

The POLICY Project

**Egypt
Population Projections
2000 – 2017**

May 2002

The Futures Group International

In collaboration with:

**Research Triangle Institute (RTI)
The Center for Development and Population
Activities (CEDPA)**

POLICY is a five-year project funded by the U.S. Agency for International Development under Contract NO. HRN-C-00-00-00006-00, beginning July, 2000. It is implemented by The Futures Group International in collaboration with Research Triangle Institute (RTI) and The Center for Development and population Activities (CEDPA).

Executive Summary

I. Introduction

Egyptian policy makers and researchers have always shown an interest in population projections. They are concerned with changes in the size and characteristics of the future population and the implications that these characteristics would have on the social, economic and health situation of the population. The amount of demographic data from censuses, demographic and health surveys and relevant research is growing and improving in quality which makes the process of developing local population projections for Egypt possible and essential.

The purpose of this report is to provide population projections for Egypt using local statistics, in an effort to help quantify the magnitude of services that will be needed in the future. It will also provide some guidance to family planning program policy makers and managers to be able to better plan in the long run. This report will be updated whenever new data is made available.

Population projections are useful for a variety of purposes, most commonly as a basis for planning. Assessing a nation's requirements for jobs creation, school capacity, teachers, doctors, nurses, urban housing, or food require knowledge of the number of people who will be requiring these services.

Population projections are also important for policy dialogue. A key aspect of the policy process is recognizing that a challenge exists and placing that challenge on the policy agenda. Population variables such as the age structure, rates of birth, death and migration have linkages with too many of the major development challenges. They affect environmental, economic, social and other development processes. Population projections are required to illustrate the future magnitude of the challenge facing the process of development.

Egypt's national population policy calls for reducing the rate of population growth. To plan for influencing this change, a major factor is to provide high quality accessible family planning services. Population projections can be used as guidelines for estimating the level of contraceptive prevalence needed to reach the government's target of reducing the fertility rate.

The fact that forecasts are, by definition, uncertain does not make them any less important. Unfortunately, the degree of uncertainty cannot be determined before hand. However, accuracy can be greatly influenced by the methodology used and the assumptions made about the future demographics.

II. The Methodology

The size of a population changes through the interaction of only three variables: fertility, mortality, and migration. To project the future population of a country, demographers make an assumption about levels of fertility and mortality and migration. The most commonly used methodology is the cohort-component method. The base year population is grouped into cohorts defined by age and sex. Each cohort is then projected according to the assumed mortality and migration rates for that age

and sex group. New cohorts are added in the young age groups by births over the projection period. The number of these births depends on the assumed fertility rate of the base line population. Estimating the base population and the vital rates of the base year is therefore the first step in conducting the population projection. Also, it is essential that the assumptions regarding the future trends of the age distribution of fertility be carefully studied. Because of the uncertainty involved when estimating future trends of vital events, it is likely that any “one” projection will be wrong. This is why demographers present alternative projections “scenarios” to show what the future population will be like if the vital rates follow different paths. Scenarios can be unrealistic, such as assuming that fertility will remain constant over the next 15 years and can be more realistic assuming a moderate decline of fertility. A third scenario which is more ambitious may assume a sharp decline in fertility during the same period.

The decline in fertility is the most significant factor that affects population growth. The indicator most commonly used to measure changes in fertility is the total fertility rate (TFR). Most projections for developing countries assume that fertility will stabilize at replacement level (TFR = 2.1) which is a little more than two children per woman. This is the fertility level at which the childbearing generation would have just enough children to exactly replace itself. Reaching a stable replacement level fertility implies that the population age structure will eventually stabilize as well. The population size will continue to grow but the growth rate will eventually stabilize.

Several international organizations such as the UN, the World Bank and the U.S. Census Bureau produce global population projections regularly that are updated periodically. They use different methodologies and a variety of assumptions about the future trend in fertility, mortality and migration.

To develop this report, POLICY (USAID funded project) used a methodology based on the SPECTRUM tool *. The tool contains three modules. DEMPROJ is the model for estimating future demographic characteristics of the population; FAMPLAN is the model for estimating the family planning variables associated with the population projection and RAPID is the model that estimates the future requirements of the projected population. All three models: DEMPROJ, FAMPLAN and RAPID were applied in this report, using the most recent Egyptian data. The projection covers the period 2000-2017 to match with Egypt’s National Plan. The Ministry of Health and Population (MOHP) provided the most recent information on fertility and mortality while other Ministries provided the most recent indicators for education, labor force and agriculture, together with their target indicators, if available. The base year population is that estimated from the most recent National Population Census conducted by the Central Agency for Public Mobilization and Statistics (CAPMAS) in 1996.

* SPECTRUM is a POLICY Modeling System. It is a system for projecting future requirements for improving reproductive health. SPECTRUM is prepared by POLICY Project, funded by US Agency for International Development. It is implemented by The Futures Group International (TFGI) in collaboration with Research Triangle Institute (RTI) and Centre for Development and Population Activities (CEDPA).

All decisions concerning the methodology of the report were taken by the projection team. The team consisted of several Egyptian demographers, MOHP population sector staff, Population IV Project consultants and USAID /Egypt population team.

