do you want to have another child sometime, in addition to the one you are expecting?

YES ☐1
NO ☐2 (SKIP TO 586
UNDECIDED ☐3 (SKIP TO 586)

☐ 48

580. How many more children do you want to have after the one you are expecting? ______________ (NUMBER)

(SKIP TO 586)

☐☐ 49 ☐ 51

581. Do you want to have any children?

YES ☐1
NO ☐2 (SKIP TO 586)
UNDECIDED ☐3 (SKIP TO 586)

☐ 53

582. Would you prefer your first child to be a boy or a girl?

BOY 1 GIRL 2 EITHER 3

Other answer (SPECIFY): ______________

(SKIP TO 586)

☐ 54

583. Do you want to have another child during the next year or so?

YES 1 NO 2 UNDECIDED 3

☐ 55

583a Do you want to have another child in the future?

YES 1 NO 2 UNDECIDED 3

(SKIP TO 586)

☐ 56

584. Would you prefer your next child to be a boy or a girl?

BOY 1 GIRL 2 EITHER 3

Other answer (SPECIFY): ______________________

☐ 57

585. How many more children do you want to have? ________ (NUMBER)

☐☐ 58 ☐☐ 60

586. *INTERVIEWER:* Circle appropriate box (See 421a, 422)

Has used a contraceptive method 1

(SKIP TO 588)

Has never used a contraceptive method 2

☐ 62

587. Do you think you and your husband may use any method at any time in the future so that you will not become pregnant?

YES 1 NO 2 UNDECIDED 3

☐ 63

588. If you could choose exactly the number of children to have in your whole life, how many children would that be?

______________ (Number)

Other answer ______________ (SPECIFY)

☐☐ 64 ☐☐ 66

SECTION 6: WORK HISTORY

601. As you know, many women work. I mean apart from doing their own housework, some take up jobs for which they are paid in cash or in kind; others sell things, or have a small business, or work on the family farm. Are you doing any such work at the present time?

YES [1] NO [2]

602. Have you ever worked since the day when you were first married?

YES [1] NO [2]
(SKIP TO 614)

603. In what year did you last work?

19_____ (YEAR)

604. I would like to ask some questions about (your present work, the last work you did). What (is, was) your occupation, that is what kind of work (do, did) you do?

----

605. *INTERVIEWER: CIRCLE APPROPRIATE BOX*

WORK (IS, WAS) FARMING [1] WORK (IS, WAS) NOT FARMING [2]
(SKIP TO 607)

606. (Is, was) that your family farm?

YES [1] NO [2]
(SKIP TO 609) (SKIP TO 609)

607. (Do, did) you work mostly at home or (do, did) you work mostly away from home in that job?

HOME [1] AWAY [2]

608. (Are, were) you employed by some member of your family, or by someone else, or (are, were) you self-employed?

FAMILY MEMBER [1] SOMEONE ELSE [2] SELF-EMPLOYED [3]
(SKIP TO 610)

[9][1]
☐☐☐ 3
☐☐☐ 6
☐ 9
☐☐ 10
☐ 12
☐ 13
☐☐ 14
☐☐☐☐ 16
☐ 20
☐ 21
☐ 22
☐ 23

609. (Do, did) you get paid mostly in cash or mostly in kind?

CASH [1] KIND [2] UNPAID [3]

☐ 24

610. About how many years in all have you worked since you first were married?

_________ (YEARS)

☐☐ 25

611. *INTERVIEWER: CIRCLE APPROPRIATE BOX*

NON-SEASONAL FULL-TIME [1] NON-SEASONAL PART-TIME [2] SEASONAL [3]

☐ 27

INTERVIEWER: PROBE AS NECESSARY

612. *INTERVIEWER: CIRCLE APPROPRIATE BOX (SEE 313)*

NO LIVE BIRTH [1] ONE OR MORE LIVE BIRTHS [2]

☐ 28

613. Did you work between the time you were first married and the birth of your first child?

YES [1] NO [2]

☐ 29

614. Now let us go back to the time before you were first married. Did you do any work at any time before you were first married?

YES [1] NO [2]

(SKIP TO 701)

☐ 30

615. What kind of work did you do mainly, before you were first married?

☐☐☐☐ 31

616. *INTERVIEWER: CIRCLE APPROPRIATE BOX*

NON-SEASONAL FULL-TIME [1] NON-SEASONAL PART-TIME [2] SEASONAL [3]

☐ 35

INTERVIEWER: PROBE AS NECESSARY

617. For how many years altogether did you work before you were first married? __________ (YEARS)

☐☐ 36

618. Were you employed by some member of your family, or by someone else, or were you self-employed?

FAMILY MEMBER $\boxed{1}$ SOMEONE ELSE $\boxed{2}$ SELF-EMPLOYED $\boxed{3}$ (SKIP TO 701)

☐ 38

619. Did you get paid mostly in cash or mostly in kind?

CASH $\boxed{1}$ KIND $\boxed{2}$ UNPAID $\boxed{3}$

☐ 39

SECTION 7. CURRENT (LAST) HUSBAND'S BACKGROUND

701. *INTERVIEWER:* Circle appropriate box (See 201, 205)

Currently married $\boxed{1}$

Widowed, divorced, separated $\boxed{2}$ (SKIP TO 705)

☐ 40

702. How old is your husband now? ____________ (YEARS)

☐☐ 41

703. Can you tell me in what month and year your husband was born?

__________ , 19 __________
(Month) (Year)

INTERVIEWER: Probe and correct as necessary

M ☐☐ 43 Y ☐☐ 45

704. How many wives does your husband currently have? ______________ (NUMBER)

☐ 47

705. Did your (present/last) husband attend school?

YES $\boxed{1}$

NO $\boxed{2}$ (SKIP TO 709)

☐ 48

706. What was the highest certificate he obtained?

No certificate $\boxed{1}$ Primary $\boxed{2}$ Preparatory $\boxed{3}$

Secondary $\boxed{4}$ Higher Institute or University $\boxed{5}$

Other ______________
(SPECIFY)

☐ 49

707. What was the highest grade he completed? ___________

☐☐ 50

708. *INTERVIEWER:* Circle appropriate box

Less than 6 years $\boxed{1}$ (TO 709)

6 years or more $\boxed{2}$ (SKIP TO 710)

☐ 52

709. Can he read and write? Can he read, say, a newspaper or magazine, can he read and write, say, a message?

Read and write [1]   Read only [2]   Neither read nor write [3]

☐ 53

710. In what kind of area did your (present/last) husband live mostly when he was growing up, say to age 12? Was it in a Badiah, in a village, in a town or in a city?

Governorate's capital [1]   City [2]   Village [3]   Hamlet [4]

☐ 54

711. Now I have some questions about your (present/last) husband's work experience. What (is/was) his occupation, that is, what kind of work (does/did) he do? (If unemployed or retired, ask latest occupation).

____

____

☐☐☐☐ 55

(If never worked end interview)

712. (Is/was) he employed by some member of his family or by someone else, or (is/was) he self-employed?

Family member [1] ↓   Someone else [2] ↓   Self-employed [3] (SKIP TO 714)

☐ 59

713. (Does/did) he get paid mostly in cash or mostly in kind?

Cash [1] (End interview)   Kind [2] (End interview)   Unpaid [3] (End interview)

☐ 60

714. (Does/did) he have any regular paid employees in his business?

YES [1] ↓   NO [2] (End interview)

☐ 61

715. How many regular paid employees (does/did) he have?

________________ (NUMBER)

☐☐ 62

END INTERVIEW.

INTERVIEWER'S OBSERVATIONS
(TO BE FILLED IN AFTER COMPLETING INTERVIEW)

☐ 64

DEGREE OF COOPERATION:
BAD 1
AVERAGE 2
GOOD 3
VERY GOOD 4

INTERVIEWER'S COMMENTS

Person Interviewed: ______________________________

____

Specific Questions: ______________________________

____

____

Other Aspects: __________________________________

____

____

Name of Interviewer: ______________ Date ____________

____

SUPERVISOR'S OBSERVATIONS: ______________________

____

____

____

EDITOR'S OBSERVATIONS: _________________________

____

____

____

____

APPENDIX III

SAMPLE DESIGN

III.1 INTRODUCTION

The Yemen Arab Republic Fertility Survey (YARFS) was the first survey of its kind in the country. All areas covered by the 1975 census were included in the survey. On the basis of 1975 population size estimates, this represents 94.4 per cent coverage of the total population.

The YARFS sample was a stratified cluster sample and all households in a selected cluster were included in the household sample. the household schedule sample (HS) was split into two parts, each of which is a probability sample in its own right. The first subsample (HS1) is that part of the household sample for which the individual questionnaire was not used; the second subsample (HS2) is that part of the household sample for which the individual questionnaire was used. Both subsamples belong to the same clusters. One in four of the households was selected for the HS2 subsample, ie for the detailed individual interview. Within households selected for the individual interview, all eligible women were interviewed. Eligibility conditions for the individual interview were: ever-married women aged 50 or under who had slept in the household the night before the visit for the household interview, ie a *de facto* basis was used.

III.2 SAMPLE SELECTION

For the purpose of sample selection, the Yemen Arab Republic was divided into rural and urban areas and a cluster sample selected independently in each type of area. The rural stratum was stratified explicitly by Governorate. For the rural stratum, the first stage of the sample consisted of the selection of primary sampling units (PSUs) with probability proportional to size (PPS) sampling. The PSUs for the rural sample were Ozlah, which are groups of villages whose 'major inhabitants belong to one tribe headed by a sheikh'. Each selected Ozlah (PSU) was segmented into a predetermined number of approximately equal sized 'clusters'. Each cluster was formed from a number of villages and/or groups of houses 'subordinate administratively to a village'. The next sampling stage consisted of the selection of a cluster from each selected PSU, using probabilities inversely proportional to the number of clusters produced by the segmentation, with the intention of producing a self-weighting sample. However, due to coverage problems and variable non-response by cluster, the introduction of sample weights for the rural sample was necessary. The urban stratum consisted of six Governorate centres (out of a total of ten). For the urban stratum, the first stage of the sample consisted of the selection of primary sampling units with probability proportional to size sampling. The PSUs for the urban sample were blocks. Maps were available which divided the towns into blocks and census documents gave for each block the number of households recorded in the 1975 census. Each selected block (PSU) was segmented into a predetermined number of approximately equal sized clusters. The next sampling stage consisted of the selection of a cluster from each selected PSU, using probabilities inversely proportional to the number of clusters produced by the segmentation, with the intention of producing a self-weighting sample. However, due to variable non-response by cluster, the introduction of sample weights for the urban sample was necessary.

The sampling scheme had to be adjusted to meet the requirement of two separate household samples, ie HS1 and HS2. In the majority of cases, a rural cluster consisted of a fairly large number of small localities. In this situation, localities were grouped into four sub-clusters of approximately equal size. However, a substantial minority of rural sample clusters consisted of only one, or only a small number of, localities. In this situation, the rural cluster was mapped and divided into four sub-clusters of approximately equal size on the basis of quick counts. Similarly, the urban clusters were listed and divided into four sub-clusters of approximately equal size. For both the rural and urban areas, one of the four sub-clusters was selected at random for HS2 and the other three sub-clusters comprised HS1.

III.3 SAMPLE SIZE

Taking into account the objectives of the study, the available manpower and field conditions, the target for achieved sample size was 15 000 completed household schedules and 3750 completed individual questionnaires.

III.4 THE SAMPLING FRAME

Administratively, the Yemen Arab Republic is divided into 10 Mohafaza (provinces) or Governorates which are divided into 40 Quada (divisions), 159 Nahyah (districts), and approximately 1750 Ozlah (sub-districts). The most suitable PSUs are the Ozlah. An Ozlah is defined as a group of villages whose 'major inhabitants belong to one tribe headed by a Sheikh'. A group of houses 'subordinate administratively to a village' is called a Mohalah (neighbourhood). On the average, an Ozlah consists of about 560 households forming 15 villages and 25 Mohalah. Villages are small (20 households on the average) and vary greatly in size. Mohalah are usually very small clusters of households (1 to 10 households), but sometimes can be as big as the village they 'belong' to. The variation in size of Mohalahs is greater than the variation in size of villages.

