

P/YEM C7.6

**YEMEN  
ARAB REPUBLIC  
POPULATION AND DEVELOPMENT**

***THE FUTURES GROUP***

***RAPID***

**Resources for the Awareness of  
Population Impacts on Development**

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## PREFACE

The Futures Group, under contract to the United States Agency for International Development (A.I D), is undertaking analyses for a number of countries regarding the effects of population factors on the efforts of these countries to achieve their economic and social goals. These analyses are being carried out for several countries that have specific development plans and are seriously determined to make substantial economic and social progress. In each case, these analyses are offered to national leaders for consideration, and the country's own experts are encouraged to perform comparable research.

## INTRODUCTION

The World Population Plan of Action, adopted by 136 countries at the World Population Conference in Bucharest in 1974, recognized as a principle that "population and development are interrelated: population variables influence development variables and are also influenced by them" (Paragraph 14-C). The Plan of Action also declares that "population measures should be integrated into comprehensive social and economic plans and programmes and this integration should be reflected in the goals, instrumentalities, and organizations for planning within the countries" (Paragraph 95).

Population is, of course, only one element to be considered in the development process. However, it has a very special importance since the ultimate purpose of economic development is not simply to increase the total goods and services produced--the gross national product (GNP)--but to increase the standard of living and quality of life of the individual, including the value of goods and services available per person.

GNP per capita can be raised by increasing the rate of production of goods and services or by slowing the increase of population--or, most effectively, by doing both. Where there is a rapid increase in population and government attention is given only to increasing the output of goods and services, the increase in GNP per capita may be limited or even nonexistent, and attainment of goals for improving the quality of life of the individual citizen may be difficult and long-delayed. However, where attention also is given to slowing population growth, the effort to reach development goals for the welfare of the individual will generally be more successful.

# **POPULATION DYNAMICS**

**Birth Rates, Death Rates, and Population Growth Rates**

**Age Distribution and Child Dependency**

**The Momentum of Population Growth**

**Population Growth Under Different Fertility Assumptions**

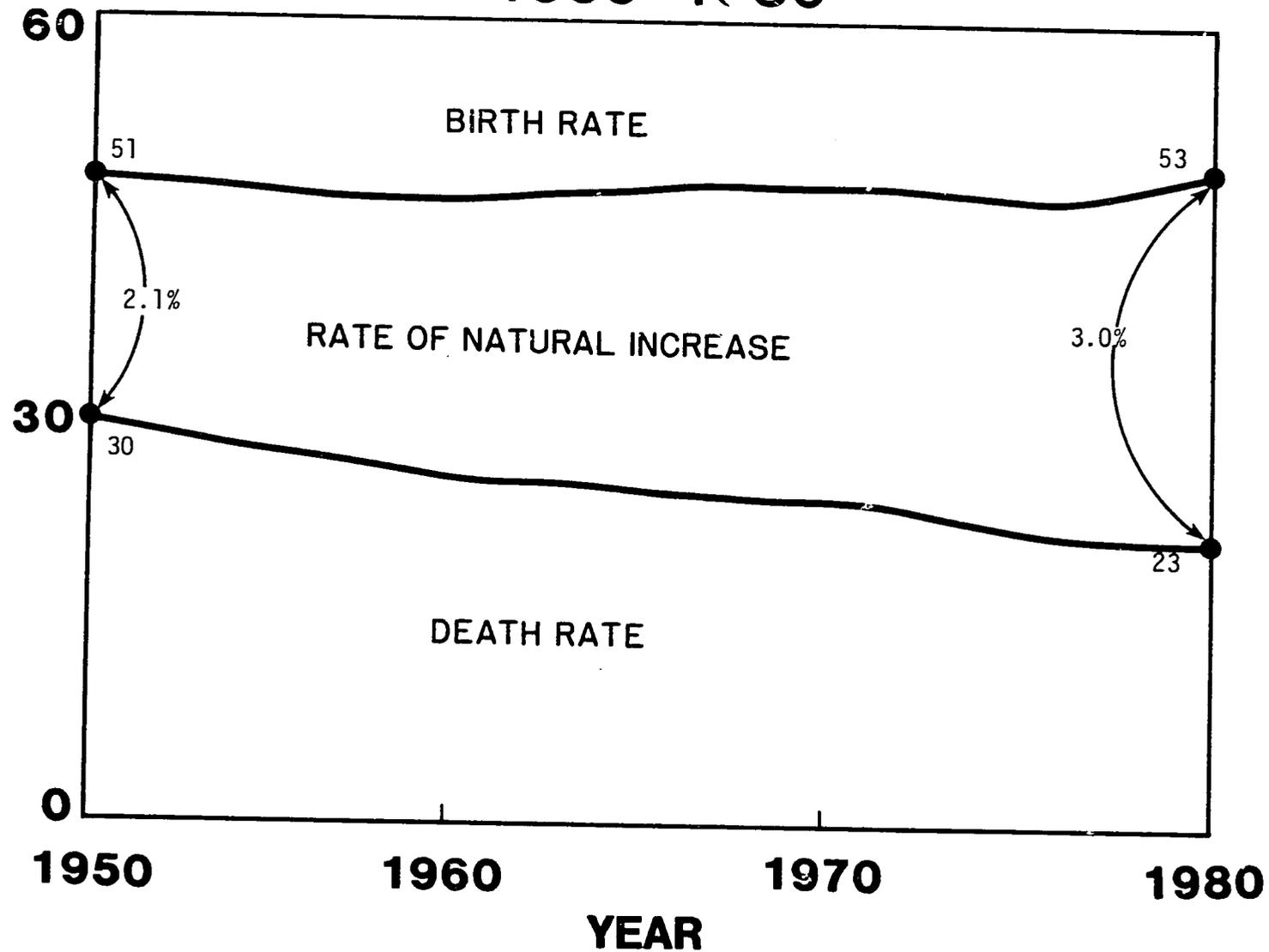
## BIRTH RATES, DEATH RATES, AND POPULATION GROWTH

The first census ever conducted in the Yemen Arab Republic (YAR) was in February 1975. At this time the resident population was estimated at 5.3 million. In addition, 1.2 million YAR citizens were estimated to be living abroad either on a short- or a long-term basis. The total population (those resident plus those living abroad on a short-term basis) was approximately 5.9 million. This number has grown to about 7.1 million in 1981, an annual rate of growth of 3.1 percent between 1975 and 1981. The resident population in 1981 was about 6.4 million.

The rate of population growth has resulted from the interplay of three factors: births, deaths, and emigration. The birth rate has been high; currently there are about 47-53 births per thousand population. The fertility rate (average number of births per woman) is 7-7.9. The death rate has also been high at about 19-22 deaths per thousand. Life expectancy is about 44. There is a great deal of uncertainty concerning the level of emigration. However, the total number of emigrants is high, but in recent years this number has stabilized and the net emigration rate has probably declined to near zero. Although there continues to be movement in and out of YAR on a short-term basis, the number coming and going seems to be equal. However, there are still approximately 740,000 short-term emigrants, mostly living in the Gulf states.

If emigration stabilizes, further population growth will rest on only two factors: births and deaths. The birth rate less the mortality rate gives a natural rate of population growth. The annual rate of natural increase is now 25-31 per thousand, or 2.5-3.1 percent. At 2.5 percent annual growth the population will double in 28 years. Today's rate of growth is probably closer to 3 percent, at which a doubling of the population would occur in only 23 years.

**YEMEN ARAB REPUBLIC**  
**Birth Rates, Death Rates, and Rates of Natural Increase**  
**1950-1980**



The situation in most lesser developed countries, and particularly Arab countries, is that death rates tend to decline faster than birth rates. Were this to happen in YAR, the currently high rate of population growth could become even higher.

## AGE DISTRIBUTION AND CHILD DEPENDENCY

Due to high fertility in the past, the Yemen Arab Republic has inherited a legacy of a very young population. Some 48 percent of the total population is under the age of 15. With the short-term migrants included, the dependency ratio is about 102 children under 15 per 100 adults of working age. Since a much higher proportion of emigrants are of working age than the total population, the dependency ratio of the resident population is even higher with 111 children per 100 adults. In contrast, a typical industrialized country is in a more enviable position with 200-300 working-age adults for every 100 dependent children.

Fertility levels will largely determine child dependency ratios in the future.

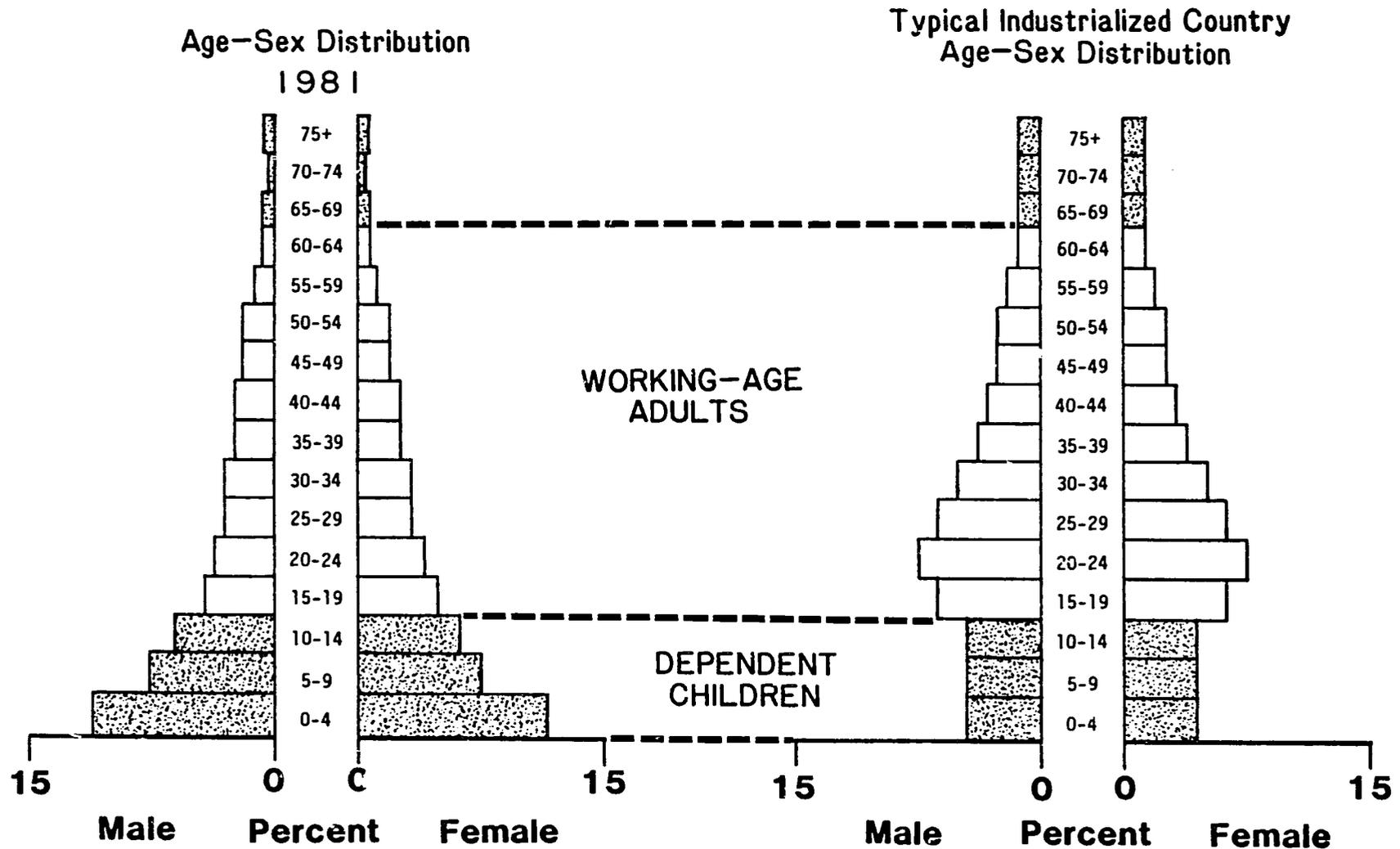
If fertility remains close to the current level, the child dependency ratio of the resident population will remain close to the current ratio of children to adults. With a decline of fertility from an average of 7 children per woman to 6 by 2010, child dependency will decline to 104 children per 100 adults.

If fertility declines substantially, so will the dependency ratio. For example, if the fertility rate is reduced gradually to 3 by 2010, the dependency ratio will improve so that by the year 2010 there would be only 63 children per 100 adults.

The importance of these ratios varies according to the sector of society. Rural families often view a large number of children as an asset since they can begin to contribute to work in the fields at an early age. However, in most situations, children probably do not increase production by as much as they consume until they reach the age of 10-15. In the urban sector, most children must be supported by the family until they complete their education and secure employment. Thus as a nation develops socially and economically, a high child dependency ratio strains the resources of individual households. High dependency ratios may affect social and economic development programs. With a large

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# Age Distribution and Child Dependency



FOR EACH DEPENDENT CHILD IN YEMEN THERE IS ONLY ABOUT ONE WORKING-AGE ADULT.  
 FOR EACH DEPENDENT CHILD IN MOST INDUSTRIALIZED COUNTRIES, THERE ARE 2 OR 3 WORKING-AGE ADULTS.

dependent population, a disproportionate share of public and private resources tends to be devoted to the needs of the young. Hence, a significant reduction in the child dependency ratio can release substantial sums for investment in other development sectors.

## THE MOMENTUM OF POPULATION GROWTH

Should fertility decline from the present average of approximately 7 children per woman to replacement level of slightly more than 2 children per woman, the population will nonetheless continue to grow for several decades. Limiting family size to two children means that eventually the population will reach a zero or negative growth rate; however, a long delay exists between the time women in the society begin averaging two children and the time population growth in that society stops.