The inputs to the model are the population size and structure estimated from the 1996 national population census and the indicators of the base year (2000) from the relevant statistical sources. The fertility schedule used is that reported by the DHS 2000 and is assumed to change gradually toward the model (UN Asian) in which the age specific fertility rates of the young age groups are reduced. The model life table used is the UN General model. The net migration on the national level is assumed to be negligible.

In the FAMPLAN model the inputs used are the method attributes (CYP indexes), method mix and source mix all of which are those reported by the Egypt Demographic and Health Survey (DHS 2000) and are assumed to remain constant for the projection period. The method effectiveness rates are those internationally accepted (condom 81%, female sterilization 100%, injectable 100%, IUD 96%, subcutaneous methods 100%, pill 92%, rhythm 50%, vaginal barrier 81%, other 50%).

The proximate determinants of fertility are assumed to be:

- The proportion of women in the age group 15-49 who are married is 68% as calculated from the 1996 national population census.
- The duration of postpartum insusceptibility is 4.0 months (DHS, 2000),
- Due of lack of information, total abortion rate is assumed to equal zero.
- The percent of sterility is 2.9%. It is equal to the percent of women with no children at the age of 45-49 from DHS, 2000.
- Contraceptive Prevalence is 56.1% (DHS, 2000).

Three scenarios were applied to estimate future population. The three scenarios were developed and approved after intensive/ comprehensive discussions and investigations done by the projection team.

III. The Three Scenarios

- (1) **The "Low" Scenario:** In this scenario it is assumed that the total fertility rate (TFR) will decline from its level of 3.5 in 2000 to reach replacement level fertility (TFR= 2.1) in the year 2017. This scenario represents the target of the MOHP.
- (2) **The "Medium" Scenario:** In this scenario it is assumed that the total fertility rate (TFR) will reach replacement level fertility (TFR= 2.1) in the year 2027. This assumption implies that the expected TFR for the year 2017 is 2.5. Justification for this scenario will be discussed below.
- (3) **The "High" Scenario:** In this scenario, it is assumed that the total fertility rate (TFR) will remain constant at its current level. According to the 2000 Demographic and Health Survey, this level is TFR= 3.5. Although unrealistic, this scenario is included for purposes of comparison.

The five points to justify the “Medium” assumption were determined by the team as follows:

1. It agrees with the past trend of

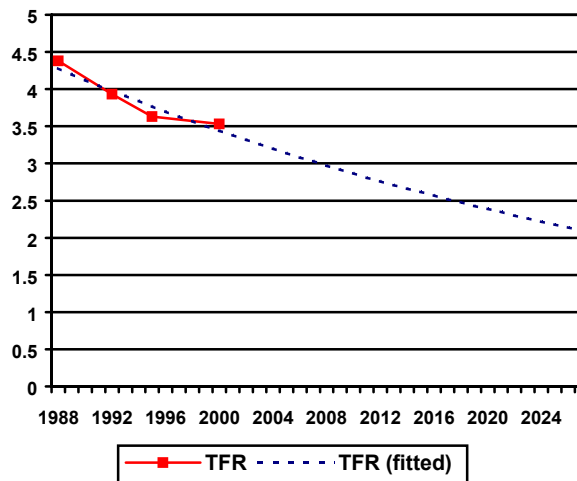
TFR: As shown in figure (1), the curve fitted to the past trend shows the expected value of TFR=2.5 in 2017 and a replacement level TFR=2.1 in 2027.

2. It agrees with estimates made

in other sources: The database of the US Census Bureau, Table 028 (Egypt) shows that the expected TFR for the year 2025 is 2.1

(<http://www.census.gov/cgi-bin/ipc/idbagg>)

Figure (1) Total Fertility Rates and Fitted Fertility Rates



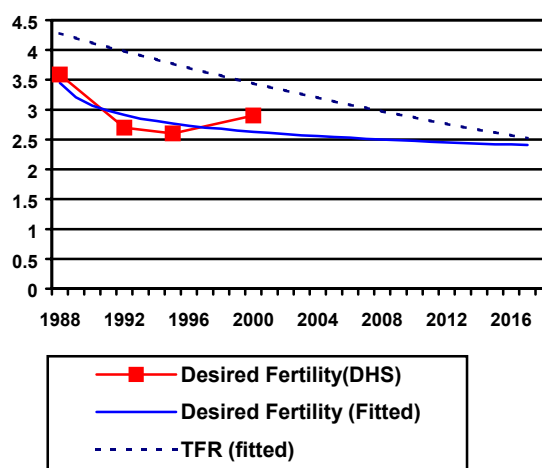
3. The TFR for the year 2017 is achieved with a contraceptive prevalence rate

(CPR) that will satisfy the unmet need: Under this assumption, the 2017 CPR required for achieving a TFR of 2.5 is 68.3%. This will cover the current unmet need of 11.2% (DHS 2000) in addition to the current level of contraceptive use (56.1% + 11.2% = 67.3%). Satisfying the unmet need is an ICPD directive and in line with the MOHP program goals.

4. It allows for the TFR to equal the

desired fertility: Figure (2) shows that the gap between TFR and the desired fertility will be minimized in 2017 when TFR = 2.5 and the desired fertility = 2.4. Reducing the desired fertility is possible only through development efforts that contribute to increasing the demand for smaller families such as expanding women’s education, enforcing child labor laws, and other policies that involve organizations (other than MOHP).

