DEMOGRAPHIC DEVELOPMENTS

IN

SAUDI ARABIA DURING THE PRESENT CENTURY

Sanaa Abd El-Hamid Kaoud

A Thesis Submitted for the Degree

of Doctor of Philosophy

The City University, London

Department of Mathematics

August 1979

Table of Contents

ACKNOWLEDGEMENTS

This thesis became a reality as a result of the inspiration and assistance of some persons. I am deeply grateful for ever helpful supervision given by Professor B. Benjamin. His encouragement, patience and insightful counselling during all phases of preparing and writing this work.

My gratitude should also be expressed to The City University, Mathematics Department and the Library staff for providing excellent research facilities.

I also want to express my profound appreciation to [redacted], the ex-under secretary of the Ministry of Health in Saudi Arabia, who made a great effort in obtaining the data utilized in this study.

My full appreciation also goes to [redacted], the Director of the University Studies Center for Girls, Riyadh University, who encouraged and helped me during writing the draft of this thesis.

ABSTRACT

Saudi Arabia rose out of poverty to riches during the third quarter of our century. It has experienced a dramatic rise in national income since the 1960's, and its material standard of living is high. The national population (Saudi's) is a stable one comprising 88 per cent of the total population of the Kingdom.

The first official population census (1974) of Saudi Arabia is the basis of this study which is concerned with the citizens of Saudi Arabia. The Brass technique of graduation has been used to reduce the error present in the age-sex structure.

Marriage, divorce, widowhood, and the expected level of mortality and fertility in Saudi Arabia has been investigated. According to this study Saudi Arabia has a declining level of mortality but retains its traditionally high level of fertility.

Projections have been made of the future population of Saudis by age and sex from 1975 until the year 2000. These have been made on the basis of the estimated population of 1975 and two assumptions of mortality decline. According to the results of these projections the total population of the citizens of Saudi Arabia is expected to vary between 13.681 and 14.007 million by the year 2000, while the crude birth rate is expected to vary between 43.98 and 44.25 per thousand.

CHAPTER ONE

INTRODUCTION

1.1 Population and Socio-Economic Development in Saudi Arabia :

Saudi Arabia has one of the smallest populations of the world but one of the highest per capita incomes. The total area of the land of Saudi Arabia is about 830,000 square miles and is located in the south-western of the Asia continent. The population density varies from one region to another. It is about three persons per square mile in the western province, two persons in the eastern province, and one person in the central province (Doxiadis, 1968). In the year 1974 the density increased to 13.74 persons per square mile in the eastern province, 2.67 persons in the central province, and 6.91 persons in the north-western province. As to the population density of the northern province it is 1.12 persons per square mile, and in southern-eastern province 6.32 persons. No information is available before that year for both provinces. The density has increased from an average 1.46 persons per square mile in 1962 to about 3.11 persons in Saudi Arabia in 1974. The density is still very low, and there are large areas which are either desert, mountains or covered with sand dunes.

In comparison with the density of population in the other arab countries, Saudi Arabia is one of the lowest density. Its density is higher only than Libya.

According to the censuses taken since 1962 [1], the total population

---

(1) This census has been cancelled by the Saudi Arabian Government.

of Saudi Arabia increased from 3.302 million in 1962 to about 7.013 million in 1974 (which is equal to the population of Cairo city). By the year 1974 when the first official census of Saudi Arabia was conducted the population had already doubled itself.

The per capita income rose from $380 in the year 1966 to $2,830 in the year 1974 (U.N. ECWA, 1976), the latter figure compares with $2,900 in the United States of America.

A period of rapid economic development began in Saudi Arabia after World War II.

The founder of modern Saudi state, King Abdul Aziz ibn Abd ar-Rahman Al-Saud, opened the door to the development of Saudi Arabia's vast hydrocarbon resources in 1933 and when he granted a concession to the Standard Oil Company of California to explore for oil in the Kingdom. In 1944 the company's name was changed to Arabian American Oil Company (Aramco), by which it is known today. Aramco are presented then ninetyseven per cent of Saudi Arabia's production, but it was not the only oil company operating in the Kingdom.

Although oil was announced to have been discovered in commercial quantities in 1938, yet production did not commence until 1944. This production however, did not provide the Saudi Treasury with any appreciable revenue until 1950 when, for the first time, Treasury revenue from oil reached $56 million, a very small amount in relation to the needs of a growing state living on one basic source of revenue : oil. In 1951 oil revenue doubled in relation to the previous year, reaching $110 million. It doubled again in 1952, reaching $212 million, but fell in 1953 to $199 million, rising again in the next year to $236 million because of the revision of the terms

of Aramco's 1933 concession and because the Getty Oil Company had commenced its operation during that year. Saudi revenue from oil did not exceed $300 million annually until 1959, the year when the Japanese Arabian Oil Company commenced exploitation of its new wells. in 1960 oil revenue rose to $333 million annually and in 1961 it rose again to $377 million. In 1962 it was slightly over $400 million, reaching $456 million in 1963 and jumping to about $525 in 1964.

Saudi Arabia oil production has increased rapidly from an average of 3.2 million barrels[1] per day in 1969 to nearly 8.5 million barrels per day in 1974 (Ministry of Planning, 1975-1980).

In 1974, Saudi Arabian crude oil production represented 15.3 per cent of the world output, 27.8 per cent of OPEC-members production, and 46.4 per cent of Arab-nation output. Proven oil reserves are estimated at 137,000 million barrels, which represents 20 per cent of world reserves. A major portion of this vast amount was diverted for development purposes and in recent years the country has experienced very rapid economic development, large-scale immigration to the Kingdom, and population growth.

Until 1950 very little was known about the demography of Saudi Arabia. The first attempt to enumerate the population of Saudi Arabia was carried out in 1962 when the Central Statistics Department made a great effort to achieve this goal. The result of this census has not been published, and the results were officially cancelled by the Government.

Registration of births and deaths in the chief cities appears to have been grossly incomplete. There is no information available before

---

(1) 1 barrel = 42 U.S. gallons = 34.9726 imperial gallons.

1965 but the United Nations Statistical Office gave an estimate of the crude birth rate and crude death rate as 50 and 22.7 per thousands respectively during the period 1965-1970 (U.N., 1974). The death rate declined rapidly to 20.2 per thousands during the period from 1970-1975 (U.N., 1975), but the birth rate was still high (49.5 per thousands) during the same period. This led to a sharp increase in the rate of natural increase which reached its maximumlevel in 1974 of 3.0 per thousands according to United Nations estimate. The life expectancy at birth has increased from about 42.3 years for both sexes together during the period from 1965-1970 (U.N., 1974) to 44.2 years for males and 46.5 years for females during the period 1970-1975 (U.N., 1975). As a result of a steadily declining death rate and the still high birth rate, the population has a youthful structure with a proportion of children less than fifteen years old of about 44.1 per cent in 1970 increasing to 44.7 per cent in 1975. Accordingly the dependency ratio has increased from 88.2 in 1970 to 90.1 in 1975 (U.N., ECWA, 1976).

As to the population of Saudi Arabia during the first half of the 20th century, they were mostly bedouin nomads. In 1912 the King Abdulaziz devised a comprehensive socio-economic program to settle the nomads in villages. He located each such settlement near a continuous water supply, helped the former nomads to make adobe homes instead of tents which gave relatively little protection from wind and weather, taught them the principles of farming and gave them seeds. He assigned each group a man learned in the principles and practice of Islam to maintain orthodoxy to the Faith. This settlement project began at Artawiyah and spread to a further hundred and twenty-one similar localities throughout the country. At least twelve tribes, amounting to 76,600 people were settled in this manner during the lifetime

of King Abdulaziz. The bedouin nomadic type of life decreased gradually owing to the economic and social developments in the Kingdom at the beginning of the second half of the 20th century.

The bedouin nomads decreased from about 67.69 per cent in the year 1932 of the Kingdom population to about 26.86 per cent in the year 1974, and then are virtually the only users of about 90 per cent of the Kingdom's land area. The nomadic bedouin graze sheep, goats and camels extensively over this vast area which has practically no other economic use .

The percentage of bedouin nomads to the total administrative-area population varies from one area to another. Their distribution around the Kingdom is as shown in Table(1.1). It reaches its maximum in the Northern region (66.67%) and it decreases gradually until it reaches its minimum in the oil production regions, Riyadh (24.06%), Holy Mecca (13.68%), Eastern province (10.39%), Al-Baha (15.59%) and Jezan (3.97%); the last two administrative-areas are agricultural regions.

Owing to the declining productivity of the range lands, the bedouins have experienced a deterioration in their income from livestock. Nowadays, the bedouins have a complex and highly developed social, economic, and legal system that has been recently (in the sixties) adopted and which differs immensely from what they were used to many hundreds of years ago. Nevertheless, the change in the rest of the kingdom has recently been so fast that economic and social gap between the bedouins and the rest of the population is still very large.

The government of Saudi Arabia found that specific programs, based on

realistic appraisal of the needs and changing social and economic state of the bedouins, are required to improve the life of this segment of the population. At the present time financial assistance is given to the tribes in times of hardship and critical moments by the Bedouins Affairs Office in the Royal Bureau (Ministry of Planning, 1975-1980).

In recent years, it was observed that significant migration to urban areas resulting in an estimated net annual decrease of 2 per cent per year in the nomadic population (Ministry of Planning, 1975-1980).

The urban population represented 14.8 per cent of the total population in 1966 increasing to 38.15 per cent in the year 1974. This upward trend was due to the massive movement of people from desert and from small villages to urban areas, especially to the oil production regions (Holy Mecca, Riyadh, Eastern Province) where more jobs were available and the level of living was higher. The rural population represented 34.98 per cent of the total population in 1974.

The percentage of the economic active population was increased from 14.5 per cent in 1966 to 21.7 per cent in the year 1974 (U.N. ECWA, 1978).

The labour force in agriculture is assumed to have declined by about 0.9 per cent annually from 40.4 per cent of the national labour force in 1970 to 28.0 per cent of the labour force in 1975 (Ministry of Planning, 1975-1980). This decline is already reflected in abandoned farmland and partly depopulated villages, particularly in the South-Western Region. Its main causes are low real incomes in agriculture and increasing opportunities for well-paid employment in other sectors.

The total area of cropped land in the kingdom was about 525,000 hectares - (1) about .2 to .3 per cent of the total land area - of

---

(1) 1 hectare = 10376.1823 Sq.m.

which about 121,000 hectares are irrigated and the rest are rain fed. Soil and water resource surveys have shown that the total area of cropped land would be more than doubled according to the availability of water.

Most land in Saudi Arabia is arid or semi-arid, suitable only for periodic grazing. Although these vast ranges have been badly over-grazed, yet they remain important, because they supply about three-fourths of the country's livestock population with about 8.5 million sheep-equivalents.

The economy grows very rapidly. The gross domestic product (GDP) growth rate in constant prices increased from 13.1 per cent in 1970 to an average annual compound rate of 20.5 per cent in the year 1973. Real national income increased at a rate of 44.8% per annum during the period 1970-1975.

The combined real growth of the private non-oil sector leapt from 3.3 per cent in 1970 to an annual rate of 15.6 per cent in 1975. Thus, despite the increasing relative dominance of oil in the economy, the non-oil sector growth rate was higher by the end of the year 1975. GDP per capita increased from about $900 in 1970 to $6800 in 1975 (Ministry of Planning, 1975).

Owing to the increase of national income and population, the growth rates in commodities consumption and services are rather high. Imported goods increased from SR 4,000 (1) million in the year 1969/1970 to SR 7,400 million in 1973. Imports occupy an important role in the trade of the Kingdom of Saudi Arabia, accounting for more than 70 per cent of the value of imported goods.

---

(1) SR. 3.55 = 1 U.S. $

The Saudi Arabian government is very much concerned with education and provides large sums of the national income in order to supply the best educational programs throughout its different stages.

In 1964-1965 the education budget was slightly over 10 per cent of the state budget and about 8 per cent of the Kingdom's national income (Assah, 1969). It increased gradually until it reached SR 2236 million in the year 1973-1974. This sum represents 13 per cent of the whole budget of the Kingdom in that year.

The government is concerned with the education of female as well as of male population. Education is free in Saudi Arabia for all boys and girls attending school and at all levels of study. In addition to free schooling, the state issues free books and school supplies to all students. At first, to encourage the pursuit of learning among the population, the state granted every student at any stage of education a monthly allowance to compensate his family for his lost earnings, but now such allowances are granted only to needy students pursuing theoretical education and to students in technical and vocational schools to encourage attendance at such schools with the object of satisfying the community's need for technicians. Students in some kinds of secondary schools and all in the university stage are paid a sum of money which ranges between $100 and $250 monthly.

Some obstacles were raised towards women's education but they were overcome. In 1960 the government invested responsibility for girls' education in a group of religious leaders who formed what is now known as the Administration of Girls' Education in all its stages including university studies. This body is effectively a Ministry and remains independent of the Ministry of Education which is responsible for men's education. Women are admitted also in some of the Saudi Arabian Universities as externals or regulars. But it is important

to add that they have their lectures separately from the men students and are separated altogether from them.

Education for women is now available in every village, town and city.

The Saudi education system is generally divided into four levels : the elementary level (Grades 1 through to 6), the intermediate level (Grades 7 to 9), the secondary level (Grades 10 to 12), the post-secondary (University and Technical : 2 and 4 years), and the post-graduate level (2 to 4 years).

The speed of progress in education has been very fast. The enrolment of students increased from 403,016 male students and 136,347 female students in the academic year 1969/1970 to 667,905 males and 310,067 females in the academic year 1974/1975.

In the year 1974 the illiteracy rate of the population aged 15 years and over was 65 and 98 per cent for males and females respectively. It is still higher than any other of the mentioned Arab countries in Table (1.2).

To make medical care available to every sick person and to provide him with the proper remedy at the proper time has been one of the golden dreams of humanity ever since man began to seek perfection at the individual, as well as at the community, level. Nevertheless, the countries that have succeeded in providing every citizen with full medical care, whether free or not, are still very few in number even among the advanced nations of the world. Keeping this fact in mind, it will be easy for us to realise how anxious Saudi Arabia has been to achieve an ideal social system since the Kingdom was re-established by the late King Abdul Aziz, if we know that the state has taken on the obligation to provide medical care not only to all its citizens, but also to all those who visit the country from every corner of the

earth during the pilgrimage season or at any other time (the total pilgrims increased from 1.042 million in 1971 to 1.558 million in 1975). This medical care is not limited to free medical consultation but also covers such medical treatment as is appropriate for each case, free of charge. Also, this full medical care guaranteed by the state to its citizens is not confined to free medical consultation and treatment in the state's medical facilities throughout the Kingdom but also enables any Saudi who has not found recovery in the country's public medical facilities to seek treatment abroad at the state's expense. The area of health is the general responsibility of the Ministry of Health and Saudi Crescent Society.

The Saudi Arabian Ministry of Health faces additional responsibilities which health deparments in other countried do not usually have to face. The reason is twofold ;

1 - The vast area of the Kingdom and the difficulty of communication among the inhabited areas.

2 - The many extensive deserts and the nomadic life habitually pursued by the desert dwellers.

The Ministry of Health has tackled these additional responsibilities through the formation of independent health units each of which consists of a mobile clinic provided with the necessary medical equipment and supplies in addition to the doctor and nurse. The duty of this unit is to provide treatment for patients in remote and desert areas as quickly as possible, regardless of the length or roughness of the road. It also serves to spread health consciousness among the inhabitants of remote areas by paying periodic visits to bedouin camps in the areas where the bedouins congregate during the summer. To make these mobile medical units more effective and their benefits

more widespread, the Ministry has set up four flying medical units, each equipped with a helicopter, to furnish medical service to the inhabitants of remote areas any day of the year.

Social assistance has been expanded through the Social Security Affairs programs. The number of institutions run by the Social Welfare Department increased from 15 to 31 between 1970 and 1975. These institutions offer care to the aged, orphans, delinquent children and others in need.

Many more facts and examples could be added about the struggle between the socio-economic development efforts in the Kingdom of Saudi Arabia and the rapid growth of population.

The government of Saudi Arabia is anxious to provide the population of Saudi Arabia with a very prosperous life by raising their standard of living and by offering them all the services which they need.

1.2 Saudis Population Figures :

Saudi Arabia undoubtedly lacked figures and statistical data owing to the lack of the census system and vital registration until the 60's. Therefore, the population estimates before this period are unreliable.

A summary of all available estimates of the Saudi population from the second quarter of this century is given in Table (1.3). The inconsistency of the various estimates may be readily seen.

The first population census in the modern sense in Saudi Arabia took place in the third quarter of the 20th century in the year 1962. But this census has been cancelled by the Saudi Arabian government

because the enumeration was considered largely incomplete.

The second census was taken in 1974 and it is considered as the first official census.

1.2.1 Basis of Census 1974 :

The basis of this census corresponds to the general use of the "de facto" concept. Hence, it included every person, national or foreign, within the borders of the country at a specified time. The intention was that every head of the family should fill the enumerating schedule and return it to the statistical authorities. In actual fact, and because of the prevailing illiteracy among the people, the form filling was completed by the enumerators. There is no doubt that this system of "de facto" enumeration is easy. But it may result in some persons being counted twice. This is mainly due to the tendency, on the part of the head of the family to include members of the family who happen to be temporarily away at the time of the census, and who will be obviously considered "present" in other places away from their normal homes.

1.2.2 Date of Census :

Saudi Arabia government decided to make the first official population census during the year 1974. The right time had been chosen, and the period selected was from 9.9.1974 to 16.9.1974, and the day 15.9.74 was to be the day of census. The information collected related to those who spent the night at home on the night of the census. The reasons which made the Saudi Arabia government choose this date were :

1 - The relative settlement of the inhabitants in order to have a real picture of the actual inhabitants of each village and town.

2 - To avoid the month of Ramadan (the fasting month) because of the difficulties involved in the field work. Also to avoid Hag time because many pilgrims would then be inside the Kingdom.

3 - To avoid the hot summer months because the inhabitants move usually from the Kingdom to other countries. In September the climate starts to be moderate and most of the people return back from abroad so that children can go back to school which starts at the beginning of September. Special arrangements were made for those who were still abroad, and could come until the census was over and they had to be added to the results of the census.

4 - To have three or four months to prepare for the actual census because three thousand employees work during this preliminary period. The summer months are regarded to be the best time to start work because most of those who are employed to do the job work in the schools.

5 - The work at schools should not be hampered since about ten thousand teachers would carry out the work as enumerators which would make it very difficult to carry out the work during the academic year.

1.2.3 Organisation of the Census :

The census came directly under the supervision of the Central Department of Statistics, Ministry of Finance and National Economy. The census operation started with the recruitment of a large staff of employees

and teachers through the agency of various administrative authorities in the Kingdom. The responsibility of the whole operation lay in the hands of one General Director who was the Minister of Finance and National Economy. Lists were made of the various administrative units necessary for the census in order to :

1 - Ensure the inclusion of all administrative units whether they were towns, villages, a water resources, which was a prerequisite of a complete census.

2 - To have clear limits to prevent overlapping of demographic centres.

The Kingdom was divided into fourteen administrative areas : Riyadh, Jizan, Al-Qurayat, Holy Mecca, Eastern Province, Asier, Madina El-Monawara, Qasiem, Ha'il, Tabook, Al-Baha, Najran, North Borders and Al-Jouf.

Each administrative area included a number of emirates (amounting to 332 in the whole Kingdom). Some of the emirates comprised a number of subemirates totalling about 234 subemirates. It is important to notice that a plan had been prepared to cover the bedouins and they were divided into the following :

1 - Bedouins who lived on the outskirts of towns and villages.

2 - Bedouins who lived around water resources.

3 - Bedouins who lived neither on the outskirts of towns and villages nor near water resources.

Another plan had been set up to count people staying in public places such as hotels, prisons, hospitals, disabled people.

The assistants were responsible, each at their own level for surveying their areas with the help of maps, local chiefs, and the administrative staff. They were also responsible for numbering streets, roads and dwellings each in his own area.

During the three months preceeding the census date, the enumerator had to visit each house and establishment in his quota to record all normal residents in these places. On the final night, he returned back to these places in order to bring his records up to date in accordance with the "de facto" basis, by including casual visitors , indicating also the names of normal residents who happened to be absent on the census night.

1.2.4 Problems which confronted the Population Census in 1974 :

The 1974 census was the most important and closest to reality. Nevertheless, it faced many problems which had their effects :

1 - Lack of awareness of the importance of the census due to lack of a previous adequate propaganda.

2 - Nomades bedouins spreading over large areas of the Kingdom and groups of them defying the census.

3 - The width of the Kingdom and dispersal of the population which made the process of gathering information very costly.

4 - In spite of the fact that army service was not obligatory in Saudi Arabia, an inherited fear of recruitment made people - especially outside cities - hold back the correct information.

5 - Lack of transport facilities especially in mountainous areas where tribes of bedouins dwelt.

1.3 Objectives and Outline of the Study :

In spite of the economic and strategic importance of the Kingdom of Saudi Arabia nowadays and its prominent position in civilization, very little demographic studies of its people have been accomplished. No specific study has been made of its demography but some information has appeared in other studies. Nevertheless, this information was not based on exact data.

The object of this research is a serious endeavour to study the demography of Saudi Arabia during the 20th century.

This study is based on the first official census carried in the year 1974.

A quick look at the population and socio-economic development in Saudi Arabia, and at Saudi Arabia population figures has been given in chapter one.

A sex and age structure of the population and the examination of errors in the census data 1974 will be studied in chapter two.

The main purpose of chapter three will be to rectify the sex-age structure of the census 1974 as far as Saudis are considered.

In chapter four the age pattern of mortality, trends in mortality levels, and current level of mortality will be investigated, in order to project the age specific mortality rates for both sexes before constructing abridged life tables for the chief cities in every region in Saudi Arabia.

Marriage, divorce and widowhood are investigated, and age at marriage, proportions single, marriage rates by age, and marital condition are calculated in chapter five.

The factors affecting fertility in Saudi Arabia, and the current level of fertility will be investigated in chapter six and an estimation of fertility will be made in order to estimate the gross reproduction rate and the total fertility of Saudis.

In chapter seven a population projection by sex and age up to year 2000 for Saudis only is made on the basis of two assumptions of mortality decline.

A final discussion and a summary of the findings of the study will be presented in chapter eight.

The tables for every chapter will be presented in separate sections at the end of the chapter.

1.4 Tables :

Table (1.1)

The Distribution of the Bedouin* Nomads Around the Kingdom of Saudi Arabia, 1974

Administrative Area	Population bedouins ('000)	Per cent of administrative area population
Riyadh	306	24.06
Holy Mecca	240	13.68
Eastern Province	80	10.39
Assir	247	36.22
Medina	237	45.66
Jizan	16	3.97
Qasiem	101	31.96
Ha'il	143	55.00
Tabook	89	45.88
Al-Baha	29	15.59
Najran	56	37.84
Northern	86	66.67
Al-Jouf	31	47.69
Al-Qoryat	13	41.94

* There are about 210,000 bedouins nomads living in the Nomadic site, all of them are bedouin nomads.

Source : Census 1974, Ministry of Finance and National Economy, Central Department of Statistics.

Table (1.2)

Illiteracy Rate of the Population aged 15 years and over (%)

for Selected Arab Countries, 1974

Country	Illiteracy Rate	
	Male	Female
Saudi Arabia	65.0	98.0
Bahrain	42.0	64.6
Egypt	43.2	71.0
Iraq	58.5	82.8
Jordan	19.0	45.7
Kuwait	32.0	52.0
Lebanon	20.0	44.0
Syria	34.0	76.0
United Arab Emirates	41.6	61.9

Source : U.N. Economic Commission for Western Asia, 1978

Table (1.3)

Summary of Population Estimates available for Saudi Arabia,

1932 to 1974

Year	Millions	Remarks
1932	5.20	Estimated by the S.R. Govern.
1950	4.89	" " " U.N.
1960	5.38	" " " U.N.
1962	3.30	Census 1962
1965	6.75	Estimated by the U.N.
1970	7.75	" " " U.N.
1974	7.01	Census 1974

CHAPTER TWO

THE DISTRIBUTION OF THE POPULATION BY AGE AND SEX, 1974

2.1 INTRODUCTION

The age and sex structure of any population is one of the most important fields for demographic analysis. Its study provides an immense wealth of information about different demographic aspects, such as natality and mortality, and reveals many of the facts about the census results. The analysis of the census by age and sex is useful in throwing light on possible errors in the enumeration. The most popular means of presenting age and sex data is the population pyramid. In such a pyramid each age group is represented by a rectangle of area proportional to the number in the age group. The rectangles are placed on top of each other, the youngest age group at the bottom and the oldest at the top. The central line divides between males and females on each side.

In its most general form, the population pyramid is expected to be triangular. Every successively older age group tends to be smaller than the preceding younger group, through the effect of mortality. In practice, the shape of the pyramid might not follow this exact pattern. Its normal profile may be distorted by such factors as fertility, differential mortalities and migration. The effects of fertility and mortality are such that if they are both high, the pyramid will be broad at the base and will be narrow rapidly as the age scale is ascended. If, on the other hand, they are both low, the pyramid will be narrow

at the base and will be characterized by very sharply inclining sides.

The effects of migratory movements, will depend totally on the age and sex structure of the immigrants and emigrants.

2.2 The Distribution Of The Population Of Saudi Arabia by Age and Sex :

In Saudi Arabia, data about the age and sex structure of the population is available only for the enumerated figure 1974 (the first official census for Saudi Arabia). These data are set out in Table (2.1). The percentage structure is presented in Table (2.2).

The adjusted distribution of population by age and sex for persons not classified by age is performed by multiplying the population classified by age by the ratio (U.N., 1967) :

$$\frac{\text{Total Population}}{\text{Total Population - Population with ages unknowns}}$$

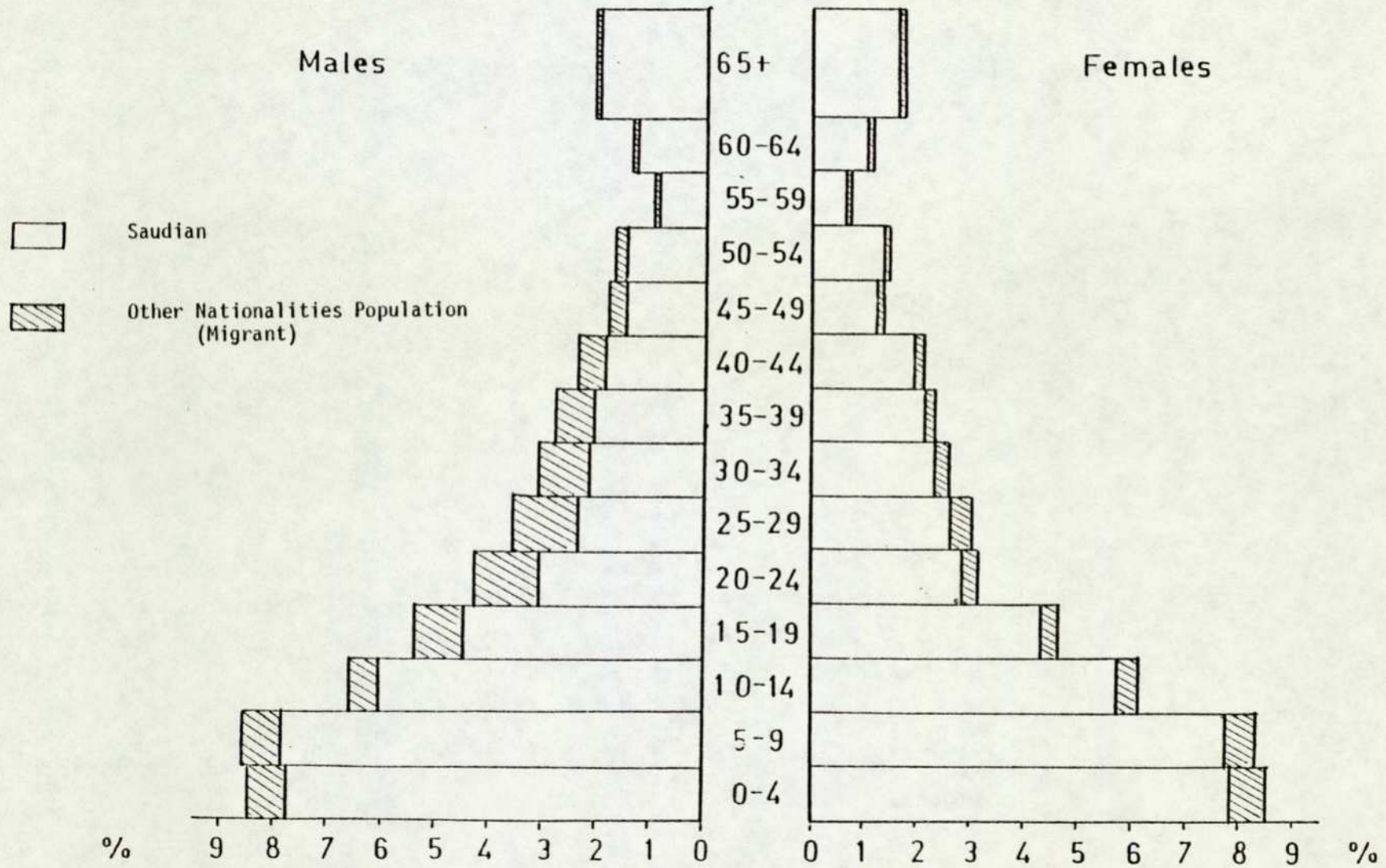
This adjusted distribution is given in Table (2.3). The percentage of this adjusted structure is presented in Table (2.4).

2.2.1 The Age Pyramid Of the Population :

The distribution of population by age is given in Table (2.3), all illustrated by the corresponding age pyramid on Figure (2.1). The important thing to notice in the distribution is the "youthfulness" of the population of Saudi Arabia. More than 46.6 of its total population are children under 15 years of age and more than half the population under 20 years. This has important implications for the future growth of Saudi Arabia. Such large proportions of young people will have a

FIGURE (2.1)

Per Cent Distribution of the Population of Saudi Arabia, 1974



Source : based on data from Census 1974

favourable many potential parents. If high birth rates are accompanied by a lowering of the future death rates, as most probably will be the case, then an increased rate of natural increase will prevail for at least the next 20-22 years (i.e. to the end of this century). Thus, the population of Saudi Arabia will continue to grow rapidly even if migration recesses. The age pyramid with its broad base conveys the same information on the young population. Its general irregular shape reflects the effect of migration. Migrants concentrate in the age groups 15-40 with a predominance of males as can be seen from the sex-structure in the Table (2.5) for these age groups and the corresponding areas for males and females in the graph of the pyramid. Moreover, a part of the difference between males and females in the younger age-groups may be accounted for the possible under-reporting of girls.

2.2.2 The Sex Structure :

The distribution of the population of Saudi Arabia by sex in each of the 14 administrative-areas can be seen in Table (2.6).

The preponderance of males in the country is marked. As much as 53.2% of the population is male or there is a ratio of 1136 males to 1000 females. The difference is due to migrants who differ in the sex structure as a result of the inflated categories among them either of single males coming to Saudi Arabia in search of employment. And this is the same cause which makes the percentage of males lower in the four administrative-areas Assier, El-Baha, Jezan and Ha'il. It is evident also that the largest percentage is seen in the administrative-areas Eastern Province and Tabook because the Eastern Province is the administrative of petroleum and oil products and because the administrative-area Tabook is very important central commercial. The difference in the sex structure between migrants and non-migrants

according to census 1974 is shown in Table (2.5).

Geographically, the preponderance of males is present in most administrative-areas as can be seen in Table (2.6) which implies that migrants are to be found in most administrative-areas. Since some administrative-areas have a percentage of males smaller than the average for non-migrants. As seen in Table (2.5) the largest percentage of males migrants are in the administrative-area Riyadh. Actually, Riyadh includes the tin-shacks North of Petromin and a large part of industrial area where migrants would tend to seek residence near the employment places.

2.3 Reliability of the Data :

There can be different types of errors found in census data. Errors in sex data are thought to be almost non-existent, since the enquiry into sex is the simplest issue on a census tables. Its terms are free from any ambiguity and there is normally no motive on the part of the respondents for misrepresentation, and even in the case of any discrepancies they are usually too small.

As a rule there should not be any abnormal differences between the number of males and that of females in the 1974 census. This is because the excess number of males over females at birth is compensated for in subsequent years by the higher death rate for males than for females at each age level. The accuracy of sex data is measured by the sex ratio defined as the number of males per hundred females. Any abnormally high or low sex ratio for the total or for any specific age group can be accepted only if it can be explained by the presence of such abnormal events.

Contrary to sex data, age statistics are liable to many errors. The most common types of these errors are :

1 - The general practice of omitting a considerable number of children under the age of 5 years, and particularly of infants under the age of 1 year because parents may tend not to think of newborn infants as regular members of the household.

2 - Heaping at ages ending in 0,5 and even digits. Age heaping is most pronounced among population having a low educational status.

3 - The tendency on the part of old people to exaggerate their ages especially in some tribal societies where honour and prestige are associated with old age. It is not yet known, however, at what age old people begin to add years to their actual ages.

Errors of this kind or the other, can be detected by means of an age ratio device. The age ratio is defined as the ratio of the population in a given age group per 100 to one half the sum of the populations in the preceding and following groups. Age ratios are computed separately for each sex in order not to influence them by the inequality of sex ratios at birth or by differences in mortality rates for each sex.

As a result of such factors, considerable differences between the age structure of each sex are bound to exist. Hence the computation of these age ratios should be separate for each sex.

Errors in the sex and age data can be suspected by the mere abrupt

fluctuations of the sex and age ratios from one age group to another. The degree of variability in the data can be compared by the United Nations age-sex accuracy index (U.N. Manual II, 1955). In this index the mean of the differences from age to age in reported sex ratios, without regard to sign, is taken as a measure of the accuracy of the observed sex ratios, on the assumption that these age-to-age changes should approximate zero. The U.N. age-sex accuracy index combines the sum of :

1 - The mean deviation of the age ratios for males from 100.0

2 - The mean deviation of the age ratios for females from 100.0

3 - Three times the mean of the age-to-age differences in reported sex ratios.

The calculation of the U.N. age-sex accuracy index is shown in Table (2.7) for Saudi Arabia in 1974. If we compare the U.N. index of Saudi Arabia as a whole by the U.N. index of the stable population as shown in Table (2.8) we notice a high irregularity. The reason for this irregular pattern may be easily explained by migration of males into Saudi Arabia.

To further illustrate this point, the age-sex distribution of Saudis will be only taken into consideration because the population of Saudi Arabia can be divided into two separate communities : citizens of Saudi Arabia (Saudi's) and immigrants (non-Saudi's), and the Saudis are an essentially closed and almost stable population.

Table (2.9) shows the U.N. index for Saudi's only. If we compare this

result with the U.N. index of the stable population as seen in Table (2.8) we notice that the U.N. index of Saudis is not only abnormally high, but also erratic. The reasons for these irregularities may be quoted as follows :

1 - Many young women were mis-stated tendentiously, or many women in the age range 15-34 were omitted from the census count.

2 - Many old men in the ages 45 and over were mis-stated, an age at which men may readily be suspected of a desire to appear older than they are due to the significance of the role of the older generation in the Saudi culture.

Our aim must be to diagnose the sources of inaccuracies and make an attempt to adjust these inaccuracies. This is done in the following Chapter III.

2.4 Tables :

Table (2.1)

The Age and Sex Structure of the Saudi Arabia Enumerated Population*, 1974

age group	Population(Number)		
	Male	Female	Total
less than 1	97,062	92,051	189,113
1-4	479,548	481,205	960,753
5-9	573,190	560,989	1,134,179
10-14	445,656	408,337	853,993
15-19	363,246	306,561	669,807
20-24	288,840	213,852	502,692
25-29	236,399	201,537	437,936
30-34	203,077	178,458	381,535
35-39	187,794	155,391	343,185
40-44	160,429	138,506	298,935
45-49	122,227	87,034	209,261
50-54	114,340	96,525	210,865
55-59	66,946	41,920	108,866
60-64	97,096	71,928	169,024
65 & Over	139,831	115,106	254,937
N.S.	1,072	313	1,385
Total	3,576,753	3,149,713	6,726,466

* It does not include Nomadic Site and Saudis living abroad.

Source: Census 1974, Kingdom of Saudi Arabia, Ministry of Finance and National Economy, Central Department of Statistics.

Table (2.2)

The Percentage Distribution of Saudi Arabia Population

by Age and Sex, Enumerated Figure 1974

Age group	Male	Female	Total
Less than 1	2.7	2.9	2.8
1-4	13.4	15.3	14.3
5-9	16.0	17.8	16.9
10-14	12.5	13.0	12.7
15-19	10.2	9.7	10.0
20-24	8.1	6.8	7.5
25-29	6.6	6.4	6.5
30-34	5.7	5.7	5.7
35-39	5.3	4.9	5.1
40-44	4.5	4.4	4.4
45-49	3.4	2.8	3.1
50-54	3.2	3.1	3.1
55-59	1.9	1.3	1.6
60-64	2.7	2.3	2.5
65 & Over	3.9	3.7	3.8
N.S.	0.0	0.0	0.0
All Ages	100.0	100.0	100.0

Source: based on data from census 1974.

Table (2.3)

The Distribution of Saudi Arabia Population by Age and Sex

(Non-Migrant and Migrant) According to Census 1974

Age group	Non-Migrant				Migrant			
	M.	F.	adj. Pop. for Age Unknowns		M.	F.	adj. Pop. for Age Unknowns	
			M.	F.			M.	F.
-1	87,158	82,826	87,171	82,832	9,914	9,225	9,925	9,229
1-4	438,206	441,592	438,271	441,623	41,942	39,613	41,991	39,629
5-9	529,451	519,954	529,525	519,990	43,699	41,035	43,750	41,052
10-14	409,349	381,811	409,406	381,838	36,307	26,526	36,349	26,537
15-19	305,458	285,995	305,502	286,015	57,788	20,565	57,855	20,574
20-24	211,081	190,771	211,113	190,785	77,759	23,081	77,850	23,090
25-29	160,744	175,369	160,767	175,382	75,655	26,168	75,743	26,179
30-34	145,260	157,651	145,280	157,662	57,817	20,807	57,885	20,816
35-39	143,764	140,791	143,784	140,802	44,030	14,600	44,082	14,606
40-44	130,091	127,051	130,109	127,060	30,328	11,455	30,363	11,460
45-49	104,148	80,412	104,163	80,418	18,079	6,622	18,100	6,625
50-54	99,763	88,922	99,777	88,928	14,577	7,639	14,594	7,640
55-59	60,851	38,881	60,860	38,884	6,094	3,039	6,101	3,040
60-64	90,155	66,679	90,168	66,684	6,941	5,240	6,949	5,242
65 & Over	132,157	108,368	132,176	108,376	7,674	6,738	7,683	6,741
N.S.	456	206	.....	.....	616	107	.....	.....
Total	3,048,092	2,887,279	3,048,092	2,887,279	529,220	262,460	529,220	262,460

Source : based on data from census 1974

Table (2.4)

The Percentage Distribution of Saudi Arabia Population by Age and Sex Enumerated Figure

1974

(Adjusted Population for Ages Unknown)

Age group	Percentage					
	Non-Migrants			Migrants		
	M.	F.	Total	M.	F.	Total
-1	1.5	1.4	2.9	1.2	1.2	2.4
1-4	7.4	7.4	14.8	5.3	5.0	10.3
5-9	8.9	8.7	17.6	5.5	5.2	10.7
10-14	6.9	6.4	13.3	4.6	3.4	8.0
15-19	5.2	4.8	10.0	7.3	2.6	9.9
20-24	3.5	3.2	6.7	9.8	2.9	12.7
25-29	2.7	3.0	5.7	9.6	3.3	12.9
30-34	2.4	2.7	5.1	7.3	2.6	9.9
35-39	2.4	2.4	4.8	5.6	1.8	7.4
40-44	2.2	2.2	4.4	3.8	1.4	5.2
45-49	1.7	1.4	3.1	2.3	0.8	3.1
50-54	1.7	1.5	3.2	1.8	1.0	2.8
55-59	1.0	0.7	1.7	0.8	0.4	1.2
60-64	1.5	1.2	2.7	0.9	0.7	1.6
65 & Over	2.2	1.8	4.0	1.0	0.9	1.9
Total			100.0			100.0

Source : based on data from census 1974.

Table (2.5)

Sex Distribution of Migrants and Non-Migrants and Administrative-Areas According to Census 1974

Administrative Area	Migrants			Non-Migrants			% Male	
	Population			Population				
	M.	F.	Total	M.	F.	Total	Migrants	Non-Migrants
Riyadh	109,852	34,041	143,893	589,315	525,937	1,115,252	76.3	52.8
Holy Mecca	230,120	135,162	365,282	722,544	672,390	1,394,934	63.0	51.8
Midinah	25,916	15,263	41,179	241,489	233,968	475,457	62.9	50.8
Eastern Province	66,945	21,979	88,924	361,568	311,545	673,113	75.3	53.7
Tabook	7,191	2,236	9,427	102,761	82,351	185,112	76.2	55.5
Al-Qoryat	1,753	780	2,533	16,199	14,121	30,320	69.2	53.4
Assier	22,728	8,883	31,611	312,462	334,606	647,068	71.9	48.3
Al-Baha	3,488	1,539	5,027	84,138	96,686	180,824	69.4	46.5
Najran	8,296	5,156	13,452	66,933	63,712	130,645	61.7	51.2
Jizan	33,218	29,410	62,628	169,427	176,279	345,706	53.0	56.8
El-Jouf	1,941	681	2,622	32,653	31,463	64,116	74.0	50.9
North Borders	3,568	2,017	5,585	64,563	57,434	121,997	63.9	52.9
El-Cassim	9,911	3,402	13,313	157,065	154,165	311,230	74.4	50.5
Ha'il	3,744	1,345	5,089	126,965	133,162	260,127	73.6	48.8

Source : based on data from census 1974

Table (2.6)

Population by Sex and Administrative-Area

According to Census 1974

Administrative Area	Population			% Male
	Male	Female	Total	
Riyadh	699,167	559,978	1,259,145	55.5
Holy Mecca	952,664	807,552	1,760,216	54.1
Al-Madinah	267,405	249,231	516,636	51.8
Eastern Province	428,513	333,524	762,037	56.2
Tabook	109,952	84,587	194,539	56.5
Qoryat	17,952	14,901	32,853	54.6
Assier	335,190	343,489	678,678	49.4
El-Baha	87,626	98,225	185,851	47.1
Najran	75,229	68,868	144,097	52.2
Jizan	202,645	205,689	408,334	49.6
El-Jouf	34,594	32,144	66,738	51.8
North Borders	68,131	59,451	127,582	53.4
Ha'il	130,709	134,507	265,216	49.3
Qassim	166,976	157,567	324,543	51.4
Total	3,576,753	3,149,713	6,726,466	53.2

Source : Census 1974.

Table (2.7)

Calculation of the United Nations Age-Sex Accuracy for Saudi Arabia, 1974

Age group	Adjusted Population for Age Unknowns		Analysis of Sex Ratios		Analysis of Age Ratios			
					Male		Female	
	Male (1)	Female (2)	Ratio [(1)÷(2)]x100 (3)	Successive differences Δ(3) = (4)	Ratio (5)	Deviation from 100 (5)-100= (6)	Ratio (7)	Deviation from 100 (7)-100= (8)
0-4	601,268	597,650	100.61					
5-9	597,702	584,862	102.20	- 1.59	109.51	9.51	111.53	+11.53
10-14	464,714	425,714	109.16	- 6.96	95.18	- 4.82	94.13	- 5.87
15-19	378,779	319,606	118.51	- 9.35	98.91	- 1.09	98.54	- 1.46
20-24	301,192	222,952	135.09	-16.58	96.33	- 3.67	84.17	-15.83
25-29	246,508	210,113	117.32	+17.77	96.11	- 3.89	102.74	+ 2.74
30-34	211,762	186,052	113.82	+ 3.50	95.74	- 4.26	99.99	- 0.01
35-39	195,824	162,003	120.88	- 7.06	103.32	3.32	98.04	- 1.96
40-44	167,289	144,400	115.85	+ 5.03	103.49	3.49	114.26	+14.26
45-49	127,453	90,738	140.46	-24.61	88.96	-11.04	74.06	+25.94
50-54	119,229	100,633	118.48	+21.98	120.88	20.88	149.70	+49.70
55-59	69,809	43,703	159.74	-41.26	63.32	36.68	49.77	-50.23
60-64	101,248	74,989	135.02	+24.72				
65 & over	145,804	120,004	121.50	+13.52				
Total (irrespective of sign)				193.93		102.65		179.53
Mean				14.92		9.33		16.32

Index = 3 times mean difference in sex ratios plus mean deviations of male and female = 70.41

Table (2.8)

Calculation of the United Nations Age-Sex Accuracy for the Stable Population

Age	Population		Analysis of sex ratios		Analysis of age ratios			
					Male		Female	
	Male (1)	Female (2)	Ratio [(1)÷(2)] x100 = (3)	Successive differences Δ(3) = (4)	Ratio (5)	Deviation from 100 (5)-100 = (6)	Ratio (7)	Deviation from 100 (7) - 100 = (8)
0-4	606,566	544,830	111.33					
5-9	473,061	434,824	108.79	+ 2.54	94.38	-5.62	95.56	-4.44
10-14	395,945	365,241	108.84	- 0.05	98.45	-1.55	98.56	-1.44
15-19	331,325	306,340	108.16	+ 0.68	98.91	-1.09	98.70	-1.30
20-24	274,022	255,524	107.24	+ 0.92	98.57	-1.43	98.72	-1.28
25-29	224,643	211,349	106.29	+ 0.95	98.40	-1.60	98.45	-1.55
30-34	182,579	173,814	105.04	+ 1.25	98.20	-1.80	98.20	-1.80
35-39	147,222	142,622	103.22	+ 1.82	98.17	-1.83	98.31	-1.69
40-44	117,351	116,357	100.85	+ 2.37	98.34	-1.66	98.41	-1.59
45-49	91,442	93,837	97.00	+ 3.85	97.56	-2.44	98.04	-1.96
50-54	70,106	75,069	93.00	+ 4.00	98.08	-1.92	98.67	-1.33
55-59	51,512	58,323	88.00	+ 5.00	96.85	-3.15	98.54	-1.46
60-64	36,272	43,309	84.00	+ 4.00				
65 & Over	46,026	65,830	70.00	+14.00				
Total (irrespective of sign)				41.43		24.09		19.84
Mean				3.19		2.19		1.80

Index = 3 times mean difference in sex ratios plus deviation of male and female = 13.56

Table (2.9)

Calculation of the United Nations Age-Sex Accuracy for Saudis only , 1974

Age	Adjusted Population for age unknowns		Analysis of sex ratios		Analysis of age ratios			
					Male		Female	
	Male (1)	Female (2)	Ratio [(1)÷(2)]x 100 = (3)	Successive differences Δ (3) = (4)	Ratio (5)	Deviation from 100 (5)-100 = (6)	Ratio (7)	Deviation from 100 (7)-100 = (8)
0-4	525,988	524,455	100.29					
5-9	529,525	519,990	101.83	- 1.54	113.22	+13.22	114.75	+14.75
10-14	409,406	381,838	107.22	- 5.39	98.06	- 1.94	94.75	- 5.25
15-19	305,502	286,015	106.81	+ 0.41	98.47	- 1.53	99.90	- 0.10
20-24	211,113	190,785	110.65	- 3.84	90.55	- 9.45	82.70	-17.30
25-29	160,767	175,382	91.67	+18.98	90.22	- 9.78	100.66	+ 0.66
30-34	145,280	157,662	92.15	- 0.48	95.41	- 4.59	99.73	- 0.27
35-39	143,784	140,802	102.12	- 9.97	104.42	+ 4.42	98.90	- 1.10
40-44	130,109	127,060	102.40	- 0.28	104.95	+ 4.95	114.87	+14.87
45-49	104,163	80,418	129.53	-27.13	90.62	- 9.38	74.46	-25.54
50-54	99,777	88,928	112.20	+17.33	120.92	+20.92	149.08	+49.08
55-59	60,860	38,884	156.52	-44.32	64.08	-35.92	49.98	-50.02
60-64	90,168	66,684	135.22	+21.30				
65 & Over	132,176	108,376	121.96	+13.26				
Total (irrespective of sign)				164.23		116.1		178.94
Mean				12.63		10.55		16.27

Index = 3 times mean differences in sex ratios plus mean deviations of male and female = 64.71

CHAPTER THREE

THE RECTIFICATION OF ENUMERATED CENSUS DATA 1974 (FOR SAUDI'S ONLY)

3.1 INTRODUCTION :

A normal age structure derived from a complete and relatively accurate census enumeration, is expected to follow a typical pattern about as follows : it begins with a large number in the first age group (0-4) of each sex, which gradually diminishes in subsequent age-groups, until the final group at age around 100 years, when the number becomes negligible or nil. Within the two sexes, males predominate in the first few quinquennial age-groups and then fall below the number of females, with gradually widening differences at the advanced ages.