From the 1975 census, lists of all villages and Mohalah, along with the numbers of dwellings, households, males, females and the total population size, are available. No distinction is made between urban and rural localities. The only practical way to separate the urban from the rural stratum is to delete from the lists the six localities known to be Governorate centres which cover most of the urban sector, namely, Sana'a, Al-Hodaidah, Domar, Al-Baidah, Taiz and Ibb. These urban areas were deleted from these lists before the rural sample selection. These lists are ordered as follows:

(1) For each Mohafaza, Quada are listed alphabetically.
(2) For each Quada, Nahyah are listed alphabetically.
(3) For each Nahyah, Ozlah are listed alphabetically.
(4) For each Ozlah, localities and Mohalah are listed alphabetically.

Rural sample

First stage

Ozlah were selected systematically with probability proportional to measure of size sampling. For the purpose of sample selection, the measure of size of each Ozlah was defined as the 1975 census number of households in the Ozlah divided by 200 and rounded. Seventy-seven Ozlah were selected with expected sample take of around 210 households per sample Ozlah. The second stage sampling fraction is one divided by the measure of size so as to yield an integral sampling interval. The sampling interval applied to the accumulated measure of size list is 1 in 56. (Ozlah smaller than 100 households were grouped with the first Ozlah with 100 or more households.)

Second stage

The population is extremely scattered and generally there is a large number of localities in each Ozlah. Since the available lists had the localities arranged in alphabetical order the locality lists had to be rearranged into geographical order. Mohalah for any village were grouped with the village and not shown separately in the new list. The village size then includes its Mohalah. The geographically ordered list of localities was divided into more or less equal measure or size parts. This was generally no problem since most localities are extremely small. The number of households in any part so created was approximately 200.

One part was selected at random. All localities in the part selected and all households in the locality were eligible for the expanded household schedule interview. Note that the clusters of approximately 200 households do not represent a very high degree of clustering since the geographical area covered by each cluster is usually quite large and the localities are often no bigger than small segments of dwellings. Villages (or groups of villages and Mohalah) were selected within sample Ozlah so that the overall sampling fraction is nearly constant (1/56).

Urban sample

First stage

Blocks were selected systematically with probability proportional to measure of size sampling. Accurate maps were available which divided the towns into blocks and census documents gave for each block the number of households recorded in the 1975 census. For the purpose of sample selection, the measure of size of each block was defined as the 1975 census number of households. Eleven blocks were selected with expected sample take of around 210 households per sample block.

Second stage

Each selected block was segmented into a predetermined number of approximately equal sized clusters, each containing approximately 100 households. The next sampling stage consisted of selecting from each selected block the necessary number of clusters so as to obtain the desired sampling fraction.

APPENDIX IV

SAMPLING ERRORS FOR SELECTED ESTIMATES

Section IV.1 introduces certain basic ideas about sampling errors; readers already familiar with them may skip to section IV.2. Section IV.3 presents procedures for approximating sampling errors when sampling errors are not given and the computational formulae used in the sampling error calculations.

IV.1 INTRODUCTION

Interpretation of sampling errors

The particular sample obtained in the survey is one of a large number of all possible probability samples which could have been selected using the given sample design. The estimates derived from different samples would differ from each other. However, apart from non-sampling errors and bias, all estimates considered in this study are approximately unbiased, meaning that the true population value of interest is approximated by an average of the estimates from the various possible samples. This average from different samples is called the 'expected value'. The sampling error or standard error of an estimate is a measure of the (absolute) difference between the observed sample estimate and the expected value of the estimate. Apart from non-sampling errors, the standard error in the present context measures the size of the expected (absolute) deviation of the sample estimate from the true population value of interest.

A common and convenient criterion asserts that the true value lies within a range of twice the standard error on either side of the sample value. The range (sample value) ± 2 (standard error) is called the '95 per cent confidence interval', and one can say that the odds are only one in twenty that the true value lies outside this range. If, for example, the observed sample mean for a variable is 3.5 and if the standard error (to an appropriate sample base) has been estimated as 0.2, then the '95 per cent confidence interval' is $3.5 \pm 2(0.2)$, ie 3.1 to 3.9, and for practical purposes, ie with 95 per cent confidence, one asserts that (apart from non-sampling errors) the true population value of interest lies in the range 3.1 to 3.9.

Computation of sampling errors

One of the advantages of a probability sample such as the present one is that the sampling errors can be estimated from the results of the one sample which is actually available.

The computational procedure must take into account the actual structure of the sample and in particular the fact that the sample is a stratified clustered sample. The results given in this appendix have been computed by using the WFS package program CLUSTERS. An outline of the procedure for estimating sampling errors is given in section IV.3 below.

Sampling errors for subclasses and subclass differences

To be useful in the interpretation of the substantive results presented in the form of detailed cross-tabulations, sampling errors for each of the important variables have to be computed over various subclasses of the sample. By subclass is meant a subset of the sample cases defined in terms of characteristics such as individual age or marriage duration groups, or groups by socio-economic background, etc. Due to the smaller sample bases involved, sampling errors for individual subclasses obviously tend to be larger than the error in an estimate based on the entire sample.

The computational formulae given in section IV.3 below apply also for estimates computed over a particular subclass of the sample. Individuals or primary sampling units (PSUs) not belonging to the subclass are simply ignored in the computation. Interpretation of the standard error in terms of the '95 per cent confidence interval' given above applies equally to the whole sample as well as to any particular sample subclass.

Sampling errors for differences between subclass means can be particularly relevant in the interpretation of fertility and other differentials observed from the survey results. These determine the likelihood that an observed difference is real and not caused merely by sampling variation. Even for a relatively 'efficient' sample such as the present one, many observed differentials may not be statistically significant once the sample has been subdivided by the introduction of necessary control variables.

For differences between subclass means, we may regard an observed difference to be 'statistically significant' if the magnitude of the difference is not smaller than twice its standard error. 'Statistically significant', of course, does not necessarily mean substantively significant or meaningful; it implies rather that the observed difference is real in the sense that it is unlikely to be caused merely by sampling variation. If the magnitude of the observed difference is smaller than twice its standard error, we may take it to be statistically (and hence substantively) 'not significant', implying that it cannot be asserted that the observed difference is not caused merely by sampling variation.

If, for example, for two sample subclasses being compared, the observed subclass means for a variable are 3.0 and 3.5 respectively, and if for the difference of the two means (3.5 − 3.0 = 0.5), the standard error has been computed to be 0.1, then the '95 per cent confidence interval' for the difference is 0.5 ± 2(0.1), that is, 0.3 to 0.7. In this example, one may assert that the true difference lies in the range 0.3 to 0.7. The observed difference is 'statistically significant' (the observed magnitude of the difference, 0.5, is greater than twice the standard error).[1] Now, if in the above example the standard error for the difference was 0.4, the '95 per cent confidence interval' for the difference would be 0.5 ± 2(0.4), that is, −0.3 to 1.3. In this second case, it cannot be asserted that the observed difference is real, and not caused merely by sampling variation. Note that in the second example, the observed difference (0.5) is smaller than twice its standard error (0.8), which is the same as the observation that the '95 per cent confidence interval' includes the value zero.

Effect of clustering of the sample

In the present sample, the individuals interviewed are clustered into a number of sample areas. Compared to a sample of individuals selected entirely at random, clustering tends to reduce efficiency of the sample (ie increase associated sampling errors, for a given sample size). This is because individuals from within a cluster tend to be more uniform compared to individuals in the sample (or the population) as a whole. In a sense, less new information is obtained by interviewing a number of individuals from the same sample area as compared to that obtained from an entirely random sample of the same size.

A measure comparing the standard error of an estimate from the actual clustered sample with what the error would have been had the sample been selected entirely at random is called the 'design factor' or DEFT.

$$\text{DEFT} = \text{SE}/\text{SR} \qquad (1)$$

where SE is the standard error for the clustered sample (computed from equation (2) given in section IV.3), and SR is the standard error computed as if the sample had been selected entirely at random (equation (3) in section IV.3).

For a particular sample design, cluster size, and variable, DEFT is a measure of the loss of sampling precision due to clustering of the sample. The two main factors on which its magnitude depends are the average cluster size and the relative homogeneity (corresponding to a particular variable) within these clusters.

For samples (or subclasses thereof) with very small clusters, or for variables with little within-cluster homogeneity, DEFT can be expected to approach unity, which implies that little sampling precision has been lost through clustering.

The last point mentioned above is of particular relevance in the present context where sampling errors for sample subclasses or subclass differences, rather than for the sample as a whole, are the main concern. The effective cluster sizes for sample subclasses, and especially for their differences, can be much smaller than the cluster sizes for the total sample, making DEFT smaller (nearer unity), that is, making the loss in sampling efficiency due to clustering generally less significant than would be the case if estimates based on the total sample were the main objective of the survey.

IV.2 DISCUSSION OF THE MAIN RESULTS

The WFS package program CLUSTERS has been used to compute sampling errors for variables of substantive interest. For each variable, sampling errors were computed over the whole sample, as well as for various subclasses and differences for pairs of subclasses.

Definition of the variables

Sampling errors have been computed for the following variables based on the individual questionnaire.

1. *Age at first marriage* — Mean age at first marriage for ever-married women aged 50 or under.[2]
2. *Age at first marriage (<20)* — Mean age at first marriage for women aged 20–50 who married before age 20.[2]
3. *First marriage dissolved* — Per cent of ever-married women whose first marriage was dissolved.
4. *Time spent in union* — Per cent of time spent in union since first marriage.
5. *Currently married* — Per cent of women who are currently married.

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[1] This assertion can be made with 95 per cent confidence. Incidentally, it follows, with even greater confidence, that in the example the difference is not zero — in other words, that the two subclasses differ for the variable concerned. Sampling errors for differences are often used in this way to test whether two subclasses differ.

[2] This mean has been computed from individual ages at first marriage in completed years. For mean in 'exact' years, add 0.5 to all values shown.

6. *Births in first five years* — Mean number of births before or during the first five years of first marriage, for women married at least five years ago.
7. *Births in past five years* — Mean number of births during the past five years, for women who have been continuously married in the past five years.
8. *Currently married and pregnant* — Per cent of currently married women who are currently pregnant.
9. *Children ever born* — Mean number of children ever born to women.
10. *Living children born* — Mean number of living children born to women.
11. *Additional children wanted* — Mean additional number of children wanted by currently married, fecund women.
12. *Breastfed in last closed interval* — Per cent of women who breastfeed in the last closed pregnancy interval.
13. *Months breastfed in closed interval* — Mean number of months breastfed in the last closed pregnancy interval (until child died cases excluded from base).
14. *Wants no more children* — Per cent of currently married, fecund women who want no more children.
15. *Number of children desired* — Mean total of children desired by currently married women.
16. *Knows an effective method* — Per cent of women who have heard of at least one effective method of contraception.
17. *Ever used any method* — Per cent of women who have ever used any method of contraception.
18. *Ever used effective method* — Per cent of women who have ever used any effective method of contraception.
19. *Currently using any method (exposed)* — Per cent of currently married, fecund or contraceptively sterilized women who are currently using any method of contraception.
20. *Currently using effective method (exposed)* — Per cent of currently married fecund or contraceptively sterilized women who are currently using any effective method of contraception.
21. *Wants no more children and using effective method (exposed)* — Of currently married, fecund or contraceptively sterilized women who want no more children, the per cent who are currently using any effective method of contraception.
22. *Never used contraception* — Per cent of currently married women who have never used contraception.
23. *Used contraception in past* — Per cent of currently married women who have used contraception in the past.
24. *Currently using contraception* — Per cent of currently married women who are currently using contraception.

Sampling errors have been computed for the following variables on the household questionnaire.