Figure (2) Desired Fertility and Total Fertility



5. The necessary increase in CPR is feasible in view of experiences of other countries:

Table (1) present the experience of four countries. They were selected since they had a CPR of almost 50% and were able to reach 70% in a reasonable time, an increase of about 1% per year as TFR approaches replacement level fertility. However, two countries are heavily dependent on female sterilization. The method mix in Colombia and Thailand concentrates on female sterilization and pills. In Turkey and Vietnam it concentrates on the IUD.

	Period	Year	Pop (m)	TFR	CPR
Colombia	First Year	1980	26.58	3.6	44
	End Year	1995	36.28	2.9	70
	Diff.	15	+9.7	-0.7	+23.7
Thailand	First Year	1981	47.92	NA	
	End Year	1993	56.98	2.0	
	Diff.	12	+9.1	NA	+15.0
Turkey	First Year	1983	48.44	4.1	
	End Year	1993	59.21	2.8	60
	Diff.	10	+10.8	-1.3	+11.6
Vietnam	First Year	1988	63.63	4.0	50
	End Year	1997	75.24	2.7	70
	Diff.	9	+11.6	-1.3	20
Egypt	First Year	1988	53.49	4.4	30
	End Year	2000	64.20	3.5	50
	Diff.	12	+10.7	-0.9	+18.3

IV. The Content and Structure of the Report

In addition to the introduction, the report contains five sections.

Section One: “Technical Notes” provides the definitions of each of the indicators used. It also explains the few common assumptions that will apply to all three scenarios.

Section Two: reports the results of applying the “Low” scenario in which the TFR is assumed to reach replacement level in the year 2017. This scenario presents the target of the MOHP’s National Strategic Plan for Population, developed by the MOHP/ Population and Family Planning Sector in December 2001. The results of this scenario are used to define the quantitative targets of the strategic plan.

Section Three: presents the results of the “Medium” scenario which assumes that TFR will decline from 3.5 in the year 2000 to 2.5 in the year 2017. Justifications for developing this scenario were mentioned above.

Section Four: presents the results of applying the “High” scenario in which no change is assumed to the level of TFR of the year 2000. In spite of being unrealistic, this scenario serves to illustrate the effect of the other two scenarios compared to a status quo situation.

Section Five: presents a comparison between the results of the three scenarios in the major indicators.

For each of the three projections, the results presented are:

1. **Fertility Indicators:** Total Fertility Rate (TFR) which is an input indicator, Gross Reproduction Rate (GRR), Net Reproduction Rate (NRR), Mean Age of Childbearing, and Child-woman ratio.

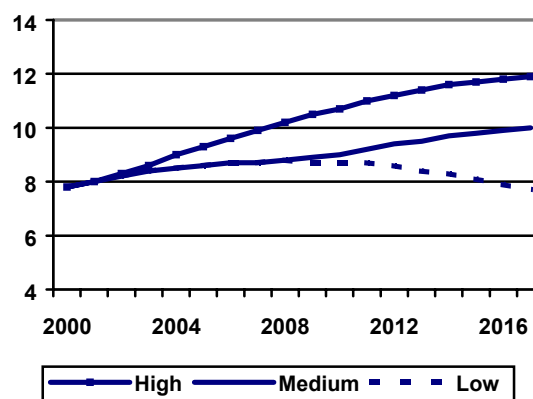
2. **Mortality Indicators:** male life expectancy (Males LE), female life expectancy (Female LE), life expectancy for both sexes (Total LE), infant mortality rate (IMR), under five mortality rate (U5MR).
3. **Vital Rates:** crude birth rate (CBR), crude death rate (CDR), Rate of natural increase (RNI), Population growth rate (GR), population doubling time, annual number of births and annual number of deaths.
4. **Population:** total population size, male population, female population, percent population in the age groups (0-4), (5-14), (15-49), (15-64), (65 and over) and percent females 15-49. Also, this section presents the sex ratio, dependency ratio and the median age of the population.
5. **Age and Sex Composition:** Detailed tables are provided containing the age and sex composition of the projected population.
6. **Family Planning Indicators:** average effectiveness of the method mix, contraceptive prevalence rate (CPR), number of women of reproductive age, number of married women of reproductive age MWRA, number of contraceptive users, number of new contraceptive acceptors, number of couple years of protection (CYP), total number of births, number of pregnancies, total fecundity rate and contraceptive commodities (condom, injectables, IUD, subcutaneous methods, Pills).
7. **Annual Needs – Health Sector :** number of doctors , number of nurses, number of health centers, number of hospitals, number of beds, annual recurrent health expenditure and population at high health risk.
8. **Annual Needs – Labor Force:** size of the labor force (males and females), unemployment rates (males and females), number of persons employed, number of persons unemployed, number of child dependents and GDP per capita.
9. **Annual Needs – Education:** number of children of primary school age, number of primary students, number of primary teachers, number of primary schools, primary schools recurrent expenditure, number of children of secondary school age, number of secondary students, number of secondary school teachers, number of secondary schools and secondary schools recurrent expenditure.

V. Highlights of the Report

1. Even under the “low scenario”, the most optimistic scenario, the population will increase to 86.4 million in 2017, an increase of 22.2 million persons (35%). The “medium” scenario shows that the total population will increase by 25.3 million persons (39.4%), increasing the total population to about 90 million. The number of married women in reproductive age (MWRA) will increase by 4.24 million reaching 15.39 million women, an increase of 38%.