This lag of about 50 years is due to the age composition of the population. Where fertility has been high, as in the case of Yemen Arab Republic, the population is composed of a proportionately large number of young people and a proportionately small number of older persons. Consequently, the number of young women entering their reproductive years exceeds the number moving out of their reproductive years. Even if young couples limit themselves to two offspring, more births will occur than deaths for at least 50 years, and the population will continue to grow until the disproportion in the number of young people disappears.

Thus, an irresistible momentum of growth is built into the population. Some hypothetical illustrations serve to demonstrate the importance of this momentum in determining the future population of the Yemen Arab Republic.

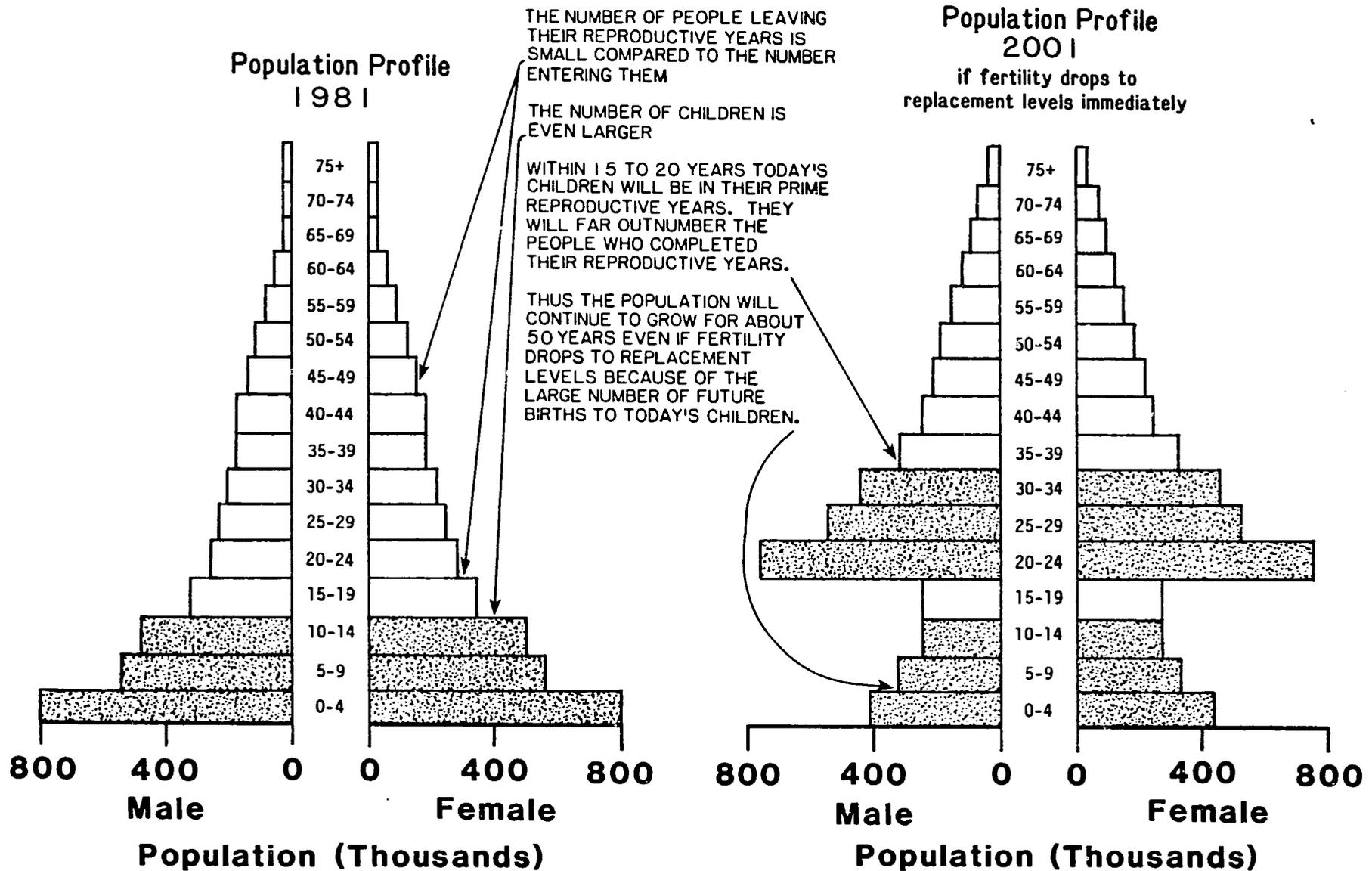
If fertility were to drop to replacement levels immediately, the resident population of about 6.4 million would increase to more than 8.4 million before growth stopped.

If replacement fertility were attained by 2000, the resident population would grow from 6.4 million in 1981 to over 13.6 million during the next several decades because of this built-in momentum.

For every decade of delay in achieving replacement level fertility, the ultimate population size of Yemen will be about 25 percent greater.

# YEMEN ARAB REPUBLIC

## Momentum of Population Growth



## POPULATION GROWTH UNDER TWO FERTILITY ASSUMPTIONS

Although the built-in momentum of population growth means that the population of Yemen will grow substantially in coming decades, any decline in fertility will reduce this growth. Two population projections based on alternative fertility assumptions demonstrate this fact. Both projections assume an increase in life expectancy from 42 in 1981 to 57 by 2010, and no further international migration.

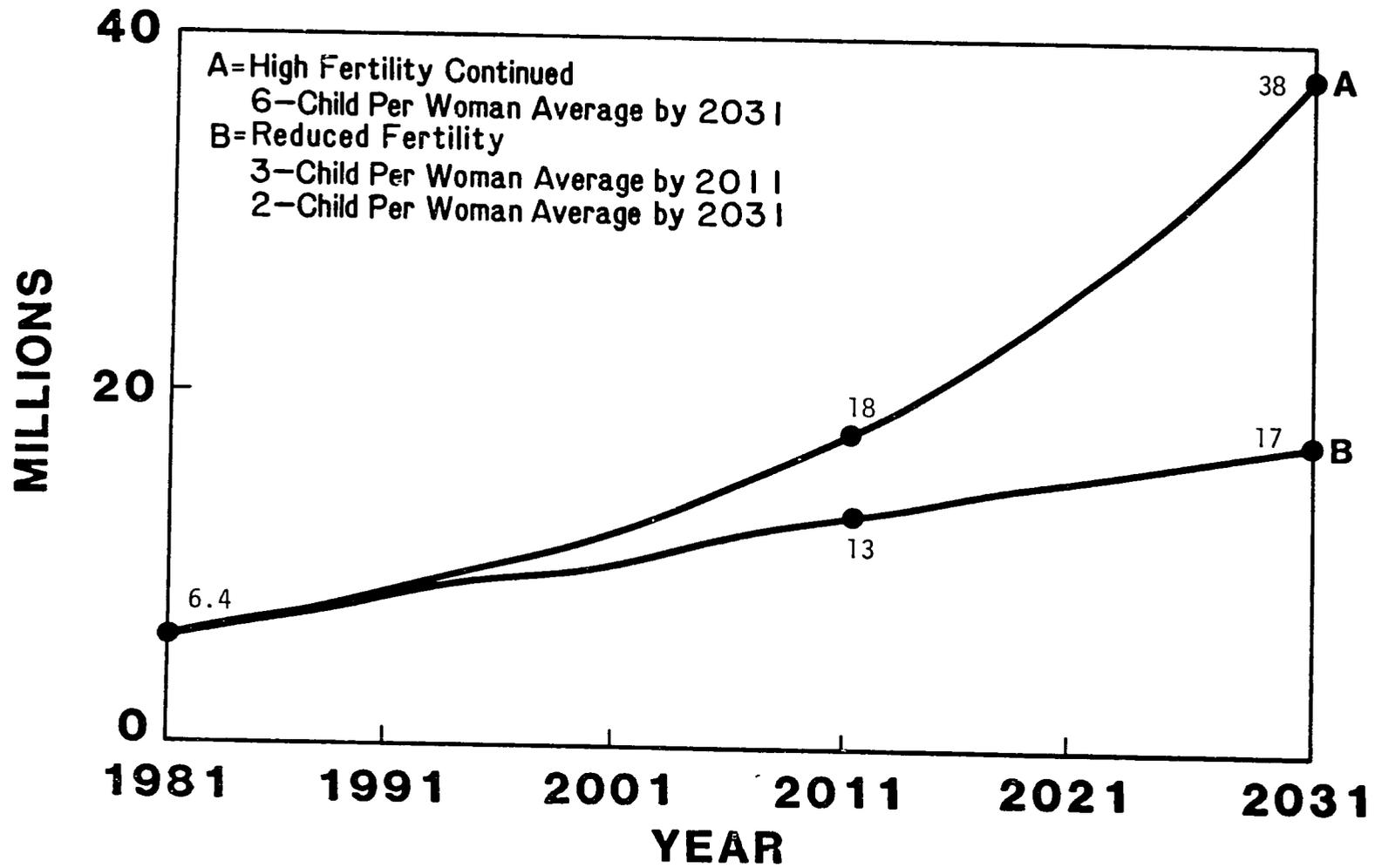
For Projection A, the high fertility case, fertility is assumed to decline very slowly from 7 children per woman today to 6 by 2030. With this assumption the resident population would nearly double from 6.4 million in 1981 to 11.9 million by 2000. It would reach 17.3 million by 2010 and 36.5 million by 2030.

For Projection B, the low fertility case, a rapid reduction in fertility is assumed, from an average of 7 to 3 children per woman by 2010. The population in this case would grow to 10.5 million by 2000, 12.9 million by 2010 and 17.3 million by 2030.

The projections above suggest that the population of the Yemen Arab Republic will reach at least 10-12 million by 2000. Even with a very rapid reduction in fertility the population will double in 30 years and would still be growing at 2.0 percent per year. Projection A, "high fertility," and Projection B, "low fertility," are used throughout this analysis to show how the attainment of Yemen's development objectives would be affected by alternative population growth rates.

# YEMEN ARAB REPUBLIC

## Total Population



# **The Effects of the Yemen Arab Republic's Population Characteristics on National Objectives for**

**Education and Literacy**

**Health**

**Labor Force, Employment, Savings, and Remittances**

**Gross Domestic Product and GDP per Capita**

**Agriculture, Food Imports, and Balance of Payments**

## EDUCATION

Education levels in Yemen are low by world standards. Primary enrollment is now about 39 percent of the school-age population and barely over 4 percent enrollment of the secondary school-age population. This compares to average enrollments of 90 percent and 50 percent, respectively, in all other less developed countries (LDCs) in primary and secondary school. Literacy rates are 20-25 percent in YAR compared to 63 percent on average for all other LDCs.

The Government of YAR, however, has made a concerted effort to improve the education system. Formal public education in YAR has only been in place since 1963. Great strides in the last two decades have been made, particularly over the past 5-6 years. Primary and secondary enrollments have increased at an annual rate of over 10 percent since 1976. Adult literacy rates have more than doubled since 1975--from 10 percent to over 20 percent in 1981.

Continued improvement of the educational system is a major objective of the Government. Without an educated and skilled labor force, the attainment of Yemen's development objectives will be hindered. The rapid improvement in the past, however, has not been attained without substantial costs. Between 1974/1975 and 1979/1980 expenditures increased by over fivefold in real terms from YR 31.9 million in 1974/1975 (in 1975/1976 prices) to YR 202.4 million in 1979/1980. The attainment of ever-increasing enrollments will continue to be very expensive, particularly as the demand for education grows in line with population growth and as the quality of education delivered to each student improves.

## Primary Enrollments

Given the historical rate of increase in enrollments, the attainment of universal primary education would be attained sooner with lower fertility, and the eventual costs to educate the children would be less.