1. *Children ever born (ever-married)* — Mean number of children ever born to ever-married women.
2. *Children dead (ever-married)* — Per cent of children who have died for ever-married women.
3. *Age-specific fertility rate* — Proportion of women giving birth in the last 12 months classified by age at interview.
4. *Ever-married* — Per cent ever-married.
5. *Currently married* — Per cent currently married.
6. *Women with father alive* — Per cent of women with father alive.
7. *Eldest daughters with father alive* — Per cent of eldest daughters with father alive.
8. *Women with mother alive* — Per cent of women with mother alive.
9. *Eldest daughters with mother alive* — Per cent of eldest daughters with mother alive.
10. *Women with husband alive* — Per cent of ever-married women with first husband alive.

Estimates over the total sample

Table IV.1 shows sampling errors computed over the total sample for the variables based on the individual questionnaire. For each variable the following quantities are shown.

r = the ratio, mean, proportion or percentage estimated for the whole sample. Note that estimates given as proportions may be changed to percentages by shifting the decimal point two places to the right. In such cases, the standard errors given for the proportions must be multiplied by 100 to correspond to percentages. Similarly, estimates given as percentages may be changed to proportions by shifting the decimal point two places to the left. In such cases, the standard errors given for the percentages must be divided by 100 to correspond to proportions.

SE= standard error for the actual clustered sample (defined by equation (2) given below).

95% CON. INT. = the '95 per cent confidence interval', defined earlier as $r \pm 2SE$.

n= the appropriate unweighted sample base. The sample for Yemen consists of 2605 completed individual interviews. However, only a minority of the variables are defined for the entire sample of 2605 women. Many of the variables are relevant only for subpopulations satisfying certain criteria; for example, the variable 'births in past five years' has been defined only for the 1728 women who have been continuously married for the past five years.

s= standard deviation, defined as $s = SR \sqrt{n}$, where SR is the standard error computed on the assumption that the sample of individuals was selected entirely at random. Though s is estimated from the sample results, it is a characteristic of the study population, not of a particular sample design or sample size.

DEFT =the Design Factor, DEFT = SE/SR (as equation (1) above). It measures the sampling efficiency lost due to clustering of the sample. DEFT values near unity imply that little has been lost by clustering of respondents into sample areas.

b= the average 'cluster size', ie the (unweighted) average number of interviews per PSU. For the sample as a whole, b = 2605/74 = 35.2. The value is smaller if a variable is not applicable to all individuals in the sample. (Note that the average cluster size can be used to calculate rates of homogeneity — see equation (6) below.)

For the total sample, sampling errors for variables not concerning contraception taken from the individual questionnaire are relatively small — under 7 per cent of the mean.[3] However, the DEFT values encountered are relatively large. The overall average DEFT is around 1.36, implying that the variance (the square of the standard error) is 1.85, less than twice as large as it would have been for a sample of the same size selected entirely at random. DEFT for the variables concerning contraception tend to be somewhat larger than the average for the other groups of variables.

IV.3 SOME TECHNICAL CONSIDERATIONS

Computational formulae

In outline, the procedure used for estimating sampling errors for a stratified clustered sample is as follows.

Consider a ratio statistic $r = y/x$, where y and x are two variables the ratio of which is being estimated. (The procedure also applies to estimates like means, proportions or percentages which can be regarded as special cases of ratios.) Let the suffix j represent an individual, suffix i the PSU to which the individual belongs, and suffix h the stratum in which the PSU lies. Hence,

y_{hij} = value of variable y for the individual j, in PSU i and stratum h

w_{hij} =sample weight for the individual

$y_{hi} = \sum_{j} w_{hij} \cdot y_{hij}$, the weighted sum of y's for all individuals in the PSU

$y_h = \sum_{i} y_{hi}$, the sum of y_{hi} for all PSUs in the stratum

$y = \sum_{h} y_h$, the sum of y_h for all strata in the sample.

Similar expressions can be defined for variable x.

The variance (= SE^2, square of the standard error) of the ratio estimate $r = y/x$ is estimated as

$$SE^2 = var(r) = \frac{1-f}{x^2} \sum_{h=1}^{H} \left[\frac{m_h}{m_h - 1} \left(\sum_{i=1}^{m_h} z_{hi}^2 - \frac{z_h^2}{m_h} \right) \right] \qquad (2)$$

where

f= overall sampling fraction, here negligible

m_h = number of PSUs in the stratum h

H= number of strata in the sample

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[3] Of the twenty-four variables considered, the standard error over the sample is under 1 per cent of the mean for six, between 1 and 3 per cent for six, between 3 and 7 per cent for four and above 7 per cent for eight.

r = ratio of the two sample aggregates y and x

$z_{hi} = y_{hi} - r \cdot x_{hi}$

$z_h = \sum_i z_{hi} = y_h - r \cdot x_h$

Equation (2) applies also for estimates computed over a particular subclass of the sample. Individuals or PSUs or strata not belonging to the subclass are simply ignored in the computation. The summations $\sum$ are taken over only the units belonging to the subclass being considered.

SR, the standard error of a ratio estimate r corresponding to an equivalent sample selected entirely at random, is required to estimate DEFT = SE/SR, and is given by

$$SR^2 = \frac{1-f}{n-1} (\sum w_{hij} \, z_{hij}^2 / \sum w_{hij}) \qquad (3)$$

where $z_{hij} = y_{hij} - r \cdot x_{hij}$

and r is the ratio estimate,

$r = y/x = \sum w_{hij} \, y_{hij} / \sum w_{hij} \, x_{hij}$

n is the total sample size, and $\sum$ is the sum for all individuals over the sample. As before, means, proportions, or percentages are merely special cases of ratios.

The variance of the difference of two subclass means for a stratified clustered sample is given by the following formulae. Denoting the second subclass in the pair by a prime ('),

$$SE^2_{r-r'} = \mathrm{var}(r - r') = \mathrm{var}(r) + \mathrm{var}(r') - 2\mathrm{cov}(r,r') \qquad (4)$$

where var(r) and var(r') are given by equation (2) and the covariance is given by

$$\mathrm{cov}(r,r') = \frac{1-f}{xx'} \sum_{h=1}^{H} \left[\frac{m_h}{m_h - 1} \left(\sum_{i=1}^{m_h} z_{hi} \cdot z'_{hi} - \frac{z_h z'_h}{m_h} \right) \right] \qquad (5)$$

Usually cov(r,r') is positive due to positive correlation between individuals in the two subclasses who belong to the same cluster in the sample.

Rates of homogeneity (ROH), which indicate to what extent responses for a particular variable are more homogeneous within PSUs than in the sample as a whole, may be calculated from the average PSU size and DEFT. ROH is calculated as:

$$ROH = \frac{DEFT^2 - 1}{b - 1} \qquad (6)$$

where b is the mean PSU size.

Strata needed for the sampling errors computations

Before selection of a sample, the population is usually divided into a number of parts called strata which are expected to be homogeneous in some way, and PSUs are then selected from each stratum independently. The aim of stratification is to reduce sampling errors, or sometimes to permit a change in sample design or sampling rate between strata. It should be noted that the strata used for computation of sampling errors are not necessarily identical to the original explicit strata used in sample selection. The difference between the two may arise for two main reasons.

1. Whenever PSUs are selected by systematic sampling from an ordered list, ie selection at a fixed interval from a list starting from a randomly determined point, neighbouring selected PSUs should be grouped, two at a time if possible, three if not, within explicit strata to form new smaller 'implicit' strata which are used for sampling error computations. In the case of an explicit stratum in which an odd number of PSUs (greater than 3) have been selected by systematic sampling, there will be a choice to be made as to where in the ordered list to make the grouping of three. A simple rule for this is as follows. Look for the smallest sized PSU. If this is at the beginning (end) of the list in that explicit stratum, make the group of three the first (last) three members of the list. Otherwise, make the group of three around the smallest PSU and the smaller of its two neighbours, bearing in mind that the first member of any group (whether of two or of three) must be odd-numbered as counted from the beginning of the list in that explicit stratum.

2. Sampling error computations require that there be at least two PSUs per stratum. Any strata from each of which only one PSU has been selected must be 'collapsed' together to form pairs (or other groups) of PSUs. Such grouping is done on the basis of characteristics of the whole strata population (pairing most similar strata), and not on the characteristics of selected PSUs. Collapsing of strata in this way tends to lead to slight overestimation of the sampling error.

   For CLUSTERS, the strata to be defined are obviously those which are to be used for sampling error computations and these strata are identified on the WFS standard recode tapes. The original explicit strata, if they differ from the above, are of no interest.

Approximating standard errors when standard errors are not given

Approximating standard errors for sample subclasses

Under the assumption that only the size of a subclass, not its nature, affects the sampling error, the standard error for a subclass of any size is well approximated from the results computed over the total sample as follows. We use the suffix t to refer to the total sample (of size n_t) and the suffix s to refer to any subclass (of size n_s). The approximate relationship (empirically valid in an approximate sense)

$$SE_s = f_s \cdot SE_t \qquad (7)$$

where f_s is a factor determined semi-empirically as

$$f_s = \left[\left(\frac{n_t}{n_s}\right) + \left(\frac{n_t}{n_s}\right)^{2/3} \cdot (DEFT_t^2 - 1)\right]^{1/2} / DEFT_t \qquad (8)$$

can be used to approximate the standard error for a sample subclass. Note that f_s depends only on the results for the total sample and the proportion of the sample belonging to the subclass. Note that the above equations are applied separately to each of the substantive variables of interest. For certain variables, eg the mean number of children ever born, these equations were found inadequate for predicting SEs for certain subclasses and the values determined from the above equations required some adjustment to make them better correspond to the results actually computed. Those variables strongly related to the life cycle, ie to age or marriage duration, have a standard error which is obviously related to the mean or proportion being estimated, which in turn varies considerably from one subclass to another. Nevertheless we find that in these particular cases, the exceptional subclasses (with, say, an exceptionally low value of the mean or proportion for the variable) can be dealt with by multiplying SEs by a simple adjustment factor such as 0.5.

Approximating standard errors for subclass differences

The standard error for subclass differences can be approximated by assuming that the standard error for the difference is mid-way between two limits: the higher limit assuming that there is no covariance term in equation (4) (actually the covariance is generally positive), and the lower limit assuming that there is no effect at all of clustering of the sample. The procedure is based on the assumption that equations (7) and (8) are valid also for the standard error of the difference of two subclass means if n_s in (8) is replaced by n_d, half the harmonic mean of the two subclass sizes, ie

$$n_d = \frac{n_1 \cdot n_2}{n_1 + n_2} \qquad (9)$$

Note that the upper and lower limits are usually not widely apart in practice, since n_d tends to be much smaller than n_s.

Variation of DEFT with subclass size

Under the assumption that only the size of a subclass, not its nature, affects the sampling error, equations (7) and (8) are equivalent to:

$$\frac{DEFT_s^2 - 1}{DEFT_t^2 - 1} = (n_s/n_t)^{1/3} \qquad (10)$$

Equation (10) implies that for small subclasses, ie subclasses with size n_s much smaller than n_t, DEFT for the subclass tends to one. In other words, loss in sampling precision due to clustering of the sample tends to become smaller for smaller subclasses. In the present context, this means that where survey estimates for relatively small subclasses such as five-year age of marriage cohorts are of major interest, the effect of clustering of the sample tends to be relatively less important. For example, for a subclass with $n_s/n_t = 0.1$ and $DEFT_t = 2.0$, the corresponding $DEFT_s$ is around 1.5.