2. The number of children under age five will continue to increase except under the “Low” assumption. The “Medium” scenario predicts an increase of 2.2 million children in 2017 which is an increase of 28% over the current number. The “High” scenario predicts an increase of 53% in the number of children under age five, reaching a high estimate of 11.9 million.

Figure (3) Projected number of children in the age group (0-4)

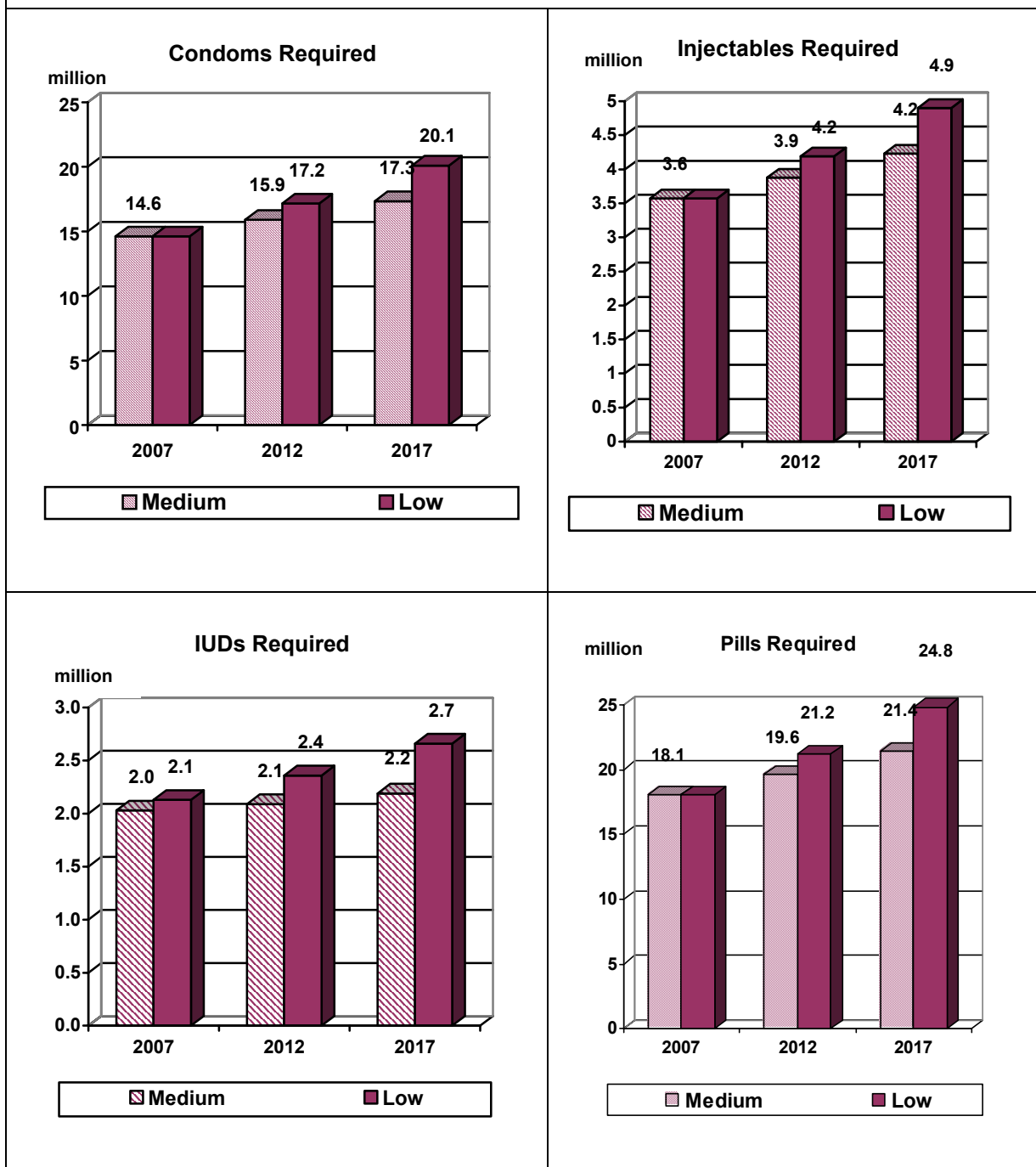


3. To achieve the “Low” scenario, the contraceptive prevalence rate (CPR) needs to increase from its 2000 level of 56.1% to 73.1% in 15 years. Under the “Medium” scenario, CPR needs to be increased to 63.1% only. As the number of married women in reproductive age increases, the number of family planning users will increase from its 2000 level of 6.25 million women. Under the “Low” scenario the total number of contraceptive users in 2017 will increase by 5 million reaching 11.25 million users (an increase of 80%). Under the “Medium” scenario the total number of contraceptive users in 2017 will increase by 3.46 million (an increase of 55% only). The population will continue to grow until it reaches stabilization at the year 2048 at a size of 115 million under the “low” scenario and at the year 2080 at a size of 138 million under the “medium” scenario.