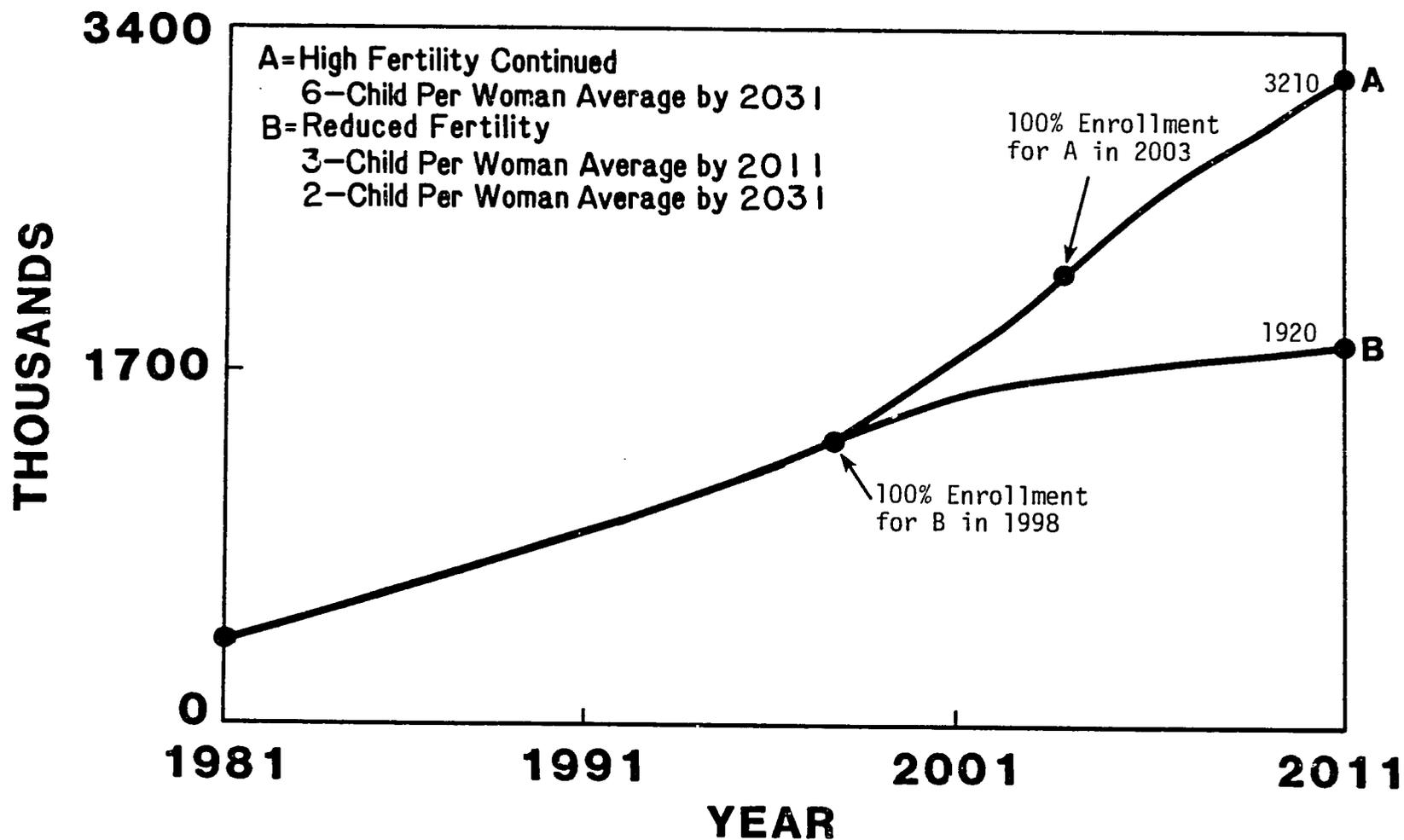
If enrollments continue to increase at a rate of 10 percent annually for the next five years, and at 7 percent thereafter, and given the case of higher fertility, universal primary education will be attained by 2003. By 2010 annual expenditures for primary education will cost a minimum of 7.3 times the cost in 1981, assuming no increase in expenditures per student.

With the lower fertility case, universal primary education will be attained by 1997. By 2010 primary education will cost 4.5 times that in 1981, a significant savings when compared to the high fertility case.

With reduced fertility, therefore, the attainment of universal primary education will be accessible sooner than with high fertility. In addition, costs will be lower, thus freeing up additional resources for improving the quality of education or for investment in other sectors and the creation of even more jobs for an increasingly better educated and skilled labor force.

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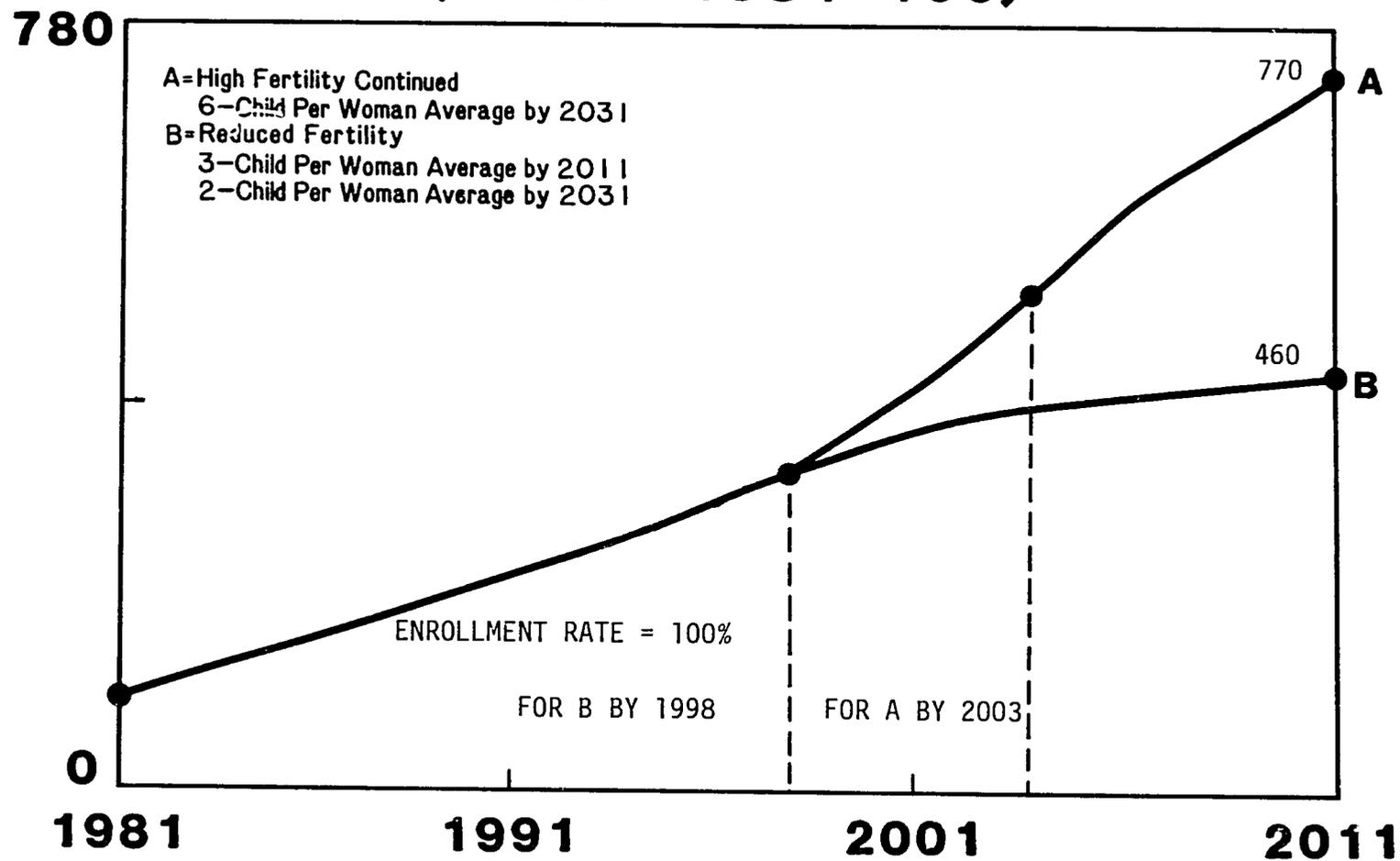
## Primary Students\*



\* Enrollments are assumed to increase 10 percent per year for the next 5 years declining to 7 percent increase thereafter, until full enrollment of the school-age population is achieved.

YEMEN ARAB REPUBLIC

# Budget Requirements for Primary School (Index: 1981=100)



## Teachers

Providing sufficient numbers of trained teachers is a major constraint to developing and maintaining a quality education for the rapidly increasing number of students. Providing an education for the growing enrollments over the past five years has required an ever-increasing reliance on foreign teachers. In 1979/1980 only 34 percent of the teachers in YAR were Yemeni nationals. The demand for education has strained the country's resources.

Given the population growth in the past and the momentum of growth already in motion, the demand for new teachers will place increasing stress on the educational system, particularly as enrollment rates in primary and secondary schools increase. With enrollments in primary school increasing 10 to 7 percent per year till full enrollment is attained and secondary enrollments increasing from 4 percent of the secondary school age population in 1981 to 50 percent by 2000, the requirements for training teachers will be very high. However, with reduced fertility that stress will be significantly less than with high fertility. With an improvement of the current ratio of students per teacher in primary school from 49 to 40 and maintenance of the secondary school ratio of 20 students per teacher and the above enrollment increases, teacher requirements would be as follows.

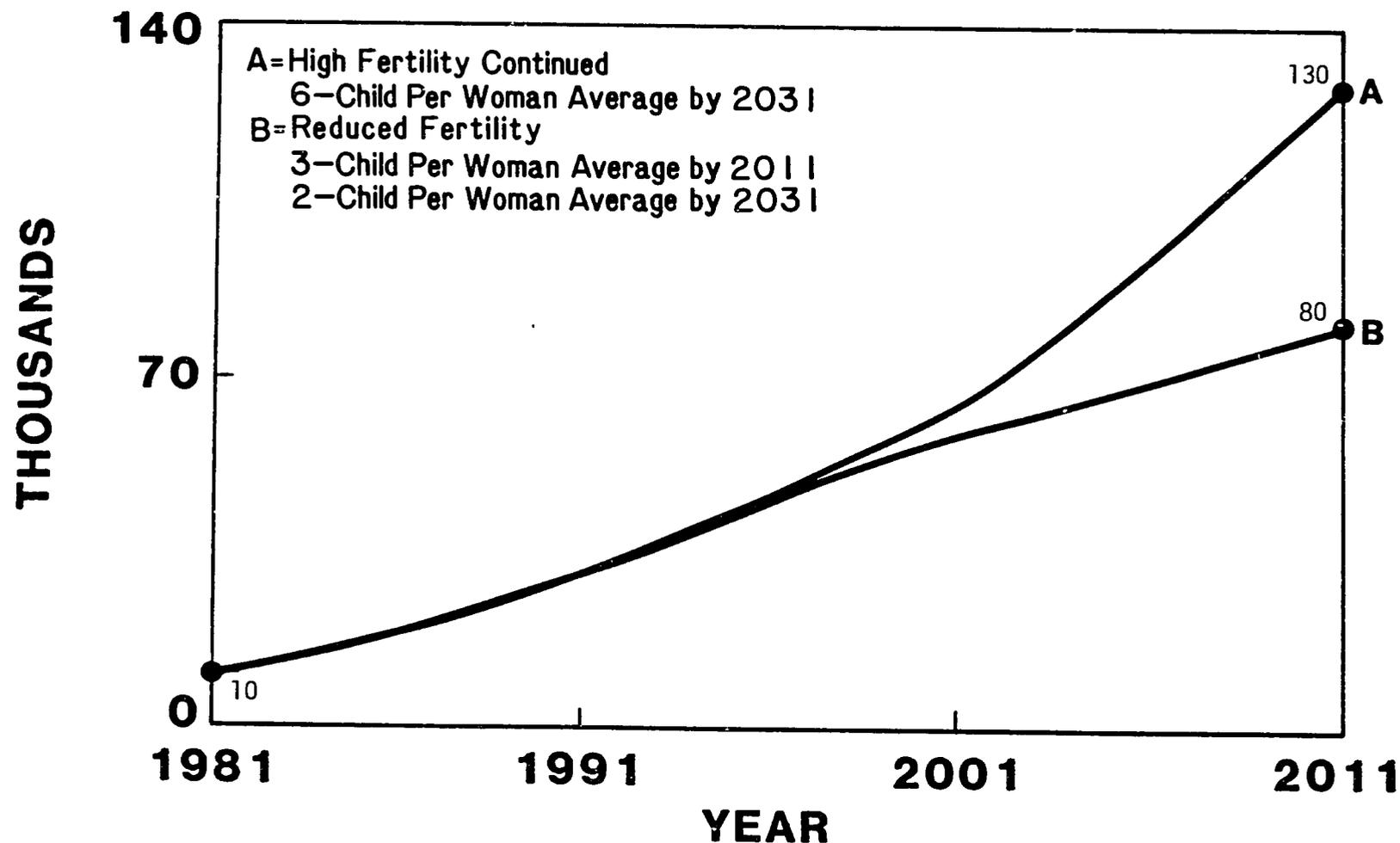
With high fertility teacher requirements would increase from about 10,000 in 1981 to 80,000 by 2001 and 130,000 by 2011.

With fertility reduced to 3 children per woman by 2000, teacher requirements would be 71,000 by 2001 and 80,000 by 2011.

In both the cases of high and reduced fertility, a very large number of Yemeni teachers will have to be trained or else hired from other countries to meet the growing demand for education. The process of increasing enrollment rates and improving the delivery of educational services is difficult in any case; however, the difficulties are compounded by population growth. With lower population growth the task becomes much less onerous than if current levels of population growth persist.

# YEMEN ARAB REPUBLIC

## Teacher Requirements\*



\*Total teacher requirements (primary and secondary) assuming improvement to 40 students per teacher for primary school and 20 students per teacher for secondary school.

## Literacy

Illiteracy in Yemen Arab Republic has been named as "one of the most dangerous problems that impedes and hinders the pace of development and prosperity of Yemeni people...."\* Illiteracy is widespread; 75-80 percent of the population cannot read and write. As a result, great efforts have been taken to remedy this very substantial problem. Both formal education programs for children and informal adult literacy programs have been instituted to combat illiteracy. The campaign has been very successful; literacy rates have probably doubled since 1975. Assuming that enrollments in primary school and in adult literacy programs increase annually at 10 percent over the next 5 years, declining to 7 percent annual growth thereafter, literacy rates will increase as follows.

With high fertility, the literacy rate will increase from 20-22 percent in 1981 to 42 percent by 2000 and 66 percent by 2010.

With reduced fertility, higher literacy rates will be attained. The literacy rate would be 44 percent by 2000 and 76 percent by 2010.