LIST OF TABLES

Table IV.1 - Sampling errors over the total sample

Variable name	Mean or per cent	SE	Mean or per cent -2SE	Mean or per cent +2SE	n	s	DEFT	b
Age at first marriage	15.59	.10	15.39	15.79	2605	3.92	1.32	35.2
Age at first marriage (<20)	14.47	.09	14.30	14.65	1795	2.65	1.39	24.3
First marriage dissolved	19.70	1.37	16.97	22.44	2605	39.78	1.75	35.2
Time spent in union	93.80	.48	92.84	94.77	2605	19.16	1.29	35.2
Currently married	94.25	.67	92.92	95.58	2605	23.28	1.46	35.2
Births in first 5 years	1.26	.04	1.19	1.34	1931	1.16	1.38	26.1
Births in past 5 years	1.65	.03	1.60	1.70	1728	1.08	1.02	23.4
Currently married and pregnant	20.41	1.04	18.33	22.49	2450	40.31	1.28	33.1
Children ever born	3.74	.09	3.56	3.92	2605	3.16	1.45	35.2
Living children born	2.68	.06	2.55	2.81	2605	2.27	1.46	35.2
Additional children wanted	2.77	.09	2.59	2.96	1420	2.93	1.20	19.2
Breastfed in last closed interval	91.72	.73	90.25	93.18	1772	27.57	1.12	23.9
Months breastfed closed interval	12.51	.32	11.87	13.15	1611	9.18	1.40	21.8
Wants no more children	19.01	1.04	16.93	21.09	2144	39.25	1.23	29.0
Number of children desired	5.40	.11	5.17	5.62	1385	2.91	1.44	18.7
Knows an effective method	24.62	2.59	19.44	29.81	2605	43.09	3.07	35.2
Ever used any method	3.15	.42	2.30	3.99	2605	17.46	1.23	35.2
Ever used effective method	2.85	.40	2.04	3.66	2605	16.64	1.24	35.2
Currently using any method (exp)	1.70	.40	.90	2.50	1635	12.93	1.25	22.1
Currently using eff. method (exp)	1.63	.39	.85	2.42	1635	12.68	1.26	22.1
Wants no more and using eff.(exp)	5.62	1.13	3.36	7.89	301	23.07	.85	4.2
Never used contraception	96.85	.42	96.01	97.70	2605	17.46	1.23	35.2
Used contraception in past	2.07	.29	1.49	2.66	2605	14.25	1.05	35.2
Currently using contraception	1.07	.25	.57	1.57	2605	10.30	1.25	35.2

Table IV.2a - Sampling errors by current age

	<20				20-24				25-29				30-34			
Variable name	Mean or per cent	SE	n	DEFT	Mean or per cent	SE	n	DEFT	Mean or per cent	SE	n	DEFT	Mean or per cent	SE	n	DEFT
Age at first marriage	14.14	.13	439	1.39	15.36	.17	516	1.25	15.76	.15	520	.91	15.66	.22	391	1.02
Age at first marriage (<20)	.00	.00	0	.00	14.83	.15	467	1.29	14.49	.14	428	1.02	14.14	.15	327	1.04
First marriage dissolved	6.71	1.10	439	.92	13.21	1.95	516	1.31	20.80	2.26	520	1.27	21.03	2.49	391	1.21
Time spent in union	95.82	.96	439	1.00	95.30	.80	516	1.13	94.21	.66	520	.92	94.65	.90	391	1.18
Currently married	96.55	.79	439	.91	94.43	1.28	516	1.27	97.07	.83	520	1.13	94.97	1.21	391	1.09
Births in first 5 years	1.02	.11	60	.89	1.20	.06	307	1.08	1.35	.07	449	1.19	1.36	.06	382	1.03
Births in past 5 years	1.51	.12	52	.93	1.85	.07	274	1.18	1.97	.05	404	.95	1.84	.08	352	1.34
Currently married and pregnant	16.09	1.76	421	.98	25.25	1.99	489	1.01	26.25	2.11	503	1.08	20.93	2.16	372	1.02
Children ever born	.60	.05	439	1.28	1.81	.07	516	.99	3.36	.08	520	.95	5.05	.18	391	1.34
Living children born	.47	.05	439	1.21	1.43	.06	516	1.16	2.56	.08	520	1.09	3.62	.15	391	1.50
Additional children wanted	3.55	.17	268	1.03	3.52	.17	297	1.04	2.73	.15	333	1.01	2.26	.22	230	1.11
Breastfed in last closed interval	79.33	4.85	85	1.10	89.66	1.96	282	1.08	92.69	1.45	413	1.13	92.83	1.39	342	1.00
Months breastfed closed interval	9.08	1.19	79	1.19	10.12	.57	258	1.05	11.86	.53	389	1.22	12.76	.52	299	1.04
Wants no more children	9.02	1.35	411	.96	8.67	1.42	468	1.09	16.88	1.43	486	.84	26.47	2.72	336	1.13
Number of children desired	4.51	.15	244	1.04	5.07	.18	272	1.12	5.46	.17	312	1.14	5.86	.31	202	1.31
Knows an effective method	17.50	2.95	439	1.62	26.02	3.46	516	1.79	24.86	2.68	520	1.41	24.38	3.01	391	1.39
Ever used any method	.64	.37	439	.97	3.05	.65	516	.85	4.38	1.05	520	1.17	3.06	.81	391	.93
Ever used effective method	.64	.37	439	.97	3.00	.65	516	.87	3.52	.90	520	1.11	2.57	.73	391	.91
Currently using any method (exp)	.00	.00	344	.00	1.09	.49	344	.87	2.34	.89	351	1.10	1.75	.77	255	.94
Currently using eff. method (exp)	.00	.00	344	.00	1.00	.50	344	.92	2.13	.87	351	1.12	1.75	.77	255	.94
Wants no more and using eff.(exp)	.00	.00	30	.00	3.20	3.11	32	.98	5.05	2.80	51	.90	4.20	2.28	66	.92
Never used contraception	99.36	.37	439	.97	96.95	.65	516	.85	95.62	1.05	520	1.17	96.94	.81	391	.93
Used contraception in past	.64	.37	439	.97	2.33	.66	516	1.00	2.78	.74	520	1.02	1.91	.63	391	.90
Currently using contraception	.00	.00	439	.00	.73	.33	516	.87	1.60	.62	520	1.12	1.16	.51	391	.93

Table IV.2a - Sampling errors by current age (cont.)

	35-39				40-44				45-50			
Variable name	Mean or per cent	SE	n	DEFT	Mean or per cent	SE	n	DEFT	Mean or per cent	SE	n	DEFT
Age at first marriage	16.40	.25	306	.93	15.80	.28	207	.93	17.13	.51	226	1.42
Age at first marriage (<20)	14.61	.16	248	1.02	13.88	.20	157	1.01	14.47	.24	168	1.10
First marriage dissolved	29.17	3.06	306	1.17	34.16	3.32	207	1.00	29.06	4.18	226	1.38
Time spent in union	94.15	.80	306	.99	92.98	.95	207	1.01	92.00	1.38	226	1.13
Currently married	89.54	2.20	306	1.25	91.34	2.28	207	1.17	90.61	2.05	226	1.05
Births in first 5 years	1.39	.07	300	.94	1.11	.09	207	1.11	1.05	.10	226	1.19
Births in past 5 years	1.61	.06	261	1.07	1.12	.07	183	.92	.94	.06	202	.80
Currently married and pregnant	22.45	3.06	272	1.21	10.85	2.47	189	1.09	8.54	2.18	204	1.11
Children ever born	6.09	.17	306	1.14	6.59	.23	207	1.05	7.10	.26	226	1.17
Living children born	4.32	.16	306	1.31	4.42	.18	207	1.14	4.62	.18	226	1.10
Additional children wanted	2.11	.24	145	1.00	1.63	.33	90	1.02	1.03	.36	57	.95
Breastfed in last closed interval	90.64	2.10	273	1.19	94.25	2.03	177	1.15	95.29	1.46	200	.97
Months breastfed closed interval	13.53	.55	243	.93	14.33	.77	163	.92	15.41	.76	180	1.10
Wants no more children	27.64	3.47	231	1.18	42.12	3.88	126	.88	50.46	6.42	86	1.18
Number of children desired	6.09	.23	138	.96	5.77	.35	101	1.14	5.88	.40	116	1.12
Knows an effective method	26.95	3.04	306	1.20	26.13	3.02	207	.99	30.69	6.73	226	2.19
Ever used any method	3.88	1.17	306	1.06	3.86	1.31	207	.98	3.86	1.54	226	1.20
Ever used effective method	3.57	1.12	306	1.05	3.86	1.31	207	.98	3.86	1.54	226	1.20
Currently using any method (exp)	3.95	1.85	168	1.23	2.52	1.50	106	.98	3.05	2.14	67	1.01
Currently using eff. method (exp)	3.95	1.85	168	1.23	2.52	1.50	106	.98	3.05	2.14	67	1.01
Wants no more and using eff.(exp)	12.80	6.33	47	1.29	5.90	3.49	44	.97	6.31	4.36	31	.98
Never used contraception	96.12	1.17	306	1.06	96.14	1.31	207	.98	96.14	1.54	226	1.20
Used contraception in past	1.71	.84	306	1.13	2.62	.88	207	.79	2.93	1.22	226	1.09
Currently using contraception	2.17	1.03	306	1.24	1.25	.72	207	.93	.93	.65	226	1.01

	<25				25-34				35-44				45-50			
Variable name	Mean or per cent	SE	n	DEFT	Mean or per cent	SE	n	DEFT	Mean or per cent	SE	n	DEFT	Mean or per cent	SE	n	DEFT
Age at first marriage	14.79	.12	955	1.35	15.72	.13	911	1.00	16.16	.19	513	.94	17.13	.51	226	1.42
Age at first marriage (<20)	14.83	.15	467	1.29	14.34	.10	755	1.00	14.33	.13	405	1.05	14.47	.24	168	1.10
First marriage dissolved	10.20	1.25	955	1.28	20.90	1.82	911	1.35	31.16	2.23	513	1.09	29.06	4.18	226	1.38
Time spent in union	95.45	.61	955	1.06	94.44	.56	911	1.05	93.61	.61	513	.99	92.00	1.38	226	1.13
Currently married	95.41	.82	955	1.21	96.18	.71	911	1.12	90.25	1.63	513	1.24	90.61	2.05	226	1.05
Births in first 5 years	1.17	.05	367	1.04	1.36	.05	831	1.22	1.28	.05	507	1.00	1.05	.10	226	1.19
Births in past 5 years	1.80	.05	326	.93	1.91	.04	756	1.17	1.41	.05	444	.95	.94	.06	202	.80
Currently married and pregnant	20.95	1.55	910	1.15	24.02	1.54	875	1.07	17.77	1.89	461	1.06	8.54	2.18	204	1.11
Children ever born	1.25	.05	955	1.17	4.07	.10	911	1.28	6.29	.15	513	1.18	7.10	.26	226	1.17
Living children born	.99	.04	955	1.13	3.01	.08	911	1.34	4.36	.14	513	1.49	4.62	.18	226	1.10
Additional children wanted	3.54	.15	565	1.24	2.54	.12	563	1.00	1.93	.19	235	1.01	1.03	.36	57	.95
Breastfed in last closed interval	87.16	2.11	367	1.21	92.75	1.01	755	1.07	92.04	1.32	450	1.04	95.29	1.46	200	.97
Months breastfed closed interval	9.87	.58	337	1.20	12.24	.40	688	1.22	13.85	.43	406	.88	15.41	.76	180	1.10
Wants no more children	8.83	1.18	879	1.23	20.75	1.27	822	.90	32.60	2.77	357	1.12	50.46	6.42	86	1.18
Number of children desired	4.80	.14	516	1.29	5.61	.15	514	1.15	5.96	.20	239	1.06	5.88	.40	116	1.12
Knows an effective method	22.07	2.80	955	2.08	24.65	2.55	911	1.78	26.62	2.59	513	1.32	30.69	6.73	226	2.19
Ever used any method	1.93	.36	955	.81	3.82	.78	911	1.23	3.88	.95	513	1.12	3.86	1.54	226	1.20
Ever used effective method	1.90	.36	955	.82	3.11	.70	911	1.22	3.69	.92	513	1.11	3.86	1.54	226	1.20
Currently using any method (exp)	.54	.24	688	.86	2.10	.75	606	1.30	3.42	1.21	274	1.10	3.05	2.14	67	1.01
Currently using eff. method (exp)	.50	.25	688	.92	1.97	.72	606	1.28	3.42	1.21	274	1.10	3.05	2.14	67	1.01
Wants no more and using eff.(exp)	1.63	1.60	62	.99	4.58	2.03	117	1.05	9.45	3.67	91	1.19	6.31	4.36	31	.98
Never used contraception	98.07	.36	955	.81	96.18	.78	911	1.23	96.12	.95	513	1.12	96.14	1.54	226	1.20
Used contraception in past	1.54	.37	955	.92	2.41	.51	911	1.00	2.07	.63	513	1.00	2.93	1.22	226	1.09
Currently using contraception	.39	.17	955	.86	1.41	.52	911	1.32	1.80	.64	513	1.08	.93	.65	226	1.01