4. One of the most effective ways for the Government to achieve its target will be to provide those services that will enable couples to meet their desired family size. Through readily available, accessible and affordable high-quality family planning services, couples will be able to limit the size of their families to a manageable number. In figure (4) and table (2), the projected family planning commodities are presented. It should be noted that these projected figures are based on the assumption presented above of the constant method mix through the projection period. Any changes in the composition of the mix, whether by introducing new methods or eliminating existing methods, will alter the results. Also, changing the share of each method will result in changing the projected quantities.

Contraceptive method	2002	2017	
		Low scenario (% increase)	Medium scenario (% increase)
Condom	11.1	20.1 (81%)	17.3 (56%)
Injectables	2.7	4.9 (81%)	4.2 (56%)
IUD	1.7	2.7 (59%)	2.2 (29%)
Pill cycles	13.7	24.8 (81%)	21.4 (56%)

Figure (4) Projected Commodities



5. In response to the expected growth in its population size, the Government will be required to provide a vast increase in resources allocation – both financial and other – to support the services currently provided. And, if the Government hopes to improve the quality of the services provided, even more integration of resources will be required to achieve sustainable results.
6. Expansion of the health system will be necessary. The number of doctors, nurses, and medical facilities will need to increase to meet the needs of the growing population, especially if the quality of health services is to be improved. Under the “Medium” scenario, the number of doctors and nurses required should reach 200,000 and 235,000 respectively. An increase of approximately 55,000 and 65,000. The sections on results provide a break down of the required number of doctors into public sector general practitioners, public specialists and the private sector. These estimates are made in view of the current health policy of the Health Sector Reform of one GP per 500 families. Also it is assumed that the ratio of nurses to physicians will reach 2:1. Also, the results provide estimates of the required number of health centers and beds.
7. There will also be increasing need and pressure to create employment opportunities for new entrants into the labor force. Over the projection period, the labor force will grow from 17.9 million to 26 million, an increase of about 8 million.
8. A great deal of pressure will be placed on the education system as the number of primary school children will increase substantially. In 2017 this number will be approximately 9.2 million students who will be in need of 401 thousand teachers.

Section One

Technical Notes and Definition

TECHNICAL NOTES AND DEFINITIONS

First: Demographic Indicators

1. **Total Fertility Rate (TFR):** The average number of children that would be born alive to a woman (or a group of women) during her reproductive lifetime (15-49). It's 3.5 in 2000 (EDHS, 2000).
2. **Goal:** Reach to the replacement level (2.1 child/woman) in 2017.
3. **Child-woman ratio:** The number of children under the age of five per woman of childbearing age (15-49).
4. **Life expectancy:** The average number of years a newborn can expect to live based on the mortality conditions at the time, data of CAPMAS have been used.
5. **Infant Mortality Rate (IMR):** The number of deaths to infants under one year of age per 1000 live births. It is 42.5 per 1000 live births in 2000 (MOHP, 2000).
6. **Under Five Mortality Rate (U5MR):** The number of deaths to children under the age of five per 1000 live births. It's 52 per 1000 live births in 2000 (DHS, 2000).
7. **Crude Birth Rate (CBR):** The number of live births per 1000 population in a given year.
8. **Crude Death Rate (CDR):** The number of deaths per 1000 population in a given year.
9. **Rate of Natural Increase (RNI):** It is the difference between CBR and CDR.
10. **Annual Growth Rate (GR):** The rate of which the population is increasing or decreasing in a given year due to natural increase and net migration expressed as a percentage of the base population. It is assumed that the net migration in Egypt equal to zero.
11. **Doubling time:** The number of years it would take for the population to double its current size at the current annual rate of growth.
12. **Births:** The total number of annual births, **Deaths:** The total number of annual deaths.
13. **Percentage of female aged (15-19) to total female:** The number of female population in reproductive age to the total number of females.
14. **Percentage of female aged (15-49) to total population:** The number of female population in reproductive age to the total population.

Second: Family Planning Indicators

1. **Method protection attributes:** refers to the characteristics of method practice that are needed to calculate the number of users, acceptors, and commodities required to meet the chosen goals. For the temporary methods (condoms, injections, pills and vaginal tablets), the key attribute is couple-year of protection, or CYP. For the longer-term methods (IUD and sub-dermal methods), the key attribute is the average duration of use. In this projection, CYP for condoms is 100, for injections it is 4 and

for pills it is 13 cycles . For IUD the duration of use is 3 years in the base year (2000) and will reach to 3.5 in 2017. The average duration of use among sub-dermal users is 3.0 years in 2000, will be kept constant. The method attributes will be held constant during the projection period for all three scenarios.