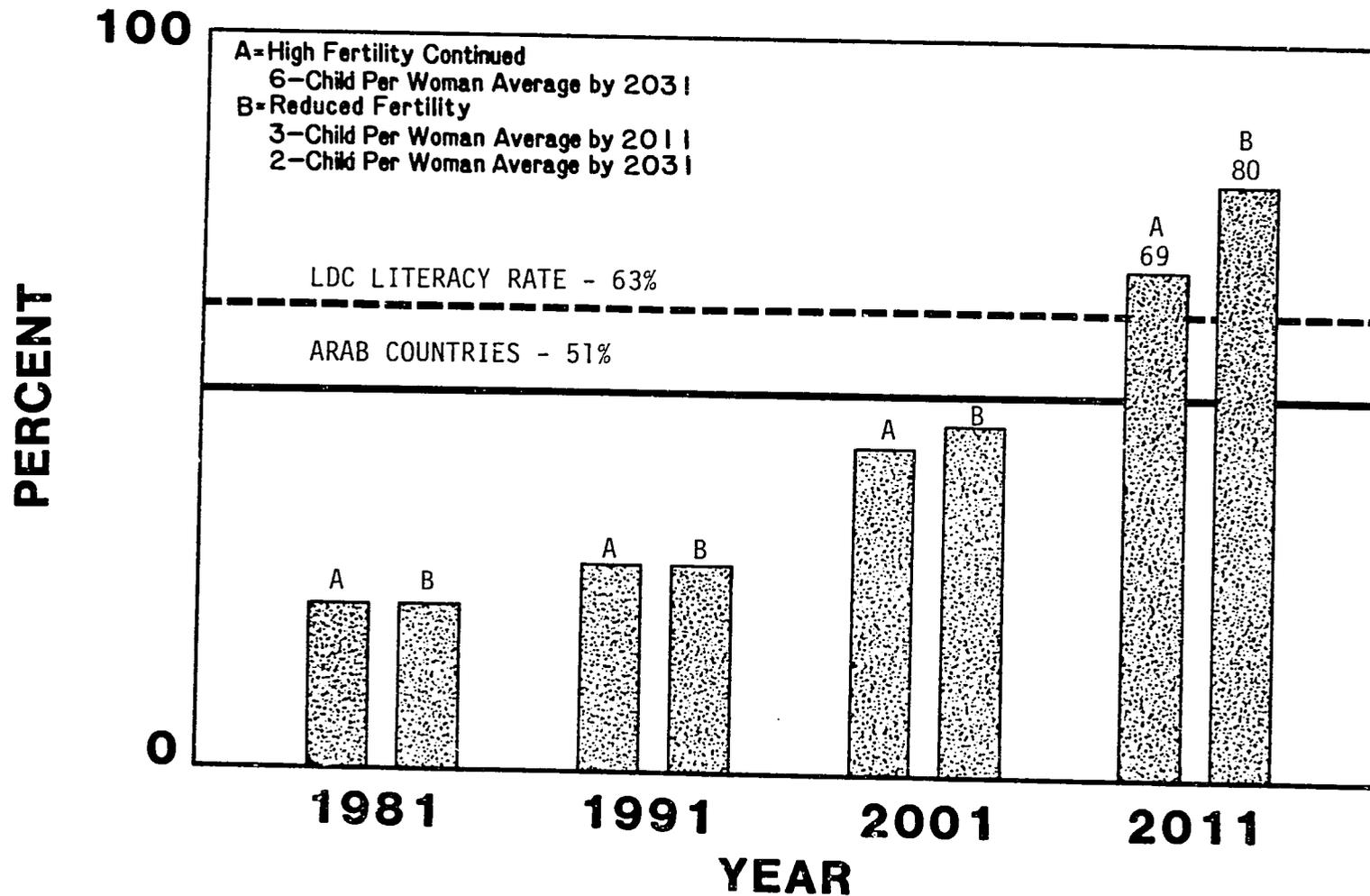
The eradication of illiteracy in Yemen Arab Republic will be attained sooner and with greater ease, if fertility is reduced, for at least two reasons. First, with lower fertility more resources will be available to ensure that students in school and participants in the adult literacy programs will receive a better education. In primary school, full enrollment will be attained sooner with reduced fertility than with higher fertility; therefore, greater resources will be available per student. This will probably increase the proportion of students who will actually complete primary school. In 1975/1976 the average number of years a student of primary education would complete was barely more than 3; only 29 percent of the students starting school actually finished to the fourth grade. Completing fourth grade is generally considered the

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\*Report on "Comprehensive National Literacy Campaign in Yemen Arab Republic," Ministry of Education, YAR (December 1981).

# YEMEN ARAB REPUBLIC

## Adult Literacy Rate\*



\* Assuming that enrollments in primary school and adult literacy programs increase annually at 10 percent over the next 5 years, declining to 7 percent annual growth thereafter.

cutoff for achieving literacy. Increasing the resources available for each student probably will greatly increase the number of enrollments that will actually complete the full cycle of primary education.

The second reason for higher literacy rates with reduced fertility will be that the population base will be smaller; therefore, even if the same number of literate people were added each year under both assumptions of population growth, the proportion of literates to the entire population would be greater with lower fertility. There would be fewer illiterate people added to the population each year with reduced fertility than with high fertility. With reduced fertility it is more likely that in the future the average Yemeni will be better educated and the average worker probably more productive.

## HEALTH

Health conditions in YAR are poor; this is indicated by the high death rate which presently averages about 23 per thousand and a low life expectancy at birth of about 44. Child mortality is about 41 compared to 17 on average in other developing countries. Provision of health services is well below world standards. For example, the population per physician is 7,750 in YAR compared to 6,150 per physician on average in other developing countries. Health coverage is about 12 percent of the population. However, there is a demonstrably strong commitment toward rapidly improving coverage of health services.

Improvements are evident both in terms of the growth of funds allocated for health and in terms of increasing availability of health facilities and personnel. Real increases in the budget for health have averaged nearly 21 percent per year since 1974/1975 and total numbers of doctors have grown from 348 in 1975/1976 to 826 in 1980/1981. YAR is committed to further improvements at an ever accelerated pace, and in fact has embraced the goal of "health for all by the year 2000" (HFA 2000).

### Health For All by the Year 2000

The attainment of HFA 2000 is an ambitious goal made difficult by financial, administrative, and human resource constraints. These difficulties are even further complicated by the rapid growth in demand for health services in line with population growth. Even if there were no increase in population, the attainment of "health for all by the year 2000" would require at least an eightfold increase of current health personnel and facilities in just 18 years.

With continued high fertility, health services would have to increase by another factor of 1.9 or a total of 15 times today's health coverage in order to meet HFA 2000. By 2010 to maintain this goal, 23 times today's resources would be required.

With reduced fertility, this goal could be attained by augmenting health coverage by another factor of 1.6 or a total of 14 times today's coverage. By 2010, 17 times today's health services would be required.

In either case the problems associated with attaining the goal of HFA 2000 will be difficult. However, with reduced fertility the requirements for the fulfillment and maintenance of this goal will be very much less.

Primary health care is the main thrust of the YAR health policy. The strategy is two-pronged, including: (1) the diversification and expansion of health services and their community extensions and (2) the provision of safe and adequate water supplies and waste disposal. The foundation of the former is the Primary Health Care Complex, consisting of one health center, two subcenters, and fourteen Primary Health Care Units (PHCU) for every 50,000 people. The focus of the Primary Health thrust is towards the rural areas where health services are particularly poor. Presently, there are only 106 PHCUs, less than 8 percent coverage of the rural population. Just to increase the level of coverage from 8 percent to 100 percent would require nearly 13 times the number of PHCUs and other support facilities and personnel.

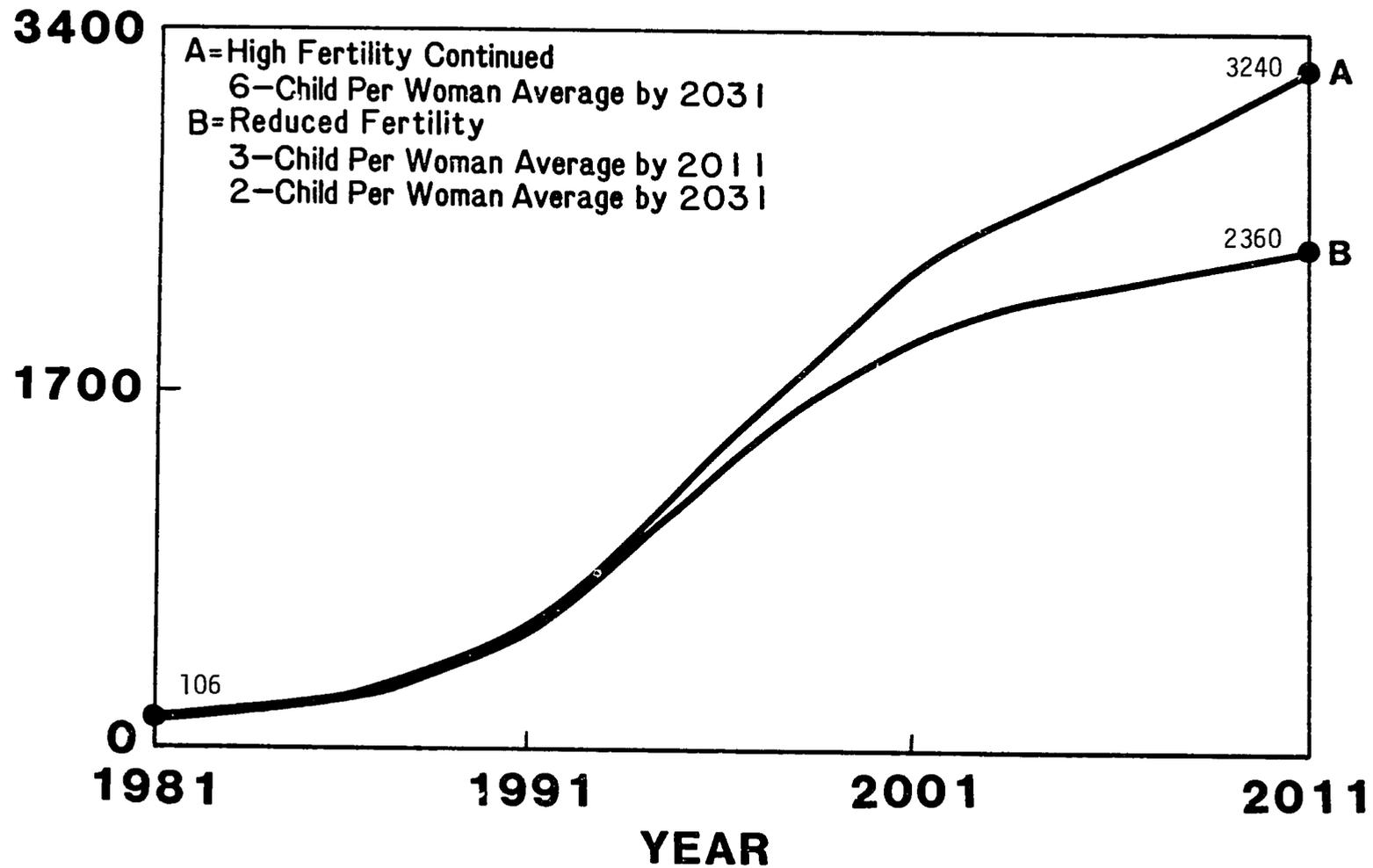
If the goal of 100 percent coverage is attained by 2000, the number of PHCUs required under the two population projections would be as follows.

With high fertility the number of PHCUs would have to increase from 106 in 1981 to 2,300 by 2000 and 3,200 by 2010.

With reduced fertility the PHCU requirements would be 2,000 by the year 2000 and 2,300 by 2010.

# YEMEN ARAB REPUBLIC

## PHCU Requirements



Health coverage in rural areas is assumed to increase from about 8% in 1982 to 100% by 2000.

## Health Expenditures

The effects of population growth on the health sector can be put in financial perspective by examining the costs associated with simply maintaining health services at today's level of coverage. Assuming no increase in health coverage from today's level, total recurrent expenditures (1982 prices) would increase as follows:

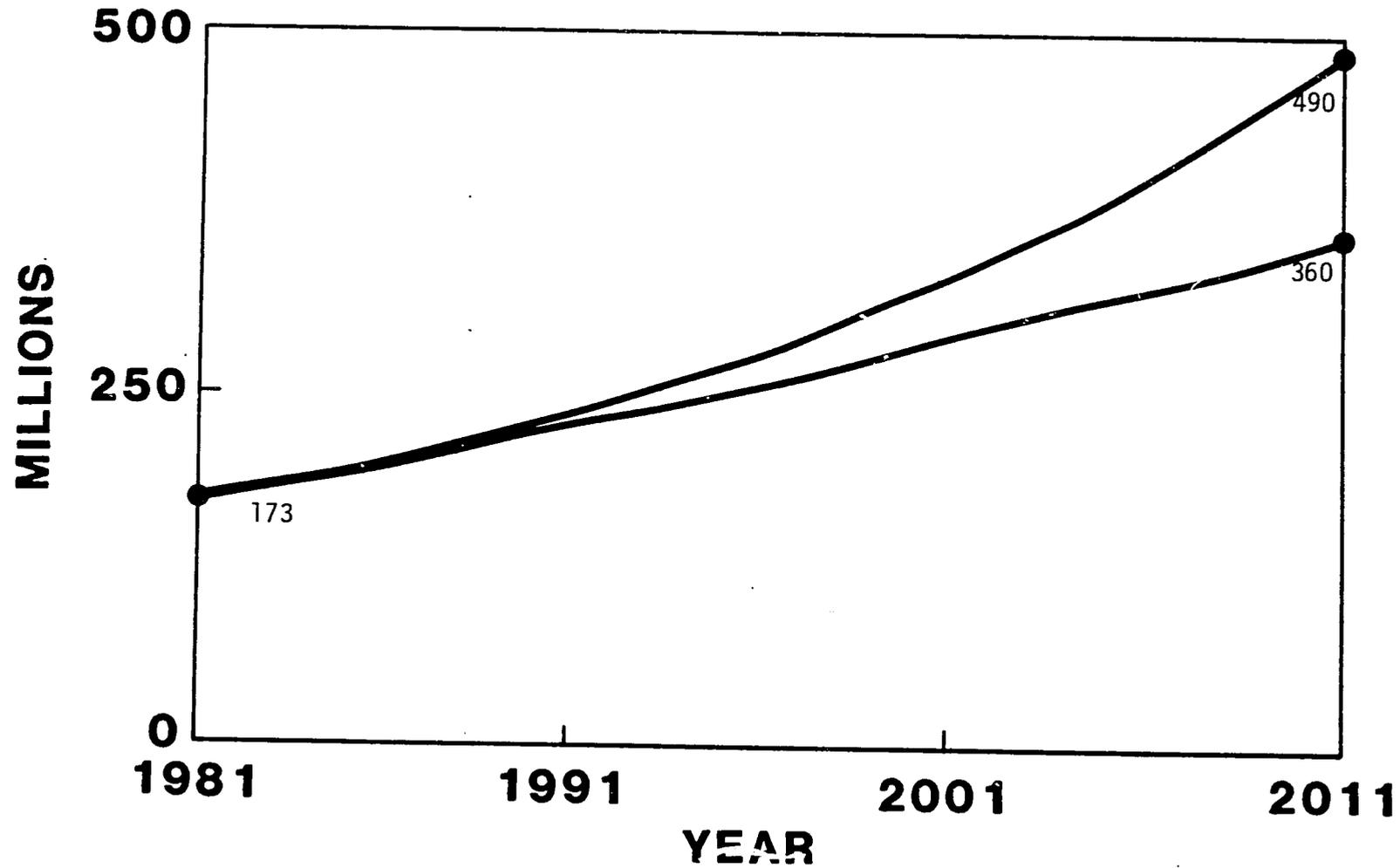
With high fertility, annual expenditures would rise from about YR 175 million in 1982 to YR 330 million by 2000 and YR 490 million by 2010.