On the assumption that the Saudis population is stable, the plotting of the data of census according to year of birth of each cohort, are usually arranged in line. In this presentation a deepening in the curve produced by an unusual population loss in one age group (due, for example, to mass emigration, heavy mortality or curtailed fertility). Similarly, a bulge of the curve (indicating gain) should show in line, depending on the time of its occurrence.

Nearly all these characteristics are absent in the recoding of Saudi Arabia data by year of birth of the census 1974 (Figure (3.1), Figure (3.2)). The line starts at a high level as expected, but the decline is not smooth.

FIGURE (3.1)

Census Population of Saudi Arabia (Saudis Only), 1974 by Sex and Age-Groups, Arranged by Year of Birth at Each Cohort

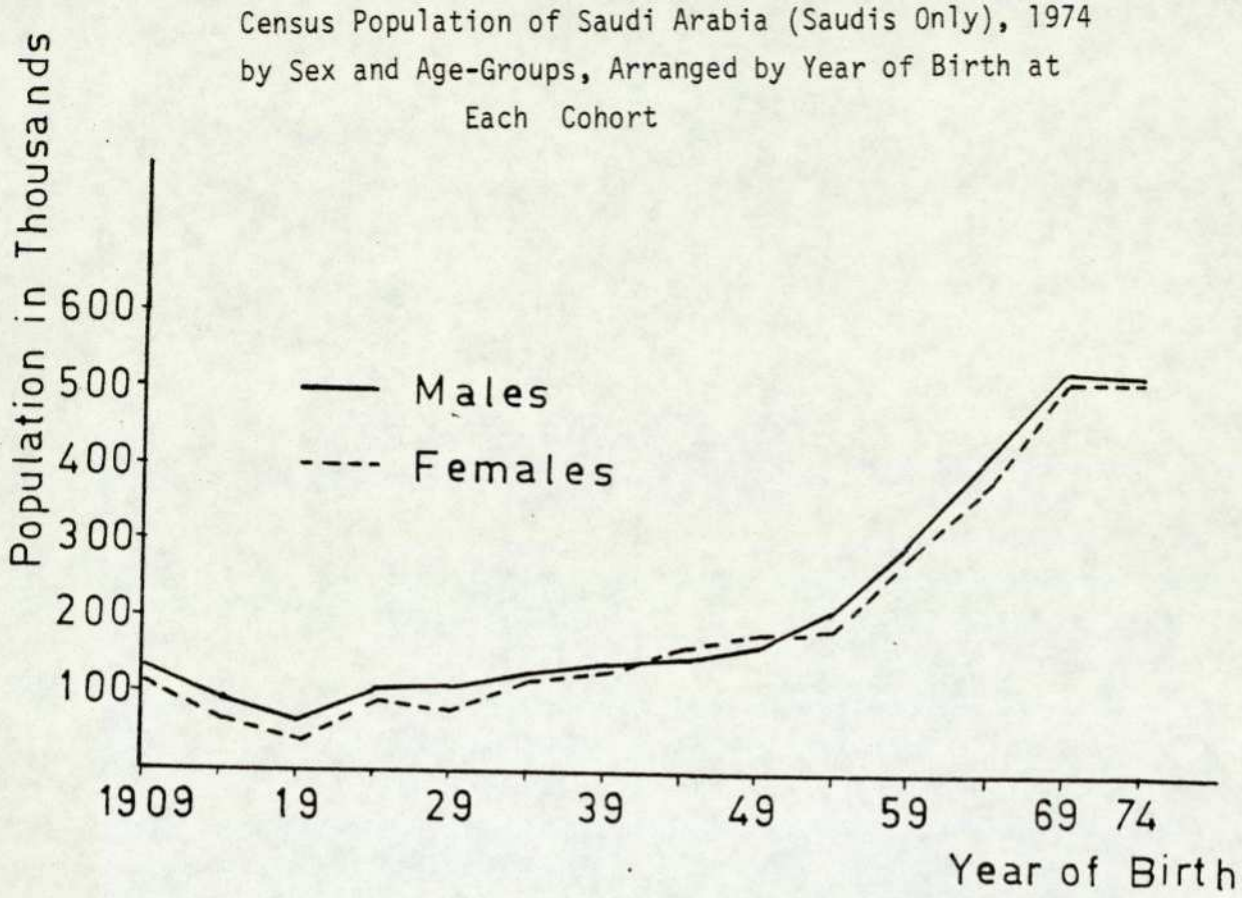
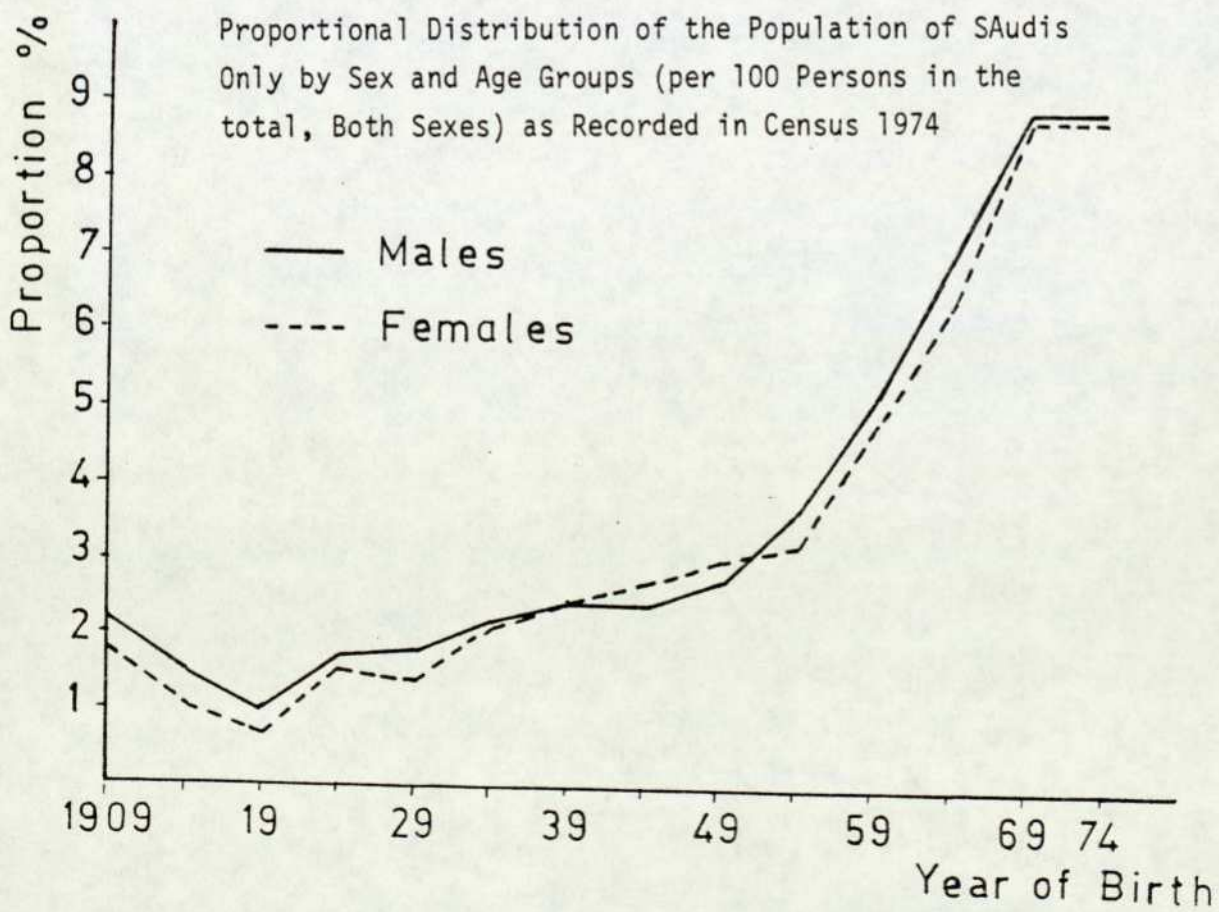


FIGURE (3.2)

Proportional Distribution of the Population of SAudis Only by Sex and Age Groups (per 100 Persons in the total, Both Sexes) as Recorded in Census 1974



These irregularities are due to two main sources of error :

1 - An under-enumeration of the young age group and more specifically, the infant population.

2 - Misreporting of the age, which is more pronounced among females and in a certain age group .

The first of these types of error is substantiated by the fact that the age group 0-4 in the 1974 census was smaller in numbers in comparison with number in the age 5-9 in the same census.

The other erratic deviations are almost due to misreporting of the age. Besides the usual preference of giving the age in round numbers ending in zero, as it becomes evident in the undulated course of the curve, there seems to be another under-reporting in the age range 45-60 for both sexes.

Sex differentials in the age structure (illustrated in Figure (3.2) in proportional distribution) departing from the usual pattern in which males predominate in the early ages and in the later part of life but females take the lead in the age range 25-39, at which age women may readily be suspected of having a desire to appear younger than they are.

In fact, the Saudi Arabia census counted more males than females, in spite of a regular sex-ratio at birth, and this is taken as an additional evidence of some under-enumeration of female sex. Most of these erratic deviations in the age structure data of the census 1974 had to be rectified by using Brass technique of graduation,

keeping, at the same time, the total numbers and basic characteristics of the population identical to those recorded by the census 1974.

The attempt here is to construct a more acceptable set of data for the age structure of Saudi's population, free from the inconsistencies discussed in the previous chapter. It is to confine the treatment of census data to 1974 census, and it is hoped that in the end a more plausible set of sex and age ratios would be produced.

3.2 Graduation of the Sex-Age Structure of the Census Population of Saudi Arabia, 1974 (Saudi's Only) :

Brass has developed a technique to graduation of the age structure where the age mis-statements are severe .

The steps are as follows :

1 - The population is cumulated to obtain totals below various ages.

2 - Each such accumulated total is divided by the grand total to produce the proportion, P , below the various ages.

3 - The logit function of a proportion, P , is defined as : $\frac{1}{2} \log_e ((1-p)/P)$

4 - The logits of these proportions are then calculated and plotted against the logits of the proportions under the same ages of an appropriate reference population (in our case we used "West" stable population, published in 1966 by Coale and Demeny on Regional Model Life Tables and Stable Populations).

5 - If the data are of particularly high quality, the technique may be more sensitive by plotting the difference between the actual and reference logit values. On the assumption that the population should be smooth (i.e. that there is no historical reason for irregularity), the points on the graph should lie on a smooth curve, usually adequately approximated by a straight line. If the quality of the data is poor, it is not clear which straight line is the "best" and the so-called "group average" method is suggested, e.g. the averages of the first third and the last third of the observations are calculated and joined.

6 - Once a line has been produced, for any age - not just one of the original ages - the corresponding logit can be obtained.

7 - By reversing the transformation procedure, this may be turned into the proportion under any age and thus the population in any age group obtained.

Tables (3.1) and (3.2) show the graduation of age structure of males and females for Saudis population by using the above technique of graduation.

The adjusted distribution represents a marked improvement over the original ones (Table (3.3)). But there are some irregularities remaining resulting from under-count of the census figure 1974.

3.3 Consideration of Population Sex Ratios :

The sex ratio is usually defined as a number of males per hundred females in successive age groups.

In the absence of migratory factors, the sex ratio is expected to vary smoothly from age to age over the span of life. The type of pattern desired can be derived from knowledge and consideration of the demography of the particular country dealt with.

A male excess of some 5 per cent at birth may be expected in any populations except African populations, but higher male mortality over the whole span of life implies, firstly that the youngest population age group will have a sex ratio somewhat below 105 males per 100 females, and secondly that the ratio will decline from each group to the next older group.

The case may be different in other countries. The enumerated population in a number of countries shows a female excess under age 1 or 5 years. This unusual feature may thus be real or again it may be attributed to faults in the statistics. It, therefore, could be suspected at least as a rarity, but it should not be rejected outright.

There is also a possibility that female mortality may be higher than male's for part of the life span. This is rarely found outside the range from 10 to 60 years, and is found more often in the early years of the range than in the later. Bringing these considerations together, the sex ratio at the youngest age shown, will usually show a small male excess. If the next age shows increasing masculinity (implying higher female mortality from a very young age), then this tendency should persist at least for a time, but

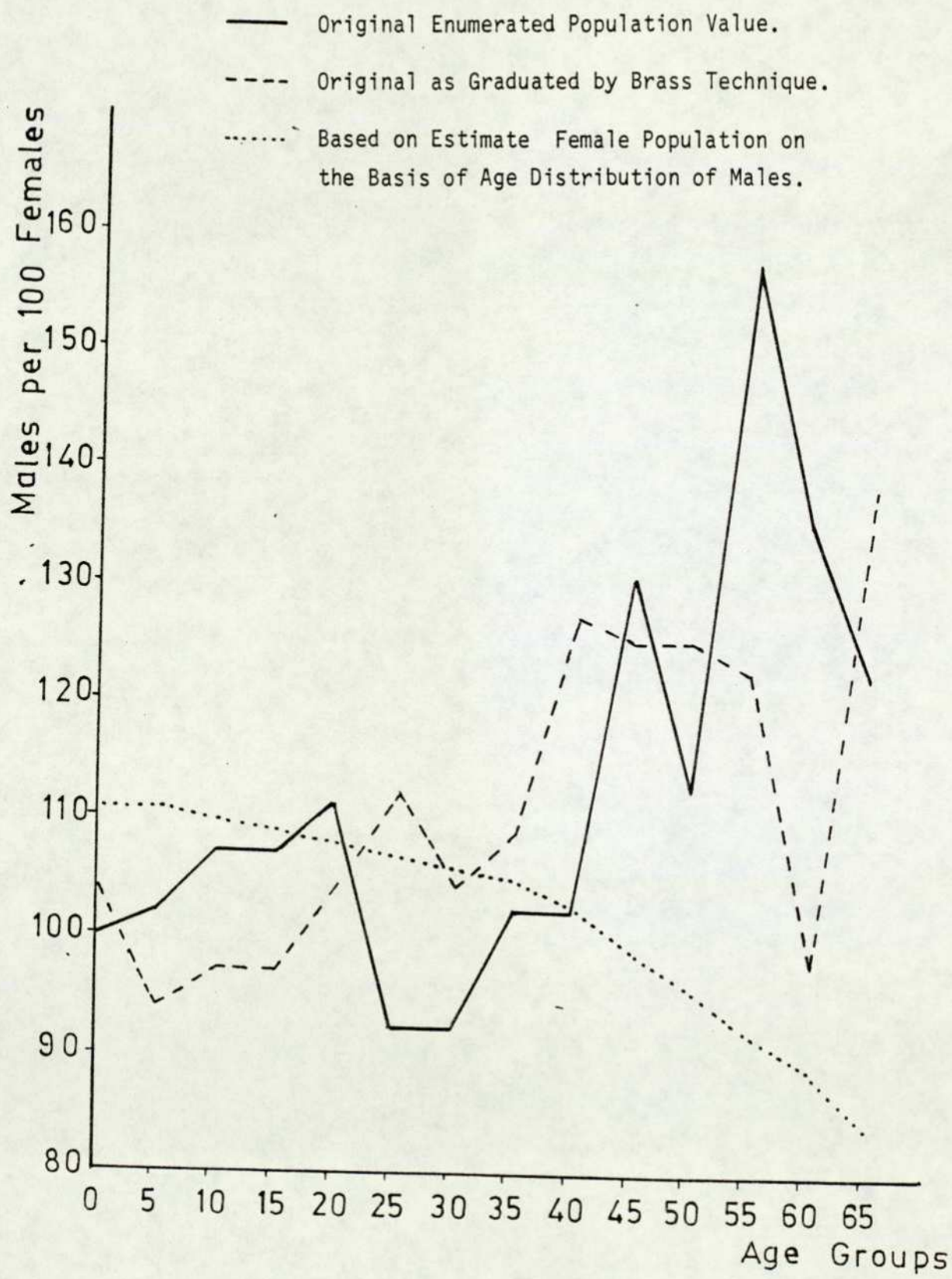
should eventually be replaced in a smooth manner by an over-increasing decline in masculinity. Alternatively, the masculinity of the second age group may be the same as, or lower than, that of the youngest age group, but arising masculinity may nevertheless appear at some older groups, not however after early adult ages. Whenever increasing masculinity appears it may end quickly, or persist for some time, but rarely into old ages. By simply looking at Table (3.4) and Figure (3.3) one can have no hesitation in rejecting the sex ratios of the enumerated population. The abnormally high masculinity values at ages 20 and 45 and over, and low values at 25 and 30, in particular, are just quite unacceptable. The graduation made some improvement in this direction. It has produced better sex ratios than the original as seen in Table (3.4) and Figure (3.3).

At middle age slight irregularities are still seen and more unlikely to be real. At the older ages striking fluctuations in the sex ratio show up a residual fault .

On the assumption that the enumeration of the male population was more complete than that of the other sex. An adjustment of the female distribution could be made by reference to the male distribution (more accurate). The expected sex ratios are applied to adjusted male distribution to derive corrected figures for females. The numbers of males, as adjusted by Brass technique, are then multiplied by these ratios to obtain first estimates of corresponding numbers of females of the same ages. Initially the total enumerated number figure for females is 2,887,279, whereas the newly computed numbers of females total 3,078,114. "Pro-rating" is used to bring the total back to 2,887,279. Table (3.5) shows

FIGURE (3.3)

Sex-Ratios, 1974 by Age (Saudis Only)



the estimate of female population by the above method.

3.4 Tables :

Table (3.1)

Graduation of Saudi Arabia Males Population (Saudi's Only), 1974, By Using Brass Technique of Graduation

Age group (1)	No. of Male pop. (2)	Exact age (3)	Pop. under successive age group (4)	P = (4) ÷ Total (5)	Y (6)	P* (7)	X (8)	$\hat{Y}$ (9)	$\hat{P}$ (10)	Adj. pop. under successive age group (11)	Adjusted population (12)
-1	87,171	1	87,171	.0286	1.7627	.0480	1.4937	1.4552	.0561	157,360	157,360
1-4	438,271	5	525,442	.1724	0.7844	.1990	0.6963	0.7592	.1799	548,214	390,854
5-9	529,525	10	1,054,967	.3461	0.3181	.3542	0.3003	0.4135	.3040	926,466	378,252
10-14	409,406	15	1,464,373	.4804	0.0392	.4841	0.0318	0.1791	.4115	1,254,351	327,885
15-19	305,502	20	1,769,875	.5807	-0.1628	.5928	-0.1878	-0.0125	.5051	1,539,430	285,079
20-24	211,113	25	1,980,988	.6499	-0.3093	.6827	-0.3831	-0.1830	.5917	1,803,593	264,163
25-29	160,767	30	2,141,755	.7027	-0.4301	.7564	-0.5664	-0.3430	.6667	2,032,048	228,455
30-34	145,280	35	2,287,035	.7503	-0.5501	.8163	-0.7458	-0.4996	.7299	2,224,870	192,822
35-39	143,784	40	2,430,819	.7975	-0.6854	.8646	-0.9270	-0.6578	.7874	2,400,057	175,187
40-44	130,109	45	2,560,928	.8402	-0.8298	.9031	-1.1161	-0.8228	.8382	2,554,964	154,907
45-49	104,163	50	2,665,091	.8744	-0.9704	.9331	-1.3176	-0.9987	.8803	2,683,162	128,342
50-54	99,777	55	2,764,868	.9071	-1.1394	.9561	-1.5406	-1.1934	.9157	2,791,275	108,113
55-59	60,860	60	2,825,725	.9271	-1.2717	.9730	-1.7932	-1.4139	.9443	2,878,255	86,980
60-64	90,168	65	2,915,896	.9566	-1.5461	.9849	-2.0900	-1.6730	.9615	2,930,838	52,583
65 & over	132,176	all ages	3,048,072								117,264
Total	3,048,072										3,048,072

(6) $Y = \frac{1}{2} \log_e((1-p)/p)$

(7) Approximated by "West" male stable population constructed with the same proportion under age ten and five-teen as recorded in 1974 census.

(8) $X = \frac{1}{2} \log_e((1-P^*)/P^*)$

(9) $\hat{Y} = 0.1514 + 0.8729\,X$

(10) $\hat{P} = \frac{1}{1 + e^{2\hat{y}}}$

Table (3.2)

Graduation of Saudi Arabia Females Population (Saudi's Only),1974

By Using Brass Technique of Graduation

Age group (1)	No. of female pop. (2)	Exact age (3)	pop. under successive age group (4)	P= (4)÷ Total (5)	Y (6)	P* (7)	X (8)	$\hat{Y}$ (9)	$\hat{P}$ (10)	Adj. pop. under succ-essive age group (11)	Adjusted population (12)
-1	82,832	1	82,832	.0287	1.7608	.0440	1.5393	1.5262	.0451	130,234	130,234
1-4	441,623	5	524,455	.1816	0.7528	.1887	0.7292	0.7525	.1818	524,960	394,726
5-9	519,990	10	1,044,445	.3617	0.2841	.3393	0.3332	0.3743	.3215	928,386	403,426
10-14	381,838	15	1,426,283	.4940	0.0099	.4658	0.0685	0.1215	.4386	1,266,350	337,964
15-19	286,015	20	1,712,298	.5930	-0.1884	.5719	-0.1448	-0.0822	.5405	1,560,691	294,341
20-24	190,785	25	1,903,083	.6591	-0.3299	.6604	-0.3325	-0.2615	.6289	1,815,899	255,208
25-29	175,382	30	2,078,465	.7199	-0.4721	.7336	-0.5065	-0.4277	.6993	2,019,076	203,177
30-34	157,662	35	2,236,127	.7745	-0.6172	.7938	-0.6740	-0.5877	.7634	2,204,030	184,954
35-39	140,802	40	2,376,929	.8232	-0.7686	.8432	-0.8411	-0.7473	.8197	2,366,622	162,592
40-44	127,060	45	2,503,989	.8672	-0.9387	.8835	-1.0130	-0.9115	.8621	2,489,034	122,412
45-49	80,418	50	2,584,407	.8951	-1.0728	.9160	-1.1946	-1.0849	.8977	2,591,812	102,778
50-54	88,928	55	2,673,335	.9259	-1.2629	.9420	-1.3938	-1.2752	.9276	2,678,366	86,554
55-59	38,884	60	2,712,219	.9394	-1.3667	.9622	-1.6185	-1.4898	.9524	2,749,790	71,124
60-64	66,684	65	2,778,903	.9625	-1.6221	.9772	-1.8790	-1.7386	.9709	2,803,183	53,393
65 & over	108,376	all ages	2,887,279								84,396
Total	2,887,279										2,887,279

(6) $Y = \frac{1}{2} \log_e((1-P)/P)$

(7) Approximated by "West" female stable population constructed with the same proportion under age five and twenty-five as recorded in 1974 census.

(8) $X = \frac{1}{2} \log_e((1-P^*)/P^*)$

(9) $\hat{Y}=.0561+.9550X$

(10) $\hat{P} = \frac{1}{1+ e^{2\hat{Y}}}$

Table (3.3)

Population of Saudi's by Sex-Age Groups, As Enumerated in Census 1974, and After Rectification

Age group	Saudis Population as recorded in census 1974			Adjusted number of population 1974		
	Males	Females	Total	Males	Females	Total
-1	87,171	82,832	170,003	157,360	130,243	287,594
1-4	438,271	441,623	879,894	390,854	394,726	785,580
5-9	529,525	519,990	1,049,515	378,252	403,426	781,678
10-14	409,406	381,838	791,244	327,885	337,964	665,849
15-19	305,502	286,015	591,517	285,079	294,341	579,420
20-24	211,113	190,785	401,898	264,163	255,208	519,371
25-29	160,767	175,382	336,149	228,455	203,177	431,632
30-34	145,280	157,662	302,942	192,822	184,954	377,776
35-39	143,784	140,802	284,586	175,187	162,592	337,779
40-44	130,109	127,060	257,169	154,907	122,412	277,319
45-49	104,163	80,418	184,581	128,342	102,778	231,120
50-54	99,777	88,928	188,705	108,113	86,554	194,667
55-59	60,860	38,884	99,744	86,980	71,124	158,104
60-64	90,168	66,684	156,852	52,583	53,393	105,976
65 & over	132,176	108,376	240,552	117,264	84,396	201,660
Total	3,048,092	2,887,279	5,935,371	3,048,092	2,887,279	5,935,371

Source : based on census 1974

Table (3.4)

Age Specific Sex Ratios Implied by Adjustments
of Saudi's Popultion 1974

Age group	"Sex Ratios Males per 100 Females"	
	As implied by the enumerated figure	As implied by Brass technique of graduation
0-4	100.29	104.43
5-9	101.83	93.76
10-14	107.22	97.02
15-19	106.81	96.85
20-24	110.65	103.51
25-29	91.67	112.44
30-34	92.15	104.25
35-39	102.12	107.75
40-44	102.40	126.55
45-49	129.53	124.87
50-54	112.20	124.91
55-59	156.52	122.29
60-64	135.22	98.48
65 & over	121.96	138.74

Table (3.5)

Estimate of Female Population by Age Groups on the Basis of Age Distribution of Males, for Saudi's only, 1974

Age group	Adj. Male population	Estimated* ratio of females to males	No. of females first estimate	No. of females "Pro-rated" estimate
-1	157,360	.95	149,492	140,224
1-4	390,854	.96	375,220	351,956
5-9	378,252	.96	363,122	340,608
10-14	327,885	.97	318,048	298,329
15-19	285,079	.98	279,377	262,056
20-24	264,163	.99	261,521	245,307
25-29	228,455	1.00	228,455	214,291
30-34	192,822	1.01	194,750	182,676
35-39	175,187	1.02	178,691	167,612
40-44	154,907	1.04	161,103	151,115
45-49	128,342	1.07	137,326	128,812
50-54	108,113	1.11	120,005	112,565
55-59	86,980	1.16	100,897	94,641
60-64	52,583	1.19	62,574	58,694
65 & over	117,090	1.26	147,533	138,386
Total			3,078,114	2,887,272

* Constructed from Model "West" stable population, Ansley J. Coale and Paul Demeny, Regional Model Life Tables and Stable Populations, Princeton University Press.

Source : Basic data from census reports of Saudi Arabia, 1974.

CHAPTER FOUR

MORTALITY

4.1 Age Pattern of Mortality :

Death is certainty for all living beings, but the probability of its occurrence at different ages in any society reflects the socio-economic development level of that society. Accordingly, the magnitude of mortality risk varies from one country to the other, and in the same country it varies from region to the other and from time-to-time.

The object of this chapter is to investigate the current level of mortality in the Kingdom of Saudi Arabia and to construct abridged life tables for the population of main cities in every region.

4.2 Trends in Mortality Levels :

According to the past published data of the U.N. Demographic yearbooks, the level of mortality of Saudi Arabia was among the highest in the world. However, this level has shown a gradual decrease. The crude death rate for the period 1965-1970 was 22.7 per thousand and fell to 19.2 per thousand in the year 1975.

Expectation of life at birth has increased from 42.3 years in the period 1965-1970 for both sexes to 44.2 years for male and 46.5 years for females for the period 1970-1975. Infant mortality, which in some desert communities has been as high as twenty per cent has fallen sharply (Ministry of Information, 1977). The immediate

hope is to reduce the infant mortality rate to no more than 110 per thousand.

The most important factor underlying these considerable improvements in the health of Saudis is the advance in economic circumstances.

4.3 Saudi Arabia Economic Circumstances :

Since 1944, Saudi Arabia income from oil exporting has increased annually, so that in terms of per capita income, the Kingdom is today one of the richest in the world. This has affected public health in the following ways : Firstly, a large fraction of Saudis oil revenues have been invested in public health, welfare, education and housing and other services including the utilities. As a consequence the Ministry of Health provides free medical service for all Saudis. Secondly, the employment of foreign consultants for redevelopment of the cities and for planning of the type and distribution of the public services has meant that European or North American standards of hygiene have been established at the outset. Thirdly, the Government's land purchase program designed to hasten the redevelopment of cities and to invigorate the private sector of economy by increasing the personal wealth of Saudis, has meant that almost all goods and services available in highly developed countries could be purchased and imported into Saudi Arabia, where they have been accessible to a large proportion of the indigenous population. It is hard to conceive of conditions for a rapid decline in mortality rates which are closer to the ideal than these. When these factors are considered in conjunction with the vast expansion of education facilities, including

provision for adults, we can conclude that the rate of mortality improvement in the cities may serve as a useful reference point in estimating the rate at which mortality will fall elsewhere in the Kingdom.

4.4 Current Level of Mortality

Registration of births and deaths in the Kingdom of Saudi Arabia has been required since 1962. But the records of vital events are ever more scanty and unreliable. Registration is restricted effectively to those events that take place in hospitals, and a few other cases of birth in the big cities where citizens realise the importance of registering birth in order to facilitate enrolment of the children in schools.

As for death registration in particular, it has only a small coverage. This is because of the lack of observance of this requirement of providing death certificates permitting burial. But death registration is better in the Holy cities Mecca and Madina and in some cities close to these, for example Jiddah and Taif, which are the objects of the annual pilgrimage (hajj), because hygiene procedures do not permit burial before obtaining permission in the interests of the general health of the pilgrims. Nevertheless, analysis of mortality has not taken place in these cities. According to the law (through observance in these cities) the attending physician must give notice of the cause of death and there is a special form which includes all the information about the deceased which must be completed in order to obtain the burial permit. Moslems believe in burying their dead as soon as possible in accordance with the tradition that says : "Honouring

the dead lies in giving them a quick burial". However, registration of deaths has been far from complete.

In the meantime the Ministry of Health is taking responsibility for registering births and deaths for areas where Public Health Bureaux operated. These bureaux are usually located in the more developed regions.

Registration has been remarkably improved by the extension of public health bureaux and the increase of their coverage throughout the country. Before 1970 only a small percentage of total population were covered by such bureaux. Coverage is certainly improving with time. A subsidiary problem affecting public data is the mis-reporting of age at death.

There is an intention to establish in the future a directorate for civil affairs directly connected with the Ministry of Interior. This directorate will take care of the recording of all civil events like birth, death, marriage and divorce.

The first real census was taken in 1974, but it contained no information on mortality. The only available data of deaths relates to the main cities in the Kingdom in the years 1973, 1974, 1975.

According to the above facts, it would be best to consider average mortality over these three years.

The number of deaths unregistered has been roughly estimated by having regard to the crude death rate estimates by the U.N. for the period 1970-1975.

The problem of the incorrect age reporting, which impedes the computation of reasonably accurate age-specific death rates, may be solved by the application of the familiar method of cumulative percentages of deaths, from the young to the old ages.

The process, which takes care of mis-statements (but not of the omissions) of deaths, sandwiches the distribution between the two natural limits of zero at birth and of 100% at the terminal age. The cumulative total between these two limits is gradually built-up in accordance with the mortality patterns prevailing in the individual country (V. G. Valaoras, 1972).

Table (4.1) shows the cumulative percentages of deaths for the main cities in every region of the Saudi Arabia.

The rectification of the age structure of deaths proceeded as follows : After accounting for the shortfall of the total deaths, the cumulative percentages of deaths for both sexes (Table (4.1)), were plotted in a diagram (Figure (4.1) to Figure (4.5)). The course of the curve between the two standard limits (zero and 100) was ascertained by the trend established at the left half of the diagram, where the experience of mortality during the younger ages is gradually accumulated. This is the portion at which the age at death is more accurately reported. In the latter portion of the age-scale, the discrepancies due to mis-reporting of the age at death, become progressively larger and the curve of the cumulative percentages not only falls short of the expected level, but approaches rather abruptly the final limit of 100% at the terminal age (V. G. Valaoras, 1972).

From this curve of the cumulative percentages we constructed the number of deaths by five age groups as shown in Table (4.2),

FIGURE (4.1)

Cumulative Percentages of Death in the Main Cities of Central Region (Riyadh + Kasiem + Aniza) for Year 1974 (average of three years) and Its Rectification (Smooth line). Original Data Shown in the Broken Line for Both Sexes

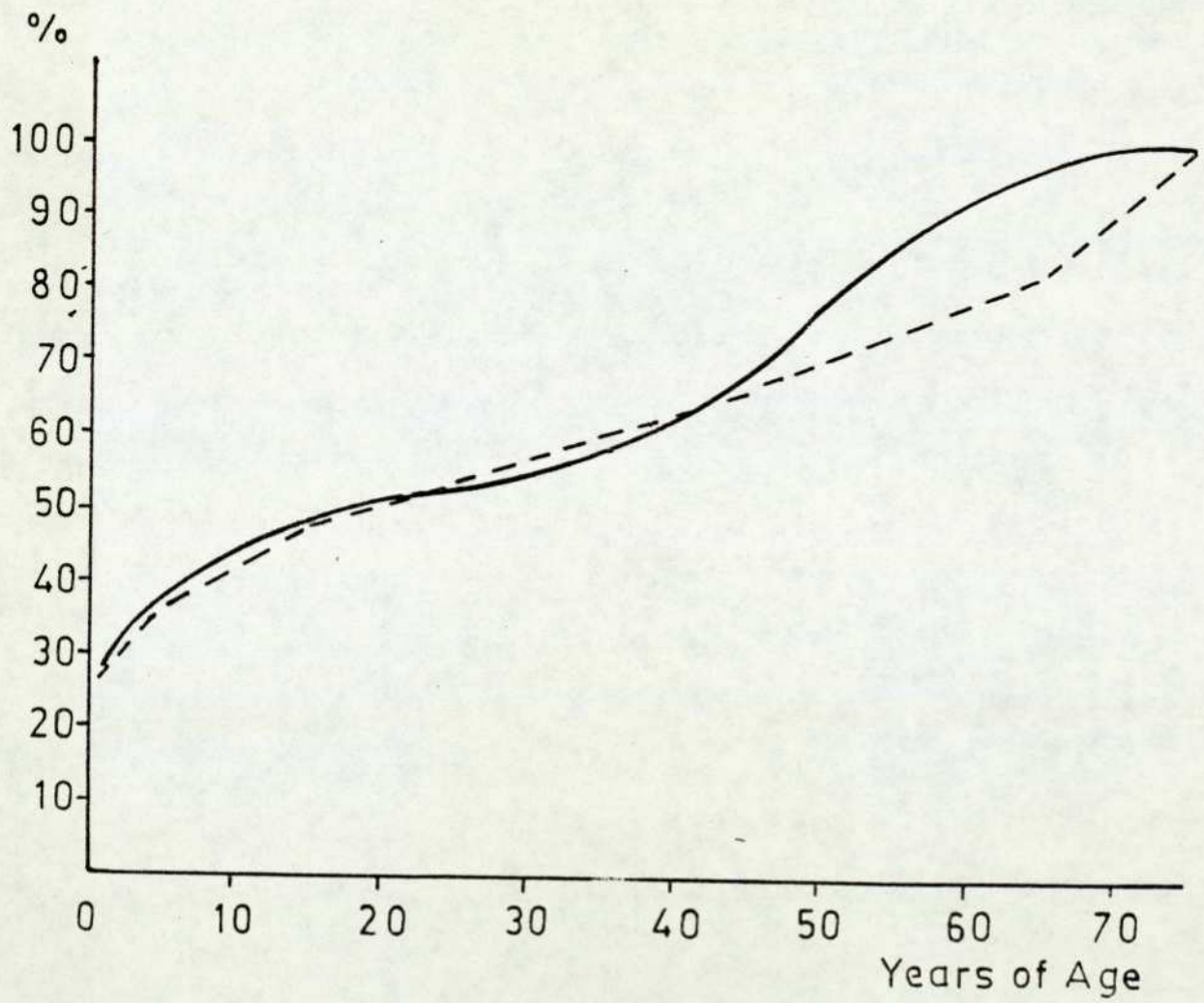


FIGURE (4.2)

Cumulative Percentages of Death for the Main Cities in Western Region (Jiddah + Holy Mecca + El-Madina + Taif) for the year 1974 (Average of Three Years) and its Rectification (Smooth Line). Original Data Shown in Broken Line for Both Sexes.

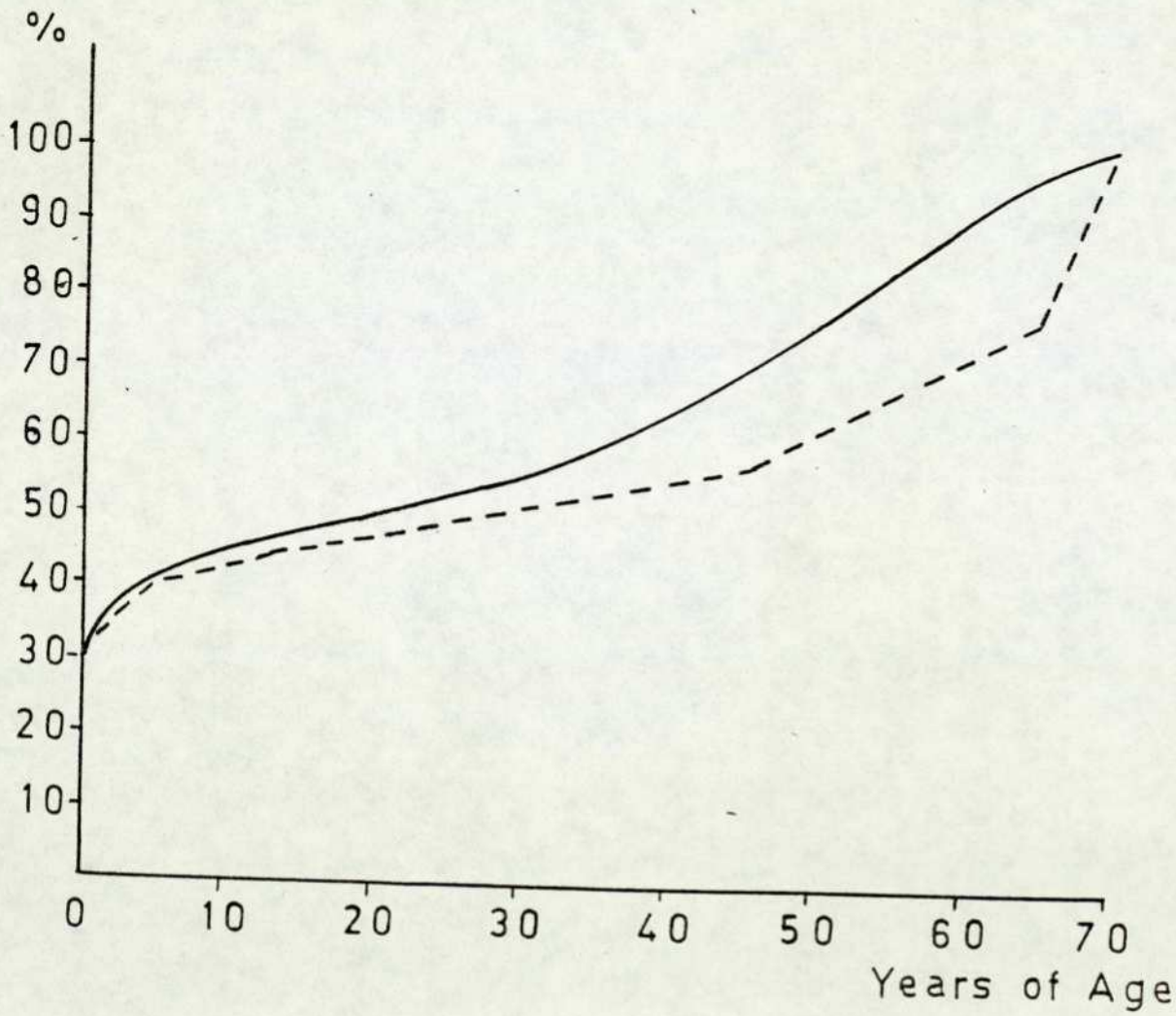


FIGURE (4.3)

Cumulative Percentages of Death for the Main Cities in Eastern Region (Dammam + Katif + Khafja + El-Ehsa) for the Year 1974 (Average of Three Years) and its Rectification (Smooth Line). Original Data Shown in Broken Line for Both Sexes.

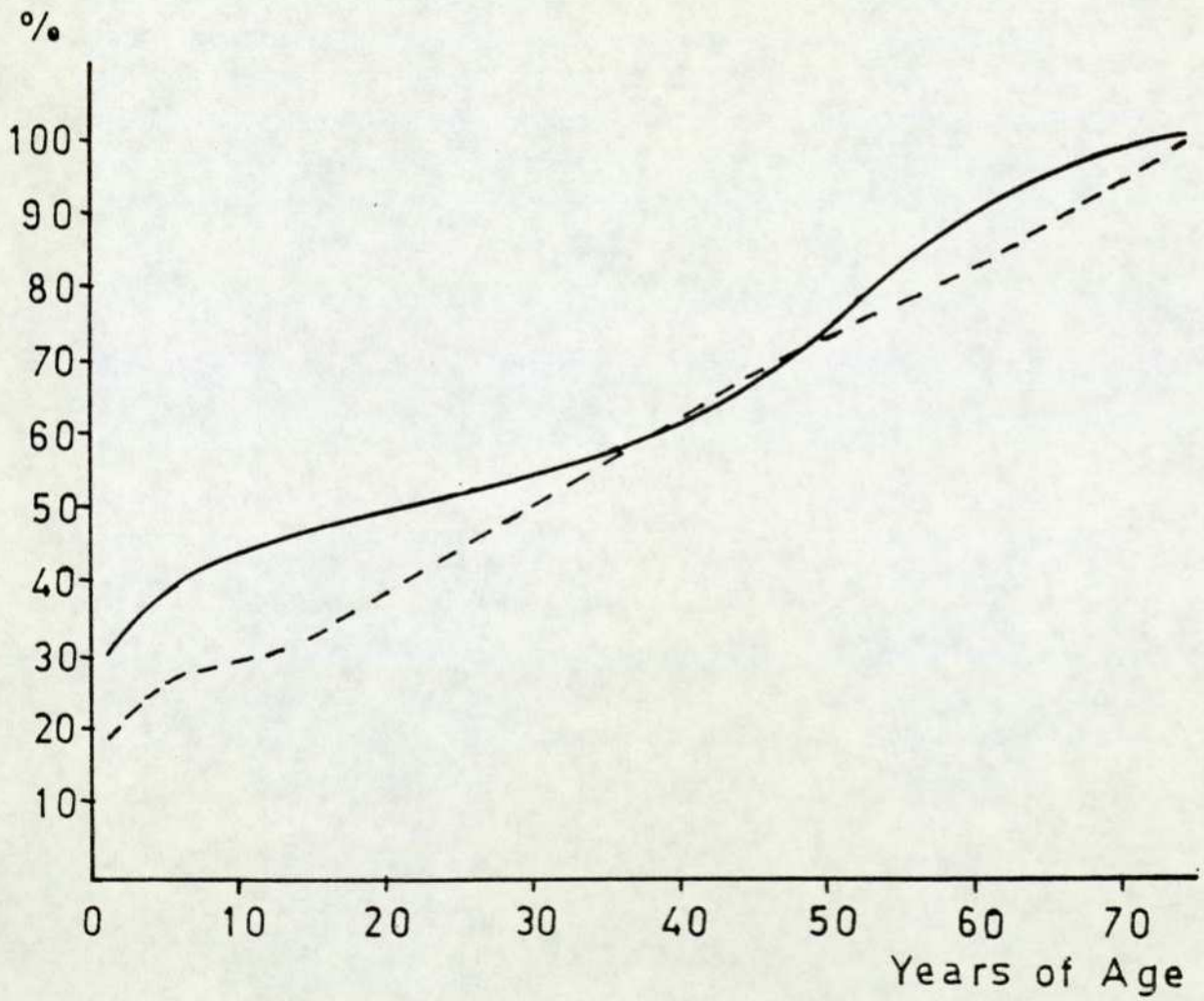


FIGURE (4.4)

Cumulative Percentages of Death in the Main Cities in Northern Region (An-AR + El-Jouf + Ha'il) for the Year 1974 (Average of Three Years) and Its Rectification (Smooth Line). Original Data Shown in Broken Line for Both Sexes.