2. **Effectiveness:** The average effectiveness of the methods selected, weighted by the number of users. This is the proportion of women using a method who will not become pregnant in that year. This proportion is 81% for condom, 100% for injectable, 96% for IUD, 100% for sub dermal, 92% for pills, 81% for vaginal barriers and 50% for “other” traditional methods. Method effectiveness will be held constant during the projection period for all three scenarios.
3. **Method mix:** The distribution of contraceptive users by contraceptive method (DHS, 2000, table 6.2 – page 77). This method mix is as follows: 1.8% condom, 10.9% injectable, 63.4% IUD, 0.4% subdermal, 17% pills, 2.5% female sterilization, 1.1% rhythm, 0.4% vaginal barrier, 0.4% withdrawal, 2.3% others. The method mix will be held constant during the projection period for all three scenarios.
4. **Source mix:** The distribution of contraceptive users by contraceptive method and sources of modern family planning methods (DHS, table 6.8 – page 84). This method specific source mix is as follows for the public sector, private sector and other respectively : Condom (14.2%, 82.2%, 3.6%), Injectable (81.4%, 17.6%, 1%), IUD (54%, 46%, 0%), Sub dermal (100%, 0%, 0%), Pills (10.8%, 88.9%, 0.3%) and Female Sterilization (46.5%, 53.5%, 0%). The source mix will be held constant during the projection period for all three scenarios
5. **Postpartum insusceptibility:** The period after a birth during which a woman is not exposed to the risk of pregnancy either because of postpartum amenorrhea or because of postpartum abstinence, it is equal 4 months in 2000 (DHS, 2000) and will be held constant during the projection period for all three scenarios
6. **Total abortion rate:** The average number of induced abortions a woman would have if she survived to age 49 and had abortions at the prevailing age-specific rates. In this projection it is ignored.
7. **Sterility:** It measures both natural sterility and the pathological. It's the percentage of women who are childless at the end at reproductive period; it's equal 2.9 in year 2000 (DHS, 2000). It will be held constant during the projection period for all three scenarios
8. **Contraceptive prevalence:** The percentage of married women of reproductive age using some form of contraception. It is equal 56.1% in year 2000 (DHS, 2000).
9. **Users:** The number of women who are using some form of contraception in a particular year.
10. **Acceptor:** The number of new users of a particular method in a particular year. A woman is classified as an acceptor if she starts using a method during the year and was not using that method at the start of the year. Previously, she may have been using nothing or she may have been using a different method.
11. **Commodities:** The amount of supplies required for different methods to provide a specified level of family planning services.

- 12. Pregnancies:** The number of pregnancies occurring during a year. Pregnancies can be wanted, wanted later, or not wanted.
- 13. Total fecundity rate:** The average number of children that would be born to women if none of the proximate determinates was acting to reduce fertility from its biological maximum.
- 14. Growth rates for methods:** The increment in total number of contraceptive users from year to year. These are net figures, consisting of new users and the continuing users who remain after previous users either have discontinued or have "aged out".

Third: Health Services Indicators for the Year 2000

1. Total number of doctors in Egypt=144413 (Source: Private Medical Treatment Department, MOHP)
2. Total number of doctors in public sector= 58695 (Source: Annual Report, MOHP, 2000, Chapter III)
3. Total number of doctors in private sector= 144413 - 58695= 85718
4. Doctors per 10000 persons= 144413/ 64.2 (million) = 22.5 doctor
5. Persons/ doctor= 64.2 million / 144413= 444.6 persons
6. Total number of nurses= 169621 (Source: Private Medical Treatment Department, MOHP)
7. Total number of nurses in public sector= 87968 (Source: Annual Report, MOHP, 2000, Chapter III)
8. Total number of nurses in the private sector= 169621 - 87968= 81653
9. Nurses per 10000 persons= 169621/ 64.2 million = 26.42 nurses
10. Persons/ nurse= 64.2 million / 169621= 378.5 persons
11. Total number of health centers with beds: 2319 (Source: yearly report, MOHP, 2000, Chapter III, the data are from Health affairs and Health Insurance Directorates in governorates, and Medical Treatment Institutions, Hospitals and Teaching Institutions).
12. Persons per hospitals= 64.2 million/ 2319 = 27684 persons
13. Total number of beds= 140148
14. Persons/ bed= 64.2 million/ 140148= 458 persons
15. MOHP budget for 1999/2000= 2922148500 LE (Source: Annual Report, MOHP, 2000, Chapter III)
16. MOHP budget per Capita in 1999/2000= 45.7 LE (Source: Annual Report, MOHP, 2000, Chapter III)
17. Total number of health centers without beds= 65043 (Source: Annual Report, MOHP, 2000, Chapter III, the data are from Health affairs and Health Insurance Directorates in governorates, Medical Treatment Institution, Pharmacy General Department, Laboratory General

Department and Human Development General Department that include private sector).

18. Persons per health center= 64.2 million/ 65043 = 987 persons

Section Two

The “Low” Projection Scenario

Replacement level fertility by the year 2017

Year	2000	2002	2007	2012	2017
Fertility					
Input TFR	3.50	3.34	2.92	2.51	2.10
Child-women ratio	0.48	0.47	0.46	0.41	0.34
Mortality					
Male LE	66.70	67.50	69.50	71.20	72.50
Female LE	71.00	71.90	74.00	75.80	77.20
Total LE	68.80	69.70	71.70	73.50	74.80
IMR	42.50	39.80	33.30	28.30	24.70
U5MR	52.90	49.20	39.90	33.80	30.40
Vital Rates					
CBR per 1000	27.50	26.80	24.60	21.30	17.30
CDR per 1000	6.10	6.00	5.70	5.40	5.40
RNI percent	2.14	2.08	1.90	1.58	1.19
Doubling time	32.70	33.70	36.90	44.10	58.60
Annual births & deaths (Millions)					
Births	1.77	1.79	1.82	1.72	1.50
Deaths	0.39	0.40	0.42	0.44	0.47
Population (Millions)					
Total population	64.20	66.98	74.03	80.74	86.43
Male population	32.70	34.08	37.58	40.91	43.73
Female population	31.50	32.90	36.45	39.83	42.71
Percent 0-4 (both sexes)	12.15	12.22	11.79	10.60	8.93
Percent 5-14 (both sexes)	23.21	22.19	21.00	20.81	19.90
Percent 15-49 (both sexes)	51.87	52.35	52.63	52.59	53.80
Percent 15-64 (both sexes)	60.59	61.37	62.65	63.52	65.29
Percent 65 and over (both sexes)	4.05	4.22	4.56	5.07	5.89
Percent females 15-49/Female Population	52.06	52.38	52.36	52.09	53.02
Percent females 15-49/Total Population	25.54	25.73	25.78	25.70	26.20