With reduced fertility, annual expenditures would rise to YR 290 million by 2000 and YR 350 million by 2010, YR 40 million less in 2000 and YR 130 million less in 2010 than with continued high fertility.

Cumulative expenditures over the period 1981-2000 would total some YR 4.8 billion with high fertility and YR 4.6 billion with reduced fertility. Total savings with reduced fertility would be more than YR 200 million over just 19 years. That sum amounts to substantially more than expenditures for primary health care in 1982.

# YEMEN ARAB REPUBLIC

## Recurrent Health Costs (1982 Year)\*



\* Constant per capita expenditure of yr 27 per year is assumed.

### Infant Mortality and Age of Mother

Studies in different countries of the world have documented the hazards that may arise from too many, too frequent, and poorly timed pregnancies.\* The evidence shows that the age of the mother at pregnancy and the interval of time between pregnancies have an important bearing on the health of infants. In a country like the Yemem Arab Republic, where infant mortality is relatively high, these results are especially relevant.

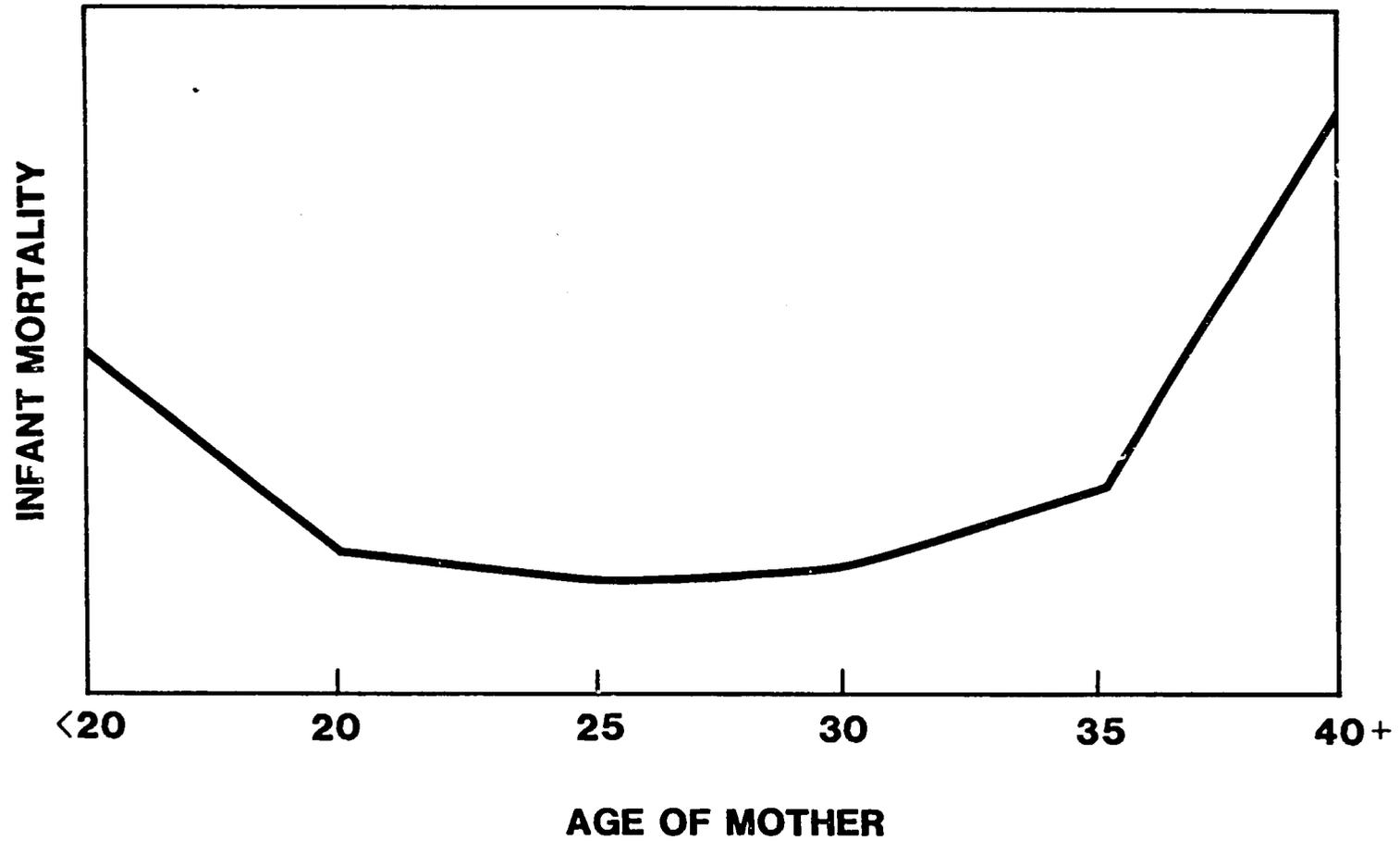
As is depicted in the graph, the timing of the pregnancy in relation to the age of the mother is important to infant mortality. Pregnancies occurring at too young an age (younger than 20), especially if repeated at short intervals, are risky for both mother and child. The risk is further compounded if the mother is undernourished. While the degree of the problem will vary from country to country, the actual shape of the curve will remain the same, suggesting that pregnancies for mothers less than 20 years of age and more than 35 years of age are risky. This risk is only aggravated by poor health conditions, malnutrition, and lack of access to medical care.

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\*For a summary of this research see, Abdel R. Omren, "Health Benefits of Family Planning for Mother and Child," World Health (World Health Organization, January 1974).

YEMEN ARAB REPUBLIC

Infant Mortality and Mother's Age  
(International Data)



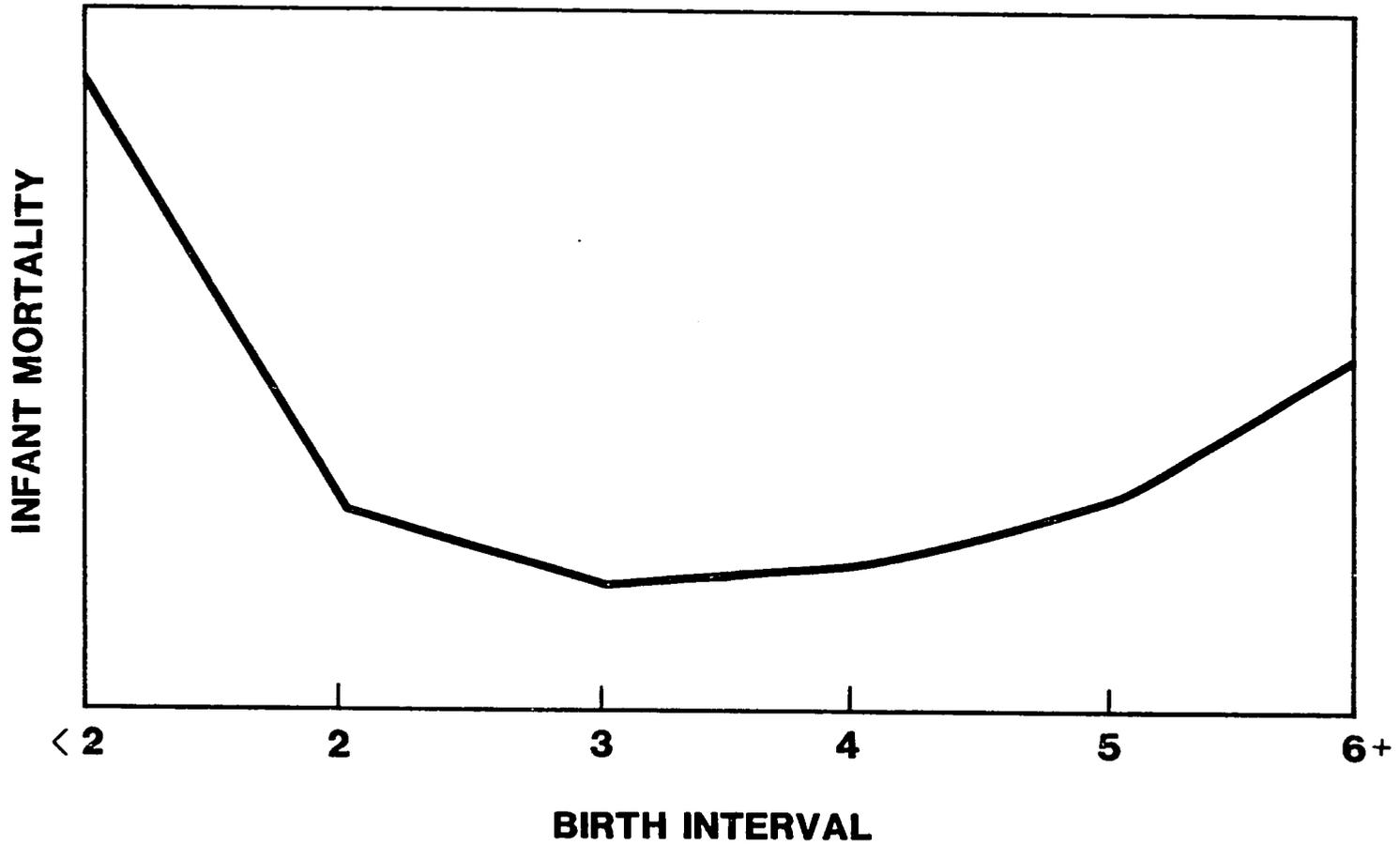
### Infant Mortality and the Spacing of Pregnancies

The interval of time between pregnancies is also very important to the health of the mother and child. Chances of fetal loss, still birth, childhood death or prematuring are high for intervals of less than one year and, to a lesser degree, intervals between one and two years. Time between pregnancies is needed for the mother to recover from pregnancy and childbirth and for the body in general to build up its reserves in preparation for another pregnancy. When short birth intervals are combined with a young age in the mother, the risks to the child are extremely high.

In YAR the average number of children born to a woman is about 7. Many women have considerably more children than the average. Almost all of these women begin bearing children at a very young age and have short intervals between children. Simply planning these births to increase the time between pregnancies and to delay the first pregnancy would contribute significantly to a reduction in the high mortality rates experienced today.

YEMEN ARAB REPUBLIC

Infant Mortality and Interval Between Births  
(International Data)



## LABOR FORCE, EMPLOYMENT, SAVINGS AND REMITTANCES

### Labor Force Size

Rapid population growth in the past has resulted in a high rate of labor force growth and has produced the conditions for continued rapid growth in the future. The labor force is currently growing at about 3.5 percent per year. The large size of the young population ensures that the labor force will continue to grow at over 3 percent for the next 20 years.

With a net outflow of migrant workers diminishing to zero, the labor force will grow to about 2,300 million by 2000 irrespective of the fertility assumption. A decline in fertility today will not make a substantial difference since the children who will enter the labor force in the next 15-20 years are already born. The labor force would nearly triple by 2010 from 1.2 million in 1981 to 3.4 million with high fertility.

The labor force will increase to 3.1-3.4 million by 2010 under either of the two projections (with a return of workers abroad, this figure would be even higher, about 3.6-3.9 million, by 2010). Declining fertility would not substantially affect the size of the labor force until after 2000. With reduced fertility, the labor force would be about 8 percent less in 2010 than with high fertility.

### Employment

Employment in 1981 was 1,201,600. It increased 9.2 percent from 1975/1976, an annual rate of growth of 1.8 percent. In the second Five-Year Plan, based on a planned growth of 7 percent annually in GDP, employment in YAR is projected to rise to 1,356,000 by 1986. This represents an annual increase of 2.4 percent. Based on the same elasticity

of GDP growth to employment used in the second Five-Year Plan, employment will increase to 2,020,000 by 2000 and 2,830,000 by 2010 if GDP continues to grow 7 percent annually.