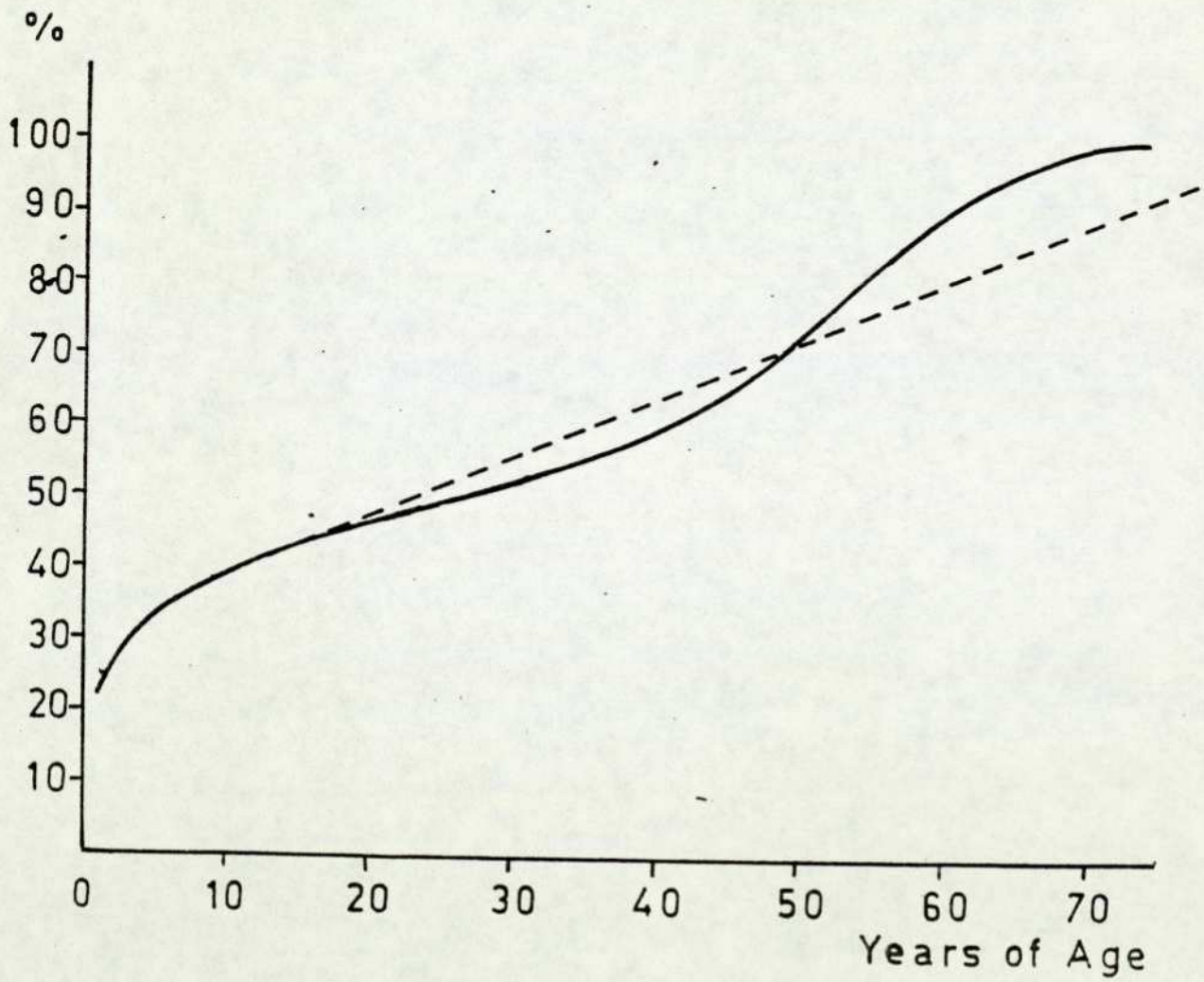


FIGURE (4.5)

Cumulative Percentages of Death for the Main Cities of Southern Region (Jizan + Najran + Besha + Asier) for Year 1974 (Average of Three Years) and Its Rectification (Smooth Line). Original Data Shown in the Broken Line for Both Sexes

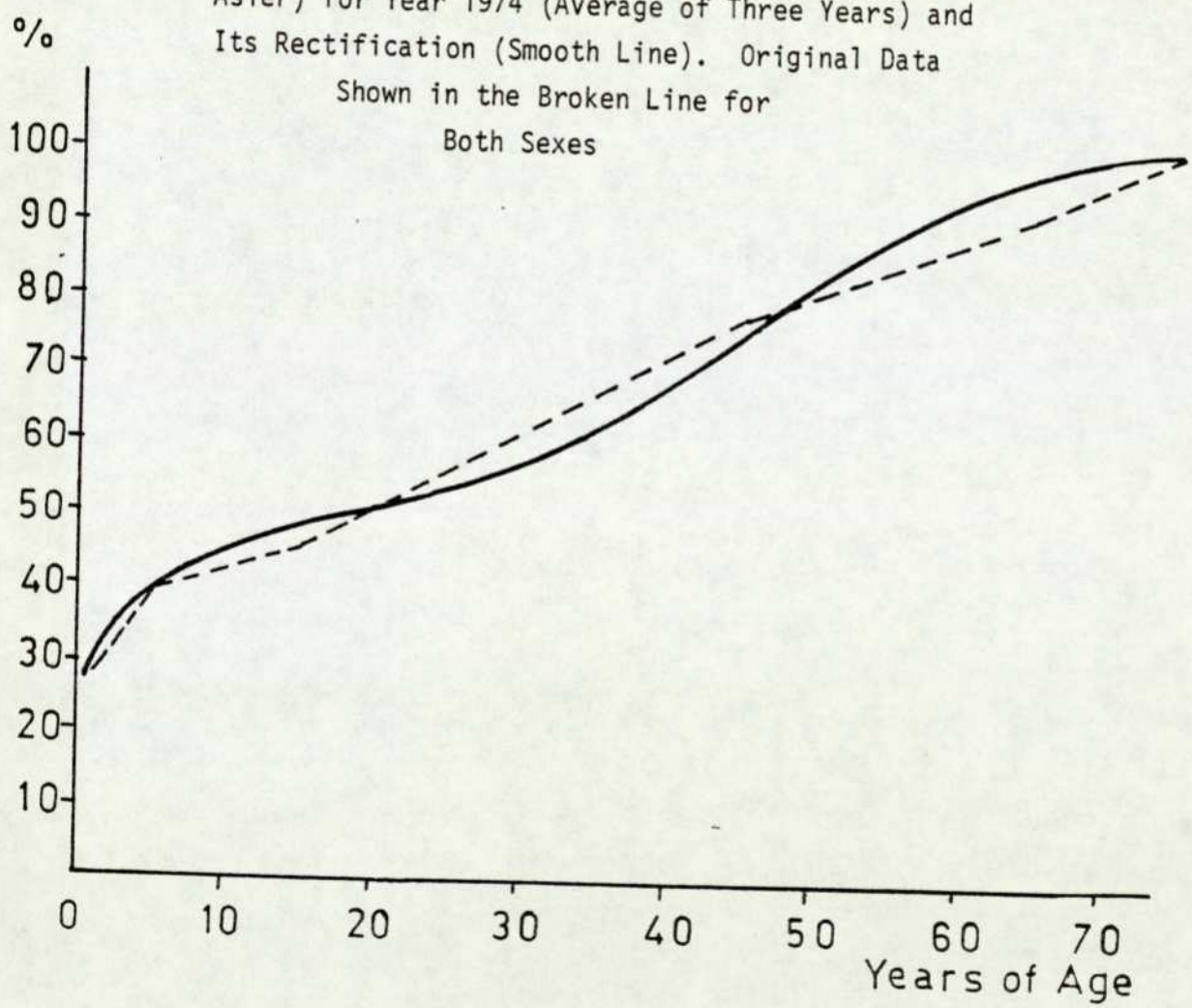


Figure (4.6) to Figure (4.10).

The irregularities due to mis-reporting of the age of the deceased were almost entirely eliminated by this treatment. This is certainly an improvement over the original data, in the sense that the new data duplicates the true numbers of deaths in the main cities in every region of the Kingdom.

The age-specific death-rates, were computed, on the basis of the two series of rectified data, one for the population (Tables (4.3) to (4.12)), and the other for the deaths (Table (4.2)). These are shown in Table (4.13).

4.5 Comparison of Mortality Between Saudi Arabia and Some Selected Countries

It must be remembered that the death data for Saudi Arabia are available only for chief cities, and in order to make the comparison the death rates in these cities can be compared with the death rates in urban sites in some selected countries.

A comparison with some selected underdeveloped countries of high mortality and some developed countries of low mortality, will help to give a picture about the state of mortality in the chief cities in Saudi Arabia.

The comparison is set out in Table (4.14). Mali had the highest crude death rate among all the selected countries that were mentioned in Table (4.14) which would appear to be at present the areas with the highest mortality, and Chad comes next, then Nepal, Mozambique and Saudi Arabia. Kuwait had a crude death rate

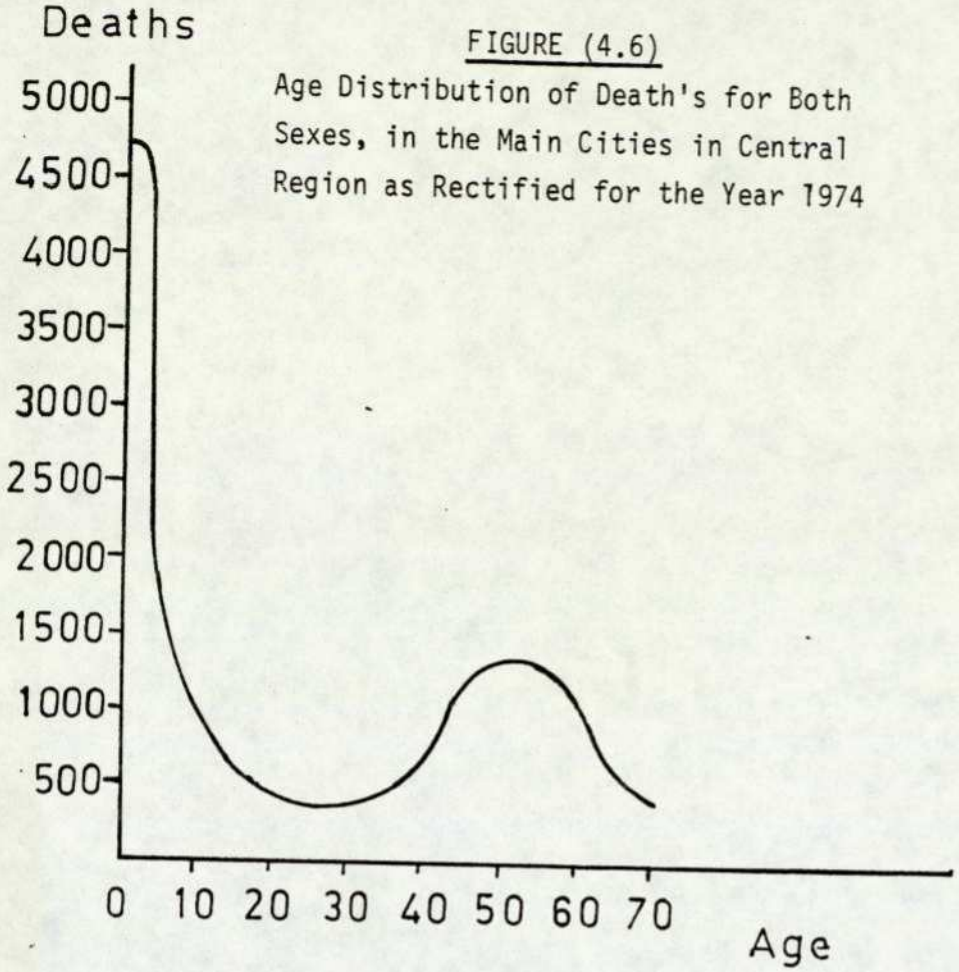


FIGURE (4.6)

Age Distribution of Death's for Both Sexes, in the Main Cities in Central Region as Rectified for the Year 1974

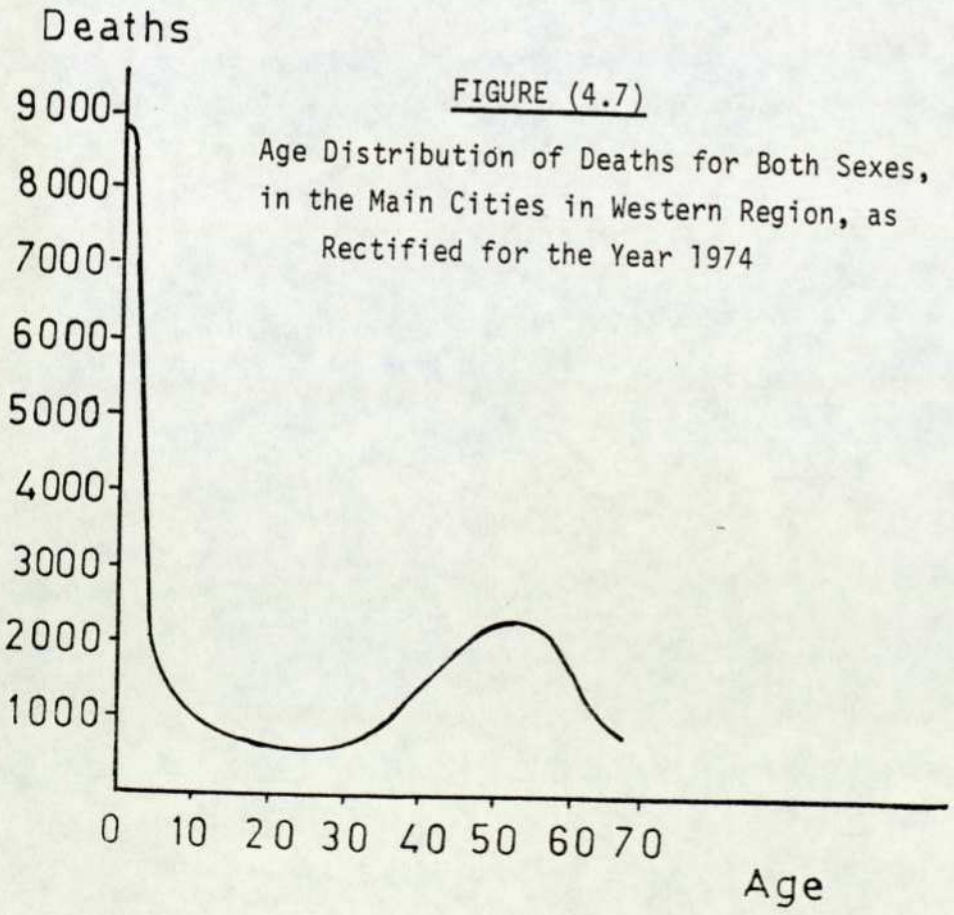


FIGURE (4.7)

Age Distribution of Deaths for Both Sexes, in the Main Cities in Western Region, as Rectified for the Year 1974

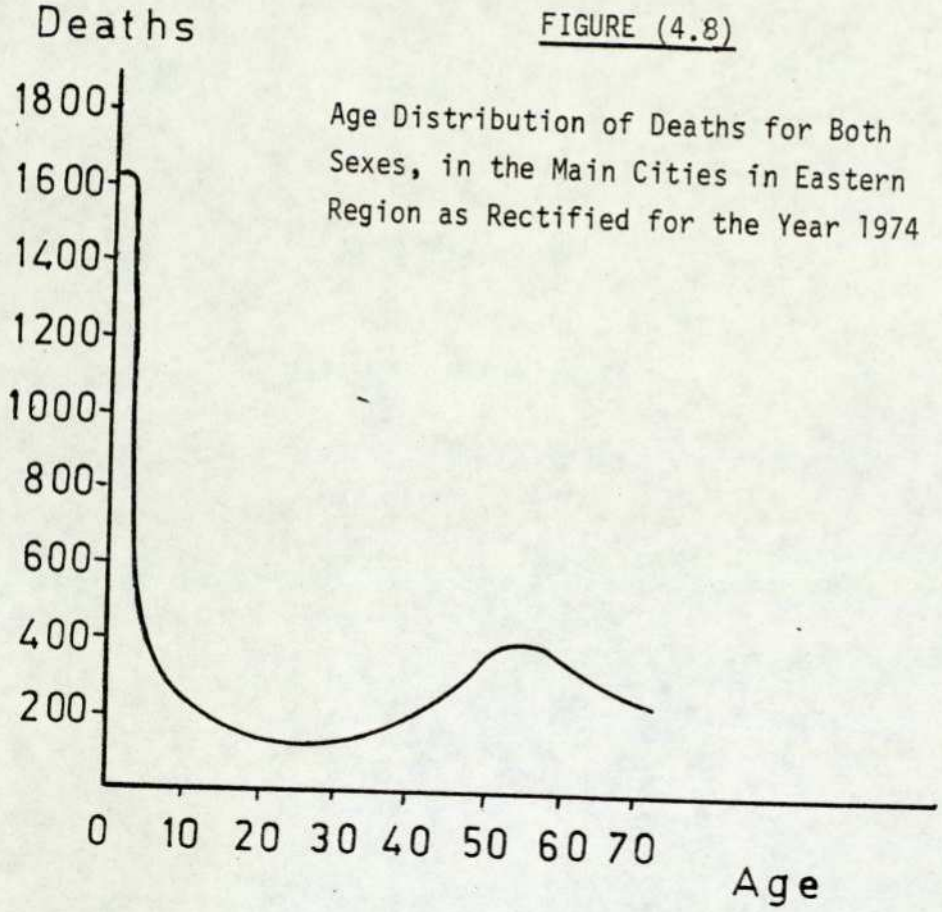


FIGURE (4.8)

Age Distribution of Deaths for Both Sexes, in the Main Cities in Eastern Region as Rectified for the Year 1974

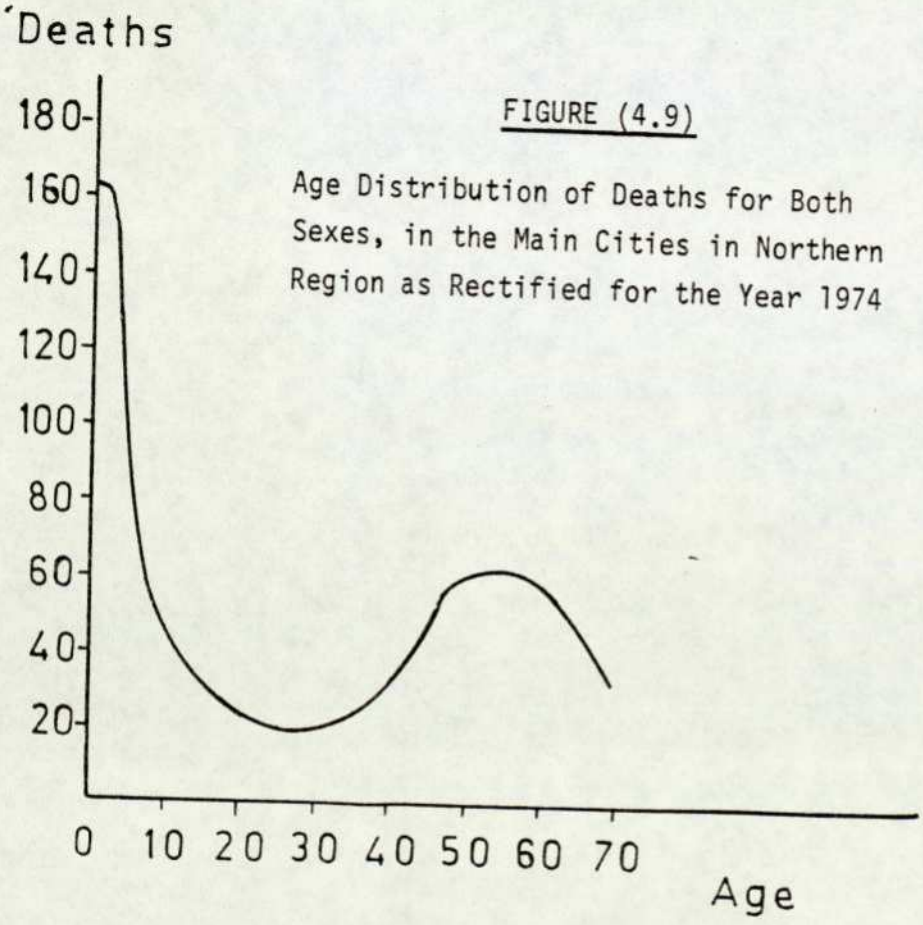
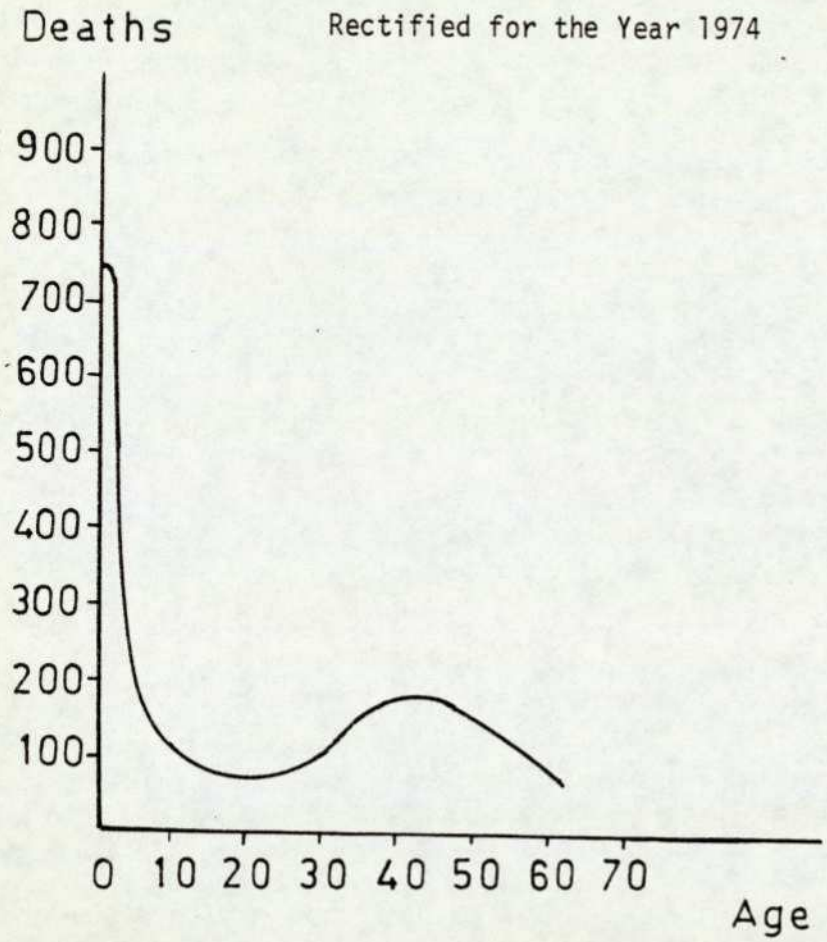


FIGURE (4.9)

Age Distribution of Deaths for Both Sexes, in the Main Cities in Northern Region as Rectified for the Year 1974

FIGURE (4.10)

Age Distribution of Deaths for Both Sexes in the Main Cities of Southern Region as Rectified for the Year 1974



lower than the United States and the United Kingdom.

The causes of lowest crude death rate in developed countries are the outcome of joint progress in science, the economy, medical-social facilities, and the cultural level of the population.

The underdeveloped world has seen its mortality declining since World War I from levels of 30 per thousand and more, mortality has declined so that at present it rarely exceeds 20 per thousand. This is due to modern medicine which has succeeded in prelonging the life of individuals. This is because those causes of death that entail considerable loss of human life (notably, the serious epidemic diseases : Plague, Cholera, Smallpox and Malaria)have become relatively easy to fight, and modern therapeutic methods (Vaccinations, DDT, etc.) make the struggle less expensive.

4.6 Projection of Age Specific Mortality Rates :

The projection of mortality must be based on current patterns of mortality as well as some probable assumptions about the future.

The assumptions used in making such projections in main cities up to the year 1998 are :

1 - The declining trend in mortality will continue for all ages and for both sexes.

2 - There is a minimum level for every age group and such a level varies from one region to another according to the circumstances of every region.

The model used (Shryock, 1975) for projecting the age specific mortality rates is :

$$M_{x,t} = (M_{x,0} - M_{x,\infty})e^{-b_x t} + M_{x,\infty}$$

where ;

$M_{x,t}$ is the age specific mortality rate for age group x, t years after the base year.

$M_{x,0}$ is the age specific mortality rate for age group x on the base year.

$M_{x,\infty}$ is the ultimate age specific mortality rate for age group.

b is the constant specific for age group x.

t is the number of years for which the projection is desired.

The age specific mortality rates for both sexes for quinquennial period to cover 1974-2000 have been projected using the above outlined model. The values of rectified average number of deaths of three years centering the 1974 year, were used as the mortality rates for the base year $M_{x,0}$. For the ultimate age specific mortality rates $M_{x,\infty}$, it has been assumed that the mortality rates of the Regional Model Life Tables, "West" level 24 (Coale, 1966) would apply with expectation of life at birth for both sexes equal to 75.70 Table (4.14).

The improving percentage for the age specific mortality rate during the projection period has been assumed according to the circumstances and current pattern of mortality for every region in the Kingdom of Saudi Arabia, and also according to the pattern of mortality for some selected countries in the past and the improving percentage which has been achieved in these countries in the past, Table (4.15).

Table (4.16) shows the percentage of the expected improving among the age specific mortality rate for both sexes for the chief cities in every region during the projection period.

Applying the above model the mortality rates have been projected by age for the period 1974-1998 at quinquennial intervals and are shown in Tables (4.17) to (4.21) and Figures (4.11) to (4.15).

4.7 Construction of Life Tables for the Projection Period

A life tables - called "mortality tables" in many countries - provide the most complete statistical description of mortality. The computation of life tables is one of the oldest techniques in demography. The technique has been extended to other phenomena with varying degrees of success.

The life table is employed by a variety of specialists in a variety of ways. It is used by public health workers, demographers, actuaries and many others in studies of longevity, fertility, migration and population growth, as well as in making projections of population size and characteristics and in studies of length of married life, widowhood, orphanhood, length of working life.

This is the first attempt to construct life tables for some cities in Saudi Arabia.

The method used to construct these tables is the method recommended by U.N. population studies ST/SOA/Series A, No's 25. The life tables are presented in Tables (4.22) to (4.47).

The method can be expressed as follows :

FIGURE (4.11)

Age Pattern of Mortality
Central Region
(Both Sexes)

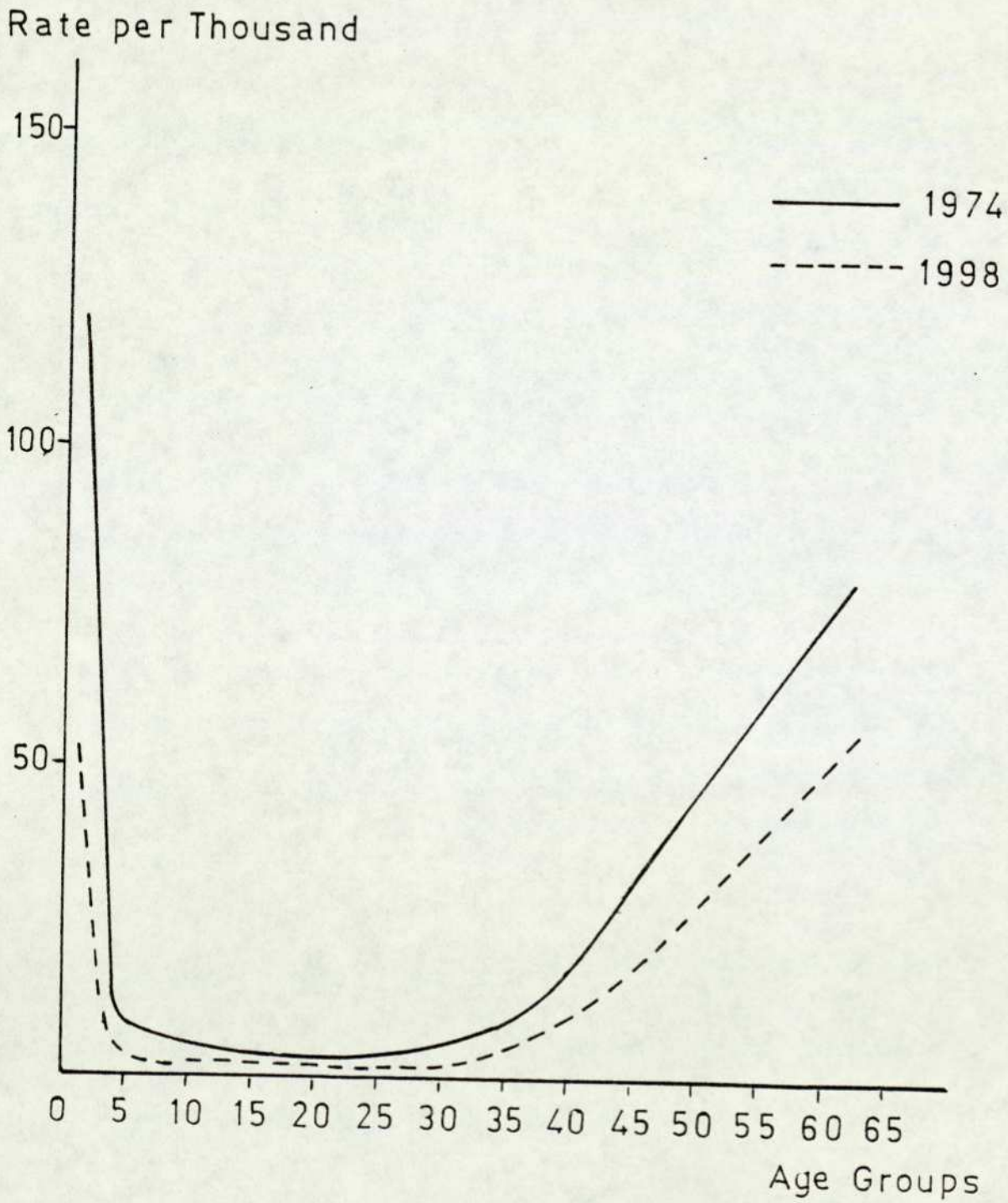


FIGURE (4.12)

Age Pattern of Mortality
Western Region
(Both Sexes)

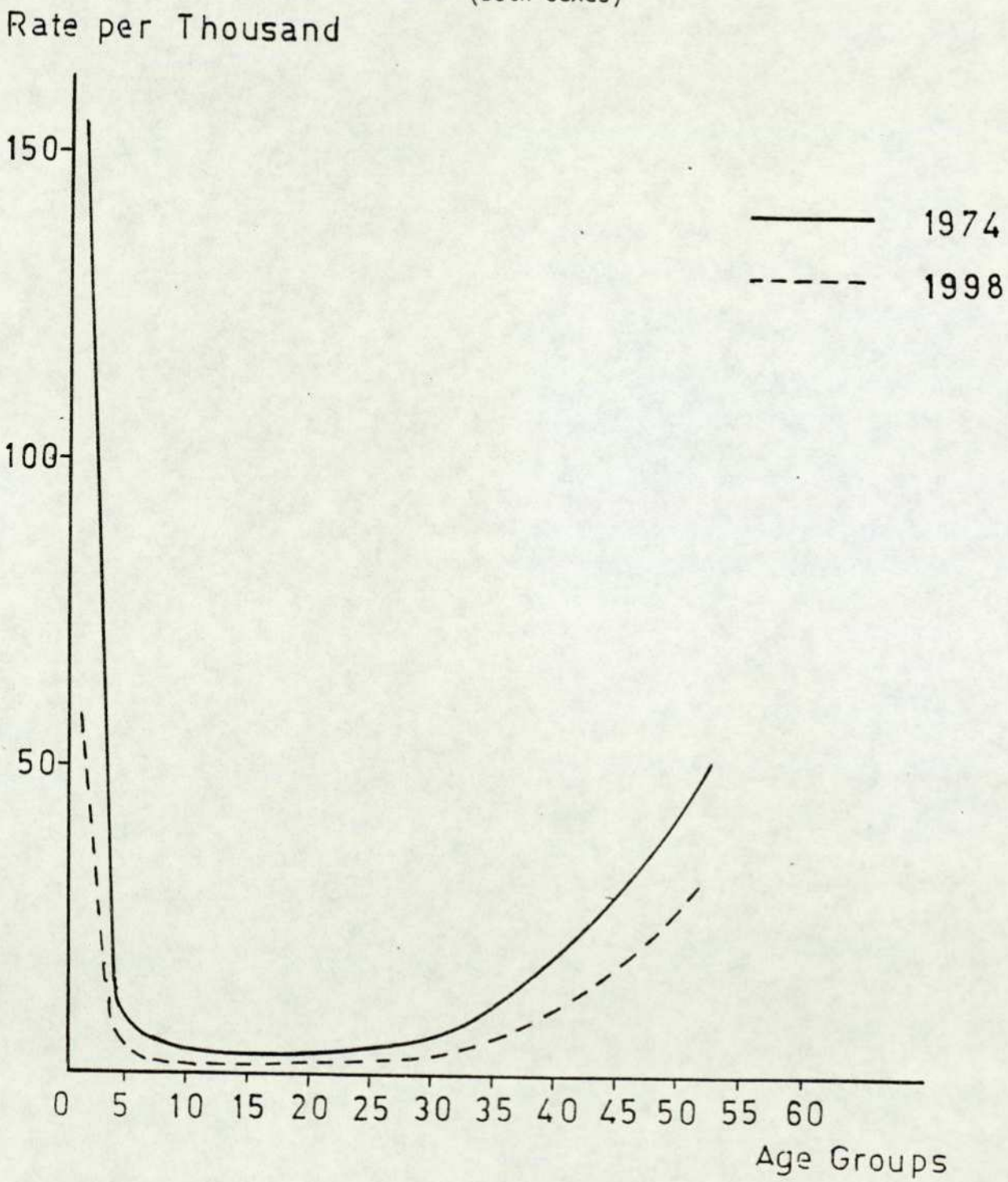


FIGURE (4.13)

Age Pattern of Mortality, Eastern Region

(both Sexes)

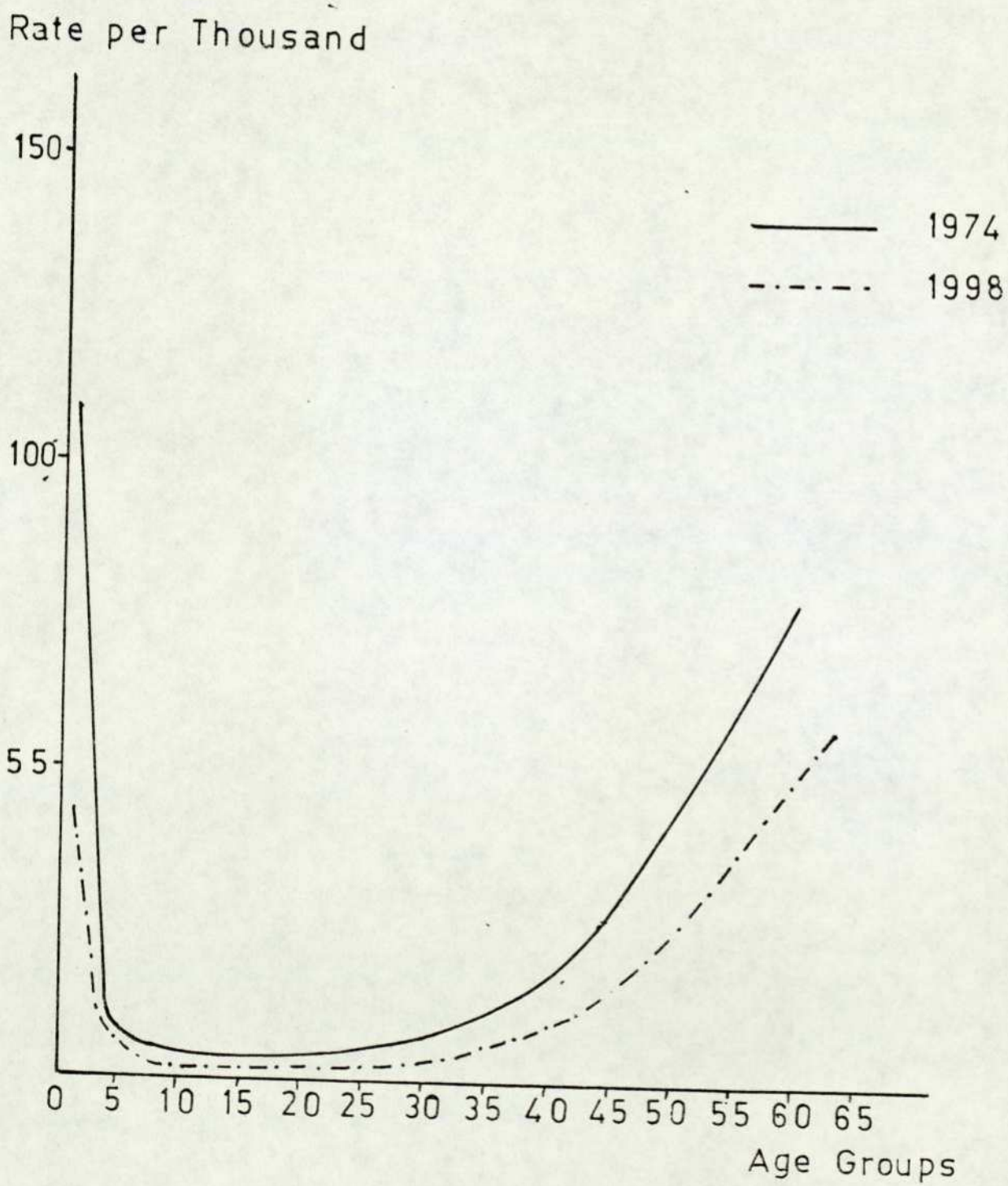


FIGURE (4.14)

Age Pattern of Mortality
Southern Region
(Both Sexes)

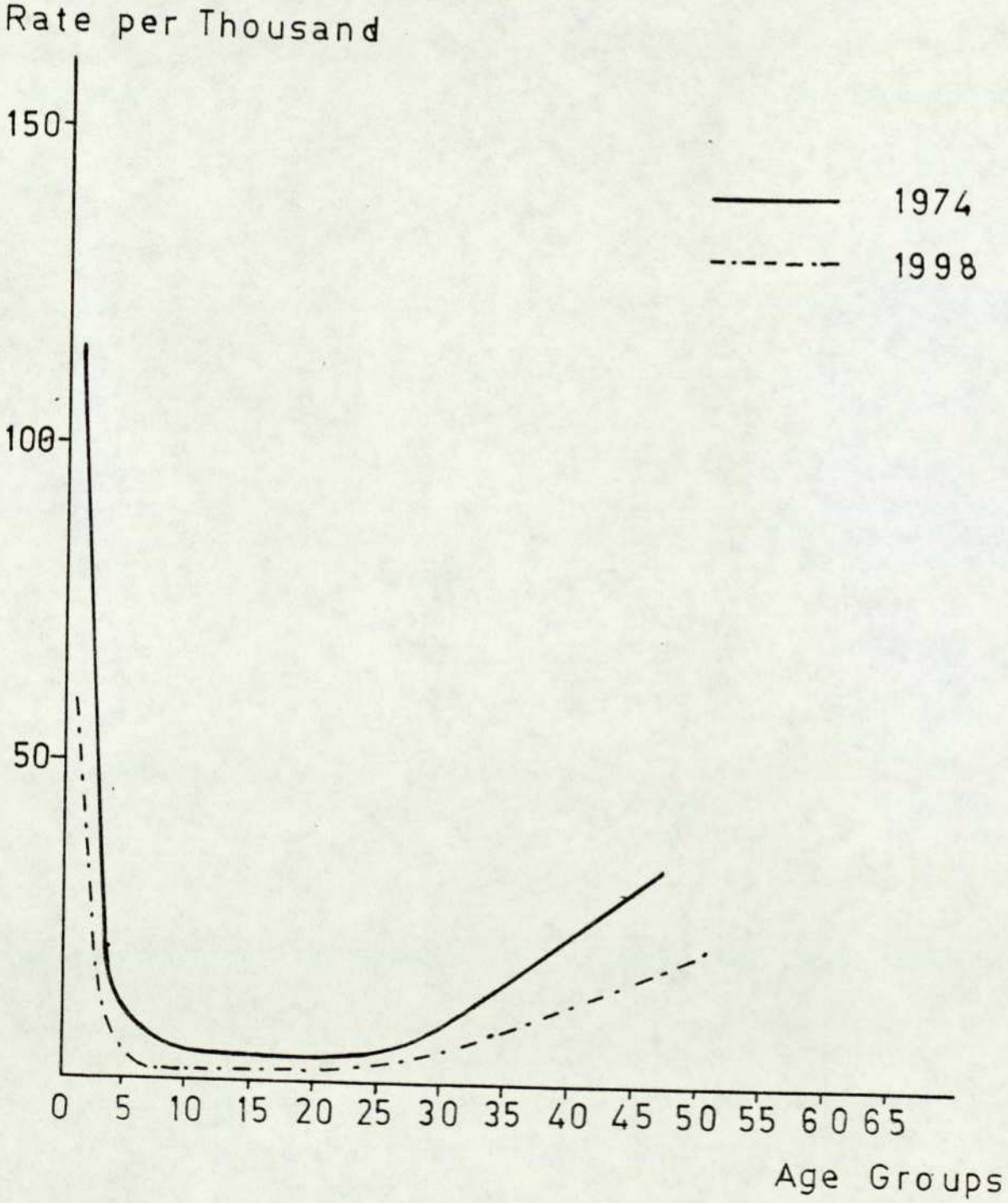
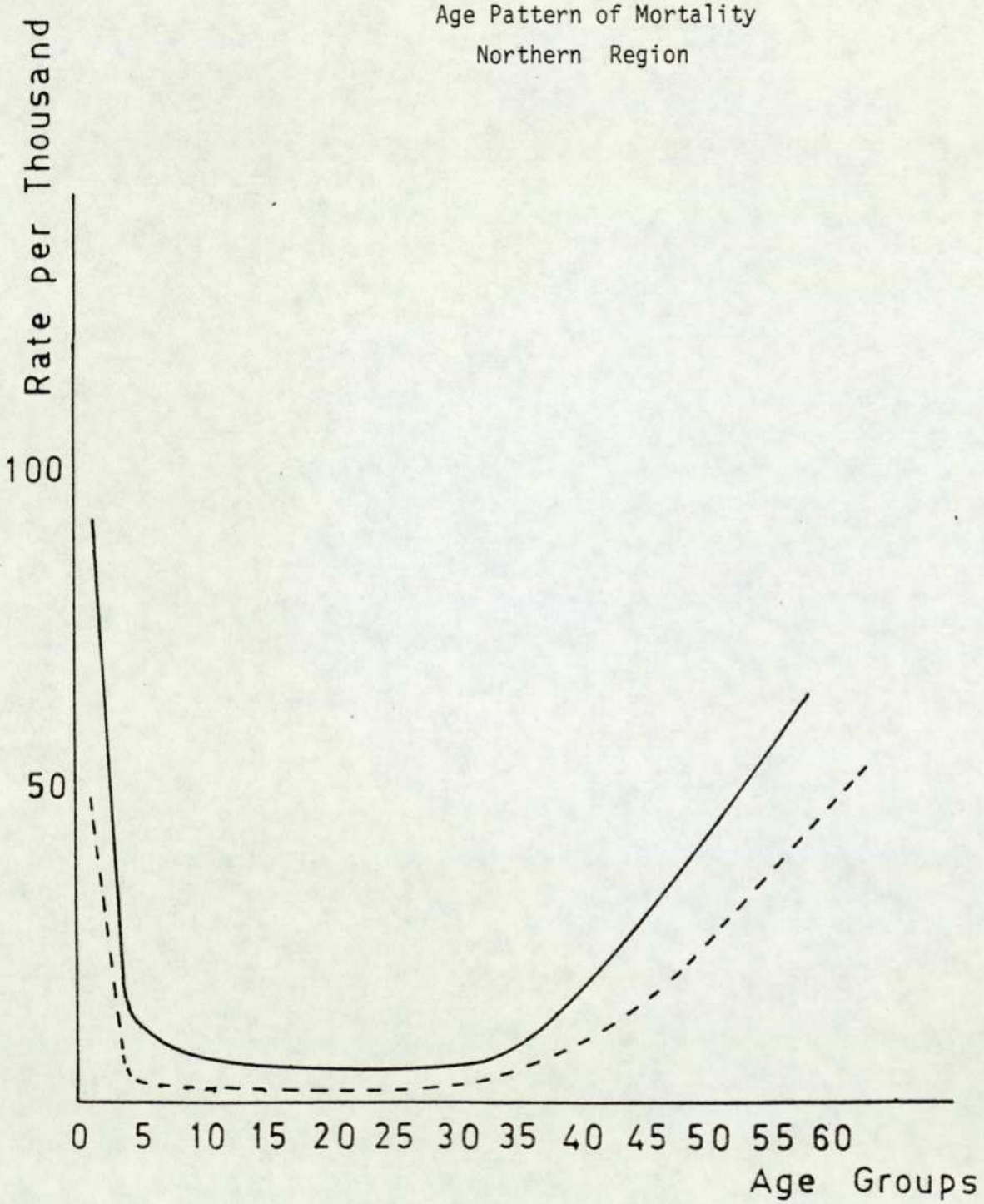


FIGURE (4.15)

Age Pattern of Mortality

Northern Region



Let :

${}_nq_x$ be the probability that a person at his xth birthday will die before reaching his x+nth birthday.

${}_nm_x$ be the age specific mortality rate between x, x+n and which is uniform over the age interval.

l_x the number of persons living at the beginning of the indicated age interval.

T_x the number of years that will be lived collectively, from the given age onward, by the survivors at that age from the original cohort of 100,000 births (the radix of the life table).

e_x^0 the complete expectation of life.

Then

$$ {}_nq_x = \frac{2n \cdot {}_nm_x}{2 + (n \cdot {}_nm_x)} $$

and

$$ {}_nL_x = \frac{n}{2}(l_x + l_{x+n}) $$

The young ages, 0 and 1, were however, treated specially by adopting the formulae given at P, 23 in the U.N. population studies, ST/SOA/Series A, No. 25, namely :

$L_0 = .25\, l_0 + .75\, l_1$ and

$4L_1 = 1.9\, l_1 + 2.1\, l_5$

L_{65+} obtained by multiplying l_{65+} by its own logarithm.

The rest of the life table functions, i.e. T_x, e_x^0 can then be easily calculated.

The projected age specific death rates in tables (4.17) to (4.21) have been used in constructing abridged life tables for both sexes for quinquennial intervals covering the period 1974-1998 for the chief cities in every region which is shown in Tables (4.22) to (4.26) for the Central region, Tables (4.27) to (4.31) for the Western region, Tables (4.32) to (4.36) for the Eastern region, Tables (4.37) to (4.41) for the Southern region, and Tables (4.42) to (4.46) for the Northern region.

4.8 Tables :

Table (4.1)

The Percentages of Deaths (average for three years) for the Main Cities in Central, Southern, Western, Eastern & Northern Region of Saudi Arabia, by Age for Both Sexes

age group	No. of deaths* (adj. average of three years)	Exact age	no. of population under successive exact ages	percentage
Western region**				
-1	8760	1	8760	32.34
1-	2145	5	10905	40.26
5-	1016	15	11921	44.01
15-	3781	45	15702	57.96
45-	5309	65	21011	77.56
65+	6078	all ages	27089	100.00
Central region**				
-1	4605	1	4605	28.11
1-	1417	5	6022	36.76
5-	1712	15	7734	47.21
15-	3247	45	10981	67.03
45-	2568	65	13549	82.71
65+	2833	all ages	16382	100.00
Eastern region**				
-1	987	1	987	18.34
1-	406	5	1393	25.89
5-	325	15	1718	31.93
15-	1916	45	3634	67.54
45-	1085	65	4719	87.70
65+	662	all ages	5381	100.00
Northern region**				
-1	163	1	163	22.36
1-	78	5	241	33.06
5-	85	15	326	44.72
15-	170	45	496	68.04
45-	127	65	623	85.46
65+	106	all ages	729	100.00
Southern region**				
-1	729	1	729	28.22
1-	298	5	1027	39.78
5-	264	15	1291	45.00
15-	694	45	1985	76.88
45-	375	65	2340	91.40
65+	222	all ages	2582	100.00

Source: Ministry of Health, Saudi Arabia

* Adjusted according to the estimated of the amount of deaths.