Total Population, both sexes (millions)

Year	2000	2002	2007	2012	2017
0-4	7.80	8.20	8.70	8.60	7.70
5-9	7.40	7.40	8.10	8.70	8.50
10-14	7.50	7.40	7.40	8.10	8.70
15-19	7.50	7.60	7.40	7.40	8.10
20-24	6.30	6.90	7.60	7.40	7.40
25-29	4.90	5.40	6.80	7.50	7.40
30-34	4.10	4.30	5.40	6.80	7.50
35-39	3.90	3.90	4.30	5.30	6.70
40-44	3.60	3.70	3.90	4.20	5.30
45-49	3.00	3.20	3.70	3.80	4.20
50-54	2.40	2.60	3.10	3.60	3.70
55-59	1.80	2.00	2.50	3.00	3.40
60-64	1.40	1.50	1.80	2.30	2.80
65-69	1.20	1.20	1.30	1.60	2.10
70-74	0.80	0.90	1.00	1.10	1.40
75-79	0.40	0.50	0.70	0.80	0.80
80+	0.20	0.30	0.40	0.60	0.80
Total	64.20	67.00	74.00	80.70	86.40

Males (millions)

Year	2000	2002	2007	2012	2017
0-4	4.00	4.20	4.50	4.40	3.90
5-9	3.80	3.80	4.20	4.40	4.40
10-14	3.90	3.80	3.80	4.10	4.40
15-19	3.90	3.90	3.80	3.80	4.10
20-24	3.30	3.60	3.90	3.80	3.80
25-29	2.50	2.80	3.60	3.90	3.80
30-34	2.00	2.10	2.80	3.50	3.90
35-39	1.90	1.90	2.10	2.70	3.50
40-44	1.80	1.80	1.90	2.10	2.70
45-49	1.50	1.60	1.80	1.80	2.00
50-54	1.20	1.30	1.50	1.70	1.80
55-59	0.90	1.00	1.20	1.50	1.70
60-64	0.70	0.70	0.90	1.10	1.30
65-69	0.60	0.60	0.60	0.80	1.00
70-74	0.40	0.40	0.50	0.50	0.60
75-79	0.20	0.20	0.30	0.30	0.40
80+	0.10	0.10	0.20	0.30	0.40
Total	32.70	34.10	37.60	40.90	43.70

Females (millions)

Year	2000	2002	2007	2012	2017
0-4	3.80	4.00	4.30	4.20	3.80
5-9	3.60	3.60	4.00	4.30	4.20
10-14	3.60	3.60	3.60	4.00	4.20
15-19	3.60	3.60	3.60	3.60	4.00
20-24	3.00	3.30	3.60	3.60	3.60
25-29	2.40	2.60	3.30	3.60	3.60
30-34	2.10	2.20	2.60	3.20	3.60
35-39	2.00	2.00	2.20	2.60	3.20
40-44	1.80	1.90	2.00	2.10	2.60
45-49	1.50	1.60	1.90	2.00	2.10
50-54	1.20	1.30	1.60	1.80	1.90
55-59	0.90	1.00	1.30	1.50	1.80
60-64	0.70	0.70	0.90	1.20	1.40
65-69	0.60	0.60	0.70	0.90	1.10
70-74	0.40	0.50	0.50	0.60	0.70
75-79	0.20	0.20	0.30	0.40	0.50
80+	0.10	0.10	0.20	0.30	0.40
Total	31.50	32.90	36.40	39.80	42.70

Year	2000	2002	2007	2012	2017
Average Effectiveness	0.94	0.94	0.94	0.94	0.94
Prevalence %	56.10	58.10	63.11	68.12	73.13
Total fertility rate	3.50	3.34	2.92	2.51	2.10
Women of Reproductive Age (millions)	16.40	17.23	19.09	20.75	22.64
Married Women of Reproductive Age (millions)	11.15	11.71	12.97	14.10	15.39
Users (millions)	6.25	6.81	8.19	9.61	11.25
Acceptors (millions)	1.84	1.94	2.18	2.41	2.71
CYP (millions)	7.67	8.28	9.79	11.38	13.34
Births (millions)	1.77	1.79	1.82	1.72	1.50
Pregnancies (millions)	2.03	2.06	2.10	1.98	1.72
Total Fecundity	13.40	13.40	13.40	13.40	13.40
Commodities (millions)					
Condom	11.17	12.15	14.62	17.16	20.1
Injectable	2.72	2.97	3.57	4.19	4.9
IUD	1.80	1.90	2.13	2.36	2.66
Sub-dermal	0.01	0.01	0.01	0.01	0.01
Pill	13.79	15.01	18.06	21.19	24.82
Female sterilization	0.02	0.03	0.03	0.03	0.04
Growth rates of contraceptives					
Condom	4.42	4.05	3.41	3.12	3.28
Injectable	4.42	4.05	3.41	3.12	3.28
IUD	2.78	2.52	2.10	2.24	2.35
Sub-dermal	3.87	3.60	3.13	3.20	3.28
Pill	4.42	4.05	3.41	3.12	3.28
Female sterilization	3.04	2.91	2.68	3.32	3.28