Table IV.3a - Sampling errors by years since first marriage

	<5				5-9				10-14				15-19			
Variable name	Mean or per cent	SE	n	DEFT	Mean or per cent	SE	n	DEFT	Mean or per cent	SE	n	DEFT	Mean or per cent	SE	n	DEFT
Age at first marriage	16.69	.15	674	1.05	16.14	.18	525	1.05	15.19	.18	402	.92	14.98	.22	406	1.09
Age at first marriage (<20)	17.14	.11	160	1.14	15.45	.12	393	1.09	14.10	.16	350	1.13	13.77	.14	353	1.01
First marriage dissolved	7.01	1.01	674	1.03	14.05	1.81	525	1.19	22.96	2.19	402	1.04	22.75	2.74	406	1.32
Time spent in union	96.83	.60	674	1.09	95.08	.68	525	.99	94.33	.77	402	1.04	95.31	.79	406	1.21
Currently married	95.43	.95	674	1.18	96.08	.83	525	.98	96.00	1.09	402	1.12	95.22	1.11	406	1.05
Births in first 5 years	.00	.00	0	.00	1.40	.04	525	.97	1.31	.06	402	1.08	1.35	.07	406	1.22
Births in past 5 years	.00	.00	0	.00	1.88	.05	469	.98	1.92	.07	363	1.26	1.79	.05	376	1.00
Currently married and pregnant	18.47	1.52	639	.99	26.24	2.82	506	1.44	24.50	1.78	387	.81	22.34	2.05	386	.97
Children ever born	.68	.05	674	1.26	2.31	.06	525	.92	4.09	.12	402	1.18	5.79	.12	406	.98
Living children born	.55	.04	674	1.34	1.79	.05	525	.89	3.02	.11	402	1.42	4.19	.10	406	1.11
Additional children wanted	3.70	.14	393	1.05	3.12	.19	318	1.25	2.45	.17	242	1.07	2.32	.27	237	1.20
Breastfed in last closed interval	82.04	4.75	144	1.48	90.83	1.32	387	.90	92.58	1.70	349	1.21	93.23	1.35	367	1.03
Months breastfed closed interval	7.88	1.06	133	1.57	11.25	.47	356	1.04	12.06	.67	310	1.35	12.96	.55	334	1.12
Wants no more children	6.60	.99	623	.99	11.65	1.71	484	1.17	20.25	1.88	364	.89	29.21	2.88	347	1.18
Number of children desired	4.60	.13	367	1.03	5.14	.19	285	1.18	5.30	.16	224	.99	6.40	.22	210	.97
Knows an effective method	19.11	2.58	674	1.71	25.38	3.54	525	1.86	25.18	3.82	402	1.76	26.65	3.21	406	1.46
Ever used any method	1.28	.39	674	.89	2.96	.72	525	.97	4.58	1.30	402	1.24	2.59	.65	406	.83
Ever used effective method	1.28	.39	674	.89	2.48	.64	525	.94	4.39	1.23	402	1.20	1.97	.47	406	.67
Currently using any method (exp)	.54	.39	507	1.20	1.08	.50	347	.89	3.33	1.46	268	1.33	1.06	.28	258	.44
Currently using eff. method (exp)	.54	.39	507	1.20	.99	.50	347	.94	3.04	1.37	268	1.31	1.06	.28	258	.44
Wants no more and using eff.(exp)	2.73	2.70	37	1.00	.00	.00	37	.00	11.21	5.02	49	1.10	2.45	1.77	72	.96
Never used contraception	98.72	.39	674	.89	97.04	.72	525	.97	95.42	1.30	402	1.24	97.41	.65	406	.83
Used contraception in past	.88	.40	674	1.13	2.24	.67	525	1.04	2.37	.74	402	.98	1.90	.63	406	.93
Currently using contraception	.41	.29	674	1.20	.72	.33	525	.90	2.22	.97	402	1.32	.68	.18	406	.44

	20-24				25-29				30+			
Variable name	Mean or per cent	SE	n	DEFT	Mean or per cent	SE	n	DEFT	Mean or per cent	SE	n	DEFT
Age at first marriage	15.31	.25	266	1.00	14.49	.30	160	1.18	13.40	.18	172	.80
Age at first marriage (<20)	13.87	.18	224	1.08	13.86	.21	147	1.02	13.27	.18	168	.82
First marriage dissolved	29.37	3.72	266	1.33	38.14	3.99	160	1.04	39.74	3.65	172	.97
Time spent in union	94.01	.96	266	1.11	92.75	1.22	160	1.08	90.21	1.34	172	.96
Currently married	89.56	2.32	266	1.24	89.99	2.24	160	.94	88.85	2.21	172	.92
Births in first 5 years	1.19	.08	266	1.06	1.16	.10	160	1.06	.71	.07	172	.86
Births in past 5 years	1.37	.08	230	1.19	1.12	.08	140	.89	.83	.09	150	1.10
Currently married and pregnant	18.02	3.17	236	1.26	10.32	2.44	143	.95	6.43	1.71	153	.86
Children ever born	6.48	.25	266	1.48	6.92	.24	160	1.02	7.24	.25	172	.91
Living children born	4.62	.23	266	1.69	4.59	.18	160	.93	4.51	.21	172	1.09
Additional children wanted	1.40	.20	134	.98	1.76	.60	53	1.21	1.60	.48	43	.94
Breastfed in last closed interval	92.31	1.61	233	.92	92.63	2.03	144	.93	95.86	1.98	148	1.21
Months breastfed closed interval	14.12	.68	212	1.01	14.63	.83	129	.93	15.68	.84	137	1.07
Wants no more children	41.51	4.44	183	1.22	39.10	4.52	82	.83	46.39	6.12	61	.95
Number of children desired	5.94	.27	136	1.09	5.72	.49	69	1.26	6.22	.39	94	.96
Knows an effective method	29.03	3.66	266	1.31	26.92	4.75	160	1.35	28.53	4.26	172	1.23
Ever used any method	5.22	1.59	266	1.16	4.83	1.71	160	1.01	3.95	1.28	172	.86
Ever used effective method	4.52	1.49	266	1.17	4.83	1.71	160	1.01	3.95	1.28	172	.86
Currently using any method (exp)	4.92	2.23	138	1.21	2.60	1.83	67	.94	1.82	1.80	50	.95
Currently using eff. method (exp)	4.92	2.23	138	1.21	2.60	1.83	67	.94	1.82	1.80	50	.95
Wants no more and using eff.(exp)	10.34	5.04	58	1.25	6.93	4.80	25	.93	3.70	3.64	23	.90
Never used contraception	94.78	1.59	266	1.16	95.17	1.71	160	1.01	96.05	1.28	172	.86
Used contraception in past	2.64	.87	266	.88	3.79	1.54	160	1.02	3.43	1.56	172	1.12
Currently using contraception	2.58	1.18	266	1.21	1.04	.76	160	.94	.52	.53	172	.96

Table IV.4a - Sampling errors by number of living children

	0				1				2				3			
Variable name	Mean or per cent	SE	n	DEFT	Mean or per cent	SE	n	DEFT	Mean or per cent	SE	n	DEFT	Mean or per cent	SE	n	DEFT
Age at first marriage	15.68	.17	506	1.18	16.45	.23	469	1.24	15.68	.26	399	1.26	15.31	.20	354	1.00
Age at first marriage (<20)	15.76	.26	154	1.28	15.07	.23	264	1.43	14.61	.17	308	1.12	14.48	.15	304	.95
First marriage dissolved	15.95	2.28	506	1.40	17.96	2.59	469	1.46	18.53	2.63	399	1.35	22.46	3.01	354	1.36
Time spent in union	84.52	2.45	506	1.14	89.62	1.66	469	1.12	93.49	1.31	399	1.47	94.46	.93	354	1.01
Currently married	91.82	1.43	506	1.17	93.84	1.29	469	1.16	95.51	1.33	399	1.28	94.74	1.27	354	1.07
Births in first 5 years	.40	.06	123	.81	.85	.06	248	1.02	1.28	.05	342	.90	1.28	.06	345	.99
Births in past 5 years	.39	.07	87	.99	1.29	.07	203	1.06	1.57	.07	306	1.20	1.89	.05	316	1.00
Currently married and pregnant	18.54	1.69	466	.94	24.57	2.27	438	1.10	22.00	2.43	381	1.14	21.07	2.57	333	1.15
Children ever born	.28	.07	506	1.44	1.69	.05	469	.81	3.09	.10	399	1.26	4.19	.09	354	1.14
Living children born	.00	.00	506	.00	1.00	.00	469	.00	2.00	.00	399	.00	3.00	.00	354	.00
Additional children wanted	4.00	.18	263	1.21	3.69	.17	268	.90	2.76	.17	224	1.07	2.48	.27	195	1.28
Breastfed in last closed interval	66.58	7.59	37	.96	83.07	3.21	223	1.28	91.14	1.44	370	.97	95.01	1.19	335	1.00
Months breastfed closed interval	3.72	1.44	24	1.07	10.18	.88	185	1.10	12.33	.55	337	1.13	13.71	.58	309	1.16
Wants no more children	5.53	1.09	437	1.00	5.31	1.52	412	1.37	14.13	1.89	339	1.00	21.52	2.43	290	1.01
Number of children desired	4.63	.13	261	.87	4.66	.22	253	1.19	4.82	.22	212	1.19	5.27	.29	183	1.23
Knows an effective method	16.81	1.94	506	1.17	20.39	3.35	469	1.80	20.37	3.29	399	1.63	29.19	4.02	354	1.66
Ever used any method	.75	.44	506	1.15	.96	.57	469	1.26	2.99	.95	399	1.11	2.92	.98	354	1.09
Ever used effective method	.75	.44	506	1.15	.96	.57	469	1.26	2.41	.78	399	1.02	2.41	.86	354	1.05
Currently using any method (exp)	.00	.00	348	.00	.56	.39	303	.91	2.35	.93	255	.98	.59	.48	219	.92
Currently using eff. method (exp)	.00	.00	348	.00	.56	.39	303	.91	2.35	.93	255	.98	.45	.46	219	1.00
Wants no more and using eff.(exp)	.00	.00	20	.00	.00	.00	13	.00	8.99	4.74	33	.94	2.18	2.20	46	1.01
Never used contraception	99.25	.44	506	1.15	99.04	.57	469	1.26	97.01	.95	399	1.11	97.08	.98	354	1.09
Used contraception in past	.75	.44	506	1.15	.60	.45	469	1.26	1.50	.72	399	1.18	2.55	.83	354	.99
Currently using contraception	.00	.00	506	.00	.36	.25	469	.91	1.49	.59	399	.97	.37	.30	354	.93