** The main cities for :

1 - Central region are : Riyadh, Kasiem and Aniza.
2 - Western " " : Jiddah, Holy Mecca, Madina, and Taif.
3 - Eastern " " : Dammam, Katif, Khafja, and El-Ehsa.
4 - Northern " " : Ar-Ar, El-Jouf and Hail.
5 - Southern " " : Jezan, Najran, Besha, Asier.

Table (4.2)

The Adjusted Number of Deaths for Both Sexes for the Main Cities in Every Region in Saudi Arabia, 1974

age group	exact age	Adjusted cumulative death percentages					Percentage of death in age group					Adjusted number of death in age group				
		Cent.	West.	East.	North.	South.	Cent.	West	East.	North.	South.	Cent.	West.	East.	North.	South.
-1	1	28.1	32.3	30.0	22.3	28.2	28.1	32.3	30.0	22.4	28.2	4605	8761	1614	163	729
1-4	5	36.8	40.3	37.6	33.1	39.8	8.7	7.9	7.6	10.7	11.6	1417	2145	406	78	298
5-9	10	43.5	45.0	42.7	39.4	45.0	6.7	4.7	5.1	6.3	5.2	1104	1284	275	46	135
10-14	15	48.1	48.0	45.9	43.6	48.0	4.6	3.0	3.2	4.2	3.0	754	813	172	31	77
15-19	20	51.0	51.0	48.9	46.7	50.8	2.9	3.0	3.0	3.1	2.8	475	813	161	23	72
20-24	25	53.5	53.5	51.5	49.3	53.5	2.5	2.5	2.6	2.6	2.7	410	677	140	19	70
25-29	30	56.1	56.0	54.1	51.9	56.0	2.6	2.5	2.6	2.6	2.5	426	677	140	19	65
30-34	35	58.9	59.0	57.1	55.0	61.0	2.8	3.0	3.0	3.1	5.0	458	813	161	22	129
35-39	40	62.5	64.0	61.3	59.1	67.0	3.6	5.0	4.2	4.1	6.0	590	1354	226	30	155
40-44	45	68.5	70.0	66.8	65.3	74.0	7.0	6.0	5.5	6.2	7.0	1147	1625	296	45	181
45-49	50	78.0	77.0	74.1	73.5	81.3	8.5	7.0	7.3	8.2	7.3	1392	1896	393	60	188
50-54	55	86.0	86.0	82.1	81.8	87.6	8.0	9.0	8.0	8.3	6.3	1311	2438	430	61	163
55-59	60	93.0	93.0	89.1	89.8	93.0	7.0	7.0	7.0	8.0	5.4	1147	1896	377	58	139
60-64	65	97.0	97.0	95.1	96.1	97.0	4.0	4.0	6.0	6.2	4.0	655	1084	323	45	103
65+	all ages	100.0	100.0	100.0	100.0	100.0	3.0	3.0	4.9	4.0	3.0	491	813	266	29	77
Total							100.0	100.0	100.0	100.0	100.0	16382	27089	5381	729	2582

Table (4.3)

Graduation of the Age Distribution of the Male Population of the Main Cities in Central Region (Riyadh + Kassiem + Aniza) in Saudi Arabia, Census 1974, By Using Brass Technique of Graduation

Age group	census pop. adjusted for age unknown	Exact age	Proportionate population up to age x (P)	$Y^{(1)}$	(2) stable prop. P*	$X^{(3)}$	$\hat{Y}^{(4)}$	adjusted pop.
-1	12,840	1	.0275	1.780	.0361	1.64	1.75	13,710
1-4	54,369	5	.1438	0.892	.1567	0.84	0.86	57,554
5-9	63,869	10	.2804	0.471	.2280	0.61	0.60	36,952
10-14	53,578	15	.3950	0.213	.4042	0.19	0.14	93,290
15-19	57,841	20	.5187	-0.037	.5068	-0.01	-0.09	53,933
20-24	55,159	25	.6367	-0.281	.5967	-0.20	-0.29	46,171
25-29	41,431	30	.7253	-0.485	.6748	-0.37	-0.49	37,154
30-34	33,712	35	.7974	-0.684	.7423	-0.53	-0.67	32,264
35-39	27,001	40	.8552	-0.888	.8002	-0.69	-0.85	25,154
40-44	20,866	45	.8998	-1.098	.8492	-0.86	-1.04	21,224
45-49	14,374	50	.9306	-1.298	.8902	-1.05	-1.24	15,460
50-54	11,049	55	.9542	-1.518	.9236	-1.25	-1.47	12,367
55-59	5,578	60	.9661	-1.675	.9502	-1.47	-1.72	8,646
60-64	6,262	65	.9795	-1.933	.9701	-1.74	-2.02	4,449
65+	9,566							9,167
	467,495							467,495

(1) $Y = \frac{1}{2} \log_e((1-P)/P)$

(2) Approximated by "West" male stable population constructed with the same proportion under age ten and fifteen as recorded in 1974 census

(3) $X = \frac{1}{2} \log_e((1-P^*)/P^*)$

(4) $\hat{Y} = -.07907 + 1.1136X$

Table (4.4)

Graduation of the age distribution of the Female Population of the Main Cities in Central Region (Riyadh + Kassiem + Aniza) in Saudi Arabia, Census 1974, By Using Brass Technique of Graduation

age group	census pop. adjusted for age unknown	Exact age	Proportionate population up to age x (P)	Y (1)	stable prop. P* (2)	X (3)	$\hat{Y}$ (4)	adjusted pop.
-1	11,853	1	.0345	1.6660	.0495	1.48	1.50	16,384
1-4	53,360	5	.1899	0.7254	.2086	0.67	0.70	51,350
5-9	61,659	10	.3695	0.2674	.3706	0.26	0.31	52,792
10-14	47,242	15	.5069	-0.0138	.5035	-0.01	0.04	44,618
15-19	38,945	20	.6203	-0.2454	.6125	-0.23	-0.18	36,890
20-24	27,252	25	.7000	-0.4236	.7010	-0.43	-0.37	30,054
25-29	24,160	30	.7700	-0.6042	.7724	-0.61	-0.55	26,166
30-34	19,007	35	.8253	-0.7763	.8296	-0.79	-0.73	20,996
35-39	16,441	40	.8732	-0.9648	.8751	-0.97	-0.91	16,852
40-44	12,421	45	.9093	-1.1530	.9109	-1.20	-1.10	12,781
45-49	7,560	50	.9314	-1.3040	.9386	-1.40	-1.30	9,152
50-54	7,625	55	.9536	-1.5110	.9597	-1.60	-1.50	9,093
55-59	3,281	60	.9631	-1.6397	.9751	-1.80	-1.80	6,346
60-64	5,004	65	.9777	-1.8903	.9859	-2.10	-2.00	3,269
65+	7,668							6,735
Total	343,478							343,478

(1) $Y = \frac{1}{2} \log_e ((1-p)/P)$

(2) Approximated by "West" Female stable population constructed with the same proportion under age ten and fifteen as recorded in 1974 census.

(3) $X = \frac{1}{2} \log_e((1-P^*)/P^*)$

(4) $\hat{Y} = .0474 + .981X$

Table (4.5)

Graduation of Age Distribution of the Male Population of the main Cities in Western Region (Jiddah + Holy Mecca + Madina + Taif) in Saudi Arabia, census 1974, by using Brass Technique of Graduation.

age group	census pop, adjusted for age unknowns	Exact age	Proportionate population up to age x P	Y (1)	Stable prop. (2) P*	X (3)	$\hat{Y}$ (4)	adjusted population
-1	19,698	1	.0263	1.81	.0361	1.60	1.73	21,910
1-4	87,804	5	.1438	0.89	.1567	0.84	0.90	84,127
5-9	101,534	10	.2796	0.47	.2880	0.45	0.49	98,774
10-14	87,666	15	.3969	0.21	.4042	0.19	0.21	90,667
15-19	81,944	20	.5065	-0.01	.5068	-0.01	-0.01	82,078
20-24	74,729	25	.6065	-0.22	.5967	-0.20	-0.20	70,085
25-29	62,656	30	.6903	-0.40	.6748	-0.37	-0.38	60,903
30-34	51,318	35	.7589	-0.57	.7423	-0.38	-0.55	53,531
35-39	45,400	40	.8197	-0.76	.8002	-0.69	-0.73	45,697
40-44	37,509	45	.8698	-0.95	.8492	-0.86	-0.91	36,676
45-49	26,379	50	.9051	-1.10	.8902	-1.00	-1.10	29,029
50-54	22,751	55	.9356	-1.30	.9236	-1.20	-1.30	25,177
55-59	12,465	60	.9522	-1.40	.9502	-1.50	-1.60	17,400
60-64	15,459	65	.9729	-1.80	.9701	-1.70	-1.80	13,273
65+	20,548							18,233
Total	747,560							747,560

(1) $Y = \frac{1}{2} \log_e((1-P)/P)$

(2) Approximated by West male stable population constructed with the same proportion under age ten and fifteen as recorded in 1974 census

(3) $X = \frac{1}{2} \log_e((1-P^*)/P^*)$

(4) $\hat{Y} = .00509 + 1.0617\ X$

Table (4.6)

Graduation of Age Distribution of the Female Population of the Main Cities in Western Region (Jiddah + Holy Mecca + Madina + Taif) in Saudi Arabia, census 1974, by using Brass Technique of Graduation

age group	census pop. adjusted for age unknowns	Exact age	Proportionate population up to age X P_x	Y (1)	stable prop. P^*_x (2)	X (3)	$\hat{Y}$ (4)	adjusted population
-1	18,537	1	.0312	1.72	.0440	1.54	1.59	23,959
1-4	84,152	5	.1730	0.78	.1887	0.73	0.78	79,438
5-9	97,750	10	.3377	0.34	.3393	0.33	0.38	85,616
10-14	76,462	15	.4666	0.07	.4658	0.07	0.12	73,598
15-19	62,967	20	.5726	-0.15	.5719	-0.14	-0.10	63,488
20-24	49,371	25	.6558	-0.32	.6604	-0.33	-0.29	54,350
25-29	42,429	30	.7273	-0.49	.7336	-0.51	-0.46	43,480
30-34	35,955	35	.7879	-0.66	.7938	-0.67	-0.63	36,149
35-39	30,669	40	.8396	-0.83	.8432	-0.84	-0.79	34,506
40-44	25,216	45	.8821	-1.01	.8835	-1.00	-0.97	26,031
45-49	15,658	50	.9085	-1.15	.9160	-1.20	-1.10	18,931
50-54	16,969	55	.9370	-1.35	.9420	-1.40	-1.30	15,128
55-59	7,683	60	.9500	-1.47	.9622	-1.60	-1.60	16,000
60-64	12,558	65	.9711	-1.76	.9772	-1.90	-1.80	5,541
65+	17,125							17,286
Total	593,501							593,501

(1) $Y = \frac{1}{2} \log_e((1-P)/P)$

(2) Approximated by "West" stable population constructed with the same proportion under age ten and fifteen as recorded in the 1974 census.

(3) $X = \frac{1}{2} \log_e((1-P^*)/P^*)$

(4) $\hat{Y} = .0474 + 1.0013\ X$

Table (4.7)

Graduation of Age Distribution of the Male Population of the Main Cities in Eastern Region (Dammam + Katief + Khafja + El-Ehsa) in Saudi Arabia, census 1974, by Using Brass Technique of Graduation

age group	census pop. adjusted for age unknowns	exact age	Proportionate population up to age X P	Y (1)	stable prop. P* (2)	X (3)	Y (4)	adjusted population
-1	3,929	1	.0261	1.62	.0361	1.64	1.77	4,224
1-4	16,937	5	.1385	0.91	.1567	0.84	0.89	17,366
5-9	21,203	10	.2792	0.47	.2880	0.45	0.47	20,979
10-14	18,979	15	.4051	-0.19	.4042	0.19	0.18	19,191
15-19	18,185	20	.5258	-0.05	.5068	-0.01	-0.04	17,138
20-24	17,241	25	.6402	-0.29	.5967	-0.20	-0.20	14,701
25-29	10,502	30	.7099	-0.45	.6748	-0.36	-0.43	12,524
30-34	10,477	35	.7794	-0.63	.7423	-0.53	-0.61	10,695
35-39	8,787	40	.8377	-0.82	.8002	-0.69	-0.79	7,723
40-44	6,929	45	.8837	-1.01	.8492	-0.86	-0.98	7,648
45-49	5,232	50	.9184	-1.21	.8902	-1.04	-1.18	6,063
50-54	4,168	55	.9461	-1.43	.9236	-1.25	-1.40	3,913
55-59	2,032	60	.9596	-1.58	.9502	-1.47	-1.60	2,734
60-64	2,529	65	.9763	-1.86	.9701	-1.74	-1.90	2,841
65+	3,565							2,955
Total	150,695							150,695

(1) $Y = \frac{1}{2} \log_e((1-P)/P)$

(2) Approximated by "West" male stable population constructed with the same proportion under age ten and fifteen as recorded in 1974 census.

(3) $X = \frac{1}{2} \log_e((1-P^*)/P^*)$

(4) $\hat{Y} = -.0299 + 1.0978\ X$

Table (4.8)

Graduation of Age Distribution of the Female Population of the Main Cities in Eastern Region (Dammam + Katief + El-Ehsa + Khafja) in Saudi Arabia , census 1974, by using Brass Technique of Graduation

age group	census pop. adjusted for age unknowns	exact age	proportionate population up to age X P	Y (1)	stable prop. P* (2)	X (3)	$\hat{Y}$ (4)	adjusted population
-1	3,818	1	.0330	1.69	.0487	1.50	1.6	4,936
1-4	16,352	5	.1743	0.78	.2065	0.70	0.7	16,853
5-9	20,733	10	.3535	0.30	.3672	0.30	0.3	17,970
10-14	17,838	15	.5077	-0.02	.4988	0.01	0.1	15,074
15-19	13,425	20	.6237	-0.25	.6065	-0.20	-0.2	12,827
20-24	8,766	25	.6995	-0.42	.6940	-0.40	-0.4	10,514
25-29	7,795	30	.7669	-0.60	.7647	-0.50	-0.8	8,817
30-34	6,208	35	.8205	-0.76	.8215	-0.80	-0.7	7,072
35-39	5,578	40	.8688	-0.94	.8668	-0.90	-0.9	5,767
40-44	4,145	45	.9046	-1.10	.9028	-1.10	-1.1	4,492
45-49	2,677	50	.9277	-1.30	.9313	-1.30	-1.3	2,896
50-54	2,801	55	.9519	-1.50	.9534	-1.50	-1.5	3,061
55-59	1,134	60	.9617	-1.60	.9702	-1.70	-1.7	2,139
60-64	1,750	65	.9769	-1.90	.9824	-2.00	-2.0	1,101
65+	2,678							2,179
Total	115,698							115,698

(1) $Y = \frac{1}{2} \log_e ((1-P)/P)$

(2) Approximated by "West" Female stable population constructed with the same proportion under age fifteen, twenty, twenty-five and thirty as recorded in 1974 census.

(3) $X = \frac{1}{2} \log_e ((1-P^*)/P^*)$

(4) $\hat{Y} = .0483 + 1.01413\ X$

Table (4.9)

Graduation of Age Distribution of the Male Population of the Main Cities in Northern Region (Ar-Ar + El-Jouf + Hail) in Saudi Arabia, census 1974, by Using Brass Technique of Graduation

age group	census pop. adjusted for age unknowns	exact age	proportionate population up to age X P	Y (1)	stable prop. P* (2)	X (3)	$\hat{Y}$ (4)	adjusted population
-1	584	1	.0292	1.75	.0379	1.6	1.6	714
1-4	2,497	5	.1538	0.85	.1666	0.8	0.8	2,396
5-9	3,259	10	.3166	0.38	.3054	0.4	0.5	2,612
10-14	2,289	15	.4308	0.14	.4256	0.2	0.2	2,321
15-19	1,850	20	.5232	-0.05	.5298	-0.1	-0.0	2,033
20-24	1,490	25	.5976	-0.20	.6193	-0.2	-0.2	1,775
25-29	1,336	30	.6643	-0.34	.6958	-0.4	-0.4	1,591
30-34	1,223	35	.7254	-0.49	.7607	-0.6	-0.5	1,394
35-39	1,436	40	.7971	-0.68	.8156	-0.7	-0.7	1,000
40-44	1,106	45	.8523	-0.88	.8616	-0.9	-0.8	1,078
45-49	850	50	.8947	-1.07	.8995	-1.1	-1.0	751
50-54	611	55	.9253	-1.26	.9302	-1.3	-1.2	650
55-59	354	60	.9429	-1.40	.9544	-1.5	-1.4	520
60-64	387	65	.9623	-1.60	.9725	-1.8	-1.7	551
65+	756							642
Total	20,028							20,028

(1) $Y = \frac{1}{2} \log_e((1-p)/p)$

(2) Approximated by "West" male stable population constructed with the same proportion under age fifteen and twenty as recorded in 1974 census.

(3) $X = \frac{1}{2} \log_e ((1-P^*)/P^*)$

(4) $\hat{Y} = .0527 + .987\ X$

Table (4.10)

Graduation of Age Distribution of the Female Population of the Main Cities in Northern Region (Ar-Ar + El-Jouf + Hail) in Saudi Arabia, census 1974, by using Brass Technique of Graduation

age group	census pop. adjusted for age unknowns	exact age	proportionate population up to age X P	Y (1)	stable prop. P* (2)	X (2)	$\hat{Y}$ (3)	adjusted population
-1	539	1	.0335	1.7	.0506	1.50	1.5	771
1-4	2,553	5	.1924	0.7	.2173	0.60	0.7	2,387
5-9	3,102	10	.3853	0.2	.3851	0.20	0.3	2,423
10-14	2,126	15	.5176	-0.1	.5198	-0.04	-0.1	2,037
15-19	1,638	20	.6195	-0.2	.6280	-0.26	-0.2	1,673
20-24	1,079	25	.6866	-0.4	.7143	-0.46	-0.4	1,425
25-29	1,003	30	.7490	-0.6	.7827	-0.64	-0.5	1,191
30-34	877	35	.8036	-0.7	.8369	-0.82	-0.7	952
35-39	866	40	.8575	-0.9	.8794	-0.90	-0.9	763
40-44	609	45	.8954	-1.1	.9127	-1.20	-1.0	603
45-49	401	50	.9203	-1.2	.9386	-1.40	-1.2	522
50-54	388	55	.9444	-1.4	.9585	-1.60	-1.4	417
55-59	171	60	.9551	-1.5	.9735	-1.80	-1.6	292
60-64	271	65	.9719	-1.8	.9843	-2.10	-1.9	303
65+	451							315
Total	16,074							16,074

(1) $Y = \frac{1}{2} \log_e((1-P)/P)$

(2) Approximated by "West" Female stable population constructed with the same proportion under age ten and fifteen as recorded in 1974 census.

(3) $X = \frac{1}{2} \log_e ((1-P^*)/P^*)$

(4) $\hat{Y} = .0908 + .9575\ X$

Table (4.11)

Graduation of Age Distribution of the Male Population of the Main Cities in Southern Region (Jezan + Najran + Besha + Asier) in Saudi Arabia, census 1974, by Using Brass Technique of Graduation

age group	census pop. adjusted for age unknowns	exact age	proportionate population up to age X P	Y (1)	stable prop. P* (2)	X (3)	$\hat{Y}$ (4)	adjusted population
-1	2,206	1	.0309	1.70	.0389	1.60	1.64	2,548
1-4	9,589	5	.1652	0.81	.1644	0.81	0.84	8,744
5-9	10,420	10	.3112	0.40	.2994	0.43	0.44	9,700
10-14	7,472	15	.4159	0.17	.4181	0.17	0.17	8,751
15-19	7,038	20	.5145	-0.03	.5226	-0.05	-0.05	7,823
20-24	6,981	25	.6123	-0.23	.6134	-0.23	-0.62	6,495
25-29	6,168	30	.6987	-0.42	.6916	-0.40	-0.41	5,503
30-34	5,071	35	.7698	-0.60	.7585	-0.57	-0.59	4,925
35-39	4,495	40	.8328	-0.80	.8152	-0.74	-0.82	4,019
40-44	3,221	45	.8779	-0.99	.8626	-0.92	-0.94	3,561
45-49	2,353	50	.9108	-1.16	.9016	-1.10	-1.10	2,820
50-54	1,983	55	.9386	-1.36	.9329	-1.30	-1.40	1,820
55-59	1,091	60	.9539	-1.52	.9572	-1.60	-1.60	1,920
60-64	1,521	65	.9752	-1.84	.9751	-1.80	-1.90	1,349
65+	1,768							1,399
Total	71,377							71,377

(1) $Y = \frac{1}{2} \log_e ((1-P)/P)$

(2) Approximated by "West" male stable population constructed with the same proportion under age twenty and twenty-five as recorded in 1974 census.

(3) $X = \frac{1}{2} \log_e ((1-P^*)/P^*)$

(4) $\hat{Y} = .00025 + 1.0277\ X$

Table (4.12)

Graduation of Age Distribution of the Female Population of the Main Cities in Southern Region (Jezan + Najran + Besha + Asier) in Saudi Arabia, census 1974, by using Brass Technique of Graduation

age group	census pop. adjusted for age unknowns	exact age	proportionate population up to age X P	Y (1)	stable prop. P* (2)	X (3)	$\hat{Y}$ (4)	adjusted population
-1	2,045	1	.0363	1.64	.0440	1.54	1.48	2,774
1-4	9,460	5	.2040	0.68	.1887	0.73	0.71	8,264
5-9	9,723	10	.3764	0.25	.3393	0.33	0.33	8,213
10-14	6,362	15	.4891	0.02	.4658	0.07	0.07	6,862
15-19	5,217	20	.5816	-0.16	.5719	-0.14	-0.13	5,754
20-24	4,299	25	.6579	-0.33	.6604	-0.33	-0.31	4,759
25-29	4,181	30	.7320	-0.50	.7336	-0.51	-0.48	3,952
30-34	3,463	35	.7934	-0.67	.7938	-0.67	-0.64	3,488
35-39	2,635	40	.8401	-0.83	.8432	-0.84	-0.79	2,937
40-44	2,218	45	.8794	-0.99	.8835	-1.01	-0.96	2,044
45-49	1,477	50	.9056	-1.13	.9160	-1.19	-1.13	2,229
50-54	1,577	55	.9336	-1.32	.9420	-1.39	-1.32	1,438
55-59	695	60	.9459	-1.43	.9622	-1.62	-1.54	1,004
60-64	1,291	65	.9688	-1.72	.9772	-1.88	-1.79	1,043
65+	1,761							1,643
Total	56,404							56,404

(1) $Y = \frac{1}{2} \log_e ((1-P)/P)$

(2) Approximated by "West" female stable population constructed with the same proportion under age twenty-five and thirty as recorded in 1974 census

(3) $X = \frac{1}{2} \log_e((1-P^*)/P^*)$

(4) $\hat{Y} = .0091 + .9561\ X$

Table (4.13)

Age specific death-rates for the main cities of every region in Saudi Arabia, both sexes, computed on the rectified age-structure of the population of the same cities, and the rectified average number of deaths of three years* centering the given year, after accounting for deficiency in total number of death reporting

age group	Death rate per thousand				
	Central	Western	Eastern	Northern	Southern
less than 1	151.24	199.31	176.20	109.76	137.68
1-4	12.90	13.36	11.87	16.31	17.60
5-9	12.24	7.04	7.06	9.14	7.57
10-14	5.43	4.94	5.02	7.11	4.95
15-19	5.22	5.59	5.37	6.21	5.35
20-24	5.44	5.45	5.55	5.94	6.15
25-29	6.67	6.24	6.56	6.83	6.71
30-34	9.02	8.77	9.06	9.38	15.98
35-39	14.05	17.79	16.75	17.02	22.43
40-44	33.73	26.10	24.38	26.77	30.20
45-49	56.56	37.16	43.87	47.13	40.99
50-54	61.09	58.36	61.66	57.17	43.82
55-59	76.51	59.70	77.37	71.43	47.54
60-64	84.95	47.75	81.94	52.69	43.06
65+	30.88	24.43	51.81	30.30	25.31

* 1973, 1974 and 1975

Table (4.14)

The Ultimate Values for Age Specific Mortality Rate

Age groups	Males	Females	Both Sexes
less than 1	13.49	9.01	11.25
1-4	0.40	0.25	0.33
5-9	0.26	0.12	0.19
10-14	0.23	0.10	0.17
15-19	0.47	0.18	0.33
20-24	0.65	0.27	0.46
25-29	0.62	0.35	0.49
30-34	0.70	0.47	0.59
35-39	0.94	0.70	0.82
40-44	1.55	1.16	1.36
45-49	2.90	2.10	2.50
50-54	5.19	3.43	4.31
55-59	9.45	5.69	7.57
60-64	15.80	9.53	12.67
65+	54.86	48.84	51.85

Source : (Coale and Demeny, 1966)

Table (4.15)

Improving Percentage Among Age Specific Death Rate for Some Countries from Different Transition Phases (1950-1970) for Both Sexes

Age groups	U.K.	Japan	Yugoslavia
0-	37.5	75.0	56.5
1-	64.0	89.0	77.0
5-	50.0	76.0	72.0
10-	41.5	73.0	68.0
15-	15.5	70.0	73.0
20-	57.5	72.0	75.0
25-	67.5	79.5	71.0
30-	58.5	55.5	64.0
35-	53.0	67.5	45.0
40-	40.0	59.0	48.0
45-	30.5	53.0	35.0
50-	45.5	53.0	56.0
55-	51.0	46.5	22.0
60-	27.0	42.5	9.0
65-	21.0	44.5	3.0

Source : U.N., 1973

Table (4.16)

Assumed Improving Percentage Among Age Specific Mortality Rate During the Projection Period for Both Sexes for Every Region in Saudi Arabia

Age groups	Region				
	Central	Western	Eastern	Southern	Northern
0-	65	70	75	56	56
1-	77	77	77	77	77
5-	77	77	77	77	77
10-	61	68	70	65	61
15-	60	68	70	53	53
20-	68	65	68	68	68
25-	72	69	72	72	72
30-	59	59	59	59	59
35-	55	55	55	55	55
40-	55	55	55	55	55
45-	60	60	60	60	60
50-	45	45	45	45	45
55-	43	43	43	43	43
60-	30	30	30	30	30
65-	10	9	9	9	9

Table (4.17)

The Projected Age Specific Mortality Rates

for Both Sexes for Central Region

Age group	1974-78	1979-83	1984-88	1989-93	1994-98
0-	121.11	97.48	78.92	64.36	52.93
1-	9.53	7.06	5.26	3.94	2.97
5-	9.08	6.74	5.06	3.75	2.82
10-	4.48	3.71	3.07	2.55	2.12
15-	4.32	3.58	2.98	2.49	2.09
20-	4.26	3.35	2.67	2.14	1.74
25-	5.07	3.88	3.00	2.35	1.87
30-	7.50	6.25	5.23	4.39	3.70
35-	11.92	10.13	8.63	7.38	6.32
40-	28.67	24.40	20.80	17.76	15.18
45-	46.87	38.92	32.39	27.03	22.62
50-	54.04	47.87	42.46	37.73	33.60
55-	68.14	60.78	54.32	48.64	43.61
60-	78.93	73.41	68.34	63.71	59.47
65+	30.29	29.69	29.08	28.44	27.79

Table (4.18)

The Projected Age Specific Mortality Rates

for Both Sexes for Western Region

Age group	1974-78	1979-83	1984-88	1989-93	1994-98
0-	154.67	120.62	94.66	74.86	59.79
1-	9.87	7.32	5.44	4.07	3.07
5-	5.07	3.85	2.86	2.14	1.62
10-	3.91	3.10	2.46	1.97	1.58
15-	4.40	3.48	2.77	2.22	1.79
20-	4.36	3.50	2.84	2.32	1.91
25-	4.85	3.80	3.00	2.39	1.93
30-	7.29	6.08	5.08	4.27	3.60
35-	15.11	12.85	10.95	9.35	8.01
40-	22.16	18.85	16.06	13.72	11.75
45-	30.71	25.46	21.18	17.70	14.86
50-	51.63	45.74	40.58	36.06	32.10
55-	53.09	47.32	42.29	37.89	34.03
60-	44.25	41.10	38.27	35.72	33.43
65+	24.00	23.57	23.13	22.68	22.23

Table (4.19)

The Projected Age Specific Mortality Rates for Both Sexes for the Eastern Region

Age group	1974-78	1979-83	1984-88	1989-93	1994-98
0-	119.41	97.71	62.59	56.57	44.05
1-	8.76	6.49	4.83	3.62	2.73
5-	5.21	3.86	2.87	2.15	1.62
10-	3.92	3.07	2.41	1.90	1.51
15-	4.16	3.24	2.55	2.01	1.61
20-	4.34	3.42	2.72	2.19	1.78
25-	4.99	3.82	2.95	2.31	1.84
30-	7.53	6.28	5.25	4.41	3.71
35-	14.23	12.10	10.31	8.81	7.54
40-	19.34	17.60	15.00	12.81	10.97
45-	36.30	30.12	25.07	20.94	17.55
50-	54.54	48.31	42.85	38.07	33.91
55-	68.89	61.44	54.90	49.15	44.10
60-	76.14	70.82	65.95	61.48	57.36
65+	51.75	51.58	51.15	50.04	47.15

Table (4.20)

The Projected Age Specific Mortality Rates

for Both Sexes for the Southern Region

Age group	1974-78	1979-83	1984-88	1989-93	1994-98
0-	116.01	98.06	83.18	70.85	60.58
1-	13.03	9.67	7.20	5.38	4.05
5-	5.59	4.14	3.08	2.31	1.74
10-	3.99	3.23	2.62	2.13	1.73
15-	4.58	3.93	3.37	2.91	2.51
20-	4.83	3.81	3.03	2.43	1.97
25-	5.10	3.91	3.02	2.37	1.88
30-	13.32	11.12	9.30	7.80	6.55
35-	19.06	16.22	13.82	11.79	10.09
40-	25.65	21.82	18.60	15.88	13.59
45-	33.89	28.10	23.37	19.52	16.40
50-	38.71	34.26	30.39	27.01	24.10
55-	42.20	37.57	33.56	30.08	27.10
60-	39.88	37.03	34.48	32.20	30.14
65+	24.87	24.42	23.96	23.50	23.03

Table (4.21)

The Projected Age Specific Mortality Rates

for Both Sexes for Northern Region

Age group	1974-78	1979-83	1984-88	1989-93	1994-98
0-	92.27	77.88	66.05	56.32	48.29
1-	12.07	8.96	6.67	4.99	3.75
5-	6.76	5.02	3.74	2.80	2.10
10-	5.87	4.86	4.02	3.34	2.77
15-	5.32	4.57	3.93	3.38	2.92
20-	4.65	3.67	2.92	2.34	1.90
25-	5.19	3.98	3.08	2.41	1.91
30-	7.80	6.50	5.43	4.56	3.85
35-	14.45	12.29	10.48	8.95	7.66
40-	22.73	19.34	16.48	14.08	12.05
45-	39.00	32.36	26.92	22.47	18.85
50-	50.56	44.78	39.73	35.30	31.43
55-	63.59	56.71	50.68	45.38	40.74
60-	48.86	45.40	42.27	39.44	36.88
65+	29.78	29.25	28.70	28.14	27.57

Table (4.22)

Abridged life Table for the Total Population in the Main Cities in Central Region (Riyadh + Aniza + Kassiem) in Saudi Arabia , 1974 -

Age group	$_5q_x^*$	l_x	$_5L_x^{**}$	T_x	e_x^0
-1	.1149	100,000	91,383	4,230,941	42.31
1-4	.0374	88,510	347,089	4,139,558	46.77
5-9	.0444	85,200	416,543	3,792,469	44.51
10-14	.0222	81,417	402,568	3,375,926	41.46
15-19	.0214	79,610	393,790	2,973,358	37.35
20-24	.0211	77,906	385,420	2,579,568	33.11
25-29	.0250	76,262	376,543	2,194,148	28.77
30-34	.0368	74,355	364,935	1,817,605	24.44
35-39	.0579	71,619	347,728	1,452,670	20.28
40-44	.1338	67,472	314,790	1,104,942	16.38
45-49	.2098	58,444	261,565	790,152	13.52
50-54	.2380	46,182	203,433	528,587	11.45
55-59	.2911	35,191	150,345	325,154	9.24
60-64	.3296	24,947	104,178	174,809	7.01
65+	.1408	16,724	70,631	70,631	4.22

* For ages 0 and 1, q_0 and $_4q_1$ respectively.

** For ages 0 and 1, L_0 and $_4L_1$ respectively.

Table (4.23)

Abridged life Table for the Total Population in the Main Cities in Central Region (Riyadh + Aniza+ Kassiem) in Saudi Arabia , 1979 -

Age group	${}_5q_x^*$	l_x	${}_5L_x^{**}$	T_x	e_x^0
-1	.0929	100,000	93,033	4,574,781	45.75
1-4	.0278	90,710	357,544	4,481,748	49.41
5-9	.0331	88,188	433,643	4,124,204	46.77
10-14	.0184	85,269	422,423	3,690,561	43.28
15-19	.0177	83,700	414,798	3,268,138	39.05
20-24	.0166	82,219	407,683	2,853,340	34.70
25-29	.0192	80,854	400,390	2,445,657	30.25
30-34	.0308	79,302	390,405	2,045,267	25.79
35-39	.0494	76,860	374,808	1,654,862	21.53
40-44	.1150	73,063	344,310	1,280,054	17.52
45-49	.1773	64,661	294,645	935,744	14.47
50-54	.2138	53,197	237,553	641,099	12.05
55-59	.2638	41,824	181,538	403,546	9.65
60-64	.3101	30,791	130,085	222,008	7.21
65+	.1382	21,243	91,923	91,923	4.33

* For ages 0 and 1, q_0 and ${}_4q_1$ respectively

** For ages 0 and 1, L_0 and ${}_4L_1$ respectively

Table (4.24)

Abridged Life Table for the Total Population in the Main Cities in Central Region (Riyadh + Kassiem + Aniza) in Saudi Arabia, 1984 -

Age group	${}_5q_x^*$	l_x	${}_5L_x^{**}$	T_x	e_x^0
-1	.0759	100,000	94,308	4,870,853	48.71
1-4	.0208	92,410	365,604	4,776,545	51.69
5-9	.0250	90,488	446,785	4,410,941	48.75
10-14	.0152	88,226	437,778	3,964,156	44.93
15-19	.0148	86,885	431,210	3,526,378	40.59
20-24	.0133	85,599	425,150	3,095,168	36.16
25-29	.0149	84,461	419,160	2,670,018	31.61
30-34	.0258	83,203	410,648	2,250,858	27.05
35-39	.0422	81,056	396,728	1,840,210	22.70
40-44	.0989	77,635	368,980	1,443,482	18.59
45-49	.1498	69,957	323,585	1,074,502	15.36
50-54	.1919	59,477	268,850	750,917	12.63
55-59	.2391	48,063	211,585	482,067	10.03
60-64	.2918	36,571	156,178	270,482	7.40
65+	.1355	25,900	114,304	114,304	4.41

* For ages 0 and 1, q_0 and ${}_4q_1$ respectively.

** For ages 0 and 1, L_0 and ${}_4L_1$ respectively.

Table (4.25)

Abridged life Table for the Total Population in the Main Cities in Central Region (Riyadh + Kassiem + Aniza) in Saudi Arabia, 1989 -

Age group	${}_5q_x^*$	l_x	${}_5L_x^{**}$	T_x	e_x^0
-1	.0624	100,000	95,320	5,110,555	51.11
1-4	.0195	93,760	371,201	5,015,235	53.49
5-9	.0186	91,932	455,385	4,644,034	50.52
10-14	.0127	90,222	448,245	4,188,649	46.43
15-19	.0124	89,076	442,618	3,740,404	41.99
20-24	.0106	87,971	437,525	3,297,786	37.49
25-29	.0117	87,039	432,650	2,860,261	32.86
30-34	.0217	86,021	425,438	2,427,611	28.22
35-39	.0362	84,154	413,155	2,002,173	23.79
40-44	.0850	81,108	388,305	1,589,018	19.59
45-49	.1266	74,214	347,583	1,200,713	16.18
50-54	.1724	64,819	296,158	853,130	13.16
55-59	.2168	53,644	239,145	556,972	10.38
60-64	.2748	42,014	181,208	317,827	7.56
65+	.1328	30,469	136,619	136,619	4.48

* For ages 0 and 1, q_0 and ${}_4q_1$ respectively.

** For ages 0 and 1, L_0 and ${}_4L_1$ respectively.

Table (4.26)

Abridged life Table for the Total Population in the Main Cities in Central Region (Riyadh + Aniza+ Kassiem) in Saudi Arabia , 1994 -

Age group	${}_5q_x^*$	l_x	${}_5L_x^{**}$	T_x	e_x^0
-1	.0516	100,000	96,130	5,368,446	53.68
1-4	.0118	94,840	377,008	5,272,316	55.59
5-9	.0140	93,720	465,320	4,895,308	52.23
10-14	.0105	92,408	459,615	4,429,988	47.94
15-19	.0104	91,438	454,813	3,970,373	43.42
20-24	.0087	90,487	450,468	3,515,560	38.85
25-29	.0093	89,700	446,415	3,065,092	34.17
30-34	.0183	88,866	440,265	2,618,677	29.47
35-39	.0311	87,240	429,418	2,178,412	24.97
40-44	.0731	84,527	407,188	1,748,994	20.69
45-49	.1070	78,348	370,783	1,341,806	17.13
50-54	.1550	69,965	322,713	971,023	13.88
55-59	.1966	59,120	266,543	648,310	10.97
60-64	.2589	47,497	211,743	381,767	8.04
65+	.1299	37,200	170,024	170,024	4.57

* For ages 0 and 1, q_0 and ${}_4q_1$ respectively.

** For ages 0 and 1, L_0 and ${}_4L_1$ respectively.

Table (4.27)

Abridged life Table for the Total Population in the Main Cities in Western Region (Jiddah + Holy Mecca + Madina + Taif), in Saudi Arabia, 1974 -

Age group	${}_5q_x^*$	l_x	${}_5L_x^{**}$	T_x	e_x^0
-1	.1436	100,000	89,230	4,291,776	42.92
1-4	.0387	85,640	335,601	4,202,546	49.07
5-9	.0250	82,326	406,485	3,866,945	46.97
10-14	.0194	80,268	397,448	3,460,460	43.11
15-19	.0218	78,711	389,265	3,063,012	38.91
20-24	.0216	76,995	380,818	2,673,747	34.73
25-29	.0240	75,332	372,140	2,292,929	30.44
30-34	.0358	73,524	361,040	1,920,789	26.12
35-39	.0728	70,892	341,558	1,559,749	22.00
40-44	.1050	65,731	311,400	1,218,191	18.53
45-49	.1427	58,829	273,158	906,791	15.44
50-54	.2286	50,434	223,348	633,633	12.56
55-59	.2343	38,905	171,738	410,285	10.55
60-64	.1992	29,790	134,115	238,547	8.01
65+	.1132	23,856	104,432	104,432	4.38

* For ages 0 and 1, q_0 and ${}_4q_1$ respectively

** For ages 0 and 1, L_0 and ${}_4L_1$ respectively

Table (4.28)

Abridged life Table for the Total Population in the Main Cities in Western Region (Jiddah + Holy Mecca + Madina + Taif), in Saudi Arabia, 1979 -

Age group	${}_5q_x^*$	l_x	${}_5L_x^{**}$	T_x	e_x^0
-1	.1138	100,000	91,465	4,641,056	46.41
1-4	.0289	88,620	349,102	4,549,591	51.34
5-9	.0191	86,059	426,185	4,200,489	48.81
10-14	.0154	84,415	418,825	3,774,304	44.71
15-19	.0172	83,115	412,000	3,355,479	40.37
20-24	.0247	81,685	403,380	2,943,479	36.03
25-29	.0188	79,667	394,590	2,540,099	31.88
30-34	.0299	78,169	385,003	2,145,509	27.45
35-39	.0623	75,832	367,350	1,760,506	23.22
40-44	.0900	71,108	339,540	1,393,156	19.59
45-49	.1197	64,708	304,175	1,053,616	16.28
50-54	.2052	56,962	255,588	749,441	13.16
55-59	.2116	45,273	202,415	493,853	10.91
60-64	.1864	35,693	161,833	291,438	8.17
65+	.1113	29,040	129,605	129,605	4.46

* For ages 0 and 1, q_0 and ${}_4q_1$ respectively.

** For ages 0 and 1, L_0 and ${}_4L_1$ respectively.

Table (4.29)

Abridged life Table for the Total Population in the Main Cities in Western Region (Jiddah + Holy Mecca + Madina + Taif), in Saudi Arabia, 1984 -

Age group	${}_5q_x^*$	l_x	${}_5L_x^{**}$	T_x	e_x^0
-1	.0904	100,000	93,220	4,983,385	49.83
1-4	.0215	90,960	359,732	4,890,165	53.76
5-9	.0142	89,004	441,860	4,530,433	50.90
10-14	.0122	87,740	436,025	4,088,573	46.60
15-19	.0138	86,670	430,360	3,652,548	42.14
20-24	.0141	85,474	424,358	3,222,188	37.70
25-29	.0149	84,269	418,205	2,797,830	33.20
30-34	.0251	83,013	409,855	2,379,625	28.68
35-39	.0533	80,929	393,860	1,969,770	24.34
40-44	.0772	76,615	368,288	1,575,910	20.57
45-49	.1006	70,700	335,720	1,207,622	17.08
50-54	.1842	63,588	288,658	871,902	13.71
55-59	.1912	51,875	234,578	583,244	11.24
60-64	.1746	41,956	191,465	348,666	8.31
65+	.1093	34,630	157,201	157,201	4.54

* For ages 0 and 1, q_0 and ${}_4q_1$ respectively.

** For ages 0 and 1, L_0 and ${}_4L_1$ respectively.

Table (4.30)

Abridged life Table for the Total Population in the Main Cities in Western Region (Jiddah + Holy Mecca + Madina + Taif), in Saudi Arabia, 1989 -

Age group	${}_5q_x^*$	l_x	${}_5L_x^{**}$	T_x	e_x^0
-1	.0722	100,000	94,585	5,257,223	52.57
1-4	.0161	92,780	367,983	5,162,638	55.64
5-9	.0106	91,286	454,010	4,794,655	52.52
10-14	.0098	90,318	449,378	4,340,645	48.06
15-19	.0110	89,433	444,705	3,891,267	43.51
20-24	.0115	88,449	439,703	3,446,562	38.97
25-29	.0119	87,432	434,560	3,006,859	34.39
30-34	.0211	86,392	427,403	2,572,299	29.77
35-39	.0457	84,569	413,183	2,144,896	25.36
40-44	.0663	80,704	390,143	1,731,713	21.46
45-49	.0847	75,353	360,810	1,341,570	17.80
50-54	.1654	68,971	316,335	980,760	14.22
55-59	.1731	57,563	262,905	664,425	11.54
60-64	.1640	47,599	218,480	401,520	8.44
65+	.1073	39,793	183,040	183,040	4.60

* For ages 0 and 1, q_0 and ${}_4q_1$ respectively.

** For ages 0 and 1, L_0 and ${}_4L_1$ respectively.

Table (4.31)

Abridged life Table for the Total Population in the Main Cities in Western Region (Jiddah + Holy Mecca + Madina + Taif), in Saudi Arabia 1994 -

Age group	${}_5q_x^*$	l_x	${}_5L_x^{**}$	T_x	e_x^0
-1	.0581	100,000	95,643	5,486,965	54.87
1-4	.0122	94,190	374,347	5,391,322	57.24
5-9	.0081	93,041	463,320	5,016,975	53.92
10-14	.0079	92,287	459,613	4,553,655	49.34
15-19	.0089	91,558	455,753	4,094,042	44.72
20-24	.0095	90,743	451,560	3,638,289	40.09
25-29	.0096	89,881	447,248	3,186,729	35.45
30-34	.0178	89,018	441,128	2,739,481	30.77
35-39	.0393	87,433	428,575	2,298,353	26.29
40-44	.0571	83,997	407,995	1,869,778	22.26
45-49	.0716	79,201	381,828	1,461,783	18.46
50-54	.1486	73,530	340,333	1,079,955	14.69
55-59	.1568	62,603	288,475	739,622	11.81
60-64	.1543	52,787	243,573	451,147	8.55
65+	.1053	44,642	207,574	207,574	4.65

* For ages 0 and 1, q_0 and ${}_4q_1$ respectively.

** For ages 0 and 1, L_0 and ${}_4L_1$ respectively.

Table (4.32)

Abridged life Table for the Total Population in the Main Cities in Eastern Region (Dammam + Katief + Khafja + El-Ehsa), in Saudi Arabia, 1974 -

Age group	${}_5q_x^*$	l_x	${}_5L_x^{**}$	T_x	e_x^0
-1	.1127	100,000	91,548	4,404,479	44.04
1-4	.0344	88,730	348,511	4,312,931	48.61
5-9	.0257	85,678	422,885	3,964,420	46.27
10-14	.0194	83,476	413,333	3,541,535	42.43
15-19	.0206	81,857	405,070	3,128,202	38.22
20-24	.0215	80,171	396,545	2,723,132	33.97
25-29	.0246	78,447	387,410	2,326,587	29.66
30-34	.0370	76,517	375,508	1,939,177	25.34
35-39	.0687	73,686	355,775	1,563,669	21.22
40-44	.0922	68,624	327,303	1,207,894	17.60
45-49	.1664	62,297	285,570	880,591	14.14
50-54	.2400	51,931	228,498	595,021	11.46
55-59	.2938	39,468	168,350	366,523	8.53
60-64	.3198	27,872	117,075	198,173	7.11
65+	.2291	18,958	81,098	81,098	4.28

* For ages 0 and 1, q_0 and ${}_4q_1$ respectively.

** For ages 0 and 1, L_0 and ${}_4L_1$ respectively.

Table (4.33)

Abridged life Table for the Total Population in the Main Cities in Eastern Region (Dammam + Katief + Khafja + El-Ehsa), in Saudi Arabia, 1979-

Age group	${}_5q_x^*$	l_x	${}_5L_x^{**}$	T_x	e_x^0
-1	.0932	100,000	93,010	4,716,960	47.17
1-4	.0256	90,680	357,846	4,623,950	50.99
5-9	.0191	88,359	437,575	4,266,104	48.28
10-14	.0152	86,671	430,063	3,828,529	44.17
15-19	.0161	85,354	423,335	3,398,466	39.82
20-24	.0170	83,980	416,330	2,975,131	35.42
25-29	.0189	82,552	408,860	2,558,801	31.00
30-34	.0309	80,992	398,703	2,149,941	26.55
35-39	.0587	78,489	380,928	1,751,238	22.31
40-44	.0843	73,882	353,840	1,370,310	18.55
45-49	.1401	67,654	314,575	1,016,470	15.02
50-54	.2155	58,176	259,538	701,895	12.07
55-59	.2663	45,639	197,810	442,357	9.69
60-64	.3008	33,485	142,245	244,547	7.30
65+	.2284	23,413	102,302	102,302	4.37

* For ages 0 and 1, q_0 and ${}_4q_1$ respectively.