Based on the above growth in employment, unemployment may become a serious problem in future years.

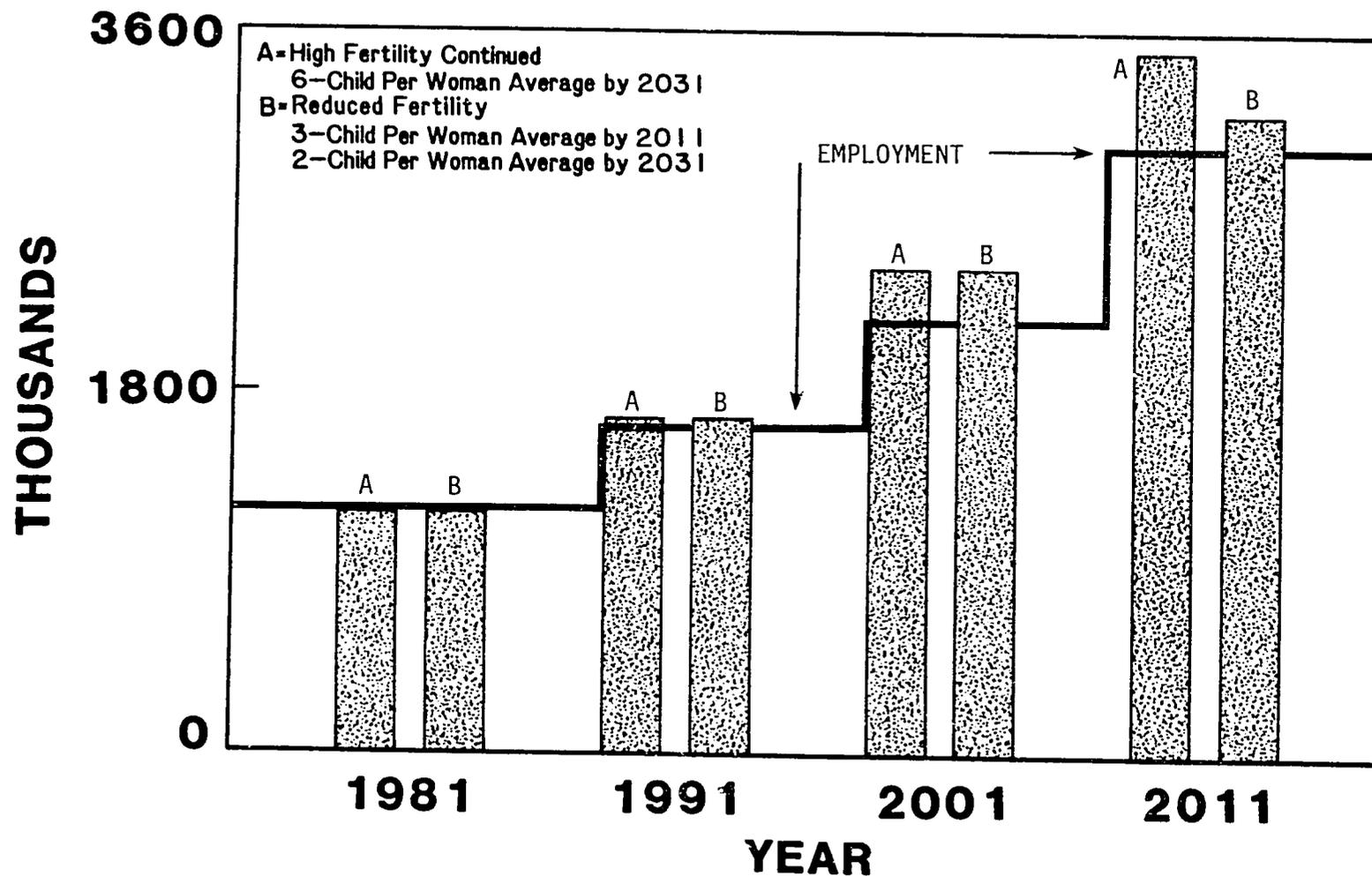
With high fertility as many as 545,000 laborers may be unable to find employment in 2010.

With reduced fertility the number of laborers not able to find employment with the above assumptions would be 280,000.

Therefore, although the labor force size would not be substantially different in the next 15-20 years irrespective of the population growth, a decrease in fertility can make a large difference in unemployment and employment levels 30 years hence. Based on the above assumption, with high fertility the number of unemployed in 2010 would be nearly double that with reduced fertility.

# YEMEN ARAB REPUBLIC

## Labor Force & Employment\*



\*Employment growth assumes 7 percent annual growth in GDP.

## Labor Force and Dependency

During a period of declining fertility, the changing age structure of the population produces an economic bonus by increasing opportunities for saving. When fertility declines, the percentage of the population composed of young people, the dependent population, begins to decrease immediately. This creates opportunities for saving at both the household and governmental levels. Within the household, a smaller number of children means that expenditures required to raise those children (food, clothing, education, and medical needs) may be less. Governmental expenditures for schools, health care, nutrition programs, and other maternal and child services may also be less because of a smaller child population. Of course, a large proportion of this potential savings will be used for increased consumption, purchasing additional goods or improving the quality of services such as education, nutrition and health care. Nonetheless, although the effect will be an increase in per capita consumption, the capacity for both public and private savings is likely to be greater.

One indicator of the potential for increased savings and improvements in standards of living is a comparison of the size of the labor force to the number of children dependent on that labor force for support. Today, there are about two children under 15 for every one person in the labor force.\*

With continued high fertility, there will be about 2.1 dependents per worker by 2000 and 2.3 per worker by 2010.

With a reduction in fertility to a 3-child family average by 2010, there will be 1.5 children per worker by 2000 and 1.3 by 2010.

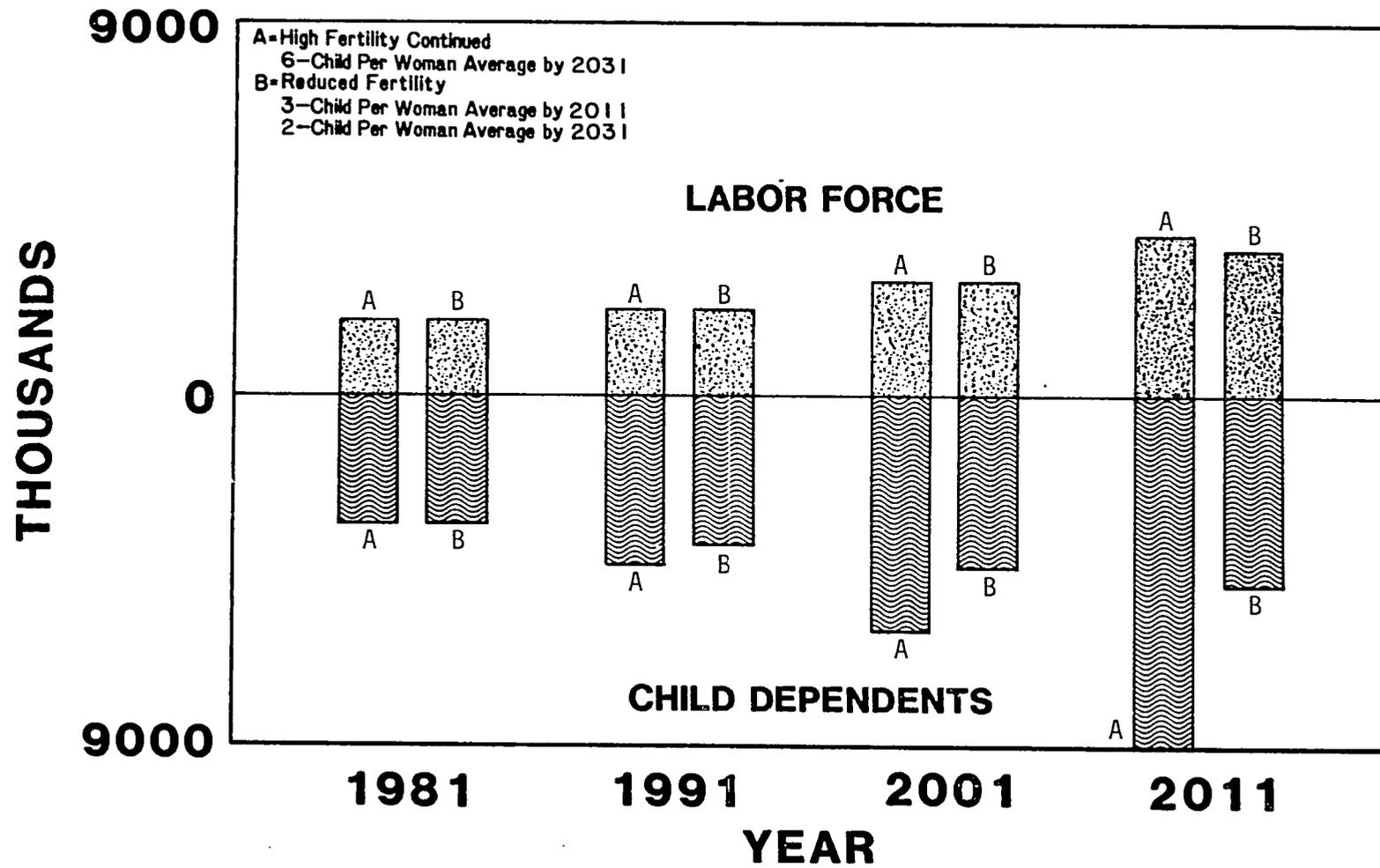
Thus, while the size of the labor force would not be greatly affected over this time period with reduced fertility, the dependency situation, however, would change dramatically. Although a high dependency ratio has the advantage of a younger, perhaps healthier future labor force, this is offset by social costs of infrastructure needed to sustain a youthful population.

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\*The labor force here includes an estimated 460,000 workers abroad on a temporary basis.

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## Labor Force and Child Dependents



## Remittances

During the first Five-Year Plan, remittances from Yemeni workers abroad were the single-most important source of capital formation and economic growth. Over the five-year period YR 17.8 billion came from remittances. This represented about 88 percent of total capital formation and an average of about 18 percent of GNP over the five-year period. Growth of GDP during this period was based primarily on remittances. GDP grew 5.9 percent annually in real terms or 33 percent total over the five years. At the same time the population grew at about 3.5 percent annually or 19 percent between 1978 and 1981. Therefore, about 58 percent of total capital formation was required merely to keep up with population growth and maintain GDP per capita, the remaining 42 percent of capital formation went toward further development. Since remittances composed 88 percent of capital formation, it also was responsible for a likewise percentage of GDP growth. It is unlikely that remittances will be an adequate source of capital formation to even sustain GDP per capita at today's level unless remittances increase in conjunction with the growth of population.

In the future, the level of remittances will depend on the number of workers abroad and the remittance per worker. The rate of increase in remittance per worker in the past is not known because of the uncertainty concerning the number of workers abroad. However, both the aggregate level of remittances and the remittance per worker are likely to rise very slowly in the future for at least two reasons. First, an increasing share of the unskilled jobs in the Gulf are now going to workers from Pakistan, South Korea and other Asians rather than the Arab workers. The unskilled workers are the most likely to remit the wages since few of them take their families with them. Professional workers earn higher salaries, but they have a greater tendency to take their families with them and thus remit a much smaller portion of their earnings. Second, as Yemeni workers continue to find employment abroad, their ties to YAR may lessen as some

workers settle permanently in the countries where they are employed. Therefore, the level of remittances among these workers would probably decline rather than increase. Since the vast majority of YAR citizens working abroad are unskilled (or only semiskilled) and have not brought their families with them, the average rate of remittance per worker, in any case, would not be likely to rise.

Thus, the importance of remittances as a source of economic growth will probably decrease in the future. Even if the rate of remittance remained constant, the percentages of remittances to GDP would decline unless workers going abroad continued to increase. If the total numbers of workers abroad were to remain constant and the GDP grew at 7 percent, remittances as a percentage of GDP would decline from 18 percent to 8 percent by 2000 and 4 percent by 2010.

With higher fertility remittances would probably make up an even less important source of economic growth because the larger number of dependents in this case would mean that more of the remittances would be used for consumption and less for capital formation. With reduced fertility, the smaller number of dependents would probably result in a greater share of remittances left over for capital formation.

## GDP AND GDP PER CAPITA

Over the period of the last Five-Year Plan, gross domestic product (GDP) grew at a healthy 6 percent in real terms. Increases in GDP reflect the overall growth and health of the economy; however, GDP per capita is a better indicator of the ability of the economy to meet the basic needs of the people. While the total output of the economy may be only slightly affected by fertility changes for the next 20-25 years, GDP per capita would rise substantially faster with reduced fertility. For example, with a 7 percent annual growth rate in the gross domestic product and using the resident population as a base, GDP per capita would rise as follows.