	4				5				6				7+			
Variable name	Mean or per cent	SE	n	DEFT	Mean or per cent	SE	n	DEFT	Mean or per cent	SE	n	DEFT	Mean or per cent	SE	n	DEFT
Age at first marriage	15.46	.28	317	1.14	14.79	.27	217	.97	14.95	.43	172	1.40	15.11	.49	171	1.65
Age at first marriage (<20)	14.09	.17	270	1.12	13.66	.18	190	.97	13.90	.27	153	1.29	13.99	.24	152	1.18
First marriage dissolved	23.44	2.54	317	1.07	22.92	2.50	217	.87	21.32	3.39	172	1.08	20.41	3.42	171	1.11
Time spent in union	94.90	.93	317	1.09	95.53	.74	217	.96	96.08	.98	172	.98	97.20	.54	171	.92
Currently married	94.78	1.24	317	.99	95.50	1.35	217	.96	94.54	1.70	172	.98	96.01	2.11	171	1.40
Births in first 5 years	1.46	.07	314	1.06	1.42	.10	216	1.21	1.47	.11	172	1.18	1.77	.09	171	.94
Births in past 5 years	1.87	.07	289	1.18	1.79	.08	204	.93	1.71	.11	160	1.26	1.88	.07	163	.89
Currently married and pregnant	19.93	2.17	299	.94	19.49	3.50	207	1.27	18.47	2.89	162	.95	13.18	2.84	164	1.07
Children ever born	5.69	.12	317	1.12	6.60	.11	217	.98	7.66	.14	172	1.10	9.53	.17	171	1.04
Living children born	4.00	.00	317	.00	5.00	.00	217	.00	6.00	.00	172	.00	7.81	.09	171	1.09
Additional children wanted	1.87	.16	168	.86	1.38	.26	111	1.04	1.32	.28	96	.95	1.92	.41	95	1.03
Breastfed in last closed interval	93.81	1.31	296	.93	96.08	1.50	196	1.08	91.65	2.14	154	.96	95.50	1.99	161	1.21
Months breastfed closed interval	12.39	.50	269	.96	14.18	.72	186	1.10	13.81	.68	144	.86	11.75	.64	157	1.01
Wants no more children	27.71	2.73	257	.98	37.12	3.13	165	.83	47.20	6.09	124	1.35	53.17	4.03	120	.88
Number of children desired	5.70	.22	160	1.19	6.16	.23	108	.86	6.17	.22	98	1.02	8.50	.26	110	.86
Knows an effective method	25.06	3.10	317	1.27	31.36	4.21	217	1.33	35.14	4.48	172	1.23	41.29	5.83	171	1.54
Ever used any method	4.18	1.26	317	1.12	4.79	1.93	217	1.33	7.56	2.43	172	1.20	9.05	3.10	171	1.41
Ever used effective method	3.63	1.10	317	1.05	4.79	1.93	217	1.33	7.00	2.38	172	1.22	8.48	3.03	171	1.42
Currently using any method (exp)	2.83	.94	196	.79	2.55	1.42	124	1.00	3.79	2.05	91	1.02	7.01	3.40	99	1.32
Currently using eff. method (exp)	2.44	.84	196	.76	2.55	1.42	124	1.00	3.79	2.05	91	1.02	7.01	3.40	99	1.32
Wants no more and using eff.(exp)	4.01	2.77	48	.97	1.72	1.70	44	.86	8.07	4.29	44	1.03	12.67	6.07	53	1.32
Never used contraception	95.82	1.26	317	1.12	95.21	1.93	217	1.33	92.44	2.43	172	1.20	90.95	3.10	171	1.41
Used contraception in past	2.40	.99	317	1.15	3.34	1.39	217	1.14	5.53	1.82	172	1.04	5.01	1.75	171	1.05
Currently using contraception	1.78	.59	317	.79	1.46	.83	217	1.02	2.04	1.15	172	1.07	4.05	1.91	171	1.26

Table IV.5a - Sampling errors by region of residence

	North				South				West				East			
Variable name	Mean or per cent	SE	n	DEFT	Mean or per cent	SE	n	DEFT	Mean or per cent	SE	n	DEFT	Mean or per cent	SE	n	DEFT
Age at first marriage	15.71	.18	876	1.32	15.20	.14	1009	1.30	16.10	.18	579	1.09	15.12	.51	141	1.47
Age at first marriage (<20)	14.50	.17	586	1.57	14.29	.09	725	1.00	14.79	.18	388	1.21	14.19	.66	96	2.47
First marriage dissolved	18.68	2.15	876	1.63	23.01	2.08	1009	1.57	16.50	3.23	579	2.09	17.88	5.61	141	1.73
Time spent in union	94.49	.70	876	1.13	92.90	.86	1009	1.39	94.02	1.10	579	1.34	94.60	.85	141	.58
Currently married	94.82	1.19	876	1.59	93.25	1.26	1009	1.59	94.74	.90	579	.97	95.44	2.97	141	1.68
Births in first 5 years	1.33	.09	627	1.90	1.28	.03	745	.76	1.20	.07	447	1.21	1.11	.12	112	1.08
Births in past 5 years	1.69	.05	563	1.07	1.69	.05	660	1.16	1.51	.05	404	.78	1.75	.05	101	.52
Currently married and pregnant	21.22	1.90	827	1.33	21.43	1.88	941	1.41	17.79	1.64	548	1.01	20.41	3.17	134	.91
Children ever born	3.82	.17	876	1.50	3.74	.09	1009	.90	3.70	.25	579	1.84	3.33	.19	141	.86
Living children born	2.55	.10	876	1.37	2.91	.10	1009	1.36	2.53	.16	579	1.76	2.55	.14	141	.84
Additional children wanted	2.24	.15	397	1.21	3.22	.12	726	.98	2.52	.28	258	1.77	2.04	.55	39	1.15
Breastfed in last closed interval	89.88	1.64	587	1.32	90.75	1.14	680	1.02	94.60	.78	411	.70	96.49	1.97	94	1.03
Months breastfed closed interval	13.57	.71	523	1.69	11.23	.52	631	1.48	12.09	.42	369	.89	17.14	.44	88	.55
Wants no more children	20.18	1.74	752	1.19	20.84	1.73	846	1.24	14.38	1.83	417	1.06	17.25	6.31	129	1.89
Number of children desired	5.02	.14	360	1.19	6.08	.18	720	1.55	4.24	.18	278	1.03	5.86	.55	27	1.21
Knows an effective method	21.04	4.58	876	3.32	32.32	4.03	1009	2.74	20.87	6.15	579	3.64	10.36	2.45	141	.95
Ever used any method	4.19	.71	876	1.05	3.81	.79	1009	1.31	1.20	.71	579	1.56	.77	.87	141	1.18
Ever used effective method	4.16	.71	876	1.05	3.51	.76	1009	1.31	.49	.49	579	1.69	.77	.87	141	1.18
Currently using any method (exp)	2.82	1.00	574	1.44	1.63	.38	644	.77	.44	.44	316	1.17	.00	.00	101	.00
Currently using eff. method (exp)	2.77	1.00	574	1.45	1.63	.38	644	.77	.22	.22	316	.82	.00	.00	101	.00
Wants no more and using eff.(exp)	9.10	2.44	122	.93	5.17	1.31	128	.67	.00	.00	38	.00	.00	.00	13	.00
Never used contraception	95.81	.71	876	1.05	96.19	.79	1009	1.31	98.80	.71	579	1.56	99.23	.87	141	1.18
Used contraception in past	2.32	.29	876	.57	2.77	.66	1009	1.29	.96	.52	579	1.29	.77	.87	141	1.18
Currently using contraception	1.87	.65	876	1.41	1.04	.24	1009	.75	.24	.24	579	1.19	.00	.00	141	.00

Table IV.5b - Sampling errors by differences between region of residence subclasses

	North - South				North - West				North - East			
Variable name	Mean or per cent	SE	n	DEFT	Mean or per cent	SE	n	DEFT	Mean or per cent	SE	n	DEFT
Age at first marriage	.51	.23	937	1.31	-.39	.26	697	1.19	.59	.54	242	1.45
Age at first marriage (<20)	.21	.20	648	1.37	-.29	.25	466	1.35	.31	.68	164	2.35
First marriage dissolved	-4.33	2.98	937	1.60	2.18	3.88	697	1.91	.80	6.00	242	1.72
Time spent in union	1.59	1.10	937	1.27	.47	1.30	697	1.27	-.11	1.10	242	.70
Currently married	1.57	1.73	937	1.59	.08	1.49	697	1.25	-.62	3.21	242	1.68
Births in first 5 years	.05	.10	680	1.54	.13	.11	521	1.52	.22	.15	190	1.25
Births in past 5 years	-.00	.07	607	1.12	.19	.07	470	.90	-.06	.07	171	.67
Currently married and pregnant	-.21	2.68	880	1.37	3.42	2.51	659	1.16	.81	3.71	230	.98
Children ever born	.07	.19	937	1.28	.11	.30	697	1.71	.49	.25	242	1.01
Living children born	-.36	.14	937	1.37	.02	.19	697	1.62	.00	.17	242	.93
Additional children wanted	-.99	.19	513	1.11	-.28	.32	312	1.58	.20	.58	71	1.16
Breastfed in last closed interval	-.86	2.02	630	1.21	-4.71	1.82	483	1.09	-6.61	2.59	162	1.14
Months breastfed closed interval	2.33	.89	571	1.63	1.48	.82	432	1.31	-3.57	.86	150	.95
Wants no more children	-.66	2.47	796	1.22	5.79	2.52	536	1.12	2.93	6.58	220	1.81
Number of children desired	-1.06	.23	480	1.37	.79	.23	313	1.08	-.83	.57	50	1.21
Knows an effective method	-11.28	6.15	937	3.05	.17	7.67	697	3.52	10.69	5.18	242	1.78
Ever used any method	.39	1.09	937	1.20	2.99	1.00	697	1.23	3.42	1.12	242	1.12
Ever used effective method	.65	1.05	937	1.18	3.67	.86	697	1.17	3.39	1.12	242	1.12
Currently using any method (exp)	1.20	1.08	606	1.26	2.38	1.09	407	1.38	2.82	1.00	171	1.44
Currently using eff. method (exp)	1.14	1.07	606	1.26	2.55	1.02	407	1.39	2.77	1.00	171	1.45
Wants no more and using eff.(exp)	3.93	2.79	124	.85	9.10	2.44	57	.93	9.10	2.44	23	.93
Never used contraception	-.39	1.09	937	1.20	-2.99	1.00	697	1.23	-3.42	1.12	242	1.12
Used contraception in past	-.44	.74	937	1.01	1.36	.60	697	.92	1.55	.92	242	1.02
Currently using contraception	.83	.70	937	1.25	1.63	.69	697	1.38	1.87	.65	242	1.41

	South - West				South - East				West - East			
Variable name	Mean or per cent	SE	n	DEFT	Mean or per cent	SE	n	DEFT	Mean or per cent	SE	n	DEFT
Age at first marriage	-.90	.23	735	1.16	.08	.53	247	1.45	.98	.54	226	1.40
Age at first marriage (<20)	-.50	.20	505	1.15	.10	.66	169	2.35	.60	.68	153	2.24
First marriage dissolved	6.51	3.84	735	1.89	5.13	5.99	247	1.71	-1.38	6.48	226	1.81
Time spent in union	-1.12	1.39	735	1.36	-1.70	1.21	247	.76	-.58	1.39	226	.83
Currently married	-1.49	1.55	735	1.27	-2.19	3.22	247	1.66	-.70	3.10	226	1.56
Births in first 5 years	.08	.08	558	1.09	.17	.12	194	1.06	.08	.14	179	1.11
Births in past 5 years	.19	.07	501	.91	-.06	.07	175	.70	-.24	.07	161	.61
Currently married and pregnant	3.64	2.50	692	1.18	1.03	3.69	234	.99	-2.61	3.57	215	.93
Children ever born	.04	.26	735	1.58	.42	.20	247	.82	.38	.31	226	1.20
Living children born	.38	.19	735	1.61	.36	.17	247	.91	-.02	.22	226	1.11
Additional children wanted	.71	.30	380	1.53	1.19	.57	74	1.15	.48	.62	67	1.22
Breastfed in last closed interval	-3.85	1.38	512	.87	-5.74	2.36	165	1.07	-1.89	2.12	153	.96
Months breastfed closed interval	-.86	.67	465	1.14	-5.90	.74	154	.85	-5.04	.61	142	.65
Wants no more children	6.46	2.51	558	1.13	3.59	6.58	223	1.82	-2.87	6.57	197	1.75
Number of children desired	1.85	.25	401	1.21	.23	.58	52	1.23	-1.62	.58	49	1.19
Knows an effective method	11.45	7.35	735	3.28	21.96	4.66	247	1.57	10.51	6.62	226	2.15
Ever used any method	2.60	1.06	735	1.41	3.04	1.16	247	1.21	.43	1.12	226	1.29
Ever used effective method	3.02	.90	735	1.39	2.74	1.13	247	1.21	-.28	1.00	226	1.26
Currently using any method (exp)	1.19	.58	423	.93	1.63	.38	174	.77	.44	.44	153	1.17
Currently using eff. method (exp)	1.41	.44	423	.78	1.63	.38	174	.77	.22	.22	153	.82
Wants no more and using eff.(exp)	5.17	1.31	58	.67	5.17	1.31	23	.67	.00	.00	19	.00
Never used contraception	-2.60	1.06	735	1.41	-3.04	1.16	247	1.21	-.43	1.12	226	1.29
Used contraception in past	1.81	.84	735	1.29	2.00	1.08	247	1.20	.19	1.01	226	1.20
Currently using contraception	.80	.34	735	.90	1.04	.24	247	.75	.24	.24	226	1.19