** For ages 0 and 1, L_0 and ${}_4L_1$ respectively.

Table (4.34)

Abridged life Table for the Total Population in the Main Cities in Eastern Region (Dammam + Katief + Khafja + El-Ehsa), in Saudi Arabia, 1984-

Age group	${}_5q_x^*$	l_x	${}_5L_x^{**}$	T_x	e_x^0
-1	.0607	100,000	95,448	5,085,801	50.86
1-4	.0191	93,930	371,953	4,990,353	53.13
5-9	.0142	92,136	457,410	4,618,400	50.13
10-14	.0120	90,828	451,415	4,160,990	45.81
15-19	.0127	89,738	445,840	3,709,575	41.34
20-24	.0135	88,598	440,000	3,263,735	36.84
25-29	.0146	87,402	433,820	2,823,735	32.31
30-34	.0259	86,126	425,053	2,389,915	27.75
35-39	.0503	83,895	408,925	1,964,862	23.42
40-44	.0723	79,675	383,973	1,555,937	19.53
45-49	.1180	73,914	347,765	1,171,964	15.86
50-54	.1935	65,192	294,423	824,199	12.64
55-59	.2414	52,577	231,155	529,776	10.08
60-64	.2831	39,885	171,198	298,621	7.49
65+	.2268	28,594	127,423	127,423	4.46

* For ages 0 and 1, q_0 and ${}_4q_1$ respectively.

** For ages 0 and 1, L_0 and ${}_4L_1$ respectively.

Table (4.35)

Abridged life Table for the Total Population in the Main Cities in Eastern Region (Dammam + Katief + Khafja + El-Ehsa), in Saudi Arabia, 1989 -

Age group	${}_5q_x^*$	l_x	${}_5L_x^{**}$	T_x	e_x^0
-1	.0550	100,000	95,875	5,290,224	52.90
1-4	.0143	94,500	375,163	5,194,349	54.97
5-9	.0107	93,149	463,253	4,819,186	51.74
10-14	.0095	92,152	458,573	4,355,933	47.27
15-19	.0100	91,277	454,103	3,897,360	42.70
20-24	.0109	90,364	449,358	3,443,257	38.10
25-29	.0115	89,379	444,325	2,993,899	33.50
30-34	.0218	88,351	436,940	2,549,574	28.86
35-39	.0431	86,425	422,813	2,112,634	24.44
40-44	.0621	82,700	400,660	1,689,821	20.43
45-49	.0995	77,564	368,525	1,289,161	16.62
50-54	.1738	69,846	318,883	920,636	13.18
55-59	.2189	57,707	256,955	601,753	10.43
60-64	.2664	45,075	195,355	344,798	7.65
65+	.2224	33,067	149,443	149,443	4.52

* For ages 0 and 1, q_0 and ${}_4q_1$ respectively.

** For ages 0 and 1, L_0 and ${}_4L_1$ respectively.

Table (4.36)

Abridged life Table for the Total Population in the Main Cities in Eastern Region (Dammam + Katief + Khafja + El-Ehsa), in Saudi Arabia, 1994-

Age group	${}_5q_x^*$	l_x	${}_5L_x^{**}$	T_x	e_x^0
-1	.0431	100,000	96,768	5,507,656	55.08
1-4	.0109	95,690	380,570	5,410,888	56.55
5-9	.0081	94,647	471,318	5,030,318	53.15
10-14	.0075	93,880	467,640	4,559,000	48.56
15-19	.0080	93,176	464,018	4,091,360	43.91
20-24	.0089	92,431	460,098	3,627,342	39.24
25-29	.0092	91,608	455,933	3,167,244	34.57
30-34	.0184	90,765	449,650	2,711,311	29.87
35-39	.0370	89,095	437,233	2,261,661	25.38
40-44	.0534	85,798	417,535	1,824,428	21.26
45-49	.0841	81,216	389,005	1,406,893	17.32
50-54	.1563	74,386	342,865	1,017,888	13.68
55-59	.1986	62,760	282,640	675,023	10.76
60-64	.2508	50,296	219,945	392,383	7.80
65+	.2109	37,682	172,438	172,438	4.58

* For ages 0 and 1, q_0 and ${}_4q_1$ respectively.

** For ages 0 and 1, L_0 and ${}_4L_1$ respectively.

Table (4.37)

Abridged life Table for the Total Population in the Main Cities in Southern Region (Jizan + Najran + Besha + Asier), in Saudi Arabia, 1974-

Age group	${}_5q_x^*$	l_x	${}_5L_x^{**}$	T_x	e_x^0
-1	.1096	100,000	91,780	4,331,894	43.32
1-4	.0508	89,040	346,662	4,240,114	47.62
5-9	.0276	84,517	416,753	3,893,452	46.07
10-14	.0198	82,184	406,853	3,476,699	42.30
15-19	.0226	80,557	398,233	3,069,846	38.11
20-24	.0239	78,736	388,975	2,671,613	33.93
25-29	.0252	76,854	379,428	2,282,638	29.70
30-34	.0645	74,917	362,505	1,903,210	25.40
35-39	.0910	70,085	334,480	1,540,705	21.98
40-44	.1205	63,707	299,343	1,206,225	18.93
45-49	.1562	56,030	258,270	906,882	16.19
50-54	.1765	47,278	215,528	648,612	13.72
55-59	.1909	38,933	176,085	433,084	11.12
60-64	.1813	31,501	143,228	256,999	8.16
65+	.1171	25,790	113,771	113,771	4.41

* For ages 0 and 1, q_0 and ${}_4q_1$ respectively.

** For ages 0 and 1, L_0 and ${}_4L_1$ respectively.

Table (4.38)

Abridged life Table for the Total Population in the Main Cities in Southern Region (Jizan + Najran + Besha + Asier), in Saudi Arabia, 1979-

Age group	${}_5q_x^*$	l_x	${}_5L_x^{**}$	T_x	e_x^0
-1	.0935	100,000	92,988	4,637,039	46.37
1-4	.0379	90,650	355,384	4,544,051	50.13
5-9	.0205	87,214	431,600	4,188,667	48.03
10-14	.0160	85,426	423,713	3,757,067	43.98
15-19	.0195	84,059	416,198	3,333,354	39.65
20-24	.0189	82,420	408,205	2,917,156	35.39
25-29	.0194	80,862	400,388	2,508,951	31.03
30-34	.0541	79,293	385,740	2,108,563	26.59
35-39	.0779	75,003	357,908	1,722,823	22.97
40-44	.1035	68,160	323,163	1,364,915	20.03
45-49	.1313	61,105	285,468	1,041,752	17.05
50-54	.1578	53,082	244,470	756,284	14.25
55-59	.1717	44,706	204,340	511,814	11.45
60-64	.1695	37,030	169,458	307,474	8.30
65+	.1151	30,753	138,016	138,016	4.49

* For ages 0 and 1, q_0 and ${}_4q_1$ respectively.

** For ages 0 and 1, L_0 and ${}_4L_1$ respectively.

Table (4.39)

Abridged life Table for the Total Population in the Main Cities in Southern Region (Jizan + Najran + Besha + Asier), in Saudi Arabia, 1984 -

Age group	${}_5q_x^*$	l_x	${}_5L_x^{**}$	T_x	e_x^0
-1	.0799	100,000	94,008	4,949,819	49.50
1-4	.0284	92,010	362,553	4,855,811	52.77
5-9	.0153	89,397	443,565	4,493,258	50.26
10-14	.0130	88,029	437,285	4,049,693	46.00
15-19	.0167	86,885	430,798	3,612,408	41.58
20-24	.0150	85,434	423,965	3,181,610	37.24
25-29	.0150	84,152	417,605	2,757,645	32.77
30-34	.0454	82,890	405,043	2,340,040	28.23
35-39	.0668	79,127	382,420	1,934,997	24.45
40-44	.0889	73,841	352,795	1,552,577	21.03
45-49	.1104	67,277	317,818	1,199,782	17.83
50-54	.1412	59,850	278,123	881,964	14.74
55-59	.1548	51,399	237,103	603,841	11.75
60-64	.1587	43,442	199,975	366,738	8.44
65+	.1130	36,548	166,763	166,763	4.56

* For ages 0 and 1, q_0 and ${}_4q_1$ respectively.

** For ages 0 and 1, L_0 and ${}_4L_1$ respectively.

Table (4.40)

Abridged life Table for the Total Population in the Main Cities in Southern Region (Jizan + Najran + Besha + Asier), in Saudi Arabia, 1989 -

Age group	${}_5q_x^*$	l_x	${}_5L_x^{**}$	T_x	e_x^0
-1	.0684	100,000	94,870	5,202,719	52.03
1-4	.0213	93,160	368,474	5,107,849	54.83
5-9	.0115	91,176	453,258	4,739,375	51.98
10-14	.0106	90,127	448,248	4,286,117	47.56
15-19	.0144	89,172	442,650	3,837,869	43.04
20-24	.0121	87,888	436,783	3,395,219	38.63
25-29	.0118	86,825	431,563	2,958,436	34.07
30-34	.0383	85,800	420,785	2,526,873	29.45
35-39	.0573	82,514	400,750	2,106,088	25.52
40-44	.0764	77,786	374,073	1,705,338	21.92
45-49	.0931	71,843	342,493	1,331,265	18.53
50-54	.1265	65,154	305,165	988,772	15.18
55-59	.1399	56,912	264,655	683,607	12.01
60-64	.1490	48,950	226,515	418,952	8.56
65+	.1110	41,656	192,437	192,437	4.62

* For ages 0 and 1, q_0 and ${}_4q_1$ respectively.

** For ages 0 and 1, L_0 and ${}_4L_1$ respectively.

Table (4.41)

Abridged life Table for the Total Population in the Main Cities in Southern Region (Jizan + Najran + Besha + Asier), in Saudi Arabia, 1994 -

Age group	${}_5q_x^*$	l_x	${}_5L_x^{**}$	T_x	e_x^0
-1	.0588	100,000	95,590	5,422,194	54.22
1-4	.0161	94,120	373,299	5,326,604	56.59
5-9	.0087	92,605	461,010	4,953,305	53.49
10-14	.0086	91,799	457,023	4,492,295	48.94
15-19	.0125	91,010	452,205	4,035,272	44.34
20-24	.0098	89,872	447,158	3,583,067	39.87
25-29	.0094	88,991	442,863	3,135,909	35.24
30-34	.0322	88,154	433,673	2,693,046	30.55
35-39	.0492	85,315	416,080	2,259,373	26.48
40-44	.0657	81,117	392,263	1,843,293	22.72
45-49	.0788	75,788	364,010	1,451,030	19.15
50-54	.1137	69,816	329,235	1,087,020	15.57
55-59	.1269	61,878	289,760	757,785	12.25
60-64	.1401	54,026	251,208	468,025	8.66
65+	.1089	46,457	216,817	216,817	4.67

* For ages 0 and 1, q_0 and ${}_4q_1$ respectively.

** For ages 0 and 1, L_0 and ${}_4L_1$ respectively.

Table (4.42)

Abridged life Table for the Total Population in the Main Cities in Northern Region (Ar-Ar + El-Jouf + Ha'il), in Saudi Arabia, 1974 -

Age group	${}_5q_x^*$	l_x	${}_5L_x^{**}$	T_x	e_x^0
-1	.0882	100,000	93,385	4,391,099	43.91
1-4	.0471	91,180	355,701	4,297,714	47.13
5-9	.0332	86,885	427,213	3,942,013	45.37
10-14	.0289	84,000	413,930	3,514,800	41.84
15-19	.0263	81,572	402,498	3,100,870	38.01
20-24	.0230	79,427	392,568	2,698,372	33.97
25-29	.0256	77,600	383,033	2,305,804	29.71
30-34	.0383	75,613	370,825	1,922,771	25.43
35-39	.0697	72,717	350,915	1,551,946	21.34
40-44	.1075	67,649	320,065	1,201,031	17.75
45-49	.1777	60,377	275,063	880,966	14.59
50-54	.2244	49,648	220,388	605,903	12.20
55-59	.2743	38,507	166,130	385,515	10.01
60-64	.2177	27,945	124,515	219,385	7.85
65+	.1386	21,861	94,870	94,870	4.34

* For ages 0 and 1, q_0 and ${}_4q_1$ respectively.

** For ages 0 and 1, L_0 and ${}_4L_1$ respectively.

Table (4.43)

Abridged life Table for the Total Population in the Main Cities in Northern Region (Ar-Ar + El-Jouf + Ha'il), in Saudi Arabia, 1979 -

Age group	${}_5q_x^*$	l_x	${}_5L_x^{**}$	T_x	e_x^0
-1	.0750	100,000	94,375	4,702,660	47.03
1-4	.0352	92,500	363,162	4,608,285	49.82
5-9	.0248	89,244	440,688	4,245,123	47.57
10-14	.0240	87,031	429,933	3,804,435	43.71
15-19	.0226	84,942	419,910	3,374,502	39.73
20-24	.0182	83,022	411,333	2,954,592	35.59
25-29	.0197	81,511	403,540	2,543,259	31.20
30-34	.0320	79,905	393,133	2,139,719	26.78
35-39	.0596	77,348	375,215	1,746,586	22.58
40-44	.0922	72,738	346,925	1,371,371	18.85
45-49	.1497	66,032	305,448	1,024,446	15.51
50-54	.2014	56,147	252,465	718,998	12.81
55-59	.2483	44,839	196,360	466,533	10.40
60-64	.2039	33,705	151,343	270,173	8.02
65+	.1363	26,832	118,830	118,830	4.43

* For ages 0 and 1, q_0 and ${}_4q_1$ respectively.

** For ages 0 and 1, L_0 and ${}_4L_1$ respectively.

Table (4.44)

Abridged life Table for the Total Population in the Main Cities in Northern Region (Ar-Ar + El-Jouf + Ha'il), in Saudi Arabia, 1984 -

Age group	${}_5q_x^*$	l_x	${}_5L_x^{**}$	T_x	e_x^0
-1	.0639	100,000	95,208	4,978,534	49.79
1-4	.0263	93,610	369,270	4,883,326	52.17
5-9	.0185	91,148	451,525	4,514,056	49.52
10-14	.0199	89,462	442,860	4,062,531	45.41
15-19	.0195	87,682	434,135	3,619,671	41.28
20-24	.0145	85,972	426,743	3,185,536	37.05
25-29	.0153	84,725	420,385	2,758,793	32.56
30-34	.0268	83,429	411,555	2,338,408	28.03
35-39	.0511	81,193	395,593	1,926,853	23.73
40-44	.0791	77,044	369,985	1,531,260	19.88
45-49	.1261	70,950	332,383	1,161,275	16.37
50-54	.1807	62,003	282,005	828,887	13.37
55-59	.2249	50,799	225,433	546,887	10.77
60-64	.1912	39,374	178,050	321,454	8.16
65+	.1339	31,846	143,404	143,404	4.50

* For ages 0 and 1, q_0 and ${}_4q_1$ respectively.

** For ages 0 and 1, L_0 and ${}_4L_1$ respectively.

Table (4.45)

Abridged life Table for the Total Population in the Main Cities in Northern Region (Ar-Ar + El-Jouf + Ha'il), in Saudi Arabia, 1989 -

Age group	${}_5q_x^*$	l_x	${}_5L_x^{**}$	T_x	e_x^0
-1	.0548	100,000	95,890	5,218,831	52.19
1-4	.0197	94,520	374,170	5,122,941	54.20
5-9	.0139	92,658	460,070	4,748,771	51.25
10-14	.0166	91,370	453,058	4,288,701	46.94
15-19	.0168	89,853	445,490	3,835,643	42.69
20-24	.0116	88,343	439,153	3,390,153	38.37
25-29	.0120	87,318	433,970	2,951,000	33.80
30-34	.0225	86,270	426,498	2,517,030	29.18
35-39	.0438	84,329	412,410	2,090,532	24.79
40-44	.0680	80,635	389,468	1,678,122	20.81
45-49	.1064	75,152	355,770	1,288,654	17.15
50-54	.1622	67,156	308,548	932,884	13.89
55-59	.2038	56,263	252,650	624,336	11.10
60-64	.1795	44,797	203,883	371,686	8.30
65+	.1315	36,756	167,803	167,803	4.57

* For ages 0 and 1, q_0 and ${}_4q_1$ respectively.

** For ages 0 and 1, L_0 and ${}_4L_1$ respectively.

Table (4.46)

Abridged Life Table for the Total Population in the Main Cities in Northern Region (Ar-Ar + El-Jouf + Ha'il), in Saudi Arabia, 1994 -

Age group	${}_5q_x^*$	l_x	${}_5L_x^{**}$	T_x	e_x^0
-1	.0472	100,000	96,460	5,428,471	54.28
1-4	.0149	95,280	378,138	5,332,011	55.96
5-9	.0104	93,860	466,860	4,953,873	52.78
10-14	.0136	92,884	461,263	4,487,013	48.31
15-19	.0145	91,621	454,783	4,025,750	43.94
20-24	.0095	90,292	449,315	3,570,967	39.55
25-29	.0095	89,434	445,045	3,121,652	34.90
30-34	.0191	88,584	438,690	2,676,607	30.22
35-39	.0376	86,892	426,293	2,237,917	25.76
40-44	.0585	83,625	405,895	1,811,624	21.66
45-49	.0900	78,733	375,950	1,405,729	17.85
50-54	.1457	71,647	332,138	1,029,779	14.37
55-59	.1849	61,208	277,748	697,641	11.40
60-64	.1688	49,891	228,400	419,893	8.42
65+	.1290	41,469	191,493	191,493	4.62

* For ages 0 and 1, q_0 and ${}_4q_1$ respectively.

** For ages 0 and 1, L_0 and ${}_4L_1$ respectively.

CHAPTER FIVE

MARRIAGE AND DIVORCE

5.1 Basic Facts :

The registration of marriage and divorce in Saudi Arabia began only recently, and the data originally related only to chief cities. On 15 September 1974, the scope of registration was extended to cover the country as a whole. The study here is therefore confined to this year only.

Under Islam, marriage is valid only if a marriage contract is duly signed by the parties concerned as well as by the moslem marriage contractor, who is under strict obligation to report the event to the authorities. He, therefore, fills in the form and sends it to the authorities in due course.

Divorces are treated similarly.

In Saudi Arabia, there is no minimum age at marriage. But the government encourages people to marry at any age. In 1973 the Saudi Credit Bank was established. The purpose of this bank is to provide interest-free loans to people with limited incomes to meet urgent social needs (e.g. marriage). From Table (5.1) it may be seen that marriage rates are high.

While Islam law suggests that a man can readily divorce his wife, in practice the bride-price (al-mahr), the kinship ties between families, and the sum paid by the husband should a divorce take place (al-mu'akhkhar) seem to have prevented divorce from being an easy way of terminating a marriage. However, the crude

divorce rate (20.3 per 1,000) for Saudi Arabia in 1974 was very much higher than the rate in Kuwait (8.4 per 1,000) in 1970. The very much higher crude divorce rate in Saudi Arabia in 1974, may be due to the great sums of money which the Saudi Credit Bank gave to the divorced women who have children as interest-fee loans. This fact encouraged men to divorce their wives and then remarry them afterwards. The government was obliged to stop giving these loans in order to put an end to this calamity.

The Statistics themselves may not be wholly reliable, but certainly the evidence suggests that, even if the divorce rate is higher, women spend a relatively short time as a divorcees There are no social barriers to remarriage for divorcees or widows but this cannot take place according to shariah (law of Islam) before a sufficient interval (three months for divorced and four months + ten days for the widowed) to determine whether or not the woman was pregnant at the time of separation, but if a woman is pregnant so the interval extends until the woman gives birth, and thereby establishes legitimate male responsibility for the offspring.

The high rates for both marriages and divorces for all administrative-areas in Saudi Arabia may be observed from Table (5.1). This should be expected in view of the rise in personal incomes which might have encouraged spending on marriage and re-marriage and also polygamy. The impact of such high marriage rates on fertility and reproduction is obvious.

5.2 Total Married Women of Reproductive Age :

The effect of high marriage rates in raising the proportion of the population which is married is an important influence on fertility of the community since this depends on the number of married women in the population.

The proportion married in the 15-49 age group represents the fraction of reproductive years which fall within married life.

Table (5.2) shows that most females are married at age 15 or soon after in all administrative-areas. The very young age structure of married females is a major factor producing a high level of fertility and reproduction experienced in Saudi Arabia.

5.3 Age at Marriage and Proportions Single :

The age at marriage is the most important variable that has been studied in relation to fertility in Saudi Arabia. Furthermore, the age at marriage influences the forms of marriage practiced in a society, or is influenced by them. Registration data on marriages by ages in combination of spouses are non-existent in Saudi Arabia. Hajnal has developed a method to compute the "Singulate mean age at marriage" from the proportion single in successive age groups (Hajnal, 1953).

The method rests on the fact that the mean age at first marriage is equal to the mean duration of single life. The latter can be computed from the proportion of males and females single in

successive age groups as reported on a census schedule if there have been no changes of the age patterns of marriage in the recent past and if differential mortality and net migration rates by marital status may be considered negligible. Under such conditions, a cohort moving through life would have the same proportions single at successive ages as persons at the same ages in the present population. Assuming that no woman dies between her fifteenth and fifty-fifth birthday the problem is to compute the mean age at marriage before they reach 50. The method may be summarized as follows :

The procedure results in an estimate of the average number of years lived in the single state by those who marry before age 50. The estimate of the number who have married by age 50 was obtained by averaging the percentage single in the age group 45 to 49 and 50 to 54 and subtracting the average from 100 to arrive at an estimate of the percentage who have ever married by age 50. The consideration underlying the computations are the following : The number of years lived the single state between the ages 15 and 50 by the entire cohort is the sum of the proportions single multiplied by 5 (the use of 5 is required by the grouping into 5 year age groups). To this figure are added the 1,500 (15 x 100) years lived by the cohort before the fifteenth birthday. The number of years lived by those who did not marry before age 50 must be subtracted from the total. The total is then divided by the number of women (or men) who have married. The result of the division is the singulate mean age at marriage. Table (5.3) shows the singulate mean age at marriage that is calculated

by the above method for 14 administrative-areas in Saudi Arabia.

The difference in age of marriage between the sexes is traditional and may be due in part to the stylized role of women in society. Since almost no women in Arabia in the past could expect to follow independent careers outside the family home, there would be no logical reason in delaying the age of marriage much beyond the age of menarche while the high value placed on female virginity by parents who would in the past have arranged almost every marriage increases the pressure on girls to marry early. In the past the effect of bride price (al-mahr) was probably to postpone the age of marriage for males, but the legal and the customary age of marriage of females was defined by the onset of menarche, despite some evidence that some girls were married before puberty, especially in the Bedouin female population.

It would seem that Saudis usually marry earlier than census data would lead us to believe. We have fairly well-documented evidence of rather late female marriage in some administrative-areas, notably in North Borders and El-Jouf (Table (5.3)). On the other hand, it seems warranted to assume that the mean age at marriage in Saudi Arabia as a whole has increased in recent years. This explains the high proportion of single at the youngest age groups observed in Table (5.4).

5.4 Divorce and Widowhood

Table (5.5) shows the rates single, married, widowed, and divorced population of 12 years of age or more.

As can be seen from Table (5.4), very few females remain unmarried beyond the age of 30. It is significant that an appreciable number of females below the age of 14 are married.

On the other hand, as it would be expected, males tend to get married in a later stage of their life as compared with females. Most males seem to be getting married by the time they are 29.

The difference in the average age of married males and females leads to the far greater number of widowed females as compared with males. Whereas there are only 25 widowed males per 1000 there are 109 females per 1000. Since the life expectation of females (46.5) is higher than males (44.2), the fact that wives are usually considerably younger than husbands permits the possibility of a greater number of widowed females.

The proportion of divorced males is much smaller than the proportion of divorced females. This is probably explained by the fact that the initiative in getting the divorce usually belongs to the male. Divorcing males may be getting remarried later on, so that they appear as married in Table (5.5) whereas divorced females may find it more difficult to get remarried.

Altogether both widowhood and divorce are more prevalent in females than in males over the whole age field, as can be seen from Table (5.5).

The combined effect of higher proportions single, divorced or widowed in females is such that there are more unmarried females than males at the older age groups, and less in the younger age groups as may be seen from Tables (5.6.1) to (5.6.4). It may be noted, that while the number of unmarried males is a consistently

declining function of age, the female numbers rise at 40 and older due mainly to the incidence of widowhood. The pattern is consistent in all the 14 administrative-areas. The ratio of unmarried males to unmarried females is highest at age 20-24, 25-29 and 30-34. In the administrative area of Jizan these ratios are less than in other administrative-areas. This may be attributable to a decline in married female mortality, a rise in spinsterhood and/or a decline in bachelorhood. A decline in the proportions divorced may also have the same effect. From Tables (5.7.1) to (5.7.4), it may be seen that age specific divorce rates have declined considerably at some age points.

Tables (5.8.1), (5.8.2), (5.9.1) and (5.9.2) describe in more detail the evolution of proportion widowed and divorced in Saudi Arabia administrative-areas. The most remarkable feature of these tables is that there is for both sexes a continuous increase with age in the proportion of widowed persons. This proportion increases sharply at ages over 45 years especially among women. Around 40% of all women over 45 are widowed. But the proportion divorced does not show any appreciable age trend. Tables (5.9.1) and (5.9.2) shows the very different age gradients in the proportions widowed in the two sexes. This age increase in the proportion of widows to age 45 could be reflected in decreasing fertility with age.

5.5 Tables :

Table (5.1)

Marriages, Divorces and their Crude Rates, 1974

Administrative Area	Male				Female			
	Marriage		Divorce		Marriage		Divorce	
	Numbers	No. per 1000 pop.	Numbers	No. per 1000 pop.	Numbers	No. per 1000 pop.	Numbers	No. per 1000 pop.
Riyadh	234,144	334.89	4,278	6.12	195,797	349.70	9,801	5.45
Holy Mecca	335,558	352.23	8,685	9.12	292,587	362.31	14,062	17.40
Al-Madina	89,725	335.76	1,533	5.73	93,547	373.34	2,818	11.30
Eastern Province	152,415	355.68	2,703	6.31	118,436	355.10	3,835	11.50
Tabook	40,938	372.33	967	8.79	31,411	371.35	999	11.81
Qaryat	6,215	346.20	130	7.20	5,521	370.50	201	13.49
Assir	110,023	322.24	3,318	9.90	120,275	350.16	8,070	23.49
Baha	28,920	330.04	414	4.72	36,688	373.50	1,222	12.44
Najran	26,610	353.71	532	7.07	23,203	336.92	2,027	29.40
Jezan	64,572	318.65	1,573	7.76	71,992	350.00	3,338	32.46
El-Jouf	10,446	301.96	354	7.34	10,666	331.82	513	15.96
North Borders	22,001	322.90	641	9.40	19,976	336.01	982	16.57
Hayal	40,686	311.27	792	6.06	44,422	330.26	2,211	16.44
Qassim	51,106	306.07	642	3.84	55,182	350.21	2,101	13.33

Source : based on data from census 1974

Table (5.2)

Age Structure of Married Females, 1974 (Age Specific Proportions)

Administrative Area	12 -14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+	Total
Riyadh	0.82	12.16	16.23	16.94	15.19	12.56	10.22	5.53	4.93	1.62	2.03	1.77	100
Holy Mecca	0.92	11.10	16.05	16.78	15.14	12.58	10.12	5.73	5.13	2.10	2.44	1.91	100
Al-Madina Al-Monora	0.76	10.70	14.74	15.16	13.42	12.67	11.92	7.19	6.51	2.28	2.67	1.98	100
Eastern Province	1.12	12.56	16.16	16.58	14.02	12.42	10.10	5.92	5.30	1.89	2.05	1.88	100
Tabook	0.72	10.04	15.27	17.51	13.82	12.73	9.62	6.34	6.04	2.85	2.49	2.57	100
Qaryat	0.46	10.02	14.24	16.14	14.50	13.93	10.63	5.33	8.02	2.01	2.47	2.25	100
Assir	0.91	8.33	12.99	16.13	15.02	13.68	11.12	6.75	6.78	2.67	2.85	2.77	100
Baha	0.96	8.10	11.97	13.76	13.28	11.84	11.85	7.33	8.11	3.60	4.85	4.35	100
Najran	1.20	9.19	13.92	16.31	14.24	10.59	10.31	6.34	7.21	3.58	4.31	2.80	100
Jezan	1.39	10.94	15.07	16.97	15.39	12.13	10.69	5.96	5.50	2.09	2.34	1.53	100
El-Jouf	0.47	8.67	11.76	14.23	14.11	13.79	12.10	7.10	6.80	3.65	3.38	3.94	100
North Borders	0.48	9.34	13.08	15.28	14.34	12.87	11.00	7.66	6.84	3.16	2.84	3.11	100
Hayal	0.81	9.57	11.06	12.82	14.13	14.05	13.90	7.51	7.91	2.57	2.80	2.87	100
Qassim	0.76	12.78	14.58	14.53	14.83	12.87	11.05	6.18	5.97	1.96	2.44	2.06	100

Source : based on data from census 1974

Table (5.3)

Singulate Mean Age at Marriage by Sex,
Administrative-Areas of Saudi Arabia,
Census 1974

Administrative-Area	Singulate mean age at marriage	
	Male	Female
Riyadh	25.7	18.8
Holy Mecca	25.4	19.0
Al-Madina Al-Monora	25.5	18.5
Eastern Province	25.3	18.8
Tabook	25.4	18.6
Qoryat	26.8	18.6
Assir	25.7	19.5
Baha	24.0	18.6
Najran	24.7	18.4
Jezan	28.1	19.4
El-Jouf	27.6	20.3
North Borders	27.7	20.6
Hayal	27.1	19.5
Cassim	25.5	18.5

Table (5.4.1)

Age Specific Proportions Single (Males) enumerated in Census 1974

Administrative-Area	12-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+
Riyadh	24.8	36.7	20.2	7.7	2.8	1.4	0.8	0.4	0.3	0.1	0.2	0.3
Holy Mecca	25.8	35.2	21.2	3.4	3.5	1.9	1.1	0.6	0.5	0.3	0.3	0.4
Al-Madina	31.0	38.1	17.6	6.3	2.5	1.4	0.9	0.6	0.5	0.2	0.4	0.5
Eastern Province	29.2	33.4	21.7	8.4	3.2	1.7	0.9	0.5	0.4	0.2	0.2	0.4
Tabook	19.3	29.2	29.3	12.5	4.5	2.0	1.0	0.6	0.5	0.3	0.2	0.6
Qoryat	22.5	31.3	23.1	12.1	4.2	2.7	1.7	0.7	0.6	0.4	0.3	0.5
Assir	29.5	36.2	16.6	8.4	3.9	2.2	1.1	0.6	0.5	0.2	0.3	0.5
Baha	40.5	37.8	11.8	4.3	1.8	1.0	0.7	0.4	0.5	0.2	0.4	0.6
Najran	29.5	34.3	19.3	9.1	3.4	1.8	0.9	0.3	0.3	0.2	0.4	0.5
Jezan	31.9	36.5	16.0	7.0	3.2	2.1	1.3	0.6	0.5	0.2	0.3	0.4
El-Jouf	29.1	32.7	17.2	10.1	4.4	2.5	1.0	0.6	0.9	0.4	0.5	0.7
North Borders	22.4	30.9	20.8	11.2	5.6	3.1	1.7	1.0	1.0	0.5	0.8	1.0
Hayal	34.0	36.6	13.8	6.5	3.4	1.9	1.1	0.7	0.6	0.3	0.5	0.6
Cassim	33.8	40.7	15.8	5.0	1.9	1.0	0.6	0.3	0.3	0.1	0.2	0.2

Source : based on data from census 1974

Table (5.4.2)

Age Specific Proportions Single (Females) as Enumerated in Census 1974

Administrative-Area	12-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+
Riyadh	50.3	39.1	6.7	1.8	0.6	0.4	0.3	0.2	0.2	0.1	0.1	0.3
Holy Mecca	46.2	36.7	9.3	3.0	1.4	0.8	0.6	0.4	0.4	0.2	0.4	0.6
Al-Madina	53.4	37.0	5.6	1.6	0.6	0.5	0.3	0.2	0.2	0.1	0.2	0.3
Eastern Province	50.5	37.9	7.1	2.1	0.9	0.4	0.3	0.2	0.3	0.1	0.1	0.2
Tabook	50.4	38.1	7.3	2.1	0.5	0.4	0.3	0.2	0.2	0.2	0.1	0.3
Qaryat	51.6	39.1	6.7	1.1	0.3	0.4	0.2	0.1	0.0	0.1	0.1	0.4
Assir	41.8	41.1	10.2	3.3	1.2	0.6	0.4	0.2	0.3	0.1	0.3	0.5
Baha	55.1	34.2	5.5	1.8	0.7	0.6	0.3	0.3	0.4	0.1	0.3	0.7
Najran	52.5	35.8	6.6	2.3	0.8	0.4	0.4	0.4	0.1	0.0	0.3	0.3
Jezan	41.4	36.8	10.8	4.4	2.0	1.0	1.0	0.5	0.6	0.3	0.6	0.8
El-Jouf	46.6	40.1	8.7	3.2	0.6	0.2	0.2	0.1	0.0	0.1	0.0	0.2
North Borders	43.0	39.7	10.6	3.7	1.3	0.5	0.6	0.0	0.1	0.1	0.1	0.3
Hayal	50.0	38.3	7.4	2.3	0.8	0.4	0.2	0.2	0.2	0.0	0.1	0.3
Qassim	54.2	38.3	4.8	1.2	0.5	0.2	0.2	0.1	0.1	0.0	0.1	0.2

Source : based on data from census 1974

Table (5.5)

Rates of Never Married, Marriages, Widowed and Divorced for Population 12 years and Over (per thousand) - 1974

Administrative-Area	Male				Female			
	never married	married	widowed	divorced	never married	married	widowed	divorced
Riyadh	456	521	14	9	268	618	83	31
Holy Mecca	422	544	20	14	255	601	115	29
Al-Madina	408	556	26	10	334	637	110	19
Eastern Province	458	519	14	9	289	608	83	20
Tabook	405	560	21	14	219	649	111	21
Qoryat	414	548	26	12	217	663	96	24
Assir	390	558	35	17	250	583	128	39
Baha	362	605	25	8	210	635	134	21
Najran	371	602	14	12	203	625	117	55
Jezan	402	536	48	13	250	565	159	26
El-Jouf	450	506	27	17	291	584	98	28
North Borders	443	508	34	15	295	580	97	28
Hayal	410	549	30	11	258	599	113	30
Qassim	446	530	17	7	268	623	85	24

Source : based on data from census 1974

Table (5.6.1)

Age Structure of Unmarried Population (Single, Divorced and Widowed), 1974

Age groups	Riyadh			Holy Mecca			Al-Madina			Eastern Province		
	No's		prop.	No's		prop.	No's		prop.	No's		prop.
	M.	F.		M.	F.		M.	F.		M.	F.	
12-14	50,765	42,717	1.19	67,100	57,179	1.17	20,390	18,348	1.11	39,294	28,472	1.38
15-19	75,300	34,123	2.21	92,000	46,638	1.97	25,078	12,941	1.94	45,018	21,809	2.06
20-24	47,794	7,089	6.74	56,018	13,546	4.14	11,702	2,314	5.06	29,538	4,677	6.32
25-29	18,756	2,899	6.47	25,461	5,987	4.25	4,390	955	4.60	11,843	1,823	6.50
30-34	7,397	2,028	3.65	10,890	4,419	2.46	1,890	750	2.52	4,754	1,246	3.15
35-39	3,786	1,959	1.93	6,776	4,218	1.61	1,290	836	1.54	2,721	1,183	2.30
40-44	2,316	2,989	0.77	4,607	6,130	0.75	991	1,235	0.80	1,669	1,729	0.97
45-49	1,342	2,614	0.51	3,061	5,280	0.58	773	1,161	0.67	1,090	1,603	0.68
50-54	1,308	4,499	0.29	3,149	9,351	0.34	849	2,292	0.37	1,072	2,857	0.38
55-59	733	2,411	0.30	1,843	5,023	0.37	556	1,295	0.43	562	1,422	0.40
60-64	1,272	5,423	0.23	3,449	12,720	0.27	1,155	3,410	0.34	958	3,062	0.31
65+	4,470	12,341	0.36	7,242	23,428	0.31	2,520	7,701	0.33	3,141	6,534	0.48

Source : based on data from census 1974

Table (5.6.2)

Age Structure of Unmarried Population (Single, Divorced, and Widowed), 1974

Age groups	Tabook			Qoryat			Assir			Baha		
	No's		prop.	No's		prop.	No's		prop.	No's		prop.
	M.	F.		M.	F.		M.	F.		M.	F.	
12-14	5,715	5,359	1.07	1,057	932	1.13	22,682	21,501	1.11	7,003	6,689	1.05
15-19	8,666	4,116	2.11	1,478	727	2.03	27,910	21,757	1.28	6,540	4,231	1.55
20-24	8,814	880	10.02	1,096	151	7.26	13,108	6,459	2.03	2,054	833	2.47
25-29	3,895	370	10.47	594	38	15.63	7,138	3,062	2.33	793	428	1.85
30-34	1,535	237	6.48	215	19	11.32	3,916	1,842	2.13	374	273	1.37
35-39	801	240	3.34	155	36	4.31	2,539	1,655	1.53	259	293	0.88
40-44	469	360	1.30	101	48	2.10	1,729	2,227	0.78	204	405	0.50
45-49	340	454	0.75	52	71	0.73	1,229	2,082	0.59	145	445	0.33
50-54	367	786	0.47	69	83	0.83	1,340	3,911	0.34	181	763	0.24
55-59	320	477	0.67	37	91	0.41	726	2,088	0.35	108	451	0.24
60-64	290	1,004	0.29	75	208	0.36	1,402	6,074	0.23	272	1,620	0.17
65+	909	2,696	0.34	196	405	0.48	3,259	13,170	0.25	932	4,646	0.20

Source : based on data from census 1974

Table (5.6.3)

Age Structure of Unmarried Population (Single, Divorced, and Widowed), 1974

Age groups	El-Jouf			North Borders			Najran			Jezan		
	No's		Prop.	No's		Prop.	No's		Prop.	No's		Prop.
	M.	F.		M.	F.		M.	F.		M.	F.	
12-14	2,705	2,480	1.09	4,298	4,374	0.98	4,840	3,965	1.22	15,477	13,185	1.17
15-19	3,038	2,181	1.39	5,927	4,127	1.44	5,642	3,048	1.85	17,735	12,183	1.46
20-24	1,602	536	2.99	4,016	1,204	3.34	3,234	838	3.86	7,932	4,151	1.91
25-29	972	242	4.02	2,204	580	3.80	1,602	520	3.08	3,717	2,283	1.63
30-34	431	111	3.88	1,152	284	4.06	664	346	1.92	2,104	1,661	1.27
35-39	289	121	2.39	670	191	3.51	385	231	1.67	1,662	1,484	1.12
40-44	130	117	1.11	430	313	1.37	223	317	0.70	1,458	2,270	0.64
45-49	106	136	0.78	323	267	1.21	118	298	0.40	967	2,067	0.47
50-54	152	231	0.66	347	499	0.70	115	571	0.20	1,098	3,413	0.32
55-59	96	162	0.59	259	324	0.80	81	286	0.28	667	1,903	0.35
60-64	119	322	0.37	392	617	0.64	184	1,106	0.17	1,096	4,605	0.24
65+	577	967	0.60	1,251	1,712	0.73	470	2,385	0.20	1,917	6,243	0.31

Source : based on data from census 1974

Table (5.6.4)

Age Structure of Unmarried Population (Single, Divorced, and Widowed),1974

Age groups	Hayal			Qassim		
	No's		Proportions	No's		Proportions
	M.	F.		M.	F.	
12-14	10,308	9,589	1.08	14,571	12,883	1.13
15-19	11,095	7,489	1.48	17,537	9,274	1.89
20-24	4,214	1,629	2.59	6,857	1,436	4.78
25-29	2,021	697	2.90	2,260	554	4.08
30-34	1,121	441	2.54	938	392	2.39
35-39	693	469	1.48	518	446	1.16
40-44	512	740	0.69	419	678	0.62
45-49	373	645	0.58	234	612	0.38
50-54	453	1,184	0.38	312	1,224	0.25
55-59	265	563	0.47	215	621	0.35
60-64	521	1,473	0.35	297	1,422	0.21
65+	1,790	4,854	0.37	1,269	3,843	0.33

Source : based on data from census 1974

Table (5.7.1)

Divorce Rates of Married Women, in Census , 1974

age group	Riyadh			Holy Mecca			El-Madina			Eastern Province		
	No's		(3) ÷ (2)	No's		(6) ÷ (5)	No's		(9) ÷ (8)	No's		(12) ÷ (11)
	married women	women divorced		married women	women divorced		married women	women divorced		married women	women divorced	
(1)	(2)	(3)		(5)	(6)		(8)	(9)		(11)	(12)	
15-19	23,811	804	.03	32,477	957	.03	10,011	177	.02	14,877	400	.03
20-24	31,778	1,187	.04	46,961	1,530	.03	13,792	283	.02	19,136	559	.03
25-29	33,159	1,044	.03	49,095	1,535	.03	14,159	273	.02	19,631	412	.02
30-34	29,736	883	.03	44,289	1,403	.03	12,555	204	.02	16,619	374	.02
35-39	24,586	701	.03	36,794	1,255	.03	11,855	186	.02	14,717	317	.02
40-44	20,006	890	.04	29,604	1,412	.05	11,153	284	.03	11,969	367	.03
45-49	10,834	644	.06	16,773	1,101	.07	6,724	194	.03	7,019	297	.04
50-54	9,659	968	.10	15,000	1,461	.10	6,093	338	.06	6,243	337	.05
55-59	3,180	466	.15	6,147	618	.10	2,137	151	.07	2,234	147	.07
60-64	3,978	920	.23	7,139	1,245	.17	2,502	289	.12	2,430	267	.11
65+	3,461	1,293	.37	5,597	1,545	.28	1,855	439	.24	2,234	358	.16

Source : based on data from census 1974

Table (5.7.2)

Divorce Rates of Married Women, in Census 1974

age groups	Tabook			Qoryat			Assir			Baha		
	No's		(3) ÷ (2)	No's		(6) ÷ (5)	No's		(9) ÷ (8)	No's		(12) ÷ (11)
(1)	Married women (2)	Women divorced (3)		Married women (5)	Women divorced (6)		Married women (8)	Women divorced (9)		Married women (11)	Women divorced (12)	
15-19	3.153	47	.01	543	16	.03	10,008	564	.06	2,971	71	.02
20-24	4,797	81	.02	772	25	.03	15,600	1,000	.06	4,391	139	.03
25-29	5,501	90	.02	875	11	.01	19,370	1,005	.05	5,047	169	.03
30-34	4,340	78	.02	786	7	.01	18,034	699	.04	4,872	83	.02
35-39	3,998	57	.01	755	12	.02	16,433	608	.04	4,343	76	.02
40-44	3,023	95	.03	576	13	.02	13,351	605	.05	4,349	88	.02
45-49	1,990	76	.04	389	12	.03	8,102	515	.06	2,687	48	.02
50-54	1,897	128	.07	435	18	.04	8,137	703	.09	2,974	76	.03
55-59	896	70	.08	109	19	.17	3,204	338	.11	1,323	52	.04
60-64	781	111	.14	134	13	.10	3,419	829	.24	1,781	142	.08
65+	809	166	.21	122	55	.45	3,339	1,204	.36	1,596	278	.17

Source : based on data from census 1974

Table (5.7.3)

Divorce Rates of Married Women, Census 1974

age groups	El-Jouf			North Borders			Najran			Jezan		
	No's		(3) ÷ (2)	No's		(6) ÷ (5)	No's		(9) ÷ (8)	No's		(12) ÷ (11)
(1)	Married women (2)	Women divorced (3)		Married women (5)	Women divorced (6)		Married women (8)	Women divorced (9)		Married women (11)	Women divorced (12)	
15-19	925	47	.05	1,866	82	.04	2,132	322	.15	7,879	362	.05
20-24	1,254	66	.05	2,613	107	.04	3,230	314	.10	10,851	484	.04
25-29	1,518	57	.04	3,052	150	.05	3,785	289	.08	12,219	452	.04
30-34	1,505	47	.03	2,864	89	.03	3,303	200	.06	11,070	383	.03
35-39	1,471	42	.03	2,570	63	.02	2,458	104	.04	8,730	298	.03
40-44	1,291	18	.01	2,197	78	.04	2,389	101	.04	7,697	285	.04
45-49	757	27	.04	1,530	75	.05	1,472	72	.05	4,290	214	.05
50-54	725	49	.07	1,366	79	.06	1,673	126	.08	3,962	278	.07
55-59	389	28	.07	632	48	.08	831	57	.07	1,508	144	.10
60-64	360	41	.11	568	73	.13	1,001	173	.17	1,685	252	.15
65+	421	91	.22	622	141	.23	650	269	.41	1,102	186	.17

Source : based on data from census 1974

Table (5.7.4)

Divorce Rates of Married Women, Census 1974

age groups (1)	Hayal			Qassim		
	No's		(3) ÷ (2)	No's		(6) ÷ (5)
	Married women (2)	Women divorced (3)		Married women (5)	Women divorced (6)	
15-19	4,253	139	.03	7,052	143	.02
20-24	4,915	179	.04	8,047	234	.03
25-29	5,693	193	.03	8,019	181	.02
30-34	6,275	156	.02	8,183	129	.02
35-39	6,240	150	.02	7,101	143	.02
40-44	6,175	215	.03	6,090	184	.03
45-49	3,338	150	.04	3,410	128	.04
50-54	3,513	230	.07	3,296	247	.07
55-59	1,140	99	.09	1,080	141	.13
60-64	1,244	236	.19	1,344	191	.14
65+	1,275	464	.36	1,139	380	.33

Table (5.8.1)

Proportion Divorced, by Age and Sex, in Per cent of Each Age, Administrative-Areas of Saudi Arabia, 1974

Males

Administrative Area	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+
Riyadh	0.10	0.55	1.13	1.36	1.43	1.23	1.40	1.55	1.62	1.70	3.35
Holy Mecca	0.15	0.72	1.54	1.84	1.90	2.00	2.03	2.27	2.72	2.83	3.89
Al-Madina	0.07	0.41	0.97	1.11	1.16	1.30	1.59	1.43	1.56	1.51	2.61
Eastern Province	0.10	0.56	1.17	1.21	1.31	1.48	1.14	1.72	1.90	1.94	2.83
Tabook	0.11	0.63	1.21	1.59	1.65	2.27	1.80	2.34	3.65	1.75	3.62
Al-Qoryat	0.00	0.47	1.27	1.17	1.36	0.52	1.37	1.08	1.08	3.26	4.36
Assir	0.18	1.05	2.12	2.20	2.04	2.08	2.30	2.44	2.69	3.15	3.57
El-Baha	0.06	0.52	0.91	0.94	1.20	1.12	1.28	1.43	0.47	0.95	2.29
Najran	0.18	0.76	1.43	2.17	1.63	2.23	1.51	1.45	0.85	1.52	2.38
Jezan	0.13	0.55	1.16	1.74	1.98	2.16	2.04	1.82	2.45	2.39	3.05
El-Jouf	0.03	0.20	1.52	1.40	2.69	2.11	2.49	2.69	3.09	2.42	5.15
North Borders	0.05	0.40	0.97	1.21	1.22	1.59	2.99	2.70	2.52	2.45	4.76
Hayal	0.01	0.31	0.67	1.16	1.05	1.45	1.50	1.79	2.05	1.70	2.67
Cassim	0.01	0.28	0.90	0.78	0.71	1.26	0.69	0.95	2.08	1.07	2.08

Source : based on data from census 1974

Table (5.8.2)

Proportion Divorced, by Age and Sex in Per cent of Each Age, Administrative-Area of Saudi Arabia, Census 1974

Administrative-Area	Females										
	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+
Riyadh	1.39	3.05	2.90	2.78	2.64	3.87	4.79	6.84	8.33	9.79	8.18
Holy Mecca	1.21	2.53	2.79	2.88	3.06	3.95	4.99	6.00	5.53	6.27	5.32
Al-Madina	0.77	1.76	1.81	1.53	1.47	2.29	2.46	4.03	4.40	4.89	4.59
Eastern Province	1.09	2.35	1.92	2.09	1.99	2.68	3.44	3.78	4.02	4.86	4.08
Tabook	0.65	1.43	1.53	1.70	1.34	2.81	3.11	4.77	5.10	6.22	4.74
Al-Qoryat	1.26	2.71	1.20	0.87	1.52	2.08	2.61	3.47	9.50	3.80	10.44
Assier	1.78	4.53	4.48	3.52	3.36	3.88	5.06	5.83	6.39	8.73	7.29
Al-Baha	0.99	2.66	3.09	1.61	1.64	1.85	1.53	2.03	2.93	4.18	4.45
Najran	6.22	7.72	6.71	5.48	3.87	3.73	4.07	5.61	5.10	8.21	8.86
Jezan	1.80	3.23	3.12	3.01	2.92	2.86	3.37	3.77	4.22	4.01	2.53
El-Jouf	1.51	3.69	3.24	2.91	2.64	1.28	3.02	5.13	5.08	6.01	6.56
North Borders	1.37	2.80	4.13	2.83	2.28	3.11	4.17	4.24	5.02	6.16	6.04
Hayal	1.18	2.74	3.02	2.32	2.24	3.11	3.77	4.90	5.81	8.69	7.57
Cassim	0.88	2.47	2.11	1.50	1.89	2.72	3.18	5.46	8.29	6.91	7.63

Source : based on data from census 1974

Table (5.9.1)

Proportion Widowed, by Age and Sex, in Per cent of Each Age, 1974

Males

Administrative Area	12-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+
Riyadh	0.08	0.28	0.49	0.61	0.82	1.13	1.24	2.26	2.99	4.60	4.60	13.81
Holy Mecca	0.00	0.09	0.28	0.69	0.95	1.26	1.94	2.56	3.70	4.14	7.53	15.11
Al-Madina	0.00	0.06	0.34	0.79	1.26	1.67	2.35	2.42	4.18	4.37	6.69	13.30
Eastern Province	0.00	0.05	0.20	0.41	0.62	0.64	0.94	1.29	2.45	2.76	5.47	16.90
Tabook	0.00	0.10	0.39	0.64	1.10	1.44	1.93	3.14	5.25	6.15	6.72	14.00
Al-Qoryat	0.00	0.39	0.20	0.52	0.78	1.56	2.33	1.68	6.49	3.02	8.64	14.97
Assir	0.00	0.16	0.79	1.73	2.88	2.51	3.48	4.08	5.40	5.73	8.71	16.85
Al-Baha	0.00	0.04	0.14	0.44	1.09	1.17	1.62	1.73	2.40	2.81	4.79	11.22
Najran	0.00	0.08	0.38	0.61	0.49	0.92	0.43	1.13	1.14	2.61	3.52	10.53
Jezan	0.00	0.20	1.08	1.77	3.44	4.08	5.95	6.46	9.20	10.51	14.32	23.85
El-Jouf	0.00	0.00	0.05	0.33	0.25	0.49	0.90	1.97	2.77	4.44	4.65	17.18
North Borders	0.00	0.03	0.14	0.60	1.02	1.02	1.68	2.21	4.11	7.45	8.29	20.27
Hayal	0.00	0.05	0.29	0.39	1.03	1.09	1.84	2.30	3.54	3.66	4.62	14.53
Cassim	0.00	0.07	0.10	0.34	0.67	0.76	1.08	1.04	2.20	3.88	3.79	12.87

Source : based on data from census 1974

Table (5.9.2.)