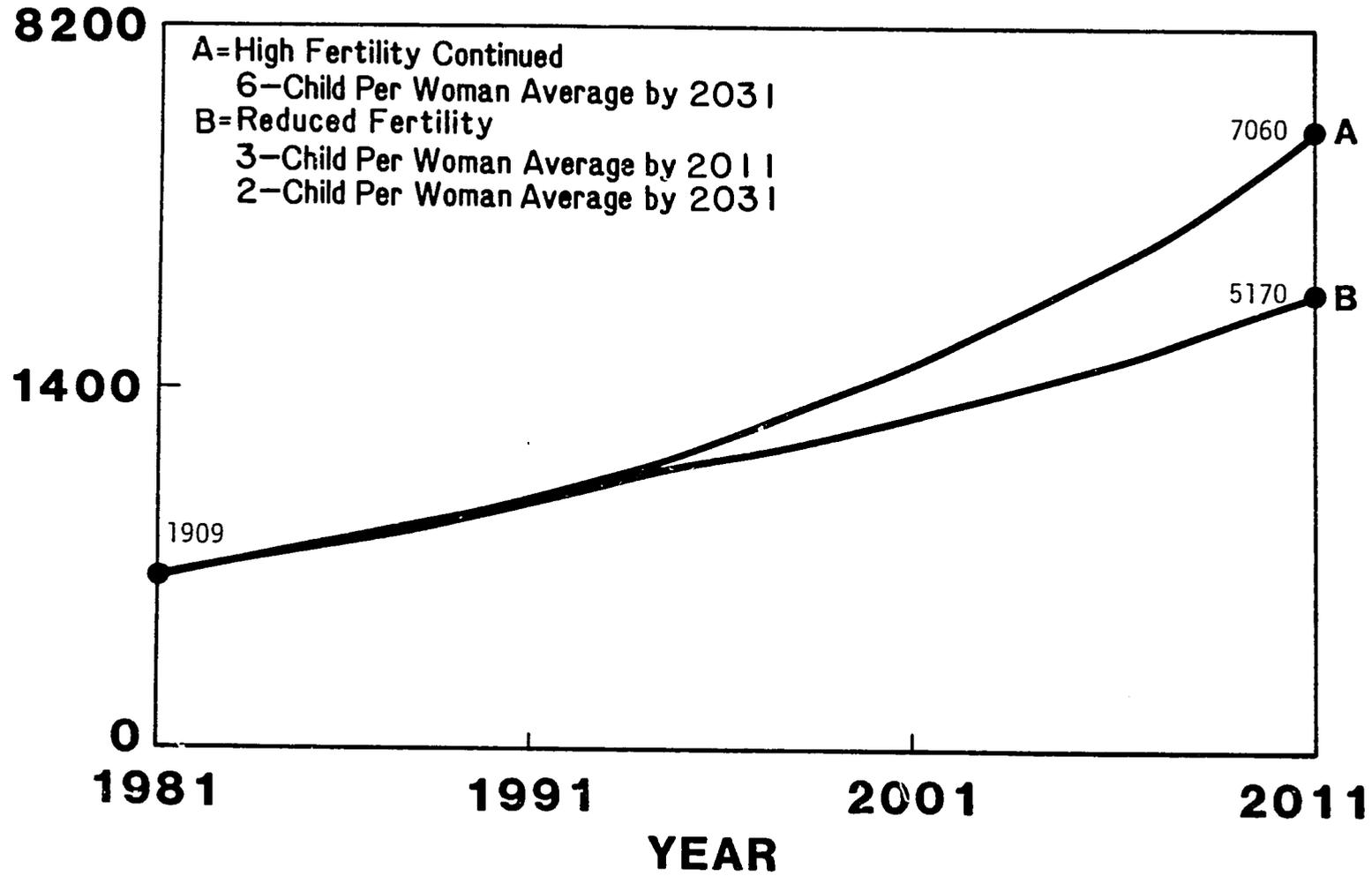
With continuing high fertility, GDP per capita would rise from YR 1910 in 1981 to YR 5020 by 2010.

With a three-child family average by 2010, GDP per capita would increase to YR 6730 by 2010, or YR 1710 more than with higher fertility.

The faster rise in GDP per capita with lower fertility will help to reduce poverty and distribute the benefits of economic growth more rapidly in YAR. This occurs not only because lowered fertility results in fewer people to share the national income, but also because dependency will be less on the household level, permitting higher family income, savings and capital accumulation for higher GDP growth.

YEMEN ARAB REPUBLIC

GDP Per Capita (1981 Rial)



## AGRICULTURE, FOOD IMPORTS, AND BALANCE OF PAYMENTS

Agriculture is one of the most important sectors of YAR's economy; however, its importance has declined substantially in recent years. Agriculture had constituted 40 percent of GDP in 1975/76, but a lack of growth over the period 1975/76 to 1979/80 resulted in a relative decline of agriculture as a share of GDP. In 1979/80 agriculture comprised only 29 percent of GDP.

YAR is not richly endowed with agricultural resources; only 1.5 million hectares (7.5 percent) of the 20 million total area are regularly cultivated. Because nearly 85 percent of the land is rainfed, YAR agriculture is dependent on the vagaries of weather, and sporadic rainfall can be disastrous to the agricultural sector. Although there has been a long tradition of irrigation, limited water confines the potential of development here.

Due to the combination of rapid increases in population and income, domestic production of food has greatly lagged behind growth in demand. Imports of agricultural goods increased 2.5 times in only 4 years--from YR 868 million in 1976/77 to YR 2,212 million in 1980. It is likely that food imports will continue to rise, as the agricultural resource limitations, particularly water, will continue to inhibit domestic food production. Therefore, YAR may face tremendous increases in trade deficits if food and other imports increase without a likewise increase in exports or other sources of foreign exchange. Although YAR's exports are relatively negligible, the large remittances sent back by Yemeni labor working in the Gulf have provided the primary source of foreign exchange to pay for the imports. In 1980, YR 2,212 million (26 percent) of the import bill was composed of food items. In comparison, annual remittances sent back between 1976 and 1980 averaged about YR 3,570 million.

Assuming food imports per person were to remain the same as in 1980, food imports would be as follows:

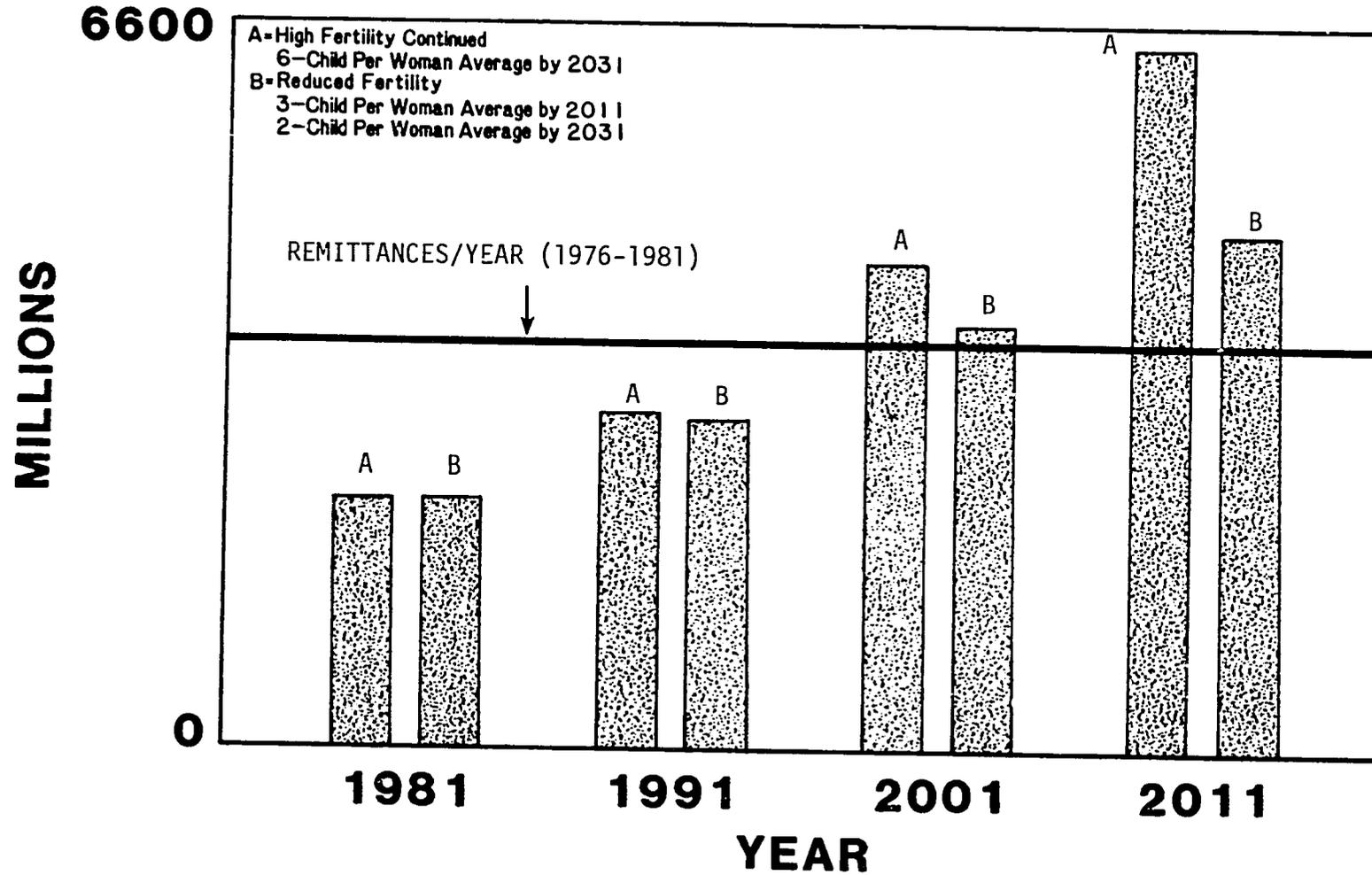
With continued high fertility, food imports would grow from YR 2,212 million in 1980 to YR 4,200 million in 2000, and YR 6,200 million in 2010.

With reduced fertility, there would be YR 3,700 million imports by 2000 and YR 4,600 million in 2010. In 2000 the import bill would be YR 400 million less with reduced fertility, and YR 1,600 million less in 2010 than if high fertility levels persisted.

Although food imports will be sensitive to other factors than population growth (viz. income growth), the implications of the above projections clearly demonstrate the importance of future population growth on the magnitude of the future import bill. Food imports could grow from about 62 percent of the average annual remittances in 1976-1980 to 174 percent by 2010 with high fertility and 129 percent with reduced fertility. In either case, in order to pay just for food imports either remittances, exports, or other source of foreign exchange will have to grow substantially; but with reduced fertility foreign exchange requirements will be substantially less than with high fertility.

# YEMEN ARAB REPUBLIC

## Food Imports (YR-1980 Prices)



# **Effects of Population Programs**

- **Effects of a Delay in Reducing Fertility**
- **The Determinants of Fertility**

## EFFECTS OF A DELAY IN REDUCING FERTILITY

Because the population is growing so rapidly and because of the irresistible momentum of population growth, any delay in reducing the rate of growth will seriously affect the future size of the Yemen Arab Republic population. Assuming that a combination of social and economic development and population program efforts results in a 2-child family average in 20 years, the demographic consequences of such a delay may be illustrated as follows:

If the fertility decline begins in 1981, the population will be about 10 million in 2010 and 12 million in 2030. The size of the population will eventually level off at approximately 13 million.

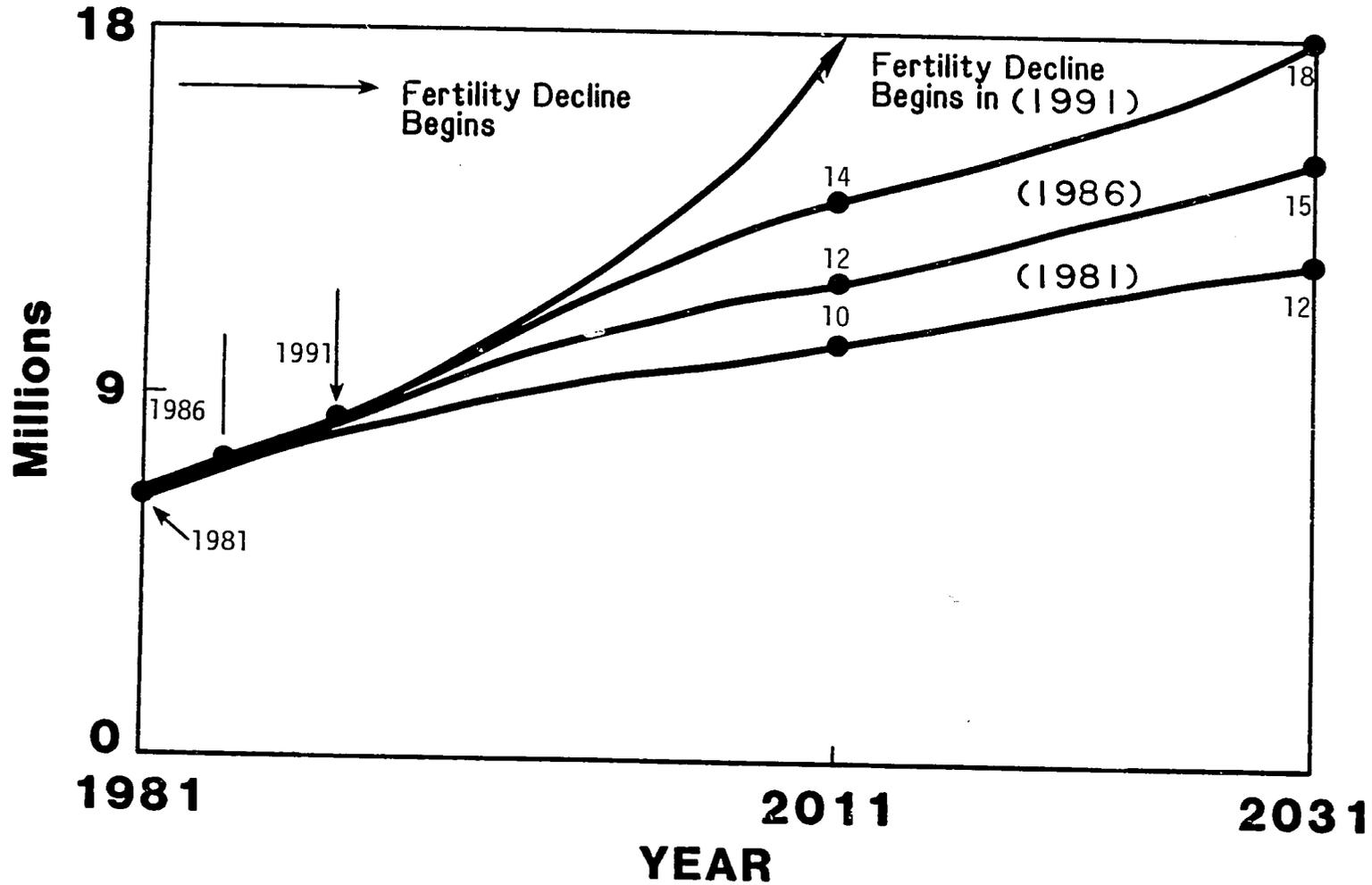
If the fertility drop begins in 1985, the population will be about 12 million in 2010 and 15 million in 2030, and will not stop growing until it reaches about 17 million.