Table IV.6a - Sampling errors by type of place of residence

	Urban				Rural			
Variable name	Mean or per cent	SE	n	DEFT	Mean or per cent	SE	n	DEFT
Age at first marriage	15.96	.21	300	.99	15.54	.11	2305	1.33
Age at first marriage (<20)	14.93	.17	208	.93	14.41	.09	1587	1.41
First marriage dissolved	15.49	2.99	300	1.43	20.26	1.48	2305	1.77
Time spent in union	95.20	1.14	300	1.25	93.61	.52	2305	1.28
Currently married	93.27	1.61	300	1.11	94.38	.73	2305	1.51
Births in first 5 years	1.51	.05	225	.64	1.23	.04	1706	1.44
Births in past 5 years	1.65	.10	200	1.12	1.65	.03	1528	1.00
Currently married and pregnant	21.61	2.92	277	1.18	20.26	1.12	2173	1.30
Children ever born	4.31	.22	300	1.09	3.66	.10	2305	1.47
Living children born	3.33	.20	300	1.36	2.59	.06	2305	1.35
Additional children wanted	1.94	.18	183	.97	2.89	.10	1237	1.19
Breastfed in last closed interval	90.31	3.30	213	1.62	91.91	.72	1559	1.04
Months breastfed closed interval	9.11	.95	196	1.68	12.98	.35	1415	1.41
Wants no more children	28.66	2.32	241	.80	17.83	1.14	1903	1.30
Number of children desired	4.83	.25	182	1.34	5.48	.12	1203	1.43
Knows an effective method	75.23	5.18	300	2.07	17.99	2.40	2305	3.00
Ever used any method	14.67	2.46	300	1.20	1.63	.34	2305	1.28
Ever used effective method	13.81	2.93	300	1.47	1.41	.31	2305	1.24
Currently using any method (exp)	9.91	2.25	172	.98	.73	.29	1463	1.29
Currently using eff. method (exp)	9.73	2.25	172	.99	.68	.27	1463	1.27
Wants no more and using eff.(exp)	20.64	4.28	53	.76	2.79	1.06	248	1.01
Never used contraception	85.33	2.46	300	1.20	98.37	.34	2305	1.28
Used contraception in past	8.98	1.69	300	1.02	1.17	.26	2305	1.14
Currently using contraception	5.69	1.57	300	1.17	.47	.18	2305	1.27

Table IV.6b - Sampling errors by differences between type of place of residence subclasses

	Urban - Rural			
Variable name	Mean or per cent	SE	n	DEFT
Age at first marriage	.42	.24	530	1.04
Age at first marriage (<20)	.52	.19	367	1.00
First marriage dissolved	-4.77	3.33	530	1.48
Time spent in union	1.59	1.25	530	1.26
Currently married	-1.11	1.76	530	1.16
Births in first 5 years	.28	.07	397	.76
Births in past 5 years	.00	.10	353	1.11
Currently married and pregnant	1.36	3.13	491	1.19
Children ever born	.64	.24	530	1.13
Living children born	.74	.21	530	1.36
Additional children wanted	-.95	.21	318	1.01
Breastfed in last closed interval	-1.60	3.37	374	1.57
Months breastfed closed interval	-3.87	1.01	344	1.64
Wants no more children	10.83	2.59	427	.85
Number of children desired	-.65	.28	316	1.35
Knows an effective method	57.24	5.71	530	2.18
Ever used any method	13.04	2.49	530	1.21
Ever used effective method	12.40	2.95	530	1.47
Currently using any method (exp)	9.17	2.26	307	.99
Currently using eff. method (exp)	9.06	2.27	307	1.00
Wants no more and using eff.(exp)	17.85	4.41	87	.77
Never used contraception	-13.04	2.49	530	1.21
Used contraception in past	7.81	1.71	530	1.02
Currently using contraception	5.23	1.58	530	1.18

Table IV.7a - Sampling errors by husband's level of education

	No education				Incomplete primary				Primary +			
Variable name	Mean or per cent	SE	n	DEFT	Mean or per cent	SE	n	DEFT	Mean or per cent	SE	n	DEFT
Age at first marriage	15.59	.10	2292	1.26	15.70	.59	128	1.57	15.49	.22	185	.84
Age at first marriage (<20)	14.46	.09	1624	1.32	14.59	.47	70	1.35	14.68	.22	101	.87
First marriage dissolved	20.51	1.45	2292	1.72	16.31	4.20	128	1.28	12.30	1.95	185	.81
Time spent in union	93.79	.53	2292	1.34	91.85	2.49	128	1.05	95.57	.94	185	.76
Currently married	94.36	.72	2292	1.50	94.35	2.14	128	1.05	92.84	1.06	185	.56
Births in first 5 years	1.25	.04	1748	1.34	1.34	.17	83	1.32	1.37	.10	100	.81
Births in past 5 years	1.64	.03	1565	.97	1.74	.16	75	1.27	1.67	.10	88	.81
Currently married and pregnant	20.56	1.03	2161	1.18	19.20	4.38	118	1.20	19.39	3.40	171	1.12
Children ever born	3.84	.10	2292	1.50	3.23	.34	128	1.25	2.83	.25	185	1.15
Living children born	2.73	.07	2292	1.47	2.59	.31	128	1.31	2.14	.21	185	1.40
Additional children wanted	2.79	.10	1240	1.17	2.75	.52	68	1.39	2.58	.35	112	1.39
Breastfed in last closed interval	91.99	.68	1587	.99	90.45	3.73	81	1.13	88.80	3.93	104	1.26
Months breastfed closed interval	12.92	.33	1448	1.37	10.99	1.26	68	1.09	7.75	.78	95	1.06
Wants no more children	18.89	1.09	1884	1.21	20.57	5.27	107	1.34	19.40	3.54	153	1.10
Number of children desired	5.48	.11	1203	1.30	5.36	.40	61	1.00	4.54	.32	121	1.53
Knows an effective method	20.79	2.06	2292	2.43	38.17	6.37	128	1.48	61.49	7.62	185	2.12
Ever used any method	2.34	.42	2292	1.34	5.28	2.03	128	1.02	11.33	2.34	185	1.00
Ever used effective method	2.15	.41	2292	1.35	4.44	1.54	128	.84	10.13	2.75	185	1.24
Currently using any method (exp)	1.20	.33	1435	1.15	4.40	2.36	82	1.04	5.75	2.51	118	1.16
Currently using eff. method (exp)	1.20	.33	1435	1.15	3.13	1.79	82	.92	5.75	2.51	118	1.16
Wants no more and using eff.(exp)	4.75	1.22	263	.93	6.83	7.09	15	1.05	14.36	5.69	23	.76
Never used contraception	97.66	.42	2292	1.34	94.72	2.03	128	1.02	88.67	2.34	185	1.00
Used contraception in past	1.59	.29	2292	1.12	2.37	1.23	128	.91	7.63	2.40	185	1.23
Currently using contraception	.75	.20	2292	1.12	2.91	1.57	128	1.05	3.69	1.62	185	1.16

Table IV.7b - Sampling errors by differences between husband's level of education subclasses

	No education - incomplete primary				Incomplete primary - primary +			
Variable name	Mean or per cent	SE	n	DEFT	Mean or per cent	SE	n	DEFT
Age at first marriage	-.11	.58	242	1.50	.21	.65	151	1.43
Age at first marriage (<20)	-.14	.43	134	1.23	-.09	.53	82	1.25
First marriage dissolved	4.20	4.38	242	1.29	4.01	4.56	151	1.12
Time spent in union	1.94	2.57	242	1.07	-3.72	2.18	151	.81
Currently married	.01	2.26	242	1.08	1.52	2.33	151	.84
Births in first 5 years	-.08	.17	158	1.27	-.03	.16	90	.92
Births in past 5 years	-.10	.16	143	1.23	.07	.15	80	.81
Currently married and pregnant	1.37	4.45	223	1.19	-.20	5.92	139	1.25
Children ever born	.61	.33	242	1.18	.40	.38	151	1.09
Living children born	.14	.30	242	1.28	.45	.29	151	1.03
Additional children wanted	.04	.54	128	1.39	.18	.63	84	1.38
Breastfed in last closed interval	1.54	3.80	154	1.13	1.65	4.28	91	.95
Months breastfed closed interval	1.93	1.29	129	1.09	3.24	1.44	79	1.05
Wants no more children	-1.68	5.21	202	1.29	1.17	5.98	125	1.18
Number of children desired	.13	.38	116	.93	.81	.44	81	.96
Knows an effective method	-17.37	6.17	242	1.40	-23.33	5.99	151	1.07
Ever used any method	-2.94	2.03	242	1.01	-6.05	3.59	151	1.17
Ever used effective method	-2.29	1.55	242	.83	-5.68	3.43	151	1.19
Currently using any method (exp)	-3.21	2.37	155	1.03	-1.35	3.95	96	1.26
Currently using eff. method (exp)	-1.93	1.78	155	.91	-2.62	3.50	96	1.21
Wants no more and using eff.(exp)	-2.09	7.24	28	1.05	-7.52	11.70	18	1.16
Never used contraception	2.94	2.03	242	1.01	6.05	3.59	151	1.17
Used contraception in past	-.78	1.20	242	.87	-5.26	2.73	151	1.15
Currently using contraception	-2.16	1.57	242	1.04	-.78	2.54	151	1.24

Table IV.8a - Sampling errors by woman´s pattern of work

	Before and after marriage				After marriage only				Before marriage only				Never worked			
Variable name	Mean or per cent	SE	n	DEFT	Mean or per cent	SE	n	DEFT	Mean or per cent	SE	n	DEFT	Mean or per cent	SE	n	DEFT
Age at first marriage	15.54	.14	1005	1.14	14.99	.24	227	.94	16.32	.26	175	.87	15.64	.14	1198	1.27
Age at first marriage (<20)	14.41	.11	694	1.12	13.94	.24	166	1.22	15.10	.27	113	1.09	14.56	.10	822	1.09
First marriage dissolved	20.51	2.23	1005	1.75	30.87	3.69	227	1.20	16.37	2.75	175	.98	17.33	1.38	1198	1.26
Time spent in union	93.47	.86	1005	1.40	91.49	1.43	227	1.11	94.63	1.53	175	1.10	94.54	.67	1198	1.23
Currently married	94.13	.96	1005	1.29	90.55	2.00	227	1.03	96.15	1.66	175	1.14	94.79	.79	1198	1.23
Births in first 5 years	1.22	.05	753	1.19	.88	.09	183	1.15	1.41	.09	126	.87	1.36	.05	869	1.21
Births in past 5 years	1.55	.05	673	1.12	1.57	.09	153	.98	1.83	.13	110	1.38	1.73	.04	792	1.06
Currently married and pregnant	17.92	1.32	947	1.05	15.34	2.64	205	1.05	21.56	3.01	168	.95	23.39	1.78	1130	1.42
Children ever born	3.54	.15	1005	1.61	3.79	.22	227	1.12	3.59	.23	175	.92	3.93	.11	1198	1.15
Living children born	2.47	.09	1005	1.39	2.84	.20	227	1.37	2.66	.19	175	1.01	2.83	.09	1198	1.36
Additional children wanted	2.86	.15	516	1.05	3.05	.43	112	1.37	3.46	.36	93	1.01	2.56	.12	699	1.29
Breastfed in last closed interval	92.38	.93	659	.90	90.53	2.61	159	1.12	93.90	1.97	114	.88	91.08	1.22	840	1.24
Months breastfed closed interval	14.34	.44	598	1.19	13.20	1.30	142	1.39	12.02	.63	108	.78	10.92	.41	763	1.31
Wants no more children	18.50	1.42	841	1.06	15.34	3.75	170	1.35	14.25	3.12	148	1.08	20.91	1.33	985	1.02
Number of children desired	5.35	.23	465	1.54	5.81	.26	124	.88	5.67	.27	105	.89	5.31	.13	691	1.30
Knows an effective method	11.06	1.71	1005	1.73	18.22	2.60	227	1.01	27.68	4.86	175	1.43	37.58	3.72	1198	2.66
Ever used any method	.96	.25	1005	.80	3.30	1.25	227	1.05	3.01	1.59	175	1.23	5.10	.75	1198	1.17
Ever used effective method	.87	.23	1005	.77	2.64	1.04	227	.98	1.57	.92	175	.97	4.87	.72	1198	1.16
Currently using any method (exp)	.36	.21	671	.92	2.66	1.30	138	.94	.25	.25	112	.53	3.08	.74	714	1.14
Currently using eff. method (exp)	.36	.21	671	.92	2.66	1.30	138	.94	.00	.00	112	.00	2.97	.72	714	1.13
Wants no more and using eff.(exp)	1.30	.95	124	.93	12.72	6.56	22	.90	.00	.00	13	.00	9.08	1.94	142	.80
Never used contraception	99.04	.25	1005	.80	96.70	1.25	227	1.05	96.99	1.59	175	1.23	94.90	.75	1198	1.17
Used contraception in past	.72	.20	1005	.76	1.63	.96	227	1.14	2.84	1.58	175	1.25	3.26	.55	1198	1.07
Currently using contraception	.24	.14	1005	.90	1.67	.82	227	.96	.17	.17	175	.54	1.84	.44	1198	1.14