Proportion Widowed, by Age and Sex, in Per cent of Each Age

Females

Administrative Area	12-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+
Riyadh	0.00	0.22	0.57	1.02	1.92	3.47	8.00	13.62	24.00	33.80	46.98	68.29
Holy Mecca	0.00	0.26	0.75	1.35	2.76	4.86	11.04	16.74	30.29	36.85	55.49	73.03
Al-Madina	0.00	0.24	0.64	0.95	2.43	3.85	6.93	11.31	22.39	32.87	51.67	75.08
Eastern Province	0.00	0.17	0.60	1.17	2.11	3.89	8.78	14.03	26.10	34.22	50.15	69.09
Tabook	0.00	0.37	0.41	1.01	2.27	3.40	7.01	14.44	23.90	28.48	49.19	71.32
Al-Qoryat	0.00	0.31	0.54	0.88	0.87	2.15	5.13	12.39	12.55	35.00	56.73	65.09
Assir	0.00	0.25	0.92	1.53	2.75	4.15	9.06	14.23	25.21	32.39	53.74	70.92
Al-Baha	0.00	0.12	0.61	0.77	2.08	3.17	5.83	11.49	17.10	21.65	42.28	68.52
Najran	0.00	0.41	0.59	1.30	2.30	3.61	6.95	11.24	19.39	20.50	43.05	68.86
Jezan	0.00	0.58	1.62	2.97	4.92	8.61	17.17	26.65	39.76	48.84	66.36	78.87
El-Jouf	0.00	0.00	0.50	0.91	1.98	4.27	6.32	11.42	19.04	23.77	40.91	62.39
North Borders	0.00	0.25	0.42	1.46	2.13	2.75	7.09	10.46	21.77	27.72	45.23	66.15
Hayal	0.00	0.15	0.63	1.02	2.00	3.64	7.06	11.67	19.46	27.01	44.94	70.78
Cassim	0.00	0.32	0.63	1.08	1.67	3.35	6.74	11.29	20.84	27.69	43.85	68.53

Source : based on data from census 1974

CHAPTER SIX

FERTILITY AND REPRODUCTION

6.1 Introduction :

The great majority of Muslims reside in areas characterized by high rates of natural increase resulting from high levels of fertility which are maintained as mortality levels decline. Saudi Arabia is such an area and its population is 99 per cent or more Muslim.

Marriage is regarded as a virtual requirement of the Muslim faithful, and the majority of Muslim women spend most of their reproductive years in conjugal union. Without the use of contraception, fertility under these conditions will continue to soar. However, Islam pragmatic approach to life is reflected in its sacred texts, so that universal marriage was encouraged by this text "marry and increase your children". As shown in Tables (6.1.1) and (6.1.2) a comparison of fertility level and the rate of population growth in Muslim countries with other countries of analogous economic levels reveals similarly high fertility, and a comparison of the birth rate and the infant mortality rate for Muslim countries and others with analogous levels shows similar correlations of high infant mortality and high fertility.

Moslim countries range from annual birth rates in the low 31.4 (per thousand population) to very high rates up to 52.2. Among the Arab countries of North Africa the birth rates are clustered from 35.5 - 52.2 and the gross reproduction rates range from 2.4 to 3.1.

The Middle Eastern Moslim countries display a similar homogeneity in fertility.

Again the gross reproduction rates vary only from 2.3 in Lebanon to 3.7 in Sorya.

In Islam polygamy is frequently invoked in an effort to explain Muslim fertility patterns. In fact, polygamy predated Islam and in many cultures served an important function in the social system. Islam, however, was the first religion to try to abolish polygamy in much the same way that it sought to abolish slavery. It ordained specific conditions for the equal treatment of all wives, admitting at the same time that this was a near impossibility. Thus, a number of Muslim scholars argue that the quraanic text of this regulation in effect prohibits polygamy. Although, studies have shown that the demographic contribution of polygamy to excessive fertility is negligible, (Muhsan, 1956), anyone living in Saudi Arabia can observe that polygamy produces excessive fertility by the large families that are commonplace.

6.2 Factors Affecting Fertility :

The factors affecting fertility differ in Saudi Arabia from other developing countries,

1 - Religion : All religions are conservative, but it is often noted that this is especially true of Islam, in which religion and way of life are so intertwined as to be inseparable. Mohammedanism

shares with other religions injunctions to marry and multiply. Children are among the richest blessing that Allah bestows - He will provide for the souls which He permits to come into the world. Saudi Arabia is the only Islamic country which applied Shareh (Law of Islam) so it refuses to have a Family Planning programme. And :

(a) It encourages the people to increase their births.

(b) It encourages the people to marry according to the Prophet who said : "Get married for the sake of procreation, you will therefore increase in number and I shall be proud of you among the nations on Doomsday".

2 - Tradition, is probably the most important factor in maintaining fertility at a high level in Saudi Arabia. A desire for children, especially boys, lies at the heart of the various social institutions and customs (early and universal marriage, easy remarriage of widows and divorcees, the subservient social position of women and the resistance to the education of women) which can be seen as facilitating the achievement of this social goal.

3 - Moslims represent the total population so that it permitted polygamy by Moslim religion.

4 - Education Facilities Available : Education in all its stages, primary, secondary and university including books, transportation and meals is free in Saudi Arabia, as well as health care and medical treatment. Every student of undergraduate level receives a monthly allowance of $180 or more. Once educated, a Saudi is practically guaranteed a job since the labour laws require a Saudi-Arabian employer to give preference to suitably qualified Saudis over non-Saudis. This rule is generally enforced since the principal employer is the government. Thus parents can have few worries about either costs of bearing and bringing up children or the problem of finding suitable employment for their educated offspring.

5 - Economic Factors and Fertility : One of the common arguments regarding fertility is that the price of goods and services related to children generally rises relative to the price of other goods and services. Certainly in post 1942 Saudi Arabia, the costs of feeding and clothing children have risen substantially but so too have personal incomes. The net result, taking into account the subsidized food distribution, education and welfare schemes, is likely to be that the costs of childbearing have been held down and new demands for other goods have been met without much substitution effect because of the high overall level and speedy rises of personal wealth.

6 - We can add also that although women in Saudi Arabia have now more opportunities for education and the number of graduated women is increasing, their choice of work owing to tradition is very limited (e.g. teaching and nursing). Moreover the need for a second income in the family is in most instances not strongly felt.

6.3 Current Level of Fertility

Reporting on the incidence of birth was instituted in Saudi Arabia in 1969. It was the responsibility of the Ministry of Health to keep the appropriate records of the events and to issue certificates to the public (Table (6.2)).

Recently the health offices were established in every part of the Kingdom and took on the task of registering all vital events.

The birth certificate form contains data on :

1 - The live born child, i.e. name, sex, date of birth.

2 - Name, sex, age, nationality, occupation of parents.

In the past this certificate was not important for entry to school. But now it becomes very important for that purpose and in addition for many other benefits.

The available data on fertility are :

1 - Data on births for the chief cities since about 1969 (Table (6.2)) with many missing values.

2 - Data on population 12 years and over by marital status, age and sex for the year 1974 for every administrative-area.

These data for Saudi Arabia suffered from the usual weakness of developing countries :

1 - Errors in the statement of age of the mother.

2 - Under-registration of births, especially the incidence of birth which occurs outside the cities. And also the under-registration of births in cities especially if the baby died in the first few days of his life, then both the notification of birth and death may not be made.

The object of this chapter is to study recent trends in patterns of fertility of Saudi Arabia according to the available data (census 1974), and to try to estimate the levels of fertility and mortality.

6.4 Child-Woman Ratio :

This measure is defined as dividing the number of children under 5 years old in the population by the number of women 15 to 49 years old.

Table (6.3) contrasts the ratios based on the two age groups of children for 14 administrative-areas for Saudi Arabia (Saudis only). The ratio based on children 5 to 9 is less than that based on children under 5 at the same census. The interesting question in connection with the factors affecting fertility in Saudi Arabia is not why the ratio is so high but, rather, why it is not even higher. The answer is probably that a combination of physiological factors and disease reduced fecundity and fertility in the past but the rapid fall in mortality and perhaps rising fecundity and

a lower age at menarche are offseting the effects of a rapid change both in nuptiality and to a lesser extent in marital fertility.

6.5 General Fertility Rate :

Crude birth rates Table (6.4) are not adequate indices of fertility, since they are based on total population irrespective of sex and age.

One way of avoiding such crudeness, is to calculate general fertility rates by relating the number of live births irrespective of sex to the number of females at the child-bearing ages. There is a variety of conventions as to the appropriate ages to consider. In order to permit comparison with rates shown in the U.N. Demographic Year Book 1975, the range 10-49 has been used here.

Table (6.5) shows the general fertility rates 1974, for Saudis only, for 14 administrative-areas. The rates based on the enumerated figures are lower than rates based on graduated figures for all administrative-areas. The difference between the rates in cols. (6) and (7) is due, in the main, to the influence of inflating or deflating census figures, and increase of under-reporting of births.

However, the U.N. in a recent study has estimated the value of general fertility rate for Saudi Arabia to be 220.8 (for Saudis and non-Saudis). It was finally decided to accept the observed value of 174.7 per thousand for Saudis only.

The Saudis general fertility rate is compared in Table (6.6) with those of other countries. The general fertility rate is higher in Saudi Arabia than it is in Chile, and in Singapore, almost three times that of Japan, but not very different from that of Venezuela, and equal to that of Pakistan.

Japan has the lowest general fertility rate compared with the other countries selected in Table (6.6).

The age specific analysis of fertility provides a better measure of the important variables but this requires the availability of data on the distribution of live births by age of mother, which are not available for the Kingdom of Saudi Arabia.

So it is desirable to assess the estimates of fertility measures on several alternative methods of estimation.

6.6 Estimation of Fertility and Mortality Rates by Stable Population Analysis :

The main problem in the case of Saudi Arabia (Saudis only) is to derive a set of consistent demographic parameters from available and partly inconsistent data.

We shall assume that the Saudis only populations are approximately stable populations.

6.6.1 Selection of a Model Life Table :

The most widely used Model Life Tables are those published in 1966 by Coale and Demeny, of the Office of Population Research, Princeton

University. The tables consist of four sets of model life tables, labelled "West", "East", "North" and "South". Each set contains 24 tables, calculated for males and females separately, with equal spacing of the values of the expectation of life at birth for females, ranging from an e_0^0 of 20 years (labelled as level 1) to an e_0^0 of 77.5 years (labelled as level 24). The mortality level shown in the male tables differs from the mortality level of the female tables with which they are paired, this difference reflects the typical relationship between male and female mortality occurring in a particular population.

The "East" tables are based mainly on central European experience, whereas the "North" and "South" tables were derived from life tables of Scandinavian and South European countries, respectively. The "West" tables are representative of a broad residual group. This model set was based on some 125 life tables from over 20 countries, including Canada, the United States, Australia, New Zealand, South Africa, Israel, Japan and Taiwan, as well as a number of countries from western Europe.

The difference among the age (and sex) patterns of mortality in the four regional models are slight in some respects and pronounced in others. These differences also vary in character as one moves from higher to lower levels of mortality.

In general, the use of "East", "North" and "South" models is recommended only if there is some evidence suggesting that mortality in the population for which the model is to be used has some of the peculiarities characterizing these three models. Otherwise the use of the "West" model is to be preferred (Shryock & Siegel, 1975).

J. Coale and Paul Demeny suggest utilizing the "West" family in the usual circumstances of underdeveloped countries where there is no reliable guide to the age pattern of mortality that prevails.

From the above we can assume that the "West" Model fits best our observed data.

6.6.2 Trends in the Sex Ratio at Birth :

The sex ratio is defined as the number of males per hundred females.

The sex ratio at birth in Saudi Arabia calculated from statistics on births occurring in hospitals and health centers gave an all Saudi average of 117.6 with very wide regional variations. However, regarding the sex ratio at birth in different cities of Saudi Arabia (Saudis only) Table (6.7) shows odd values, which range in 1974 for example from 0.92 to 1.81. This may be explained by a certain amount of under-registration of female births especially in the North region of Saudi Arabia (Jizan, Abha, Najran, Beisha) as shown in Table (6.7).

The persistent decline in the sex ratios Table (6.8) at birth from 1972 to 1976 may be due to either :

1 - Improvement of registration of female births,
or
2 - A deterioration of the registration of male births compared to that of female births.

It is more reasonable to assume that this decline is due to an

improvement in registration of female births.

A predominance of male births may be due to :

1 - High socio-economic status of the parents (a predominance of male births has been observed among higher socio-economic groups in Western countries (Winston, 1931)).

2 - A higher birth rate and young population of Saudi Arabia tends to have a higher overall sex ratio than an older population with a low birth rate.

6.6.3 Fixing the Level of Mortality :

The method represented here of deriving estimates of fertility and mortality from records of the age distribution in the 1974 census and from information on the rate of growth, for the period 1962-1974, illustrated by the U.N. Manual IV, 1967 on pages 61-65 under conditions when the population may be considered approximately stable, (the female age distribution was chosen since it was found to be more stable for every administrative area, but for all in Saudi Arabia the male age distribution was chosen since it was found to be more correctly reported), was applied to the West family of model stable populations to determine the appropriate fertility and mortality levels.

Tables (6.9.1) to (6.9.15) show the derivation of various population parameters from the 1974 female age distribution (Saudis only), and from the female growth rate (r = .028).

The mean age of the mothers was estimated from an imputed age

distribution in the manner shown in Tables (6.10.1) to (6.10.15).

The preliminary stable estimates of birth rate and G.R.R. are adjusted for the effect of changing mortality, using the adjustments listed in Table III (1) (Manual IV page 119). To extract the correct adjustment factors from the tabulated figures it is first necessary to estimate values of two indices, namely t, the approximate length of time (in years) for which the decline of mortality has been proceeding, which equals 1962-1974 = 12 years, and K, a parameter that describes the speed of the decline, calculated as follows :

(for Females) :

The rate of increase during the period of stability (1962-1969) = r_{69} = 27.3.

The rate of increase during the period (1970-1975) = r_{74} = 28

$$\Delta t = 1974\text{-}1969 = 5$$

$$\Delta r = .028 - .0273 = .0007$$

$$\frac{\Delta r}{\Delta t} = .00014$$

$$K = 17.8 \times .00014 = .002492$$

Tables (6.11.1) to (6.11.15) shows the procedure applied to adjust the preliminary stable estimates. From column (6) of Tables (6.11.1) to (6.11.15) the median of birth rates is selected as a single most acceptable among those associated with x = 10,15,..., 40 for every administrative-area. But in the case of all Saudis, it was found that the estimates derived from C(25) are to be preferred to the rest.

The male birth rate and the birth rate for the total population

are calculated by assuming a sex ratio at birth of 1.10 and by accepting the reported sex ratio of the population as a whole 1.05, from the following formula (U.N., 1967) :

$$\text{male birth rate} = \text{female birth rate} \times \frac{\text{sex ratio at birth}}{\text{sex ratio of the population}}$$

Death rates were obtained by subtracting the rates of growth from the appropriate birth rate estimates. The expectation of life or any other index of mortality is determined by reading the level of mortality in the "West" stable populations (one for the males, one for females) determined by the vital rates calculated earlier. No adjustment of such estimates for quasi-stability is warranted, or indeed desirable.

6.6.4 Estimation of Gross Reproduction Rate :

Using the rate of growth of female population as of 1974 and the accepted birth rate, an estimate of the uncorrected G.R.R. was obtained which was then corrected for mortality decline. The corrected value of the G.R.R. was shown in Tables (6.11.1) to (6.11.14) for every administrative-area.

6.6.5 Estimation of Total Fertility :

The total fertility is obtained from the gross reproduction rate by taking account of the sex ratio at birth. But here again we encounter a difficulty. The sex ratio of reported births for the Saudis appears not reliable Table (6.7). So we consider the estimate value of the U.N. in the absence of reliable direct information on the sex ratio at birth, a value of 1.05. We have simply adopted the sex ratio as being equal to 105, and multiplied

the estimated gross reproduction rates by 2.05 to get total fertility (number of children per woman).

The principal parameter values derived by following the above steps of calculation are exhibited in Table (6.12).

The total fertility rate is highest in Saudi Arabia. Saudi Arabia reproduction rates are compared with other countries in Table (6.13). The Saudi Arabia G.R.R. is only exceeded by that of Ceylon. It is possible that under-registration of births in all other countries could account for their comparatively low G.R.R.'s. But Saudis G.R.R. may require inflation for the same reason. The difference between G.R.R. and N.R.R., which is solely a result of mortality, is greater for Saudi Arabia due to Saudi Arabia's high mortality.

6.7 Estimation of the Age Distribution :

Table (6.14) and Figures (6.1) and (6.2) show the assumed age distribution by sex for Saudis only, in 1974 corresponding to a level of 13.4, and 11.81 for males and females respectively, in the "West" model.

6.8 Tables :

FIGURE (6.1)

Male Age Structure for Saudis Only

1974

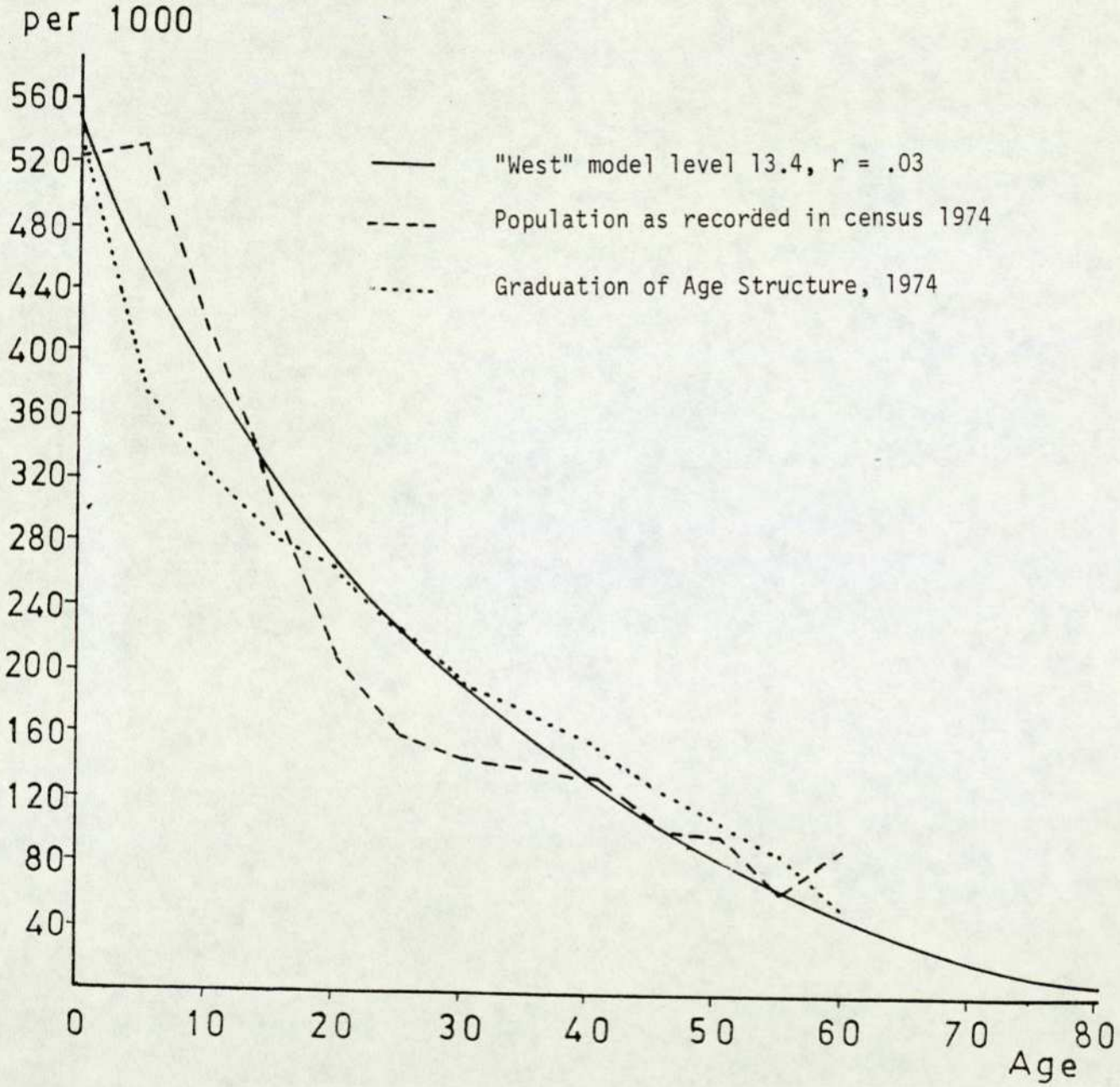


FIGURE (6.2)

Female Age Structure for Saudis Only

1974

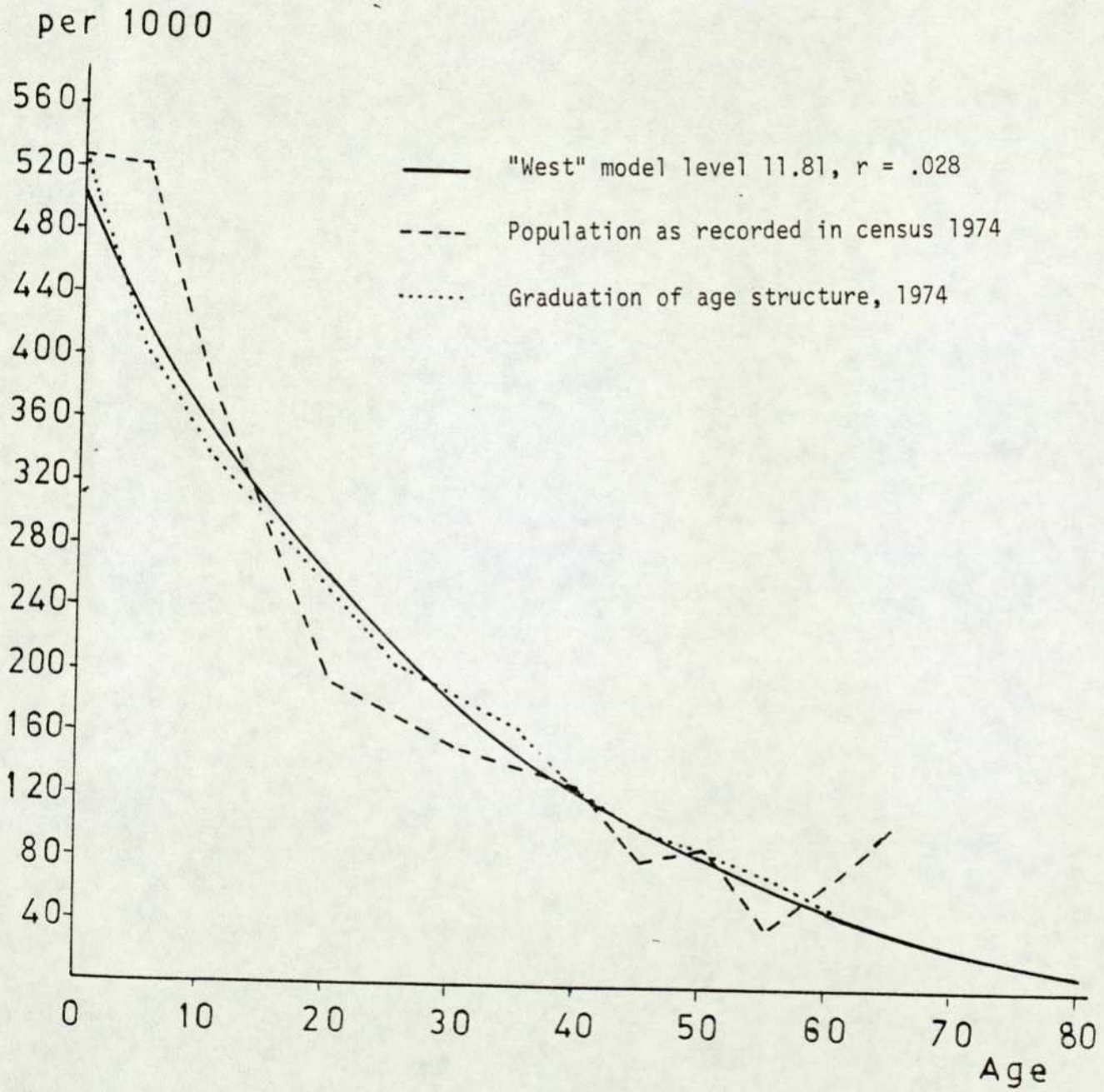


Table (6.1.1)

Some Demographic, Social, and Epidemiological Indices for Selected Muslim Countries *

Country	Estimated Pop. in Millions		Population Projected to 1985	Per cent Muslim	Fertility rate per 1,000	Birth rate per 1,000	Marriage rate per 1,000	G.R.R.	Death rate per 1,000	Infant mortality rate	Divorce rate	Growth rate	% Pop. under 15 yrs
	1970	1975											
Algeria (70-75)	14.33	16.78	23.90	99	225.2	48.7	4.7	3.0	15.4	86.3	0.5	33.3	47
Chad (70-75)	3.64	4.03	5.50	58	147.7	43.4	...	...	22.5	190.0	...	20.9	46
Egypt (74)	33.33	37.23	52.30	91	189.3	35.5	9.8	2.4	12.4	100.4	2.0	23.1	43
Gambia (70-75)	0.46	0.52	0.60	77	151.3	43.3	...	...	24.1	.....	...	19.2	38
Guinea (70-75)	3.92	4.42	5.70	65	227.8	46.6	...	...	22.9	216.0	...	23.7	44
Libya (70-75)	1.99	2.44	3.10	96	209.3	45.0	5.8	3.0	14.7	.....	2.0	30.3	44
Mali (70-75)	5.05	5.70	7.60	63	262.7	50.1	...	...	25.9	120.0	...	24.2	46
Mauritania (70-75)	1.16	1.32	1.70	99	173.0	44.8	...	...	24.9	187.0	...	19.9	...
Morocco (70-75)	15.52	17.31	26.20	95	215.7	46.2	...	2.9	15.7	149.0	...	30.5	46
Niger (70-75)	4.02	4.60	6.20	75	215.7	52.2	...	...	25.5	200.0	...	26.7	46
Nigeria (70-75)	55.07	62.93	84.70	48	200.0	49.3	...	...	22.7	.....	...	26.6	43
Senegal (70-75)	3.93	4.14	5.80	76	217.8	47.6	1.9	...	23.9	92.9	...	23.7	42
Somalia (70-75)	2.79	3.17	4.20	99	174.0	47.2	...	...	21.7	.....	...	25.5	..
Sudan (70-75)	15.70	15.73	26.00	69	201.0	47.8	...	...	17.5	93.6	...	30.3	47
Tunisia (70-75)	5.13	5.61	8.30	97	234.3	40.0	8.2	3.1	13.8	125.0	1.1	26.2	44
Africa	352.00	401.00	530.00	..	160.1	46.0	...	...	20.0	.....	...	2.7	44

Table (6.1.2)

Some Demographic, Social, and Epidemiological Indices for Selected Muslim Countries *

Country	Estimated Pop. in Millions		Population projected to 1985	Per cent moslim	Fertility rate per 1,000	Birth rate per 1,000	Marriage rate per 1,000	G.R.R.	Death rate per 1,000	Infant Mortality rate	Divorce rate	rate of growth	% pop. under 15 years
	1970	1975											
Afghanistan	17.09	19.28	25.00	99	217.9	49.2	....	3.1	23.8	....	...	25.4	...
Indonesia	119.47	136.04	183.08	90	175.7	42.9	10.6	...	16.9	125.0	...	26.0	42.0
Iran	28.66	33.02	45.00	98	209.7	45.3	6.6	...	15.6	....	0.6	29.7	46.0
Iraq	9.44	11.12	16.70	95	219.8	48.1	7.5	3.3	14.6	27.5	0.5	33.5	45.0
Jordan	2.30	2.70	3.90	88	221.3	47.6	7.9	3.2	14.7	21.9	1.4	32.9	46.0
Kuwait	0.74	1.00	2.40	94	117.4	51.1	6.1	3.5	8.9	....	0.5	19.9	38.0
Lebanon	2.47	2.87	4.30	50	184.3	39.8	6.1	2.3	9.9	13.6	0.5	29.9	....
Malaysia	10.39	11.90	16.40	51	135.8	31.4	1.7	...	6.4	33.2	0.0	25.0	....
Oman	0.66	0.77	1.10	99	.....	42.0	...	3.5	11.0	....	...	31.0	46.2
Pakistan (68)	60.61	70.26	224.20	88	174.8	36.0	....	...	12.0	124.0	...	21.0	45.0
Saudi Arabia	.....	7.23	12.20	99	220.8	49.5	....	3.5	19.2	....	...	29.7	44.7
Syria (70-75)	6.26	7.35	10.50	82	213.7	45.4	10.8	3.7	4.8	21.7	0.6	40.6	46.0
Turkey (67)	34.85	39.18	52.80	99	175.0	39.6	....	...	14.6	153.0	0.3	25.0	44.0
Yemen (70-75)	5.77	6.67	9.10	99	220.7	49.6	....	3.3	20.6	....	...	29.0	....
Asia	2027.00	2256.00	.....	..	....	36.0	....	...	14.0	....	...	2.1	40.0
Albania (71)	1.60	2.20	3.30	69	202.8	33.3	7.0	...	8.1	86.8	0.8	25.2	....
Europe	459.00	473.00	515.00	..	....	16.0	....	...	10.0	....	...	0.6	25.0
World	3610.00	3967.00	4,933.00	..	....	32.0	....	...	13.0	....	...	1.9	37.0

* Sources : Compiled from Demographic Year Book 1976, World Data Sheet (Washington D.C. : Population Reference Bureau, 1971) Demographic and Related Socio-Economic Data Sheets for Countries of the Economic Commission for Western Asia, (U.N. Economic Commission for Western Asia, 1978).

Table (6.2)

Birth Certificates issued by Hospitals and Health Offices of the Ministry of Health 1969-1976

Year	Saudi	Non-Saudi
1969	22,357	8,255
1970	25,218	8,879
1971	33,306	13,528
1972	39,073	16,490
1973	52,830	15,763
1974	56,829	18,873
1975	72,018	21,147
1976	84,619	27,045

Source : The Statistical Indicator, Ministry of Finance and National Economy, Central Department of Statistics, Kingdom of Saudi Arabia, 1976. Ministry of Health, Statistical Unit.

Table (6.3)

Child Woman Ratios based on the two age groups of children for 14 administrative-area for Saudis only,1974

Administrative-Area	children under 5	women 15-49	children under 5 per 1000 women 15-49 years old	children 5 to 9	women 20-54	children 5-9 per 1000 women 20-54
Riyadh	207,741	236,746	877.48	158,274	193,904	816.27
Holy Mecca	240,222	313,002	767.48	184,926	266,821	693.07
Al-Madina	82,743	111,005	745.40	59,183	94,779	624.43
Eastern Province	121,559	143,563	846.73	94,584	118,466	798.41
Tabook	29,639	38,634	767.17	24,562	33,360	736.27
Qoryat	5,235	6,567	797.17	3,802	5,663	671.38
Assir	117,950	155,354	759.23	79,873	134,852	592.30
Baha	36,531	44,271	825.17	20,342	39,392	516.40
Najran	26,288	27,952	940.47	16,442	24,354	675.13
Jezan	62,308	82,698	753.44	46,136	88,527	521.15
El-Jouf	11,576	14,982	772.66	7,707	12,914	596.79
North Borders	20,648	27,341	755.20	14,671	23,423	626.35
El-Cassim	32,120	71,217	451.02	40,107	59,792	670.78
Hayal	49,260	62,545	787.59	30,351	54,658	555.29

Source : based on data from Census 1974

Table (6.4)

Crude Birth rate 1974, Saudis only

Administrative Area	No. of births enumer-ated	No. of adjusted births	No. of population	Crude Birth Rate	
				Based on enumerated figures	Based on adj. figures
Riyadh	33,588	52,128	1,115,252	30.1	46.7
Holy Mecca	39,451	60,488	1,394,934	28.3	43.4
Al-Madina	11,223	23,242	475,457	23.6	48.9
Eastern Province	20,478	30,323	673,113	30.4	45.0
Tabook	4,569	7,047	185,112	24.7	38.1
Qoryat	794	1,431	30,320	26.2	47.2
Assir	19,123	35,008	647,068	29.6	54.1
Baha	5,796	13,194	180,824	32.1	73.0
Najran	4,173	8,298	130,105	32.1	63.8
Jezan	11,296	16,442	345,706	32.7	47.6
El-Jouf	1,531	3,501	64,116	23.9	54.6
North Borders	3,076	5,768	121,997	25.2	47.3
El-Cassim	8,506	18,840	311,230	27.3	60.5
Hayal	6,370	16,225	260,127	24.5	62.4

Source : based on data from Census 1974

Table (6.5)

General Fertility Rates 1974, Saudis only for 14 Administrative- Area

Administrative Area	Number of women aged 10-49		Male and female Live Births		General Fertility Rates	
	Enumerated	Graduated	Enumerated	Graduated	Based on enumera-ed figures	Based on graduat-ed figures
Riyadh	283,464	302,396	33,588	52,128	118.5	172.4
Holy Mecca	368,491	391,451	39,451	60,488	107.1	154.5
Al-Madina	125,303	138,001	11,223	23,242	89.6	168.4
Eastern Province	172,817	181,276	20,478	30,323	118.5	167.3
Tabook	42,524	47,793	4,569	7,047	107.4	147.4
Qoryat	7,184	8,141	794	1,431	110.5	175.8
Assir	174,389	191,703	19,123	35,008	109.7	182.6
Baha	47,119	53,905	5,796	13,194	123.0	244.8
Najran	29,050	34,490	4,173	8,298	143.6	240.6
Jezan	95,076	103,252	11,296	16,442	118.8	159.2
El-Jouf	16,065	18,470	1,531	3,501	95.3	189.6
North Borders	30,412	33,645	3,076	5,768	101.1	171.4
El-Cassim	81,914	89,949	8,506	18,840	103.8	209.5
Hayal	66,043	76,778	6,370	16,225	96.5	211.3
Total	1,539,851	1,671,330	169,984	291,935	110.4	174.7

Source : based on data from Census 1974

Table (6.6)

General Fertility Rates per 1,000

Countries	Saudi Arabia (Saudis only) 1974	Chile 1971	Japan 1974	Singapore 1975	Venezuela 1970-75	Egypt 1975	Pakistan 1968
General Fertility Rates	174.7	113.2	67.0	76.2	163.1	154.9	174.8

Source : U.N. Demographic Year Book 1976

Table (6.7)

Registered sex ratio at birth, by Governorate of Saudi Arabia according to birth certificates issued by hospitals and health offices of the Ministry of Health 1974, 1975, 1976.

Hospitals or Health Office	Saudis			Non-Saudis		
	1974	1975	1976	1974	1975	1976
Health office Riyadh	1.24	1.15	1.19	1.10	1.09	1.11
" " Jeddah	1.03	1.10	1.00	1.16	1.13	1.05
" " Dammam	1.08	1.09	1.09	1.08	0.92	1.07
" " Hafuf	....	1.11	1.04	....	0.95	0.84
" " Khafju	1.09	1.28	1.26	0.89	1.00	1.20
" " Ar'ar	0.92	1.08	1.90	1.37	1.04	1.40
Centeral HospitalEl-Jouf	1.26	1.08	1.07	0.94	2.15	0.95
Dispensary Tarif	1.13	1.11	1.12	1.24	1.28	1.35
Health office Mecca	1.17	1.20	1.20	1.17	1.17	1.06
" " Taif	1.22	1.27	1.26	1.00	1.07	1.25
" " Madina	1.07	1.10	1.20	1.31	1.23	1.14
" " Buraida	1.42	1.38	1.28	0.99	1.03	1.01
Hospital Hayal	1.32	1.29	1.26	1.16	1.00	1.32
" Unaizah	1.24	1.23	1.11	1.06	1.20	1.23
Health office Jezan	1.81	1.50	1.50	1.83	1.81	1.36
" " Abha	1.50	1.33	1.20	1.00	1.29	1.13
Hospital Najran	1.51	1.36	1.27	1.75	1.72	1.34
" Beisha	1.67	1.21	1.21	0.90	1.28	1.46
Health office Qatif	1.17	1.07	1.08	0.94	0.99	1.17
Total	1.18	1.17	1.15	1.16	1.15	1.11

Source : Ministry of Health

Table (6.8)

Sex Ratio at Birth, Saudis only

1971-1976

Year	1971	1972	1973	1974	1975	1976
Sex Ratio	121.7	133.9	125.7	118.1	117.2	115.0

Source : Ministry of Health

Table (6.9.1)

Derivation of Stable Population Estimates of Fertility and Mortality based on a Reported Age Distribution and the Rate of Growth, Administrative-Area Riyadh 1974 Females

age x	C(x) prop. up to age x	Values of C(x) and various parameters in female stable population with r = .028			Values of various parameters in female population with C(x) and with r = .028				
		level 8	level 9	level 10	Birth rate	Death rate	level of mortality	e^0_0	G.R.R. ($\bar{m}$ = 29.6)
5	.1931	.1943	.1897		.0538	.0258	8.26	38.15	3.87
10	.3425	.3458	.3395		.0531	.0251	8.52	38.81	3.82
15	.4673	.4731	.4657		.0525	.0244	8.78	39.46	3.76
20	.5747	.5799	.5720		.0528	.0248	8.66	39.15	3.79
25	.6623	.6688	.6608		.0524	.0244	8.81	39.52	3.76
30	.7353	.7421	.7344		.0522	.0242	8.88	39.71	3.74
35	.7937		.7950	.7881	.0514	.0241	9.19	40.48	3.68
40	.8475	.8510	.8447		.0530	.0250	8.56	38.90	3.81
45	.8850		.8850		.0519	.0239	9.00	40.00	3.72
Birth rate		0.0545	0.0519	0.0495					
Death rate		0.0265	0.0239	0.0215					
G.R.R.(29)		3.8354	3.6318	3.4530					
G.R.R.(31)		4.1496	3.9204	3.7206					
e^0_0		37.5000	40.0000	42.5000					

Table (6.9.2)

Derivation of Stable Population Estimates of Fertility and Mortality based on Reported Age Distribution and the Rate of Growth, Administrative Area Holy Mecca 1974 Females

age x	C(x) prop. up to age x	Values of C(x) and various parameters in female stable population with r = .028.					Values of various parameters in female population with C(x) and with r = .028				
		level 12	level 13	level 14	level 15	level 16	Birth rate	Death rate	Level of mortality	e_0^0	G.R.R. ($\bar{m}$= 29.53)
5	.1751	.1781	.1747				.0439	.0159	12.88	49.71	3.10
10	.3106			.3135	.3090		.0411	.0131	14.64	54.10	2.89
15	.4274				.4294	.4242	.0401	.0121	15.39	55.96	2.82
20	.5291				.5325	.5267	.0398	.0118	15.59	56.47	2.80
25	.6173				.6204	.6143	.0399	.0119	15.51	56.28	2.81
30	.6944				.6949	.6889	.0405	.0125	15.08	55.21	2.85
35	.7576				.7579	.7522	.0405	.0125	15.05	55.13	2.85
40	.8130			.8162	.8109		.0412	.0132	14.60	54.01	2.90
45	.8547				.8554	.8508	.0404	.0124	15.15	55.38	2.84
Birth rate		0.0454	0.0437	0.0421	0.0406	0.0393					
Death rate		0.0174	0.0157	0.0141	0.0126	0.0113					
G.R.R.(29)		3.1546	3.0274	2.9094	2.8040	2.7092					
G.R.R.(31)		3.3870	3.2460	3.1146	2.9974	2.8920					
e_0^0		47.5000	50.0000	52.5000	55.0000	57.5000					

Table (6.9.3)

Derivation of Stable Population Estimates of Fertility and Mortality based on Reported Age Distribution and Rate of Growth, Administrative-Area Al-Madina 1974 Females

age x	C(x) prop. up to age x	Values of C(x) and various parameters in female stable population with r = .028					Values of various parameters with C(x) and with r = .028				
		level 14	level 15	level 16	level 17	level 18	Birth rate	Death rate	level of mortality	e_0^0	G.R.R. ($\bar{m}$ = 29.49)
5	.1706	.1715	.1684				.0417	.0137	14.29	53.23	2.93
10	.3030			.3047	.3006		.0388	.0108	16.42	58.54	2.72
15	.4184				.4192	.4145	.0379	.0099	17.17	60.43	2.65
20	.5208				.5211	.5158	.0380	.0100	17.06	60.15	2.66
25	.6098			.6143	.6085		.0383	.0103	16.78	59.45	2.69
30	.6897		.6949	.6889			.0395	.0115	15.87	57.18	2.77
35	.7519			.7522	.7466		.0392	.0112	16.05	57.64	2.75
40	.8065		.8109	.8057			.0395	.0115	15.85	57.13	2.77
45	.8547		.8554	.8508			.0404	.0124	15.15	55.38	2.84
Birth Rate		0.0421	0.0406	0.0393	0.0381	0.0370					
Death Rate		0.0141	0.0126	0.0113	0.0101	0.0090					
GRR(29)		2.9094	2.8040	2.7092	2.6236	2.5472					
GRR(31)		3.1146	2.9974	2.8920	2.7976	2.7124					
e_0^0		52.5000	55.0000	57.5000	60.0000	62.5000					

Table (6.9.4)

Derivation of Stable Population Estimates of Fertility and Mortality based on Reported Age Distribution and Rate of Growth,
Administrative-Area Eastern Province 1974 Females

age x	C(x) prop. up to age x	Values of C(x) and various parameters in female stable population with r = .028				Values of various parameters with C(x) and with r = .028				
		level 8	level 9	level 10	level 11	Birth rate	Death rate	level of mortality	e_0^0	G.R.R. ($\bar{m}$= 30.0)
5	.1938	.1943	.1897			.0542	.0262	8.11	37.78	3.97
10	.3356		.3395	.3336		.0503	.0223	9.66	41.65	3.65
15	.4566			.4587	.4522	.0488	.0208	10.32	43.30	3.55
20	.5618			.5645	.5574	.0487	.0207	10.38	43.45	3.33
25	.6494			.6532	.6459	.0484	.0204	10.52	43.80	3.50
30	.7246			.7270	.7200	.0488	.0208	10.34	43.35	3.53
35	.7874			.7881	.7815	.0492	.0212	10.11	42.78	3.57
40	.8418		.8447	.8385		.0508	.0228	9.47	41.18	3.69
45	.8850		.8850			.0519	.0239	9.00	40.00	3.78
Birth Rate		0.0545	0.0519	0.0495	0.0473					
Death Rate		0.0265	0.0239	0.0215	0.0193					
GRR(29)		3.8354	3.6318	3.4530	3.2950					
GRR(31)		4.1496	3.9204	3.7206	3.5442					
e_0^0		37.0000	40.0000	42.0000	45.0000					

Table (6.9.5)

Derivation of Stable Population Estimates of Fertility and Mortality based on Reported Age Distribution and Rate of Growth, Administrative-Area Tabook 1974 Females

age x	C(x) prop. up to age x	Values of C(x) and various parameters in female stable population with r = .028							Value of various parameters with C(x) and with r = .028				
		level 10	level 11	level 14	level 15	level 16	level 17	level 18	Birth rate	Death rate	level of mortality	e_0^0	G.R.R.($\bar{m}$= 29.5)
5	.1842	.1856	.1817						.0482	.0205	10.35	42.95	3.43
10	.3125			.3135	.3090				.0418	.0137	14.22	53.05	2.94
15	.4237					.4242	.4192		.0392	.0112	16.10	57.75	2.75
20	.5208						.5211	.5158	.0380	.0100	17.06	60.15	2.66
25	.6061						.6085	.6028	.0376	.0133	17.42	61.05	2.64
30	.6849					.6889	.6831		.0385	.0105	16.69	59.23	2.70
35	.7463						.7466	.7411	.0380	.0100	17.06	60.14	2.66
40	.8065				.8109	.8057			.0395	.0115	15.85	57.13	2.77
45	.8511				.8554	.8508			.0394	.0114	15.94	57.34	2.76
Birth Rate		0.0495	0.0473	0.0421	0.0406	0.0393	0.0381	0.0370					
Death Rate		0.0215	0.0193	0.0141	0.0126	0.0113	0.0101	0.0090					
GRR(29)		3.4530	3.2950	2.9094	2.8040	2.7092	2.6236	2.5472					
GRR(31)		3.7206	3.5442	3.1146	2.9974	2.8920	2.7976	2.7124					
e_0^0		42.5000	45.0000	52.5000	55.0000	57.5000	60.0000	62.5000					

Table (6.9.6)

Derivation of Stable Population Estimates of Fertility and Mortality based on Reported Age Distribution and Rate of Growth, Administrative-Area Qoryat 1974 Females

age x	C(x) prop. up to age x	Values of C(x) and various parameters in female stable population with r = .028							Values of various parameters with C(x) and with r = .028				
		level 9	level 10	level 13	level 14	level 15	level 16	level 17	Birth rate	Death rate	level of mortality	e_0^0	G.R.R. ($\bar{m}$= 29.61)
5	.1887	.1897	.1856						.0513	.0233	9.24	40.61	3.67
10	.3178			.3180	.3135				.0436	.0156	13.04	50.10	3.09
15	.4292					.4294	.4242		.0406	.0126	15.04	55.10	2.86
20	.5263						.5267	.5211	.0392	.0112	16.07	57.68	2.76
25	.6135						.6143	.6085	.0391	.0104	16.14	57.85	2.75
30	.6897					.6949	.6889		.0395	.0115	15.87	57.18	2.78
35	.7519						.7522	.7466	.0392	.0112	16.05	57.63	2.76
40	.8065					.8109	.8057		.0395	.0112	15.85	57.13	2.78
45	.8547					.8554	.8508		.0404	.0124	15.15	55.38	2.85
Birth Rate		0 .0519	0 .0495	0.0437	0.0421	0.0406	0.0393	0.0381					
Death Rate		0.0239	0.0215	0.0157	0.0141	0.0126	0.0113	0.0101					
GRR(29)		3.6318	3.4530	3.0274	2.9094	2.8040	2.7092	2.6236					
GRR(31)		3.9204	3.7206	3.2460	3.1146	2.9974	2.8920	2.7976					
e_0^0		40.0000	42.5000	50.0000	52.5000	55.0000	57.5000	60.0000					

Table (6.9.7)

Derivation of Stable Population Estimates of Fertility and Mortality based on Reported Age Distribution and Rate of Growth, Administrative-Area Assir 1974 Females

age x	C(x) prop. up to age x	Values of C(x) and various parameters in female stable population with r = .028							Values of various parameters with C(x) and with r = .028				
		level 13	level 14	level 16	level 17	level 19	level 20	level 21	Birth rate	Death rate	level of mortality	e_0^0	G.R.R. ($\bar{m}$= 29.96)
5	.1736	.1747	.1715						.0431	.0151	13.34	50.85	3.09
10	.3012			.3047	.3006				.0383	.0103	16.85	59.63	2.72
15	.4098					.4099			.0359	.0079	19.00	65.00	2.55
20	.5061					.5106	.5059		.0280	.0070	19.96	67.50	2.49
25	.5917					.5974	.5912		.0283	.0071	19.92	67.30	2.49
30	.6640						.6665	.6611	.0306	.0066	20.46	68.65	2.46
35	.7299						.7305	.7252	.0284	.0069	20.11	67.78	2.48
40	.7874					.7904	.7854		.0310	.0074	19.60	66.50	2.51
45	.8333					.8369	.8323		.0295	.0072	19.78	66.95	2.45
Birth Rate		0 .0437	0.0421	0 .0393	0 .0381	0.0359	0.0277	0.0341					
Death Rate		0 .0157	0.0141	0 .0113	0 .0101	0.0079	0.0070	0.0061					
GRR(29)		3.0274	2.9094	2.7092	2.6256	2.4772	2.4144	2.3576					
GRR(31)		3.2460	3.1146	2.8920	2.7976	2.6348	2.5648	2.5020					
e_0^0		50.0000	52.5000	57.5000	60.0000	65.0000	67.5000	70.0000					

Table (6.9.8.)