If the fertility decline begins in 1990, the population will be 14 million in 2010 and 18 million in 2030, and will continue to grow until it is about 20 million. A delay of only 10 years will make a difference of about 7 million people in the ultimate size of the Yemen Arab Republic population.

Hence, it is important to reemphasize the rapidity of population growth and the power of population momentum. The Yemen Arab Republic has no real choice between a large population and a small population relative to its size; rather, the choice is between a large population and a population so big and growing so fast as to undermine social and economic development effort.

# YEMEN ARAB REPUBLIC

## Effects of a Delay in Reducing Fertility (Fertility Decline to a 2-Child Per Woman Average in 20 Years)



## DETERMINANTS OF FERTILITY

The preceding analysis suggests that continued high fertility will hinder development efforts in the Yemen Arab Republic. Given the momentum of population growth, it is not too soon to improve the effectiveness of family planning with the objective of slowing population growth. The experience of both more developed and less developed countries which have undergone significant fertility declines suggests that a wide variety of factors determine the birth rate in a country. Demographic, social, and economic determinants all play a role, but it is possible to identify certain phenomena which historically have had a major effect on reducing fertility. Three of these phenomena are changing marriage patterns, social and economic development, and the increased knowledge and practice of family planning methods.

In the Yemen Arab Republic, where some form of marital union is nearly universal, the age at which women marry is of great significance. As much as 50 percent of the fertility declines experienced in the last 20 years in some developing countries can be attributed to rising age at marriage. A later average age at marriage means that a smaller percentage of women at highly fecund ages are exposed to the risk of pregnancy. Increased age at marriage cannot be brought about in the Yemen Arab Republic by simply raising the legal age at marriage; rather, it is essential that women be given more educational and employment opportunities outside the home.

Social and economic development are integrally related to the demographic transition from a rapid population growth society to a slow or zero growth society, as the more developed countries are now. Gains in health, education, and economic well-being inevitably change people's family size aspirations, but the process can be long and delayed unless the government takes a strong initiative. Because development is hindered by rapid population growth, the most

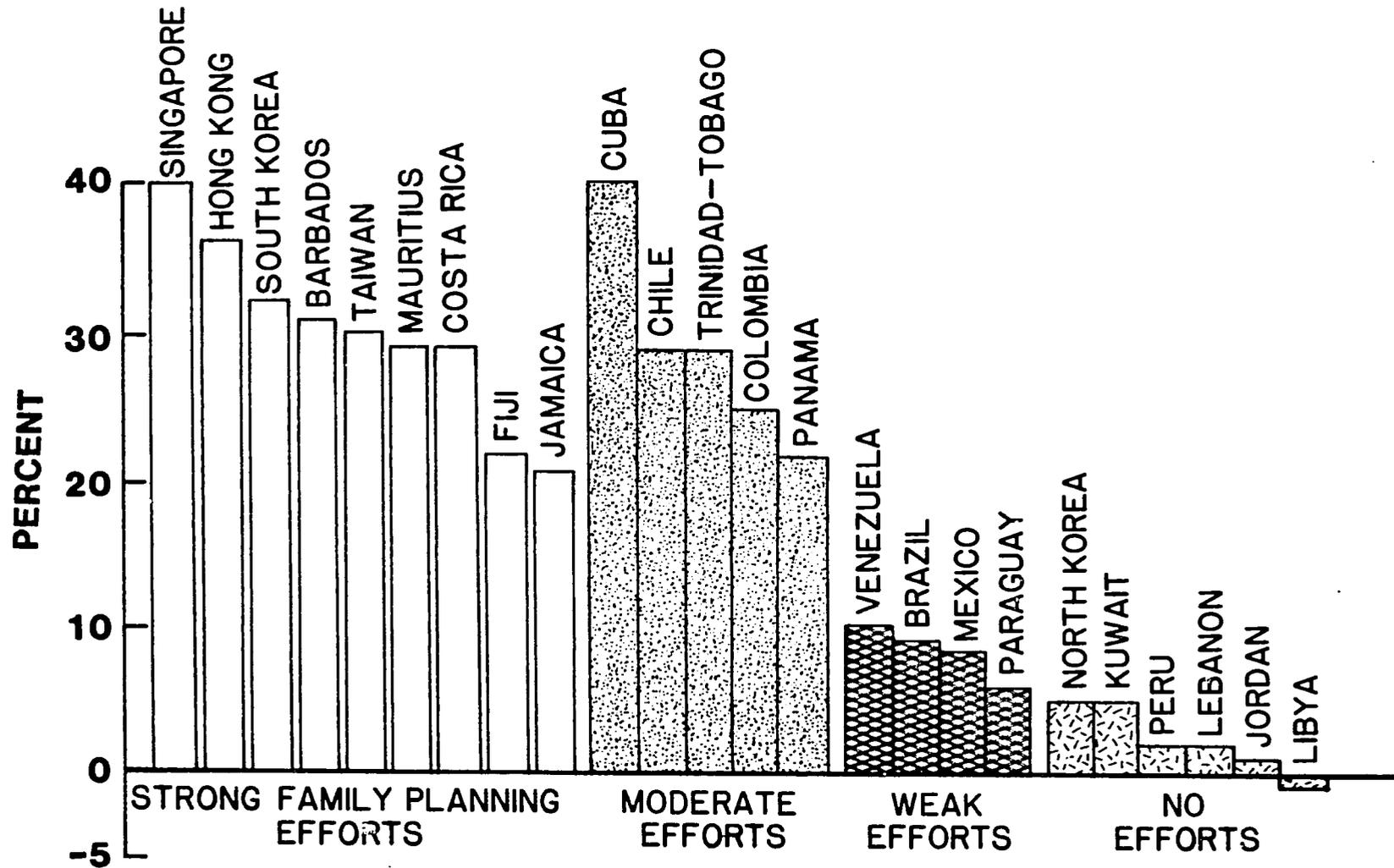
effective way to achieve both reduced fertility and socioeconomic development is to integrate population policy with every development program. In this way the closely correlated problems of poverty and rapid population growth are approached simultaneously and pervasively.

Given a concerted effort on the part of the Yemen Arab Republic Government to develop a society where the incentive to have a small family is high, then the birth rate will come down as people attempt to maximize their economic and psychic welfare. Nevertheless, a strong family planning program effort which makes the knowledge and practice of contraceptives widely available can be a major contributor to declining fertility. A recent study by W. Parker Mauldin and Bernard Berelson showed that among developing nations with relatively advanced social and economic conditions, birth rates declined an average of 30 percent between 1965 and 1975 in countries with moderate or strong population/family planning programs, and only an average of 6 percent in countries with no population/family planning efforts.

The same pattern prevailed among countries with a relatively less-advanced social and economic setting: birth rates declined an average of 19 percent where there was a strong-to-moderate family planning program. Where there was a weak or no program effort, the average birth rate decline was only an average of 4 percent--in some countries there may actually have been a rise in the birth rate. Mauldin and Berelson's findings are part of an emerging consensus among policymakers and scholars that a strong development effort and a commitment to a population/family planning program must be pursued concurrently.

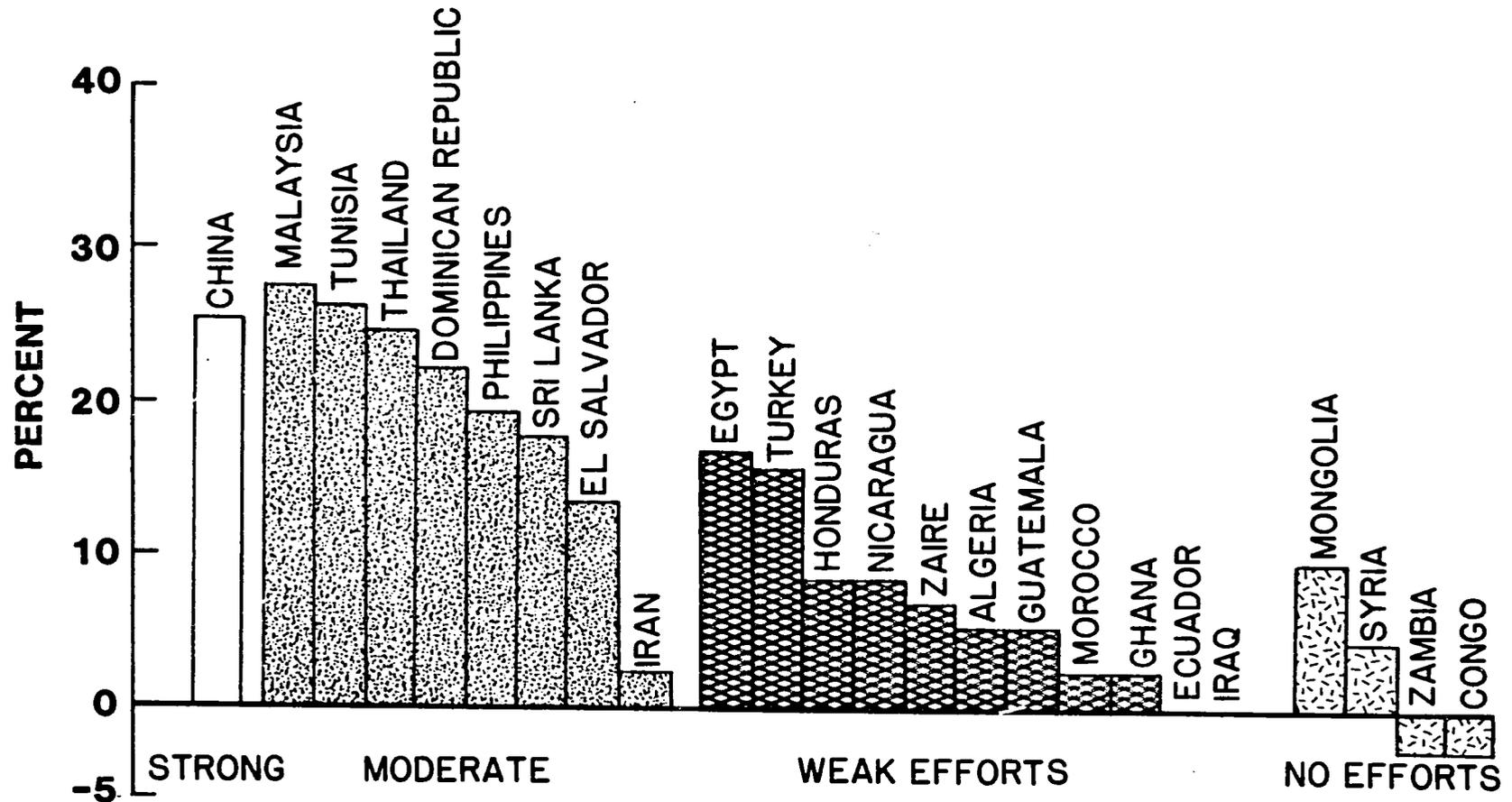
# Effects of Population/Family Planning Efforts on Birth Rates

Decline in the Birth Rate from 1965 to 1975 Among  
Developing Countries with Relatively Advanced Economic and Social Settings



# Effects of Population /Family Planning Efforts on Birth Rates

Decline in the Birth Rate from 1965 to 1975 Among Developing Countries with Moderate Economic and Social Settings



## CONCLUSION

The rapid growth of the population may seriously impede the Yemen Arab Republic's social and economic development. On the other hand, a lower rate of growth could have a favorable impact on the ability of YAR to make some important social and economic gains, including efforts to:

Maintain a quality system of education and attain universal primary education.

Increase literacy and improve the productivity of the labor force.

Provide adequate health services to the entire population.

Continue to provide employment for a growing labor force.

Increase gross domestic product through higher rates of investment.

Increase gross domestic product per capita and the standard of living for every Yemeni national.

The prospects of providing a quality education, improving literacy levels, and attaining the goals of health for all by the year 2000 will be greatly facilitated by a rapid reduction in fertility. The difficulties are substantial in providing access to social services and attaining these goals without any population growth at all; with rapid growth of the population they become even more onerous. In education and health, reduced fertility will help determine the quality of these services and the share of national income that will be required for their delivery to the people. Reduced fertility will result in higher GDP per capita and higher standards of living than could be attained with continued high fertility.

For these reasons, population planning--used in the broadest sense of the term--should become an integral part of the development process of the Yemen Arab Republic. Planners in YAR should address themselves particularly to the

following four population areas:

Rapid growth of the school-age population, resulting in high dependency burdens.

Population pressure on social and health services.

Rapid growth of the economically active population resulting in pressure on the economy to generate sufficient employment opportunities.

Distribution of goods and services to an increasing population.

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