Table IV.9a - Sampling errors by husband's occupation

	Prof. & clerical				Sales				Agriculture			
Variable name	Mean or per cent	SE	n	DEFT	Mean or per cent	SE	n	DEFT	Mean or per cent	SE	n	DEFT
Age at first marriage	15.54	.38	126	1.04	15.47	.25	297	1.12	15.76	.15	931	1.12
Age at first marriage (<20)	14.52	.29	100	1.08	14.55	.21	213	1.16	14.44	.09	651	.87
First marriage dissolved	19.51	3.18	126	.90	17.86	2.06	297	.92	21.94	2.30	931	1.69
Time spent in union	93.89	1.09	126	.74	93.98	1.07	297	.97	94.27	.77	931	1.38
Currently married	91.83	1.84	126	.75	94.04	1.70	297	1.24	94.16	1.06	931	1.38
Births in first 5 years	1.26	.15	103	1.28	1.47	.11	231	1.26	1.23	.05	731	1.11
Births in past 5 years	1.40	.09	87	.80	1.69	.07	210	.86	1.56	.04	655	1.06
Currently married and pregnant	13.54	3.47	115	1.08	20.08	2.27	279	.94	18.69	1.43	876	1.09
Children ever born	3.99	.26	126	.97	4.39	.25	297	1.26	4.05	.14	931	1.40
Living children born	3.16	.16	126	.79	3.13	.14	297	1.00	2.81	.10	931	1.35
Additional children wanted	1.84	.17	68	.63	3.09	.32	180	1.22	2.67	.13	450	1.03
Breastfed in last closed interval	90.32	3.93	95	1.29	92.16	1.52	215	.82	93.52	.90	675	.95
Months breastfed closed interval	8.96	.81	90	1.05	10.92	.59	194	.92	14.27	.44	605	1.27
Wants no more children	25.29	5.22	96	1.17	22.84	2.69	237	.98	18.57	1.53	731	1.06
Number of children desired	4.93	.45	77	1.41	5.78	.28	189	1.24	5.32	.17	437	1.21
Knows an effective method	68.89	7.97	126	1.92	37.07	4.48	297	1.59	10.82	1.28	931	1.26
Ever used any method	12.71	4.12	126	1.38	6.98	1.26	297	.85	.81	.23	931	.79
Ever used effective method	11.16	4.87	126	1.73	6.98	1.26	297	.85	.61	.20	931	.79
Currently using any method (exp)	5.95	3.51	77	1.29	5.58	1.83	178	1.06	.17	.17	567	.98
Currently using eff. method (exp)	5.95	3.51	77	1.29	5.58	1.83	178	1.06	.17	.17	567	.98
Wants no more and using eff.(exp)	13.02	9.18	20	1.19	15.15	4.75	40	.83	.93	.94	102	.98
Never used contraception	87.29	4.12	126	1.38	93.02	1.26	297	.85	99.19	.23	931	.79
Used contraception in past	9.02	2.87	126	1.12	3.61	.91	297	.84	.71	.25	931	.92
Currently using contraception	3.70	2.29	126	1.35	3.36	1.14	297	1.09	.10	.10	931	.97

	Services				Manual			
Variable name	Mean or per cent	SE	n	DEFT	Mean or per cent	SE	n	DEFT
Age at first marriage	15.50	.31	208	1.04	15.44	.18	786	1.39
Age at first marriage (<20)	13.96	.27	151	1.24	14.50	.14	526	1.28
First marriage dissolved	28.00	3.46	208	1.11	16.78	1.80	786	1.35
Time spent in union	92.05	1.01	208	.78	93.71	.88	786	1.17
Currently married	90.52	2.13	208	1.05	96.45	.69	786	1.05
Births in first 5 years	1.29	.09	169	.92	1.19	.05	553	1.08
Births in past 5 years	1.76	.10	143	1.01	1.75	.05	499	1.01
Currently married and pregnant	19.69	2.71	186	.93	24.46	1.66	757	1.06
Children ever born	4.11	.26	208	1.16	3.32	.10	786	.88
Living children born	2.90	.21	208	1.28	2.43	.07	786	.94
Additional children wanted	2.89	.38	109	1.23	2.85	.15	471	1.08
Breastfed in last closed interval	91.66	2.92	154	1.31	89.58	1.49	493	1.08
Months breastfed closed interval	12.36	1.20	142	1.26	11.51	.54	456	1.26
Wants no more children	21.59	3.37	164	1.05	18.05	1.67	694	1.14
Number of children desired	5.44	.37	106	1.18	5.54	.19	449	1.36
Knows an effective method	33.72	4.68	208	1.43	27.34	2.73	786	1.71
Ever used any method	5.46	1.45	208	.92	2.30	.59	786	1.10
Ever used effective method	4.74	1.25	208	.85	2.03	.58	786	1.15
Currently using any method (exp)	2.07	1.15	126	.90	1.50	.50	510	.93
Currently using eff. method (exp)	2.07	1.15	126	.90	1.28	.48	510	.96
Wants no more and using eff.(exp)	3.40	3.24	24	.86	7.51	2.59	89	.92
Never used contraception	94.54	1.45	208	.92	97.70	.59	786	1.10
Used contraception in past	4.19	1.17	208	.84	1.32	.37	786	.91
Currently using contraception	1.27	.72	208	.92	.98	.32	786	.92

Table IV.10 - Sampling errors for variables based on the household questionnaire for females (de facto residence) by current age and residence

	0-4				5-9				10-14				15-19			
Variable	Mean or per cent	SE	n	DEFT	Mean or per cent	SE	n	DEFT	Mean or per cent	SE	n	DEFT	Mean or per cent	SE	n	DEFT
Children ever born (ever married)	.00	.00	0	.00	.00	.00	0	.00	.00	.00	215	.00	.49	.03	1869	1.43
% children dead (ever married)	.00	.00	0	.00	.00	.00	0	.00	.00	.00	215	.00	19.61	1.94	1869	1.21
Age-specific fertility rate	.00	.00	0	.00	.00	.00	0	.00	2.50	.00	215	.00	2.66	.01	1869	1.10
% ever married	.00	.00	7260	.00	.00	.00	5626	.00	6.07	.56	3539	1.39	60.55	1.74	3038	1.96
% currently married	.00	.00	7260	.00	.00	.00	5626	.00	6.00	.56	3555	1.41	59.12	1.77	3041	1.99
% women with father alive	98.12	.25	7259	1.55	94.51	.43	5626	1.42	91.39	.58	3555	1.24	84.09	.89	3039	1.34
% eldest with father alive	98.55	.29	1508	.93	96.51	.63	1201	1.18	94.49	.91	887	1.18	85.78	1.47	897	1.26
% women with mother alive	98.50	.18	7260	1.29	95.97	.39	5625	1.49	93.61	.53	3554	1.28	89.26	.63	3036	1.12
% eldest with mother alive	99.07	.29	1630	1.22	95.88	.68	1289	1.23	95.93	.68	946	1.05	87.73	1.29	926	1.20

	20-24				25-29				30-34				35-39			
Variable	Mean or per cent	SE	n	DEFT	Mean or per cent	SE	n	DEFT	Mean or per cent	SE	n	DEFT	Mean or per cent	SE	n	DEFT
Children ever born (ever married)	1.59	.04	2642	1.27	3.04	.06	2873	1.52	4.41	.08	2235	1.38	5.60	.10	2025	1.47
% children dead (ever married)	19.15	.96	2642	1.39	22.10	1.00	2873	1.75	24.99	.86	2235	1.53	27.59	.90	2025	1.53
Age-specific fertility rate	2.81	.01	2632	1.17	2.81	.01	2865	1.26	2.78	.01	2229	1.23	2.70	.01	2020	1.20
% ever married	92.20	.78	2852	1.56	96.72	.38	2966	1.17	98.21	.31	2275	1.12	98.93	.21	2050	.90
% currently married	90.05	.91	2854	1.62	93.98	.49	2966	1.12	94.40	.59	2277	1.22	93.10	.57	2050	1.03
% women with father alive	74.20	1.05	2852	1.28	63.44	1.48	2965	1.67	51.28	1.37	2275	1.31	34.43	1.07	2049	1.02
% eldest with father alive	75.59	1.81	968	1.31	66.27	2.04	1035	1.39	51.59	2.14	913	1.29	37.19	1.67	846	1.00
% women with mother alive	82.69	.76	2853	1.08	74.10	1.23	2966	1.53	62.82	1.55	2275	1.53	50.65	1.60	2049	1.45
% eldest with mother alive	82.39	1.22	981	1.01	77.01	1.73	1043	1.33	62.98	2.54	902	1.58	52.14	2.16	821	1.24

	40-44				45-50				Urban, aged 15-50				Rural, aged 15-50			
Variable	Mean or per cent	SE	n	DEFT	Mean or per cent	SE	n	DEFT	Mean or per cent	SE	n	DEFT	Mean or per cent	SE	n	DEFT
Children ever born (ever married)	5.91	.10	1648	1.29	5.92	.15	2100	2.12	4.61	.18	1303	1.78	3.64	.05	14089	1.93
% children dead (ever married)	31.33	1.05	1648	1.49	32.98	1.23	2100	1.95	28.01	2.07	1303	2.36	27.32	.87	14089	3.16
Age-specific fertility rate	2.63	.01	1641	1.28	2.55	.01	2073	1.31	2.72	.01	1295	1.11	2.72	.00	14034	1.41
% ever married	97.97	.43	1678	1.24	98.96	.28	2126	1.28	81.13	3.55	1580	3.61	91.50	.32	15405	1.41
% currently married	87.89	.85	1678	1.07	78.27	.79	2126	.89	72.67	3.86	1581	3.44	85.85	.38	15411	1.35
% women with father alive	21.80	1.21	1677	1.20	12.86	.79	2123	1.08	56.38	1.98	1581	1.58	52.86	.78	15399	1.95
% eldest with father alive	24.78	1.90	744	1.20	11.75	1.02	1091	1.05	53.99	2.59	544	1.21	50.14	1.13	5950	1.74
% women with mother alive	36.07	1.48	1678	1.26	22.42	1.32	2124	1.46	69.88	2.23	1581	1.94	62.79	.83	15400	2.12
% eldest with mother alive	36.70	2.08	722	1.16	20.42	1.72	1061	1.39	65.87	3.03	546	1.49	59.75	1.08	5910	1.69