Derivation of Stable Population Estimates of Fertility and Mortality based on Reported Age Distribution and Rate of Growth, Administrative-Area
El-Baha 1974 Females

age x	C(x) prop. up to age x	Values of C(x) and various parameters in female stable population with r = .028										Values of various parameters with C(x) and with r = .028				
		level 6	level 7	level 8	level 9	level 11	level 12	level 16	level 17	level 23	level 24	Birth rate	Death rate	level of mortality	e_0^0	G.R.R. (m = 29.60)
5	.1803					.1817	.1781					.0466	.0186	11.39	45.98	3.41
10	.3568	.3599	.3526									.0596	.0316	6.43	33.56	4.48
15	.4837	.4893	.4809									.0587	.0307	6.67	34.18	4.41
20	.5573					.5573						.0473	.0193	11.00	45.00	3.47
25	.6093							.6143	.6085			.0382	.0102	16.86	59.65	2.76
30	.6639			.6688	.6608							.0529	.0249	8.61	39.03	3.92
35	.7159					.7200	.7131					.0462	.0182	11.59	46.48	3.38
40	.7632									.7689	.7630	.0322	.0042	23.97	77.43	3.34
45	.8119									.8166	.8107	.0322	.0043	23.80	77.00	2.35
Birth Rate		0.0610	0.0576	0.0545	0.0519	0 .0473	0.0454	0.0393	0.0381	0.0327	0.0322					
Death Rate		0.0330	0.0296	0.0265	0.0239	0 .0193	0.0174	0.0113	0.0101	0.0047	0.0042					
GRR(29)		4.3426	4.0700	3.8354	3.6318	3.2950	3.1546	2.7092	2.6236	2.2776	2.2502					
GRR(31)		4.7200	4.4128	4.1496	3.9204	3.5442	3.3870	2.8920	2.7976	2.4128	2.3818					
e_0^0		32.5000	35.0000	37.5000	40.0000	45.0000	47.5000	57.5000	60.0000	75.0000	77.5000					

Table (6.9.9)

Derivation of Stable Population Estimates of Fertility and Mortality based on Reported Age Distribution and Rate of Growth, Administrative-Area
Najran 1974 Females

age x	C(x) prop. up to age x	Values of C(x) and various parameters in female stable population with r = .028										Values of various parameters with C(x) and with r = .028				
		level 4	level 5	level 9	level 10	level 12	level 13	level 15	level 16	level 17	level 18	Birth rate	Death rate	level of mortality	e_0^0	G.R.R. (m = 29.60)
5	.2143	.2173	.2106									.0677	.0397	4.45	28.63	5.01
10	.3390			.3395	.3336							.0517	.0237	9.08	40.20	3.70
15	.4425					.4460	.4401					.0444	.0164	12.59	48.98	3.15
20	.5319							.5325	.5267			.0405	.0121	15.11	55.25	2.85
25	.6135								.6143	.6085		.0391	.0111	16.14	57.85	2.75
30	.6817									.6831	.6774	.0378	.0098	17.25	60.63	2.66
35	.7429									.7466	.7411	.0373	.0093	17.67	61.68	2.62
40	.7962									.8005	.7954	.0372	.0091	17.84	62.11	2.61
45	.8425									.8461	.8416	.0372	.0092	17.80	62.00	2.61
Birth Rate		0.0698	0.0651	0.0519	0.0495	0.0454	0.0437	0.0406	0.0393	0.0381	0.0370					
Death Rate		0.0418	0.0371	0.0239	0.0215	0.0174	0.0157	0.0126	0.0113	0.0101	0.0090					
GRR(29)		5.0472	4.6638	3.6318	3.4530	3.1546	3.0274	2.8040	2.7092	2.6236	2.5472					
GRR(31)		5.5150	5.0816	3.9204	3.7206	3.3870	3.2460	2.9974	2.8920	2.7976	2.7124					
e_0^0		27.5000	30.0000	40.0000	42.0000	47.5000	50.0000	55.0000	57.5000	60.0000	62.5000					

Table (6.9.10)

Derivation of Stable Population Estimates of Fertility and Mortality based on Reported Age Distribution and Rate of Growth, Administrative-Area Jizan 1974 Females

age x	C(x) prop. up to age x	Values of C(x) and various parameters in female stable population with r = .028					Values of various parameters with C(x) and with r = .028				
		level 13	level 14	level 15	level 16	level 17	Birth rate	Death rate	level of mortality	e_0^0	G.R.R. ($\bar{m}$ = 29.51)
5	.1721	.1747	.1715				.0424	.0144	13.81	52.03	2.98
10	.3071			.3090	.3047		.0400	.0120	15.44	56.10	2.81
15	.4237				.4242	.4192	.0392	.0112	16.10	57.75	2.75
20	.5263				.5267	.5211	.0392	.0112	16.07	57.68	2.75
25	.6135				.6143	.6085	.0391	.0111	16.14	57.85	2.74
30	.6897			.6949	.6889		.0395	.0115	15.87	57.18	2.77
35	.7519				.7522	.7466	.0392	.0112	16.05	57.63	2.75
40	.8065			.8109	.8057		.0395	.0115	15.85	57.13	2.77
45	.8547			.8554	.8508		.0404	.0124	15.15	55.38	2.84
Birth Rate		0.0437	0.0421	0.0406	0.0393	0.0381					
Death Rate		0.0157	0.0141	0.0126	0.0113	0.0101					
GRR(29)		3.0274	2.9094	2.8040	2.7092	2.6236					
GRR(31)		3.2460	3.1146	2.9974	2.8920	2.7976					
e_0^0		50.0000	52.5000	55.0000	57.5000	60.0000					

Table (6.9.11.)

Derivation of Stable Population Estimates of Fertility and Mortality based on Reported Age Distribution and Rate of Growth, Administrative-Area El-Jouf 1974 Females

age x	C(x) prop. up to age x	Values of C(x) and various parameters in female stable population with r = .028							Values of various parameters with C(x) and with r = .028				
		level 11	level 12	level 15	level 16	level 17	level 18	level 19	Birth rate	Death rate	level of mortality	e_0^0	G.R.R. ($\bar{m}$= 30.14)
5	.1792	.1817	.1781						.0460	.0180	11.69	46.73	3.33
10	.3058			.3090	.3046				.0396	.0116	15.74	56.85	2.84
15	.4167					.4192	.4144		.0375	.0095	17.52	61.30	2.68
20	.5155						.5158	.5106	.0369	.0089	18.06	62.65	2.64
25	.6024						.6028	.5974	.0369	.0089	18.07	62.68	2.64
30	.6803					.6831	.6774		.0375	.0095	17.49	61.23	2.68
35	.7463					.7466	.7411		.0380	.0100	17.05	60.13	2.72
40	.8000					.8005	.6954		.0381	.0101	17.00	60.00	2.72
45	.8503				.8508	.8461			.0350	.0112	16.11	57.78	2.80
Birth Rate		0.0473	0.0454	0.0406	0.0393	0.0381	0.0370	0.0359					
Death Rate		0.0193	0.0174	0.0126	0.0113	0.0101	0.0090	0.0079					
GRR (29)		3.2950	3.1546	2.8040	2.7092	2.6236	2.5472	2.4772					
GRR (31)		3.5442	3.3870	2.9974	2.8920	2.7976	2.7124	2.6348					
e_0^0		45.0000	47.5000	55.0000	57.5000	60.0000	62.5000	65.0000					

Table (6.9.12)

Derivation of Stable Population Estimates of Fertility and Mortality based on Reported Age Distribution and Rate of Growth, Administrative-Area North Borders 1974 Females

age x	C(x) prop. up to age x	Values of C(x) and various parameters in female stable population with r = .028						Values of various parameters with C(x) and with r = .028				
		level 10	level 11	level 15	level 16	level 17	level 18	Birth rate	Death rate	level of mortality	e_0^0	G.R.R. ($\bar{m}$ = 30.11)
5	.1825	.1856	.1817					.0478	.0198	10.79	44.48	3.47
10	.3086			.3090	.3047			.0405	.0125	15.09	55.23	2.90
15	.4184					.4192	.4145	.0379	.0099	17.17	60.43	2.71
20	.5181					.5211	.5158	.0374	.0094	17.57	61.43	2.67
25	.6061					.6085	.6028	.0376	.0096	17.42	61.05	2.69
30	.6803					.6831	.6774	.0375	.0095	17.49	61.23	2.68
35	.7463					.7466	.7411	.0380	.0100	17.05	60.13	2.72
40	.8065			.8109	.8057			.0395	.0115	15.85	57.13	2.83
45	.8547			.8554	.8508			.0404	.0124	15.15	55.38	2.90
Birth Rate		0.0495	0.0473	0.0406	0.0393	0.0381	0.0369					
Death Rate		0.0215	0.0193	0.0126	0.0113	0.0101	0.0090					
GRR(29)		3.4530	3.2950	2.8040	2.7092	2.6234	2.5472					
GRR(31)		3.7206	3.5442	2.9974	2.8920	2.7976	2.7124					
e_0^0		42.5000	45.0000	55.0000	57.5000	60.0000	62.5000					

Table (6.9.13)

Derivation of Stable Population Estimates of Fertility and Mortality based on Reported Age Distribution and Rate of Growth, Administrative-Area El-Cassim 1974 Females

age x	C(x) prop. up to age x	Values of C(x) and various parameters in female stable population with r = .028				Values of various parameters with C(x) and with r = .028				
		level 9	level 10	level 11	level 12	Birth rate	Death rate	level of mortality	e_0^0	G.R.R. (m = 29.52)
5	.1880	.1897	.1856			.0509	.0229	9.41	41.03	3.63
10	.3289		.3336	.3281		.0477	.0197	10.85	44.63	3.38
15	.4505			.4522	.4460	.0468	.0188	11.27	45.68	3.32
20	.5556			.5574	.5506	.0468	.0188	11.26	45.65	3.32
25	.6452			.6459	.6390	.0472	.0192	11.10	45.25	3.35
30	.7194			.7200	.7131	.0472	.0192	11.09	45.23	3.35
35	.7813			.7815	.7752	.0473	.0193	11.03	45.08	3.36
40	.8333		.8385	.8325		.0476	.0196	10.87	44.68	3.38
45	.8772		.8797	.8745		.0485	.0205	10.48	43.70	3.44
Birth Rate		0.0519	0.0495	0.0473	0.0454					
Death Rate		0.0239	0.0215	0.0193	0.0174					
GRR(29)		3.6318	3.4530	3.2950	3.1546					
GRR(31)		3.9204	3.7206	3.5442	3.3870					
e_0^0		40.0000	42.5000	45.0000	47.5000					

Table (6.9.14)

Derivation of Stable Population Estimates of Fertility and Mortality based on Reported Age Distribution and Rate of Growth, Administrative-Area Hayal 1974 Females

age x	C(x) prop. up to age x	Values of C(x) and various parameters in female stable population with r = .028								Values of various parameters with C(x) and with r = .028				
		level 9	level 10	level 14	level 15	level 16	level 17	level 18	level 19	Birth rate	Death rate	level of mortality	e_0^0	G.R.R. ($\bar{m}$= 29.84)
5	.1873	.1873	.1856							.0505	.0225	9.59	41.48	3.64
10	.3115			.3135	.3090					.0414	.0134	14.44	53.60	2.95
15	.4184						.4192	.4144		.0379	.0099	17.17	60.43	2.68
20	.5155							.5158	.5106	.0369	.0089	18.06	62.65	2.61
25	.6024							.6028	.5974	.0369	.0089	18.07	62.68	2.61
30	.6757							.6774	.6719	.0367	.0086	18.31	63.28	2.59
35	.7407							.7411	.7358	.0369	.0089	18.08	62.70	2.61
40	.8000						.8005	.6954		.0381	.0101	17.05	60.01	2.70
45	.8475					.8508	.8461			.0384	.0104	16.70	59.25	2.72
Birth Rate		0.0519	0.0495	0.0421	0.0406	0.0393	0.0381	0.0370	0.0359					
Death Rate		0.0239	0.0215	0.0141	0.0126	0.0113	0.0101	0.0090	0.0079					
GRR(29)		3.6318	3.4530	2.9094	2.8040	2.7092	2.6236	2.5472	2.4772					
GRR(31)		3.9204	3.7206	3.1146	2.9974	2.8920	2.7976	2.7124	2.6348					
e_0^0		40.0000	42.5000	52.5000	55.0000	57.5000	60.0000	62.5000	65.0000					

Table (6.9.15)

Derivation of Stable Population Estimates of Fertility and Mortality based on Reported Age Distribution and Rate of Growth, Saudi Arabia (Saudis only) 1974 Males

age x	C(x) prop. up to age x	Values of C(x) and various parameters in male stable population with r = .03								Values of various parameters with C(x) and with r = .03				
		level 9	level 11	level 13	level 15	level 17	level 19	level 21	level 23	Birth rate	Death rate	level of mortality	e_0^0	G.R.R. ($\bar{m}$ = 29.72)
5	.1724					.1727	.1679			.0411	.0111	17.12	56.76	2.90
10	.3461	.3542	.3432							.0528	.0228	10.48	40.87	3.78
15	.4804	.4841	.4712							.0551	.0251	9.58	38.70	3.96
20	.5806	.5928	.5789							.0521	.0221	10.76	41.54	3.73
25	.6499			.6553	.6438					.0457	.0157	13.94	49.33	3.24
30	.7027					.7076	.6970			.0401	.0101	17.92	58.66	2.83
35	.7503							.7502		.0369	.0069	21.00	66.02	2.60
40	.7975							.8041	.7928	.0359	.0059	22.16	69.02	2.54
45	.8402							.8497	.8390	.0354	.0054	22.78	70.62	2.50
Birth Rate		0.0566	0.0515	0.0472	0.0439	0.0412	0.0389	0.0369	0.0352					
Death Rate		0.0266	0.0215	0.0172	0.0139	0.0112	0.0089	0.0069	0.0052					
GRR(29)		3.9600	3.5800	3.2700	3.0300	2.8400	2.6800	2.5400	2.4400					
GRR(31)		4.2900	3.8700	3.5200	3.2500	3.0400	2.8600	2.7100	2.5900					
e_0^0		37.3000	42.1200	47.1100	51.8300	56.4700	61.2300	66.0200	71.1900					

Table (6.10.1)

Calculation of $\bar{m}$ from reported proportions married and from the standard age pattern of marital fertility rates, 1974

administrative-area Riyadh

age interval (1)	proportion of married females (2)	standard marital fertility rates (3)	Hypothetical fertility rates col.2 x col.3 (4)	median age (5)	col.(4)x col.(5) (6)
15-19	.4110	0.9123*	.3750	17.5	6.5625
20-24	.8176	1.0000	.8176	22.5	18.3960
25-29	.9196	0.9350	.8598	27.5	23.6445
30-34	.9362	0.8530	.7986	32.5	25.9545
35-39	.9262	0.6850	.6344	37.5	23.7900
40-44	.8700	0.3490	.3036	42.5	12.9030
45-49	.8056	0.0510	.0411	47.5	1.9523
			3.8301		113.2028

* 1.2 - .7 (Proportion married at age (15-19)) = 1.2 - .7 x .411
= .9123

Hence $\bar{m}$ = 113.2028/3.8301 = 29.60

Table (6.10.2)

Calculation of $\bar{m}$ from reported proportions married and from the standard age pattern of marital fertility rates, 1974 , administrative-area Holy Mecca

age interval (1)	proportion of married females (2)	standard marital fertility rates (3)	Hypothetical fertility rates col.2 x col.3 (4)	Median age (5)	col. (4) x col.(5) (6)
15-19	.4105	0.9127*	.3747	17.5	
20-24	.7761	1.0000	.7761	22.5	
25-29	.8913	0.9350	.8334	27.5	
30-34	.9093	0.8530	.7756	32.5	
35-39	.8972	0.6850	.6146	37.5	
40-44	.8285	0.3490	.2891	42.5	
45-49	.7606	0.0510	.0388	47.5	
			3.7023		109.3223

* 1.2 - .7 (prop. married at age (15-19)) = 1.2 - .7 x .4105

= .9127

$\bar{m}$ = 109.3223/3.7023 = 29.53

Table (6.10.3)

Calculation of $\bar{m}$ from reported proportions married and from the standard age pattern of marital fertility rates, 1974, administrative-area El-Madina

age interval (1)	proportion of married females (2)	standard marital fertility rates (3)	Hypothetical fertility rates col.2xcol.3 (4)	Median age (5)	col.(4)x col.(5) (6)
15-19	.4362	0.8947*	.3903	17.5	
20-24	.8563	1.0000	.8563	22.5	
25-29	.9368	0.9350	.8759	27.5	
30-34	.9436	0.8530	.8049	32.5	
35-39	.9341	0.6850	.6399	37.5	
40-44	.9003	0.3490	.3142	42.5	
45-49	.8528	0.0510	.0435	47.5	
			3.9250		15.7595

* 1.2 - .7 x .4362 = .8947

$\bar{m}$ = 115.7595/3.9250 = 29.49

Table (6.10.4)

Calculation of $\bar{m}$ from reported proportions married and from the standard age pattern of marital fertility rates, 1974, administrative-area Eastern Province

age interval	proportion of married females	standard marital fertility rates	Hypothetical fertility rates col.2xcol.3	Median age	col.(4)x col.(5)
(1)	(2)	(3)	(4)	(5)	(6)
15-19	.4055	0.9162*	.3715	17.5	
20-24	.8036	1.0000	.8036	22.5	
25-29	.9150	0.9350	.8555	27.5	
30-34	.9303	0.8530	.7935	32.5	
35-39	.9256	0.6850	.6340	37.5	
40-44	.8738	0.3490	.3050	42.5	
45-49	.8141	0.0510	.0415	47.5	
			3.7506		112.6060

* 1.2 - .7 x .4055 = .9162

$\bar{m}$ = 112.6060/3.7506 = 30.0235

Table (6.10.5)

Calculation of $\bar{m}$ from reported proportions married and from the standard age pattern of marital fertility rates, 1974 administrative-area Tabook

age interval (1)	proportion of married females (2)	standard marital fertility rates (3)	Hypothetical fertility rates col.2xcol.3 (4)	Median age (5)	col.(4)x col.(5) (6)
15-19	.4338	0.8963*	.3888	17.5	
20-24	.8451	1.0000	.8451	22.5	
25-29	.9371	0.9350	.8762	27.5	
30-34	.9482	0.8530	.8088	32.5	
35-39	.9434	0.6850	.6462	37.5	
40-44	.8936	0.3490	.3119	42.5	
45-49	.8142	0.0510	.0415	47.5	
			3.9185		115.6598

* 1.2 - .7 x .338 = .8963

$\bar{m}$ = 115.6598/3.9185 = 29.52

Table (6.10.6)

Calculation of $\bar{m}$ from reported proportions married and from the standard age pattern of marital fertility rates, 1974, administrative-area El-Qoryat

age interval (1)	proportion of married females (2)	standard marital fertility rates (3)	Hypothetical fertility rates col.2xcol.3 (4)	Median age (5)	col.(4) x col.(5) (6)
15-19	.4276	0.9007*	.3851	17.5	
20-24	.8364	1.0000	.8364	22.5	
25-29	.9584	0.9350	.8961	27.5	
30-34	.9764	0.8530	.8329	32.5	
35-39	.9545	0.6850	.6538	37.5	
40-44	.9231	0.3490	.3222	42.5	
45-49	.8457	0.0510	.0431	47.5	
			3.9696		117.5285

* 1.2 - .7 x .4276 = .9007

$\bar{m}$ = 117.5285/3.9696 = 29.61

Table (6.10.7)

Calculation of $\bar{m}$ from reported proportions married and from the standard age pattern of marital fertility rates, 1974 administrative-area Assir

age interval (1)	proportion of married females (2)	standard marital fertility rates (3)	Hypothetical fertility rates col.2 x col.3 (4)	Median age (5)	col.(4)x col.(5) (6)
15-19	.3151	0.9794*	.3086	17.5	
20-24	.7072	1.0000	.7072	22.5	
25-29	.8635	0.9350	.8074	27.5	
30-34	.9073	0.8530	.7739	32.5	
35-39	.9085	0.6850	.6223	37.5	
40-44	.8570	0.3490	.2991	42.5	
45-49	.7956	0.0510	.0406	47.5	
			3.5591		106.6443

* 1.2 - .7 x .3151 = .9794

$\bar{m}$ = 106.6443/3.5591 = 29.96

Table (6.10.8)

Calculation of $\bar{m}$ from reported proportions married and from the standard age pattern of marital fertility rates, 1974

administrative-area El-Baha

age interval (1)	proportion of married females (2)	standard marital fertility rates (3)	Hypothetical fertility rates col.2xcol.3 (4)	Median age (5)	col.(4)x col.(5) (6)
15-19	.4125	0.9113*	.3759	17.5	
20-24	.8405	1.0000	.8405	22.5	
25-29	.9218	0.9350	.8619	27.5	
30-34	.9469	0.8530	.8077	32.5	
35-39	.9368	0.6850	.6417	37.5	
40-44	.9148	0.3490	.3193	42.5	
45-49	.0510	0.0510	.0438	47.5	
			3.8908		115.1565

* 1.2 - .7 x .4125 = .9113

$\bar{m}$ = 115.1565/3.8908 = 29.60

Table (6.10.9)

Calculation of $\bar{m}$ from reported proportions married and from the standard age pattern of marital fertility rates, 1974 administrative-area Najran

age interval (1)	proportion of married females (2)	standard marital fertility rates (3)	Hypothetical fertility rates col.2xcol.3 (4)	Median age (5)	col.(4)x col.(5) (6)
15-19	.4116	0.9119*	.3753	17.5	
20-24	.7940	1.0000	.7940	22.5	
25-29	.8792	0.9350	.8221	27.5	
30-34	.9052	0.8530	.7721	32.5	
35-39	.9141	0.6850	.6262	37.5	
40-44	.8829	0.3490	.3081	42.5	
45-49	.8316	0.0510	.0424	47.5	
			3.7402		110.7245

* 1.2 - .7 x .4116 = .9119

$\bar{m}$ = 110.7245/3.7402 = 29.60

Table (6.10.10)

Calculation of $\bar{m}$ from reported proportions married and from the standard age pattern of marital fertility rates, 1974 , administrative-area Jizan

age interval	proportion of married females	standard marital fertility rates	Hypothetical fertility rates col.2 x col.3	Median age	col.(4) x col.(5)
(1)	(2)	(3)	(4)	(5)	(6)
15-19	.3927	0.9251*	.3633	17.5	
20-24	.7233	1.0000	.7233	22.5	
25-29	.8426	0.9350	.7878	27.5	
30-34	.8695	0.8530	.7417	32.5	
35-39	.8547	0.6850	.5855	37.5	
40-44	.7722	0.3490	.2695	42.5	
45-49	.6748	0.0510	.0344	47.5	
			3.5055		103.4458

* 1.2 - .7 x .3927 = .9251

$\bar{m}$ = 103.4458/3.5055 = 29.51

Table (6.10.11)

Calculation of $\bar{m}$ from reported proportions married and from the standard age pattern of marital fertility rates, 1974 administrative-area El-Jouf

age interval (1)	proportion of married females (2)	standard marital fertility rates (3)	Hypothetical fertility rates col.2xcol.3 (4)	Median age (5)	col.(4)x col.(5) (6)
15-19	.2978	0.9915*	.2953	17.5	
20-24	.7006	1.0000	.7006	22.5	
25-29	.8625	0.9350	.8064	27.5	
30-34	.9313	0.8530	.7944	32.5	
35-39	.9240	0.6830	.6311	37.5	
40-44	.9169	0.3490	.3200	42.5	
45-49	.8477	0.0510	.0423	47.5	
			3.5901		108.2008

* 1.2 - .7 x .2978 = .9915

$\bar{m}$ = 108.2008/3.5901 = 30.14

Table (6.10.12)

Calculation of $\bar{m}$ from reported proportions married and from the standard age pattern of marital fertility rates, 1974

administrative-area North Borders

age interval	proportion of married females	standard marital fertility rates	Hypothetical fertility rates col.2xcol.3	Median age	col.(4)x col.(5)
(1)	(2)	(3)	(4)	(5)	(6)
15-19	.3114	0.9820*	.3058	17.5	
20-24	.6846	1.0000	.6846	22.5	
25-29	.8403	0.9350	.7857	27.5	
30-34	.9098	0.8530	.7761	32.5	
35-39	.9308	0.6850	.6376	37.5	
40-44	.8753	0.3490	.3055	42.5	
45-49	.8514	0.0510	.0434	47.5	
			3.5387		106.5403

* 1.2 - .7 x .3114 = .9820

$\bar{m}$ = 106.5403/3.5387 = 30.11

Table (6.10.13)

Calculation of $\bar{m}$ from reported proportions married and from the standard age pattern of marital fertility rates, 1974, administrative-area Hayal

age interval (1)	proportion of married females (2)	standard marital fertility rates (3)	Hypothetical fertility rates col.2xcol.3 (4)	Median age (5)	col.(4)x col.(5) (6)
15-19	.3622	0.9465*	.3428	17.5	
20-24	.7511	1.0000	.7511	22.5	
25-29	.8909	0.9350	.8330	27.5	
30-34	.9343	0.8530	.7970	32.5	
35-39	.9301	0.6830	.6353	37.5	
40-44	.893C	0.3490	.3117	42.5	
45-49	.8381	0.0510	.0427	47.5	
			3.7136		110.8080

* 1.2 - .7 x .3622 = .9465

$\bar{m}$ = 110.8080/3.7136 = 29.84

Table (6.10.14)

Calculation of $\bar{m}$ from reported proportions married and from the standard age pattern of marital fertility rates, 1974, administrative-area El-Cassim

age interval (1)	proportion of married females (2)	standard marital fertility rates (3)	Hypothetical fertility rates col.2xcol.3 (4)	Median age (5)	col.(4)x col.(5) (6)
15-19	.4319	0.8977*	.3877	17.5	
20-24	.8486	1.0000	.8486	22.5	
25-29	.9354	0.9350	.8746	27.5	
30-34	.9543	0.8530	.8140	32.5	
35-39	.9409	0.6830	.6426	37.5	
40-44	.8998	0.3490	.3140	42.5	
45-49	.8478	0.0510	.0432	47.5	
			3.9248		115.8793

* 1.2 - .7 x .4319 = .8977

$\bar{m}$ = 115.8793/3.9248 = 29.52

Table (6.10.15)

Calculation of $\bar{m}$ from reported proportions married and from the standard age pattern of marital fertility rates, 1974, Saudi Arabia

age interval (1)	proportion of married females (2)	standard marital fertility rates (3)	Hypothetical fertility rates col.2xcol.3 (4)	Median age (5)	col.(4)x col.(5) (6)
15-19	.3978	0.9215*	.3666	17.5	6.4155
20-24	.7861	1.0000	.7861	22.5	17.6873
25-29	.8986	0.9350	.8402	27.5	23.1055
30-34	.9213	0.8530	.7859	32.5	25.5418
35-39	.9140	0.6850	.6261	37.5	23.4788
40-44	.8598	0.3490	.3001	42.5	12.7543
45-49	.7963	0.0510	.0406	47.5	1.9285
			3.7456		110.9117

* 1.2 - .7 x .3978 = .9215

$\bar{m}$ = 110.9117/3.7456 = 29.61

Table (6.11.1)

Estimation of the Birth Rate and of the Gross Reproduction Rate from the Female Population of the Administrative-area Riyadh , 1974, by Adjustment of Preliminary of Stable Estimates of these parameters (as calculated in Table (6.9.1)) for the Effects of Declining Mortality

Age x	stable pop. estimates derived as in table (6.9.1)	Adjustments from table III.1 part (b) t=12, k = .01	Adjustments for t=12, k= .00249	Adjustments factors (1+col.4)	Adjusted Estimates (col.2xcol.5)
(1)	(2)	(3)	(4)	(5)	(6)
			Birth Rate		
5	.0538	-.0082	-.0020	0.9980	.0537
10	.0531	.0122	.0030	1.0330	.0533
15	.0525	.0426	.0106	1.0106	.0530
20	.0528	.0652	.0162	1.0162	.0537
25	.0524	.0764	.0190	1.0190	.0532
30	.0522	.0798	.0199	1.0199	.0532
35	.0514	.0788	.0196	1.0196	.0524
40	.0530	.0754	.0188	1.0188	.0540
			GRR ($\bar{m}$ = 29.60)		
5	3.87	-.0070	-.0017	0.9983	3.86
10	3.82	.0138	.0034	1.0034	3.83
15	3.76	.0432	.0108	1.0108	3.80
20	3.79	.0652	.0162	1.0162	3.85
25	3.76	.0766	.0191	1.0191	3.83
30	3.74	.0798	.0199	1.0199	3.81
35	3.68	.0790	.0197	1.0197	3.75
40	3.81	.0754	.0188	1.0188	3.88

Table (6.11.2)

Estimation of the Birth Rate and of the Gross Reproduction Rate from the Female Population of the Administrative-Area Holy Mecca, 1974, by Adjustment of Preliminary of Stable Estimates of these parameters (as calculated in Table (6.9.2)) for the Effects of Declining Mortality

Age x	stable pop. estimates derived as in table (6.9.2)	Adjustments from table III.1 part (b) t=12, k=.01	Adjustments for t=12, k=.00249	Adjustments factors (1 + col.4)	Adjusted Estimates (col.2 x col.5)
(1)	(2)	(3)	(4)	(5)	(6)
			Birth Rate		
5	.0439	-.0082	-.0020	0.9980	.0438
10	.0411	.0122	.0330	1.0330	.0425
15	.0401	.0426	.0106	1.0106	.0405
20	.0398	.0652	.0162	1.0162	.0405
25	.0399	.0764	.0190	1.0190	.0407
30	.0405	.0798	.0199	1.0199	.0413
35	.0405	.0788	.0196	1.0196	.0413
40	.0412	.0754	.0188	1.0188	.0420
			GRR ($\overline{m}$ = 29.53)		
5	3.10	-.0070	-.0017	0.9983	3.09
10	2.89	.0138	.0034	1.0034	2.90
15	2.82	.0432	.0108	1.0108	2.85
20	2.80	.0652	.0162	1.0162	2.85
25	2.81	.0766	.0191	1.0191	2.86
30	2.85	.0798	.0199	1.0199	2.91
35	2.90	.0790	.0197	1.0197	2.95
40	2.84	.0754	.0188	1.0188	3.88

Table (6.11.3)

Estimation of the Birth Rate and of the Gross Reproduction Rate from the Female Population of the Administrative-Area El-Madina , 1974 , by Adjustment of Preliminary of Stable Estimates of these parameters (as calculated in Table (6.9.3)) for the Effects of Declining Mortality

Age x	stable pop. estimates derived as in table 6.9.3.	Adjustments from table III.1 part (b) t=12, k=.01	Adjustments for t=12, k = .00249	Adjustments factors (1+col.4)	Adjusted Estimates (col.2 x col.5)
(1)	(2)	(3)	(4)	(5)	(6)
			Birth Rate		
5	.0417	-.0082	-.0020	0.9980	.0416
10	.0388	.0122	.0330	1.0330	.0401
15	.0379	.0426	.0106	1.0106	.0383
20	.0380	.0652	.0162	1.0162	.0386
25	.0383	.0764	.0190	1.0190	.0390
30	.0395	.0798	.0199	1.0199	.0403
35	.0392	.0788	.0196	1.0196	.0400
40	.0395	.0754	.0188	1.0188	.0402
			GRR ($\overline{m}$ = 29.49)		
5	2.93	-.0070	-.0017	0.9983	2.93
10	2.72	.0138	.0034	1.0034	2.73
15	2.65	.0432	.0108	1.0108	2.68
20	2.66	.0652	.0162	1.0162	2.70
25	2.69	.0766	.0191	1.0191	2.74
30	2.77	.0798	.0199	1.0199	2.83
35	2.75	.0790	.0197	1.0197	2.80
40	2.77	.0754	.0188	1.0188	2.82

Table (6.11.4)

Estimation of the Birth Rate and of the Gross Reproduction Rate from the Female Population of the Administrative-Area Eastern Province, 1974, by Adjustment of Preliminary of Stable Estimates of these parameters (as calculated in Table (6.9.4.)) for the Effects of Declining Mortality

Age x	stable pop. estimates derived as in table (6.9.4)	Adjustments from table III.1 part (b) t=12 , k = .01	Adjustments for t=12, k=.00249	Adjustments factors (1+col.4)	Adjusted Estimates (col.2 x col.5)
(1)	(2)	(3)	(4)	(5)	(6)
		Birth Rate			
5	.0542	-.0082	-.0020	0.9980	.0541
10	.0503	.0122	.0330	1.0330	.0520
15	.0488	.0426	.0106	1.0106	.0493
20	.0487	.0652	.0162	1.0162	.0495
25	.0484	.0764	.0190	1.0190	.0493
30	.0488	.0798	.0199	1.0199	.0498
35	.0492	.0788	.0196	1.0196	.0502
40	.0508	.0754	.0188	1.0188	.0518
		GRR ($\bar{m}$ = 30.02)			
5	3.97	-.0070	-.0017	0.9983	3.96
10	3.65	.0138	.0034	1.0034	3.66
15	3.53	.0432	.0108	1.0108	3.57
20	3.53	.0652	.0162	1.0162	3.59
25	3.50	.0766	.0191	1.0191	3.57
30	3.53	.0798	.0199	1.0199	3.60
35	3.57	.0790	.0197	1.0197	3.64
40	3.69	.0754	.0188	1.0188	3.76

Table (6.11.5)

Estimation of the Birth Rate and of the Gross Reproduction Rate from the Female Population of the Administrative-Area Tabook , 1974 , by Adjustment of Preliminary of Stable Estimates of these parameters (as calculated in Table (6.9.5.)) for the Effects of Declining Mortality

Age x	stable pop. estimates derived as in table (6.9.5)	Adjustments from table III.1 part (b) t=12, k=.01	Adjustments for t=12 , k=.00249	Adjustments factors (1+col.4)	Adjusted Estimates (col.2 x col.5)
(1)	(2)	(3)	(4)	(5)	(6)
			Birth Rate		
5	.0482	-.0082	-.0020	0.9980	.0481
10	.0418	.0122	.0330	1.0330	.0432
15	.0392	.0426	.0106	1.0106	.0396
20	.0380	.0652	.0162	1.0162	.0386
25	.0376	.0764	.0190	1.0190	.0383
30	.0385	.0798	.0199	1.0199	.0393
35	.0380	.0788	.0196	1.0196	.0387
40	.0395	.0754	.0188	1.0188	.0402
			GRR($\bar{m}$ = 29.52)		
5	3.43	-.0070	-.0017	0.9983	3.42
10	2.94	.0138	.0034	1.0034	2.95
15	2.75	.0432	.0108	1.0108	2.78
20	2.66	.0652	.0162	1.0162	2.70
25	2.64	.0766	.0191	1.0191	2.63
30	2.70	.0798	.0199	1.0199	2.75
35	2.66	.0790	.0197	1.0197	2.71
40	2.77	.0754	.0188	1.0188	2.82

Table (6.11.6)

Estimation of the Birth Rate and of the Gross Reproduction Rate from the Female Population of the Administrative-area Qoryat , 1974 , by Adjustment of Preliminary of Stable Estimates of these parameters (as calculated in Table (6.9.6.)) for the Effects of Declining Mortality

Age x	stable pop. estimates derived as in table (6.9.6)	Adjustments from table III.1 part (b) t=12, k= .01	Adjustments for t=12, k=.00249	Adjustments factors (1 + col.4)	Adjusted Estimates (col.2 x col.5)
(1)	(2)	(3)	(4)	(5)	(6)
			Birth Rate		
5	.0513	-.0082	-.0020	0.9980	.0512
10	.0436	.0122	.0330	1.0330	.0450
15	.0406	.0426	.0106	1.0106	.0410
20	.0392	.0652	.0162	1.0162	.0398
25	.0391	.0764	.0190	1.0190	.0398
30	.0395	.0798	.0199	1.0199	.0402
35	.0392	.0788	.0196	1.0196	.0400
40	.0395	.0754	.0188	1.0188	.0402
			GRR($\bar{m}$ = 29.61)		
5	3.67	-.0070	-.0017	0.9983	3.66
10	3.09	.0138	.0034	1.0034	3.10
15	2.86	.0432	.0108	1.0108	2.89
20	2.76	.0652	.0162	1.0162	2.80
25	2.75	.0766	.0191	1.0191	2.80
30	2.78	.0798	.0199	1.0199	2.84
35	2.76	.0790	.0197	1.0197	2.81
40	2.78	.0754	.0188	1.0188	2.83

Table (6.11.7)

Estimation of the Birth Rate and of the Gross Reproduction Rate from the Female Population of the Administrative- area Assir , 1974 , by Adjustment of Preliminary of Stable Estimates of these parameters (as calculated in Table (6.9.7.)) for the Effects of Declining Mortality

Age x	stable pop. estimates derived as in table (6.9.7)	Adjustments from table III.1 part (b) t=12, k=.01	Adjustments for t=12, k=.00249	Adjustments factors (1+col.4)	Adjusted Estimates (col.2 x col.5)
(1)	(2)	(3)	(4)	(5)	(6)
			Birth Rate		
5	.0431	-.0082	-.0020	0.9980	.0430
10	.0383	.0122	.0330	1.0330	.0396
15	.0359	.0426	.0106	1.0106	.0363
20	.0280	.0652	.0162	1.0162	.0285
25	.0283	.0764	.0190	1.0190	.0288
30	.0306	.0798	.0199	1.0199	.0312
35	.0284	.0788	.0196	1.0196	.0290
40	.0310	.0754	.0188	1.0188	.0316
			GRR ($\bar{m}$ = 29.96)		
5	3.09	-.0070	-.0017	0.9983	3.08
10	2.72	.0138	.0034	1.0034	2.73
15	2.55	.0432	.0108	1.0108	2.58
20	2.49	.0652	.0162	1.0162	2.53
25	2.49	.0766	.0191	1.0191	2.54
30	2.46	.0798	.0199	1.0199	2.51
35	2.48	.0790	.0197	1.0197	2.53
40	2.51	.0754	.0188	1.0188	2.56

Table (6.11.8)

Estimation of the Birth Rate and of the Gross Reproduction Rate from the Female Population of the Administrative-Area El-Baha , 1974 , by Adjustment of Preliminary of Stable Estimates of these parameters (as calculated in Table (6.9.8) for the Effects of Declining Mortality

Age x	stable pop. estimates derived as in table (6.9.8)	Adjustments from table III.1 part (b) t=12 k = .01	Adjustments for t=12, k = .00249	Adjustments factors (1 + col.4)	Adjusted Estimates (col.2 x col.5)
(1)	(2)	(3)	(4)	(5)	(6)
			Birth Rate		
5	.0466	-.0082	-.0020	0.9980	.0465
10	.0596	.0122	.0330	1.0330	.0613
15	.0587	.0426	.0106	1.0106	.0593
20	.0473	.0652	.0162	1.0162	.0481
25	.0382	.0764	.0190	1.0190	.0390
30	.0529	.0798	.0199	1.0199	.0539
35	.0462	.0788	.0196	1.0196	.0471
40	.0322	.0754	.0188	1.0188	.0328
			GRR ($\overline{m}$ = 29.60)		
5	3.41	-.0070	-.0017	0.9983	3.40
10	4.48	.0138	.0034	1.0034	4.49
15	4.41	.0432	.0108	1.0108	4.46
20	3.47	.0652	.0162	1.0162	3.53
25	2.76	.0766	.0191	1.0191	2.81
30	3.92	.0798	.0199	1.0199	4.00
35	3.38	.0790	.0197	1.0197	3.45
40	3.34	.0754	.0188	1.0188	3.40

Table (6.11.9)

Estimation of the Birth Rate and of the Gross Reproduction Rate from the Female Population of the Administrative-Area Najran , 1974 , by Adjustment of Preliminary of Stable Estimates of these parameters (as calculated in Table (6.9.9.)) for the Effects of Declining Mortality

Age x	stable pop. estimates derived as in table (6.9.9)	Adjustments from table III.1 part (b) t=12, k = .01	Adjustments for t=12, k= .00249	Adjustments factors (1+ col.4)	Adjusted Estimates (col.2 x col. 5)
(1)	(2)	(3)	(4)	(5)	(6)
			Birth Rate		
5	.0677	-.0082	-.0020	0.9980	.0676
10	.0517	.0122	.0330	1.0330	.0534
15	.0444	.0426	.0106	1.0106	.0449
20	.0405	.0652	.0162	1.0162	.0412
25	.0391	.0764	.0190	1.0190	.0398
30	.0378	.0798	.0199	1.0199	.0386
35	.0373	.0788	.0196	1.0196	.0380
40	.0372	.0754	.0188	1.0188	.0379
			GRR ($\bar{m}$ = 29.60)		
5	5.01	-.0070	-.0017	0.9983	5.00
10	3.70	.0138	.0034	1.0034	3.71
15	3.15	.0432	.0108	1.0108	3.18
20	2.85	.0652	.0162	1.0162	2.90
25	2.75	.0766	.0191	1.0191	2.80
30	2.66	.0798	.0199	1.0199	2.71
35	2.62	.0790	.0197	1.0197	2.67
40	2.61	.0754	.0188	1.0188	2.66

Table (6.11.10)

Estimation of the Birth Rate and of the Gross Reproduction Rate from the Female Population of the Administrative-area Jizan , 1974 , by Adjustment of Preliminary of Stable Estimates of these parameters (as calculated in Table (6.9.10)) for the Effects of Declining Mortality

Age x	stable pop. estimates derived as in table (6.9.10)	Adjustments from table III.1 part (b) t=12, k = .01	Adjustments for t=12, k = .00249	Adjustments factors (1 + col.4)	Adjusted Estimates (col. 2 x col. 5)
(1)	(2)	(3)	(4)	(5)	(6)
			Birth Rate		
5	.0424	-.0082	-.0020	0.9980	.0423
10	.0400	.0122	.0330	1.0330	.0413
15	.0392	.0426	.0106	1.0106	.0396
20	.0392	.0652	.0162	1.0162	.0398
25	.0391	.0764	.0190	1.0190	.0398
30	.0395	.0798	.0199	1.0199	.0403
35	.0392	.0788	.0196	1.0196	.0400
40	.0395	.0754	.0188	1.0188	.0402
			GRR ($\bar{m}$=29.51)		
5	2.98	-.0070	-.0017	0.9983	2.97
10	2.81	.0138	.0034	1.0034	2.82
15	2.75	.0432	.0108	1.0108	2.78
20	2.75	.0652	.0162	1.0162	2.79
25	2.74	.0766	.0191	1.0191	2.79
30	2.77	.0798	.0199	1.0199	2.83
35	2.75	.0790	.0197	1.0197	2.80
40	2.77	.0754	.0188	1.0188	2.82

Table (6.11.11)

Estimation of the Birth Rate and of the Gross Reproduction Rate from the Female Population of the Administrative-area El-Jouf , 1974 , by Adjustment of Preliminary of Stable Estimates of these parameters (as calculated in Table (6.9.11)) for the Effects of Declining Mortality

Age x	stable pop. estimates derived as in table (6.9.11.)	Adjustments from table III.1 part (b) t=12, k = .01	Adjustments for t=12, k = .00249	Adjustments factors (1 + col.4)	Adjusted Estimates (col.2 x col.5)
(1)	(2)	(3)	(4)	(5)	(6)
			Birth Rate		
5	.0460	-.0082	-.0020	0.9980	.0459
10	.0396	.0122	.0330	1.0330	.0409
15	.0375	.0426	.0106	1.0106	.0379
20	.0369	.0652	.0162	1.0162	.0375
25	.0369	.0764	.0190	1.0190	.0376
30	.0375	.0798	.0199	1.0199	.0382
35	.0380	.0788	.0196	1.0196	.0387
40	.0381	.0754	.0188	1.0188	.0388
			GRR ($\overline{m}$ = 30.14)		
5	3.33	-.0070	-.0017	0.9983	3.32
10	2.84	.0138	.0034	1.0034	2.85
15	2.68	.0432	.0108	1.0108	2.71
20	2.64	.0652	.0162	1.0162	2.68
25	2.64	.0766	.0191	1.0191	2.69
30	2.68	.0798	.0199	1.0199	2.73
35	2.72	.0790	.0197	1.0197	2.77
40	2.72	.0754	.0188	1.0188	2.77

Table (6.11.12)

Estimation of the Birth Rate and of the Gross Reproduction Rate from the Female Population of the Administrative-area North Borders, 1974 , by Adjustment of Preliminary of Stable Estimates of these parameters (as calculated in Table (6.9.12)) for the Effects of Declining Mortality

Age x	stable pop. estimates derived as in table (6.9.12)	Adjustments from table III.1 part (b) t=12 k = .01	Adjustments for t=12, k = .00249	Adjustments factors (1 + col.4)	Adjusted Estimates (col.2 x col.5)
(1)	(2)	(3)	(4)	(5)	(6)
			Birth Rate		
5	.0478	-.0082	-.0020	0.9980	.0477
10	.0405	.0122	.0330	1.0330	.0412
15	.0379	.0426	.0106	1.0106	.0383
20	.0374	.0652	.0162	1.0162	.0380
25	.0376	.0764	.0190	1.0190	.0383
30	.0375	.0798	.0199	1.0199	.0382
35	.0380	.0788	.0196	1.0196	.0387
40	.0395	.0754	.0188	1.0188	.0402
			GRR ($\bar{m}$ = 30.11)		
5	3.47	-.0070	-.0017	0.9983	3.46
10	2.90	.0138	.0034	1.0034	2.91
15	2.71	.0432	.0108	1.0108	2.74
20	2.67	.0652	.0162	1.0162	2.71
25	2.69	.0766	.0191	1.0191	2.74
30	2.68	.0798	.0199	1.0199	2.73
35	2.72	.0790	.0197	1.0197	2.77
40	2.83	.0754	.0188	1.0188	2.88

Table (6.11.13)

Estimation of the Birth Rate and of the Gross Reproduction Rate from the Female Population of the Administrative-area El-Cassim , 1974 , by Adjustment of Preliminary of Stable Estimates of these parameters (as calculated in Table (6.9.13)) for the Effects of Declining Mortality

Age x	stable pop. estimates derived as in table (6.9.13)	Adjustments from table III.1 part (b) t=12, k = .01	Adjustments for t=12, k = .00249	Adjustments factors (1 + col.4)	Adjusted Estimates (col. 2 x col. 5)
(1)	(2)	(3)	(4)	(5)	(6)
			Birth Rate		
5	.0509	-.0082	-.0020	0.9980	.0508
10	.0477	.0122	.0330	1.0330	.0493
15	.0468	.0426	.0106	1.0106	.0473
20	.0468	.0652	.0162	1.0162	.0476
25	.0472	.0764	.0190	1.0190	.0481
30	.0472	.0798	.0199	1.0199	.0481
35	.0473	.0788	.0196	1.0196	.0482
40	.0476	.0754	.0188	1.0188	.0485
			GRR ($\bar{m}$ = 29.52)		
5	3.63	-.0070	-.0017	0.9983	3.62
10	3.38	.0138	.0034	1.0034	3.39
15	3.32	.0432	.0108	1.0108	3.36
20	3.32	.0652	.0162	1.0162	3.33
25	3.35	.0766	.0191	1.0191	3.41
30	3.35	.0798	.0199	1.0199	3.42
35	3.36	.0790	.0197	1.0197	3.43
40	3.38	.0754	.0188	1.0188	3.44

Table (6.11.14)

Estimation of the Birth Rate and of the Gross Reproduction Rate from the Female Population of the Administrative-Area Hayal , 1974 , by Adjustment of Preliminary of Stable Estimates of these parameters (as calculated in Table (6.9.14) for the Effects of Declining Mortality

Age x	stable pop. estimates derived as in table (6.9.14)	Adjustments from table III.1 part (b) t = 12, k = .01	Adjustments for t=12, k=.00249	Adjustments factors (1 + col.4)	Adjusted Estimates (col.2 x col.5)
(1)	(2)	(3)	(4)	(5)	(6)
			Birth Rate		
5	.0505	-.0082	-.0020	0.9980	.0504
10	.0414	.0122	.0330	1.0330	.0428
15	.0379	.0426	.0106	1.0106	.0383
20	.0369	.0652	.0162	1.0162	.0375
25	.0369	.0764	.0190	1.0190	.0376
30	.0366	.0798	.0199	1.0199	.0373
35	.0369	.0788	.0196	1.0196	.0376
40	.0381	.0754	.0188	1.0188	.0388
			GRR ($\overline{m}$ = 29.84)		
5	3.64	-.0070	-.0017	0.9983	3.63
10	2.95	.0138	.0034	1.0034	2.96
15	2.68	.0432	.0108	1.0108	2.71
20	2.61	.0652	.0162	1.0162	2.65
25	2.61	.0766	.0191	1.0191	2.66
30	2.59	.0798	.0199	1.0199	2.64
35	2.61	.0790	.0197	1.0197	2.66
40	2.70	.0754	.0188	1.0188	2.75

Table (6.11.15)

Estimation of the Birth Rate and of the Gross Reproduction Rate from the Male Population of Saudi Arabia (Saudis only), 1974, by Adjustment of Preliminary of Stable Estimates of these parameters (as calculated in Table (6.9.15)) for the Effects of Declining Mortality

Age x	stable pop. estimates derived as in table (6.9.15)	Adjustments from table III.1 part (b) t = 12, k = .01	Adjustments for t = 12, k = .00249	Adjustments factors (1 + col.4)	Adjusted Estimates (col. 2 x col. 5)
(1)	(2)	(3)	(4)	(5)	(6)
			Birth Rate		
5	.0411	-.0082	-.0020	0.9980	.0410
10	.0528	.0122	.0030	1.0030	.0546
15	.0551	.0426	.0106	1.0106	.0557
20	.0521	.0652	.0162	1.0162	.0529
25	.0457	.0764	.0190	1.0190	.0465
30	.0401	.0798	.0199	1.0199	.0409
35	.0369	.0788	.0196	1.0196	.0376
40	.0359	.0754	.0188	1.0188	.0366

GRR ($\overline{m}$ = 29.72)

The female gross reproduction rate, can be obtained by reading these values in a female stable population determined by the two parameters calculated, the female death rate and the female rate of growth.

Table (6.12)

Estimation of various population parameters for Saudis only for 14 administrative - area , 1974 obtained by adjusting stable of these parameters for the effects of declining Mortality

Administrative-Area	Female							Male			
	Birth rate	Death rate	level of mortality	e_0^0	GRR		Total fertility	Birth rate	Death rate	level of mortality	e_0^0
					$\bar{m}$	GRR					
Riyadh	.0534	.0254	8.42	38.55	29.60	3.83	7.85	.0560	.0260	9.21	37.79
Holy Mecca	.0407	.0127	14.94	54.85	29.53	2.91	5.97	.0433	.0133	15.45	52.87
El-Madina	.0403	.0123	15.24	55.60	29.49	2.83	5.80	.0422	.0122	16.25	54.72
Eastern Province	.0498	.0218	9.86	42.15	30.02	3.60	7.38	.0522	.0222	10.70	41.39
Tabook	.0393	.0113	16.00	57.50	29.52	2.75	5.64	.0412	.0112	17.02	56.52
Qoryat	.0402	.0122	15.31	55.78	29.61	2.84	5.82	.0421	.0121	16.32	54.89
Assir	.0396	.0116	15.77	56.93	29.96	2.73	5.60	.0415	.0115	16.79	55.97
El-Baha	.0481	.0201	10.65	44.13	29.60	3.53	7.24	.0504	.0204	11.51	43.33
Najran	.0398	.0118	15.61	56.53	29.60	2.80	5.74	.0417	.0117	16.63	55.61
Jezan	.0400	.0120	15.46	56.15	29.51	2.80	5.74	.0419	.0119	16.48	55.26
El-Jouf	.0382	.0102	16.84	59.60	30.14	2.73	5.60	.0400	.0100	18.00	58.84
North Borders	.0383	.0103	16.83	59.58	30.11	2.73	5.60	.0400	.0100	18.00	58.84
El-Cassim	.0481	.0201	10.65	44.13	29.52	3.41	6.99	.0504	.0204	11.51	43.33
Hayal	.0428	.0148	13.55	51.38	29.84	2.66	5.45	.0448	.0148	14.45	50.56
All Saudis	.0444	.0164	11.81	49.05	29.61	3.14	6.45	.0465	.0165	13.40	48.09

Table (6.13)

Gross and Net Reproduction Rates for some Selected Countries

Reproduction Rates	Saudi Arabia 1974	Egypt 1970	Chile 1940	Japan 1947	Ceylon 1952	U.K. 1951	Australia 1947
G.R.R.	3.50	2.50	2.06	2.30	3.70	1.20	1.50
N.R.R.	2.30	1.90	1.20	1.70	2.00	1.10	1.40

Source : U.N. Demographic year book

Table (6.14)

Estimated Age Distribution, Saudis only, 1974

Age group	Percentage Dist.		Estimated Number		
	Males	Females	Males	Females	Total
-1	4.1720	4.1187	127,166	118,918	246,084
1-4	14.0930	13.7600	429,565	397,290	826,855
5-9	14.8780	14.5074	453,507	418,872	872,379
10-14	12.5844	12.3300	383,582	356,002	739,584
15-19	10.6400	10.4713	324,316	302,336	626,652
20-24	8.9260	8.8375	272,071	255,163	527,234
25-29	7.4440	7.4139	226,898	214,060	440,958
30-34	6.1820	6.1906	188,432	178,740	367,172
35-39	5.1040	5.1455	155,574	148,565	304,139
40-44	4.1740	4.2528	127,227	122,790	250,017
45-49	3.3680	3.4959	102,699	100,936	203,595
50-54	2.6680	2.8312	81,323	81,745	163,068
55-59	2.0520	2.2392	62,546	64,652	127,198
60-64	1.5080	1.7059	45,965	49,254	95,219
65-69	1.0400	1.2179	31,700	35,164	66,864
70-74	0.6460	0.7930	19,691	22,896	42,587
75-79	0.3420	0.4436	10,424	12,808	23,232
80+	0.1780	0.2455	5,426	7,088	12,514
Total	100.0000	100.0000	3,048,072	2,887,279	5,935,351

CHAPTER SEVEN

POPULATION PROJECTIONS

7.1 Introduction :

In an age of economic planning, the importance of future population estimates cannot be over-emphasised. A programme which aims at fulfilling certain socio-economic ends, may fail to achieve its purposes effectively, by failing to take into consideration the implications of population growth for the future size and structure of the population.

The principal uses of population projections and other demographic projections relate to government or private planning. Demographic projections may be used directly or as the basis for preparing other more specialized types of projections. These include, for example, projections of the expected number of retirements from the labour forces in a given period, and the required number of teachers or classrooms, housing units, medical personnel and facilities, etc.

Thus it becomes very essential for any country like Saudi Arabia to have the most accurate information about the size and composition of its people at a future point in time, since any decision is concerned with the future. Such information about the expected population of the future may be obtained by using demographic tools such as projection techniques and models.

The reliability of a future estimate, depends on the reliability of the data used, the validity of the assumptions, the technique and

model used.

The aim of this chapter is to project the population of Saudi Arabia (Saudis only) in order to know how far this population is going to change in the future.

7.2 Future Population of Saudi Arabia

The current growth of Saudi Arabia (3.0 per cent) is one of the highest in the world. The death rate is still high and there is ample scope for future decrease. It is therefore likely that the growth rate will increase further and the population of Saudi Arabia will increase rapidly in the future.

To go beyond such qualitative statements about the future growth rate requires accurate data on trends which are lacking for Saudi Arabia.

The United Nations estimated that the expectation of life at birth in Saudi Arabia was about 42.3 years during 1965-1970. In the previous analysis we have estimated that the expectation of life at birth in Saudi Arabia (Saudis only) was about 48.57 years in 1974. Thus, during 1965 - 1974 the expectation of life increased by 6.27 years or about .7 year per year.

There is no doubt that the rapid decrease in mortality observed during 1965-1974 will continue in the future. The Saudi Arabia Government is pursuing an active policy of public health planning. Services relating to human health and nutrition are offered to the population through a number of channels.

By far the most significant health services in terms of size and

coverage are those offered by the Ministry of Health.

The current level of key health personnel and facilities under the jurisdiction of the Ministry of Health and in private sector are shown in Table (7.1).

The health programs operated by other government agencies employ a further 517 doctors, 1464 nursing and technical staff in a number of hospitals and clinics. In 1970 there were about 951 doctors in the Kingdom, or about one doctor for every 3,500 inhabitants, but by 1974 about one doctor for every 2,906. The specific plan target of Saudi Arabia is a doctor ratio 1 : 2,000 by the year 1980.

The number of hospitals increased from 65 in the year 1970 to 84 in 1974, the number of hospital beds increased from 8,111 to 8,818 during the same period. The target of the government is to increase the number of hospital beds, to provide 2.5 beds per 1,000 population by the end of year 1980.

It is therefore most likely that mortality in Saudi Arabia will continue to decrease rapidly.

7.3 Method of Projection :

The method proposed to be followed in the present work is to consider 1975 estimates by age and sex, as contained in Table (7.2). Appropriate intercensal survival rates are then applied to these estimates to reach the 2000 estimates.

Under the present conditions in Saudi Arabia there is no reason to believe that fertility will change appreciably in the future. It is therefore doubtful whether any serious attempt will be made by the

Government in the future to reduce the birth rate for the same reasons which have been mentioned in Chapter Six. The most plausible assumption about future fertility in Saudi Arabia is that the present level will be maintained.

In view of the doubt attached to forecasting future mortality, two projections will be produced, one based on a minimum, denoted by "Low", and one on a maximum forecast of future mortality decline, denoted by "High".

As mentioned above a substantial decline in rates of mortality is one of the outstanding phenomena of Saudi Arabia. But adequate mortality statistics covering a sufficiently long period have not become available for Saudi Arabia.

The U.N. Population Studies ST/SOA/Series A, No. 25 suggests at page 28, a corresponding increase in the value of e_0^0 of 0.5 year per calendar year. But in view of the steep decline in Saudis death rates together with the possible advancement of medicine, it may be assumed that a higher increase in the value of e_0^0 may be achieved in the future. However, it is not at all conceivable that such a steep decline in Saudis death rates will persist to the extent that could lead to a "Zero" death rate at any point of time in the future.

In view of the wide development of medical intervention, and for purposes of population projections, the value of 0.5 may be taken as a minimum increase in the value of e_0^0, and an annual increase in the value of e_0^0 of 0.6 years may be taken as the maximum forecast corresponding to a maximum decline in mortality. Five-year survival rates for each 5 year time period corresponding to each required

mortality level were selected from the Regional Life Tables, "West" model, and in many cases it was found necessary to interpolate between two levels of e_0^0 as published in these tables.

The implications of these alternate trends in mortality on the population totals, age-sex compostion, birth rate, death rate and growth rate are worked out in Tables (7.3) to (7.5.2). The decline in mortality assumed in the "Low" projection does not make much of a difference to the total population of the Kingdom in 1995. It is most likely that the population of Saudi Arabia (Saudis only) will double itself during the period 1980-2000.

The projections assume an increase in the expectation of life at birth of 15.0 and 10.0 years during 1975-2000 for females and males respectively under the first assumption, and 17.5, 12.5 through the same period for females and males respectively under the second assumption.

7.4 Results of the Projections :

The projection for the population of Saudi Arabia (Saudis only) has been made under the two assumptions about the future pattern of mortality for quinquennial intervals covering the period 1975-2000. There are two qualifications that must be mentioned :

1 - The variant projections presented here are designed to provide a fairly general idea of the kind of population growth in Saudi Arabia that would happen in the future.

2 - A single assumption of the future fertility trends

is made(in a constant level) because there is no reason to believe that fertility will change in the future.

7.4.1 The Projected Age Structure :

The projected age-sex composition during the projection period reflects the effect of the decline in the level of mortality as follows :

1 - The size of the population will increase from about 6.07 million in the year 1975 to about 13.68 million in the year 2000, under the first assumption of the future mortality level and to about 14.01 million under the second assumption, i.e. , more than double in both cases Table (7.6).

2 - The percentage of persons under 15 years of age to total population will increase from 44.94 per cent in year 1975 to 46.20 per cent in year 2000 under the first assumption and to 46.49 per cent under the second assumption as a result of the decrease in the level of mortality, at the same time the percentage of the population 65 and over years of age to total population will increase from 2.45 per cent in year 1975 to about 2.56 per cent and 2.64 per cent respectively by year 2000 Table (7.7).

3 - The percentage of the women in child-bearing span (15-49) will decrease from 45.81 in 1975 to 44.17 and 43.97 respectively in the year 2000 according to the two mortality assumptions , Table (7.8)

4 - The general sex ratio will decrease from about 1.06 in the year 1975 to about 1.039 and 1.038 in the year 2000, Table (7.9).

7.4.2 Vital Rates per Thousand Population :

1 - Crude birth rate will show a decrease from 45.27 in year 1975 to about 44.25 and 43.98 by year 2000 under the first and second assumptions of mortality respectively as shown in Table (7.3).

2 - Crude death rate will show a decrease from about 15.14 in year 1975 to about 8.91 and 6.78 by year 2000 as shown in Table (7.3).

3 - Crude rate of nature increase will increase from 30.10 per thousand to about 35.32 and 37.20 per thousand by the year 2000.

7.4.3 Fertility Measure :

The general fertility rate will show an increase from 798.57 per thousand in year 1975 to about 857.81 and 871.59 per thousand by year 2000 respectively according to the first and second assumption of mortality, Table (7.10).

7.5 Tables :

Table (7.1)

Key Health Facilities and Personnel in the Kingdom of Saudi Arabia, 1970 - 1974

	Ministry of Health		Private Sector	
	1970	1974	1970	1974
Hospitals	47	62	18	22
Hospitals beds	7,165	7,734	946	1,084
Dispensaries	187	215	b	b
Health Centers	322	372	b	b
Doctors	789	1,900	162	509
Health Inspectors and Technicians	1,396	2,536	875	1,102
Nurses	2,253	3,934	b	b

b : Data not available

Source : Second Development Plan 1975-1980, Ministry of Planning, Kingdom of Saudi Arabia

Table (7.2)

Estimate Population By Age and Sex (Saudis only)

1975

age groups	Males	Females	Total
0-4	569,913	527,616	1,097,529
5-9	464,230	428,129	892,359
10-14	392,664	363,870	756,534
15-19	331,994	309,018	641,012
20-24	278,513	260,802	539,315
25-29	232,271	218,791	451,062
30-34	192,893	182,690	375,583
35-39	159,257	151,848	311,105
40-44	130,239	125,504	255,743
45-49	105,090	103,167	208,257
50-54	83,248	83,552	166,800
55-59	64,027	66,081	130,108
60-64	47,053	50,343	97,396
65-69	33,051	36,941	69,992
70-74	20,357	23,402	43,759
75-79	10,971	13,891	25,862
80+	4,454	5,445	9,899
Total	3,120,243	2,951,088	6,071,315

Table (7.3)

Estimates of Total Population, Birth Rate, Death Rate and Growth Rate Under Alternate Assumptions about Future Mortality Trends, Saudi Arabia, 1975 - 2000 .
(Saudis only)

Categories	1975	1980	1985	1990	1995	2000
Total Population	in thousands					
High	6,071	7,195	8,444	9,980	11,874	14,009
Low	6,071	7,041	8,242	9,708	11,501	13,681
	1975-80	1980-85	1985-90	1990-95	1995-2000	
Birth Rate	per 1,000					
High	45.01	44.73	44.49	44.22	43.98	
Low	45.27	44.82	44.61	44.39	44.25	
Death Rate	per 1,000					
High	14.09	12.20	10.45	8.84	6.78	
Low	15.14	12.82	11.32	9.92	8.91	
Growth Rate	per 1,000 per year					
High	30.92	32.53	34.03	35.38	37.20	
Low	30.10	32.01	33.28	34.47	35.32	

Table (7.4.1)

Estimates of the Future Population of Saudi Arabia (Saudis only) by Age and Sex, 1975 - 2000

(High Projection) in thousands

Age group	Males					
	1975	1980	1985	1990	1995	2000
All ages	3,120	3,756	4,401	5,189	6,155	7,138
0-4	570	779	797	948	1,135	1,389
5-9	464	545	750	774	926	1,111
10-14	393	457	538	742	767	918
15-19	332	387	451	532	735	762
20-24	279	325	379	444	525	727
25-29	232	271	317	371	436	517
30-34	193	225	264	309	364	429
35-39	159	186	218	256	302	357
40-44	130	152	179	211	249	296
45-49	105	123	145	171	202	241
50-54	83	97	115	136	161	194
55-59	64	75	88	105	125	151
60-64	47	55	65	78	93	114
65-69	33	38	45	54	65	80
70-74	20	24	28	34	41	52
75-79	11	13	15	18	22	29
80+	4	4	5	6	8	13

Table (7.4.2)

Estimates of the Future Population of Saudi Arabia (Saudis Only) by Age and Sex, 1975-2000

(High Projection) in thousands

Age group	Females					
	1975	1980	1985	1990	1995	2000
All Ages	2,951	3,439	4,043	4,791	5,719	6,871
0-4	528	621	736	882	1,056	1,288
5-9	428	504	599	718	868	1,045
10-14	364	421	498	594	713	864
15-19	309	358	416	492	589	709
20-24	261	302	351	410	488	585
25-29	219	254	295	345	405	483
30-34	183	212	248	289	340	400
35-39	152	176	206	241	284	335
40-44	126	146	170	200	236	279
45-49	103	120	140	165	195	231
50-54	84	97	114	134	159	188
55-59	66	77	91	107	127	151
60-64	50	59	69	82	98	118
65-69	37	42	50	60	72	87
70-74	23	28	33	40	49	60
75-79	14	16	19	23	29	36
80+	5	6	7	8	11	14

Table (7.5.1)

Estimates of the Future Population of Saudi Arabia (Saudis Only) by Age and Sex, 1975 - 2000

(Low Projection) in thousands

Age group	Males					
	1975	1980	1985	1990	1995	2000
All Ages	3,120	3,629	4,240	4,980	5,879	6,970
0-4	570	654	766	907	1,080	1,277
5-9	464	544	629	740	881	1,054
10-14	393	457	537	621	732	873
15-19	332	386	451	530	614	725
20-24	279	324	378	442	521	605
25-29	232	271	316	370	433	512
30-34	193	225	263	308	362	425
35-39	159	186	218	255	300	353
40-44	130	152	178	210	247	291
45-49	105	123	144	170	200	237
50-54	83	97	114	135	159	189
55-59	64	75	88	104	123	147
60-64	47	55	65	77	91	109
65-69	33	38	45	53	64	76
70-74	20	24	28	33	40	61
75-79	11	13	15	18	22	26
80+	4	4	5	6	7	9

Table (7.5.2)

Estimates of the Future Population of Saudi Arabia (Saudis Only) by Age and Sex, 1975-2000

(Low Projection) in thousands

Age group	Females					
	1975	1980	1985	1990	1995	2000
All Ages	2,951	3,413	4,003	4,728	5,621	6,708
0-4	528	608	737	867	1,040	1,246
5-9	428	499	576	715	848	1,021
10-14	364	420	493	570	709	842
15-19	309	357	414	487	564	703
20-24	261	301	350	408	481	558
25-29	219	253	294	343	401	474
30-34	183	211	246	287	337	395
35-39	152	176	205	240	281	330
40-44	126	145	170	199	234	275
45-49	103	119	139	163	192	227
50-54	84	97	113	133	156	185
55-59	66	77	90	106	125	148
60-64	50	58	67	81	97	115
65-69	37	42	50	59	71	85
70-74	23	27	33	39	48	57
75-79	14	15	19	23	28	34
80+	5	5	7	8	10	13

Table (7.6)

Projections of Total Population Under the
Two Assumptions about Future Mortality

(in thousands)

year	1st assumption			2nd assumption		
	Male	Female	Total	Male	Female	Total
1980	3,629	3,413	7,042	3,756	3,439	7,195
1985	4,240	4,003	8,243	4,401	4,043	8,444
1990	4,980	4,728	9,708	5,189	4,791	9,980
1995	5,879	5,621	11,500	6,155	5,719	11,874
2000	6,970	6,708	13,678	7,138	6,871	14,009

Table (7.7)

Population Under 15 year , 65 and over years
(percentage)

year	1st assumption		2nd assumption	
	-15	65+	-15	65+
1980	45.22	2.39	45.30	2.40
1985	45.34	2.43	45.48	2.44
1990	45.44	2.57	45.91	2.48
1995	45.83	2.56	46.10	2.53
2000	46.20	2.56	46.49	2.64

Table (7.8)

The Percentage of the Woman in Child Bearing Span (15-49) to Total Women Population

Year	1st assumption	2nd assumption
1980	45.76	45.59
1985	45.42	45.22
1990	44.98	44.73
1995	44.30	44.36
2000	44.17	43.97

Table (7.9)

General Sex Ratio During the Projection Period

Year	1st assumption	2nd assumption
1980	1.060	1.056
1985	1.059	1.052
1990	1.053	1.047
1995	1.046	1.040
2000	1.039	1.038

Table (7.10)

General Fertility Rate During Projection Period

Year	1st assumption	2nd assumption
1980	808.28	823.96
1985	821.17	826.06
1990	829.83	841.20
1995	850.76	850.53
2000	857.81	871.59

CHAPTER EIGHT

CONCLUSIONS

This research was undertaken to study the demography of Saudi Arabia during this century. This work was intended to answer the different questions which might occur to the concerned and interested people about the demography of the Kingdom of Saudi Arabia.

The population of Saudi Arabia can be divided into two separate communities according to the census of 1974 :

1 - Citizens of Saudi Arabia (Saudis), number 6.22 million.

2 - Immigrants (non-Saudis) who are working in Saudi Arabia number 791 thousands. Most of them are Arabs from poorer states, such as Yemenis and Egyptians.

This article concentrates on the Saudis since they are an essentially closed and almost stable population.

There are two reasons why recent demographic changes among the Saudi population of the Kingdom of Saudi Arabia have a wider significance :

1 - The post 1944 economic development of the Kingdom has produced one of the highest per capita incomes in the world and material standard of living. This prosperity has had no effect on fertility in Saudi Arabia.

2 - The Saudis are entirely Muslim, having religious beliefs and a special social system which encourage birth and marriage.

The continuing high birth rate, matched by encouraging progress in the reduction of deaths must lead to rapid population growth.

This rapid growth is not dangerous as far as Saudi Arabia is concerned since this country suffers from a shortage of population.

According to the population projection carried out in this study :

The size of the population in the year 2000 is expected to be between 13.68 million as a minimum estimate and 14.01 as a maximum estimate.

The rate of population growth is expected to vary between 3.53 and 3.72 per cent in the year 2000, with a crude birth rate varying between 43.98 and 44.25 per thousand in the same year.

The economic and social significance of the age structure of the population in the future may best be examined by means of the diagram (8.1) drawn from the percentage age structure shown in Table (8.1). These graphs are not meant to demonstrate a sequence of events in the present as much as they are meant to serve as an indication of what might develop in the future.

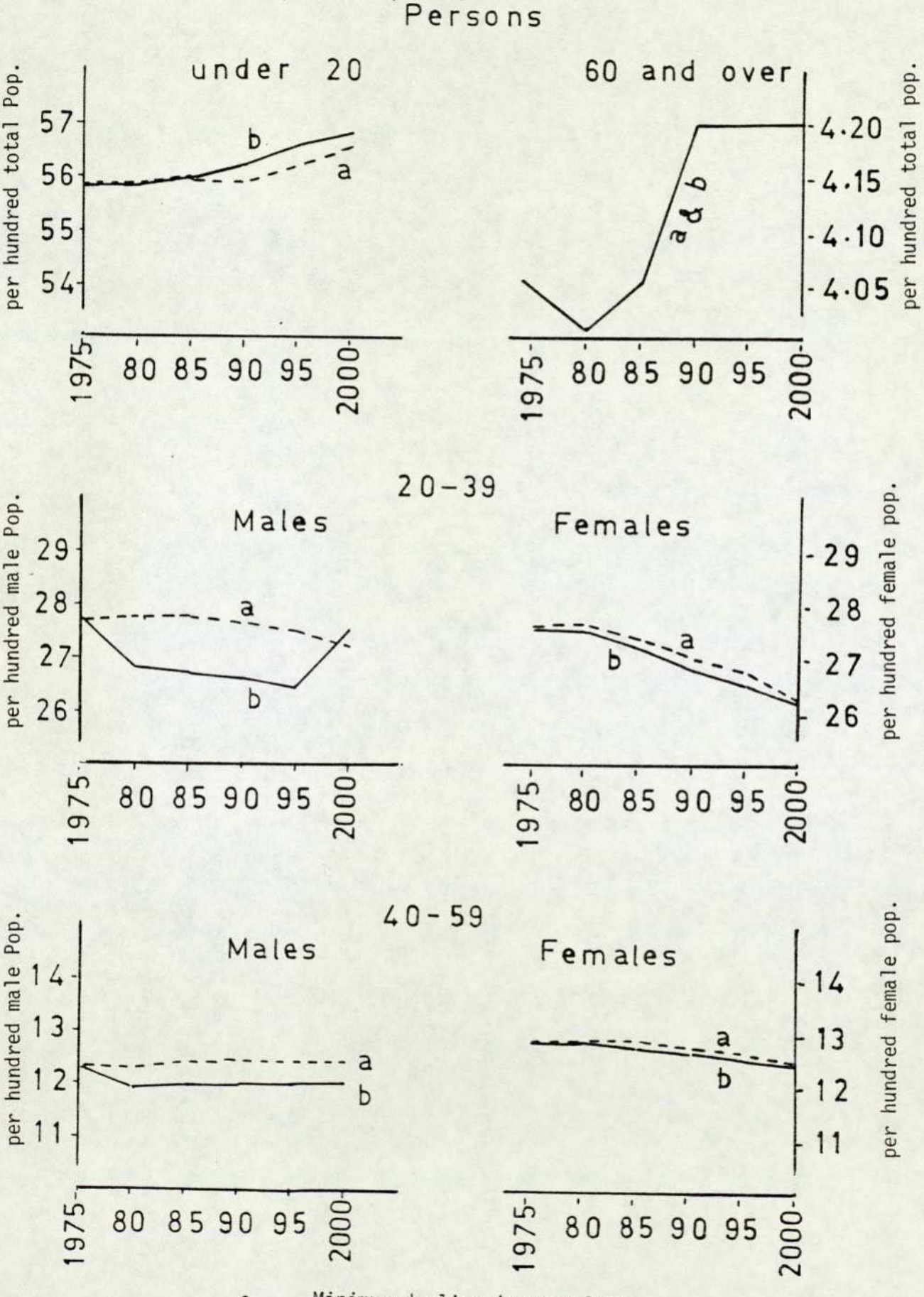
Although the size of working population is seen at Tables (7.5.1) and (7.5.2) in Chapter Seven to be increased, it is obvious from the Figure (8.1) that it will come to form a somewhat smaller proportion of the total population. Young adults 20-39 of both sexes will grow in numbers but their proportion to the total will decline.

The old people aged 60 and over will grow both in number and in proportion to the total.

FIGURE (8.1)

Percentage Distribution of the Population

(1975-2000) Projections



a Minimum decline in mortality

b Maximum decline in mortality

There are, however, doubts as regards the natality trend in the future. The assumption made in Chapter Seven was that it would continue unchanged. Failing this, and in view of the almost certain decline in future mortality, it will still mean an increase in the size and proportion of young dependents under 20 years, greater if there will be a rise in natality and smaller if there should be a decline.

From the point of view of educational planning, the anticipated rise in the numbers and proportions of children under 20 years of age, requires special attention from the authorities.

At the other end of the age scale, the problem of ageing has not yet been seriously felt in the Kingdom of Saudi Arabia. Future estimates do show, however, that their numbers are likely to grow at least over the next 10 years or so. The problems caused by this growth in number of the old aged people will be raised in considering, for example, old age pensions and welfare schemes of old people. But the problem is not only concerned with finance but also of maintenance, since their consumption is always in excess of their production. The problem of ageing is certainly relevant to all old age schemes especially in social insurance.

The increase in the female numbers aged under 20, will cause an increase in the number of women 20-39, perhaps in a decade, and this in turn will increase the under 20's even more. The vicious circle will only stop if family limitation is practised and marriage habits and reduction patterns would change in future times. But this is most unlikely to happen since the Saudis practice Sharia (Law of Islam).

Table (8.1)

Analysis of Population Projections of Saudi Arabia

	1975	1980	1985	1990	1995	2000
High Projection						
Dependts* :						
Children under 20	55.79	55.83	55.93	56.18	56.58	56.81
Working pop'n — Younger group — M. 20-39	27.66	26.80	26.76	26.61	26.42	27.50
Working pop'n — Younger group — F. 20-39	27.59	27.46	27.21	26.83	26.52	26.23
Working pop'n — older group — M. 40-59	12.26	11.92	11.96	11.99	11.98	11.95
Working pop'n — older group — F. 40-59	12.82	12.80	12.74	12.64	12.53	12.36
Dependts* :						
Old ages 60 and over	4.05	4.01	4.05	4.20	4.20	4.20
Low Projection						
Dependts* :						
Children under 20	55.79	55.77	55.83	55.92	56.16	56.58
Working pop'n — Younger group — M. 20-39	27.66	27.72	27.72	27.62	27.50	27.19
Working pop'n — Younger group — F. 20-39	27.59	27.57	27.36	27.03	26.68	26.20
Working pop'n — Older group — M. 40-59	12.26	12.32	12.37	12.41	12.42	12.39
Working pop'n — Older group — F. 40-59	12.82	12.84	12.78	12.70	12.58	12.44
Dependts*:						
Old ages 60 and over	4.05	4.01	4.05	4.20	4.20	4.20

* Dependents related to population of both sexes.

REFERENCES AND BIBLIOGRAPHY

AL-JASIR, H. (1966)

The City of Riyadh Throughout its History. Dar Al-Yamama, Riyadh

ALLMAN, J. & HILL, A. (1978)

Fertility, Mortality, Migration and Family Planning in Yemen Arab Republic, Population Studies, 32(1) : 159-171.

ASSAH, A. (1969)

Miracle of the Desert Kingdom. Johnson Publications Ltd., London.

BAER, G. (1964)

Population and Society in the Arab East. Greenwood Press, U.S.A.

BENJAMIN, B. (1968)

Demographic Analysis. Allen and Unwin, London.

BENJAMIN, B. & HAYCOCKS, H. W. (1970)

The Analysis of Mortality and Other Actuarial Statistics. Cambridge University Press, Cambridge.

BRASS, W. (1968)

The Demographic of Tropical Africa. Princeton University Press, N.J.

BRASS, W. (1975)

Methods for Estimating Fertility and Mortality from Limited and Defective Data. The University of North Carolina Press, U.S.A.

CAIRO DEMOGRAPHIC CENTER (1970)

Demographic Measures and Population Growth in Arab Countries. Research Monograph Series. No. 1, Cairo.

CAIRO DEMOGRAPHIC CENTER (1970)

Use of Census Age Distribution for Estimating Basic Demographic Parameters of the U.A.R., Research Monograph Series, No. 1, Cairo.

CARRIER, N. H. (1959)

A Note on the Estimation of Mortality and Other Population Characteristics given Deaths by Age. Population Studies, 12: 149-163.

CARRIER, N. H. & FARRAG, A. M. (1959)

The Reduction of Errors in Census Populations for Statistically Underdeveloped Countries, Population Studies, 12 : 240-285.

CARRIER, N. H. & HOPCROFT, J. (1971)

Demographic Estimation for Developing Societies. Population Investigation Committee, L.S.E., London.

COALE, A. S. & DEMENY, P. (1966)

Model Life Tables and Stable Population. Princeton University Press, N.J.

COX, P. R. (1976)

Demography. Cambridge University Press, Cambridge.

DOXIADIS ASSOCIATES (1968)

Riyadh Existing Conditions. Ministry of Interior, Riyadh.

DOXIADIS ASSOCIATES (1974)

Eastern Region Existing Conditions. Ministry of Interior, Riyadh.

DOXIADIS ASSOCIATES (1974)

Unayzah Existing Conditions. Ministry of Interior, Riyadh.

DOXIADIS ASSOCIATES (1974)

Al-Kharj Existing Conditions. Ministry of Interior, Riyadh.

DOXIADIS ASSOCIATES (1974)

Sakakah Existing Conditions. Ministry of Interior, Riyadh.

DOXIADIS ASSOCIATES (1974)

Ar-Rass Existing Conditions. Ministry of Interior, Riyadh.

DOXIADIS ASSOCIATES (1974)

Hail Existing Conditions. Ministry of Interior, Riyadh.

DOXIADIS ASSOCIATES (1974)

Buraydah Existing Conditions. Ministry of Interior, Riyadh.

DOXIADIS ASSOCIATES (1974)

Al Majam'ah Existing Conditions. Ministry of Interior, Riyadh.

DOXIADIS ASSOCIATES (1974)

Qurayyat Existing Conditions. Ministry of Interior, Riyadh.

DOXIADIS ASSOCIATES (1974)

Ar'Ar Existing Conditions. Ministry of Interior, Riyadh.

DOXIADIS ASSOCIATES (1974)

Al-Jouf Existing Conditions. Ministry of Interior, Riyadh.

EL-BADRY, M. A. (1955)

Some Demographic Measurements for Egypt Based on the Stability of Census Age Distribution. The Milbank Memorial Fund Quarterly,20 : 268-305.

EL-BADRY, M. A. (1965)

Trends in the Components of Population Growth in the Arab Countries of the Middle East. Demography, 2 : 140-186.

FARRAG, A. M. (1963)

Demographic Trends in the Arab World. The New Metropolis in the Arab World. Ed. Morroe Berger, Allied Publishers, New Delhi.

HAJNAL, J. (1953)

Age Marriage and Proportion Marrying. Population Studies, 7(2) : 111-136.

HAJNAL, J. (1953)

The Marriage Boom. Population Index, 19 : 80-101.

HILL, A. G. (1975)

The Demography of the Kuwaiti Population of Kuwait. Demography, 12(3) : 537-548.

KEYFITZ, N. (1968)

Introduction to the Mathematics of Population. Addison Wesley Publishing Company, London.

KEYFITZ, N. & FLIEGER, W. (1971)

Population : Factors and Methods of Demography. W. H. Freeman & Co., San Francisco.

KIRK, D. (1965)

Factors Affecting Moslem Natality. In Berelson, B. et. al. (Eds). Family Planning and Population Programs : a Review of World Development. The University of Chicago Press, Chicago.

MALIK, S. A. (1973)

Rural Migration and Urban Growth in Riyadh. Ph.D. Dissertation, University of Michigan, Michigan.

MINISTRY OF AGRICULTURE AND WATER (1974)

The Results of Agricultural Census. Government Press, Riyadh.

MINISTRY OF EDUCATION (1978)

Education in Kingdom of Saudi Arabia in Figures. Government Press, Riyadh.

MINISTRY OF FINANCE AND NATIONAL ECONOMY (1968)

Statistical Year Book. Central Department of Statistics, Riyadh.

MINISTRY OF FINANCE AND NATIONAL ECONOMY (1969)

Statistical Year Book. Central Department of Statistics, Riyadh.

MINISTRY OF FINANCE AND NATIONAL ECONOMY (1970)

Statistical Year Book. Central Department of Statistics, Riyadh.

MINISTRY OF FINANCE AND NATIONAL ECONOMY (1971)

Statistical Year Book. Central Department of Statistics, Riyadh.

MINISTRY OF FINANCE AND NATIONAL ECONOMY (1972)

Statistical Year Book. Central Department of Statistics, Riyadh.

MINISTRY OF FINANCE AND NATIONAL ECONOMY (1973)

Statistical Year Book. Central Department of Statistics, Riyadh.

MINISTRY OF FINANCE AND NATIONAL ECONOMY (1974)

Statistical Year Book. Central Department of Statistics, Riyadh.

MINISTRY OF FINANCE AND NATIONAL ECONOMY (1975)

Statistical Year Book. Central Department of Statistics, Riyadh.

MINISTRY OF FINANCE AND NATIONAL ECONOMY (1976)

The Statistical Indicator. Central Department of Statistics, Riyadh.

MINISTRY OF FINANCE AND NATIONAL ECONOMY (1977)
Population Census, Detailed Data, 1974 : Riyadh Region, Central Department of Statistics, Riyadh.

MINISTRY OF FINANCE AND NATIONAL ECONOMY (1977)
Population Census, Detailed Data, 1974 : Holy Mecca Region, Central Department of Statistics, Riyadh.

MINISTRY OF FINANCE AND NATIONAL ECONOMY (1977)
Population Census, Detailed Data, 1974 : Madina El-Monawara Region, Central Department of Statistics, Riyadh.

MINISTRY OF FINANCE AND NATIONAL ECONOMY (1977)
Population Census, Detailed Data, 1974 : Eastern Region. Central Department of Statistics, Riyadh.

MINISTRY OF FINANCE AND NATIONAL ECONOMY (1977)
Population Census, Detailed Data, 1974 : El-Qoryat and Tabook. Central Department of Statistics, Riyadh.

MINISTRY OF FINANCE AND NATIONAL ECONOMY (1977)
Population Census, Detailed Data, 1974 : Assier Region. Central Department of Statistics, Riyadh.

MINISTRY OF FINANCE AND NATIONAL ECONOMY (1977)
Population Census, Detailed Data, 1974 : El-Baha and Najran Regions. Central Department of Statistics, Riyadh.

MINISTRY OF FINANCE AND NATIONAL ECONOMY (1977)
Population Census, Detailed Data, 1974 : Jizan Region. Central Department of Statistics, Riyadh.

MINISTRY OF FINANCE AND NATIONAL ECONOMY (1977)

Population Census, Detailed Data, 1974 : North Borders and El-Jouf Regions. Central Department of Statistics, Riyadh.

MINISTRY OF FINANCE AND NATIONAL ECONOMY (1977)

Population Census, Detailed Data, 1974 : El-Cassiem Region. Central Department of Statistics, Riyadh.

MINISTRY OF FINANCE AND NATIONAL ECONOMY (1977)

Population Census, Detailed Data, 1974 : Ha'il Region. Central Department of Statistics, Riyadh.

MINISTRY OF INFORMATION (1975)

The Kingdom of Saudi Arabia. Stacey International, London.

MINISTRY OF PLANNING (1970-1975)

First Development Plan. Government Press, Riyadh.

MINISTRY OF PLANNING (1975-1980)

Second Development Plan. Government Press, Riyadh.

MUHSAN, H. V. (1956)

Fertility of Polygamous Marriages. Population Studies, 10 : 3-16.

PRESSAT, R. (1972)

Demographic Analysis : Methods, Results, Applications. Aldine Atherton, Chicago.

SENG, Y. P. (1959)

Errors in Age Reporting in Statistically Underdeveloped Countries. Population Studies, 13(2) : 164-182.

SHROCK, H. S. et. al. (1975)
The Methods and Materials of Demography. U.S. Government Printing Office, Washington, D.C.

SPENGLER, J. J. (1966)
Values and Fertility Analysis. Demography, 3 : 109-130.

U.N. (1952).
Accuracy Tests for Census Age Distributions Tabulated in Five Year and Ten Year Groups. Department of Economic and Social Affairs, N.Y.

U.N. (1955).
Age and Sex Patterns of Mortality : Model Life Tables for Under-developed Countries. Department of Economic and Social Affairs, N.Y.

U.N. (1955).
Methods of Appraisal of Quality of Basic Data for Population Estimates (Manual II). Department of Economic and Social Affairs, N.Y.

U.N. (1956).
Methods for Population Projections by Sex and Age. Department of Economic and Social Affairs, N.Y.

U.N. (1956).
General Principles for National Programs of Population Projections as Aids to Development Planning. Department of Economic and Social Affairs, N.Y.

U.N. (1967)
Methods of Estimating Basic Demographic Measures from Incomplete Data (Manual IV). Department of Economic and Social Affairs, N.Y.

U.N. (1973b11975)

Statistical Year Book. Department of Economic and Social Affairs, N.Y.

U.N. (1975)

Demographic Year Book. Department of Economic and Social Affairs, N.Y.

U.N. ECONOMIC COMMISSION FOR WESTERN ASIA (1978)

The Population Framework : Data Collection, Demographic Analysis Population and Development. Beirut.

UNESCO (1965-1973).

Statistical Year Book. Paris.

VALOURAS, V.C. (1972)

Population Analysis of Egypt (1935-1970), Cairo Demographic Center, Cairo.

WINSTON, S. (1931)

Birth Control and Sex Ratio at Birth. American Journal of Sociology, 38 : 225-231.

WINSTON, S. (1931)

The Influence of Social Factors Upon the Sex Ratio at Birth. American Journal of Sociology, 37 : 1-21.