Annual Needs - Health Sector

Year	2000	2002	2007	2012	2017
Doctors** (Thousands)	144.40	150.70	166.44	181.51	194.33
Nurses** (Thousands)	169.62	177.01	195.51	213.21	228.27
Health centers** (Thousands)	65.05	67.88	74.97	81.76	87.54
Hospitals** (Thousands)	2.32	2.42	2.67	2.92	3.12
Beds** (Thousands)	140.17	146.29	161.57	176.20	188.65
Annual recurrent health expenditure** (Billions LE)	2.93	3.06	3.38	3.69	3.95
Population at high health risk* (Millions)	24.20	25.40	27.90	29.30	30.40

* Total of babies, children (less than 5 years), and women at reproductive age (15-49 years)

** Assumption: the 2000 rates will be kept constant.

Required Doctors and Nurses

Year		2000	2002	2007	2012	2017
Total Population (Million)		64.20	66.98	74.03	80.74	86.43
Doctors		144,431	148,827	159,795	169,037	175,337
Public General Practitioners		44,026	44,207	44,048	42,792	40,190
Public Specialist		14,669	15,304	16,915	18,448	19,748
Private Sector		85,718	89,430	98,843	107,802	115,399
Doctor/ 10000	Total	22.50	22.24	21.59	20.94	20.29
	Public General Practitioners *	6.86	6.60	5.95	5.30	4.65
	Public Specialist	2.28	2.28	2.28	2.28	2.28
	Private Sector	13.35	13.35	13.35	13.35	13.35
Nurses **		169,620	190,920	244,172	297,423	350,674

* Assumption: for public general practitioners to reach the goal of HSR of one GP per 500 families

** Assumption: for nurses to reach the goal ratio to physicians of 2:1

Annual Needs - Labor Force Sector

Year		2000	2002	2007	2012	2017
Total population (Million)		64.20	67.00	74.00	80.70	86.40
Labor force (Million)	Total	17.86	18.77	21.32	23.47	25.91
	M	15.13	15.96	18.12	20.17	22.11
	F	2.73	2.81	3.20	3.30	3.80
Unemployment rates %	M	4.95	4.61	3.75	2.90	2.04
	F	22.61	20.19	14.14	8.09	2.04
Employed (Million)		16.49	17.47	20.19	22.62	25.38
Unemployed (Million)		1.37	1.30	1.13	0.85	0.53
Child dependents (Million)		22.70	23.0	24.4	25.40	24.90
GDP (Billion LE)		302.20	339.55	454.40	608.09	813.76
GDP per capita (Thousand LE)		4.71	5.07	6.14	7.54	9.42

Labor Force: The population aged 15-64 who is able and willing to work. The male participation rate =0.77 and the female participation rate = 0.14 (Human Development Report, 1998/99), they are assumed constant.

Unemployment rates: For 2000 (Labor Sample Survey, 2000. For 2017 (The National Strategy for Economic and Social Development (1900/91 - 2016/17)

Child dependents: children under age 14.

GDP: Human Development Report 1998/99. The current annual increase of 6% is assumed to continue.

Note: This is not intended to be a forecast of actual GDP, but is used to demonstrate the impact of population growth on GDP per capita, given constant economic growth.

Annual Needs - Education Sector

Year		2000	2002	2007	2012	2017
Children of Primary School Age (million)	M	3.81	3.81	4.07	4.36	4.39
	F	3.59	3.61	3.88	4.26	4.20
	Total	7.40	7.42	7.95	8.62	8.59
Primary Students (million)	M	3.75	3.75	4.01	4.28	4.32
	F	3.39	3.41	3.67	4.03	3.97
	Total	7.14	7.16	7.67	8.31	8.29
Primary teachers required (thousand)		320.82	321.76	344.54	373.51	372.42
Primary schools required (thousand)		15.55	15.59	16.69	18.10	18.04
Primary recurrent expenditure required (Billion LE)		2.54	2.54	2.73	2.96	2.95
Children of Secondary School Age (million)	M	2.38	2.38	2.38	2.36	2.54
	F	2.20	2.21	2.23	2.26	2.42
	Total	4.58	4.59	4.61	4.63	4.96
Secondary students (million)	M	1.65	1.65	1.65	1.64	1.76
	F	1.49	1.50	1.51	1.53	1.63
	Total	3.14	3.14	3.16	3.17	3.39
Secondary teachers required (thousand)		237.18	237.56	238.52	239.48	256.57
Secondary schools required (thousand)		3.54	3.55	3.56	3.57	3.83
Secondary recurrent expenditure required (Billion LE)		2.34	2.34	2.36	2.37	2.53

Primary school enrollment rate (%) = 96.5% (adjusted from Ministry of Education, Department of Information) (98.34% for males, 94.56% for females).

Students /primary school teacher = 22.26 (Ministry of Education, Department of Information, 2000-2001).

Student/primary school = 459.42 (Calculated from Ministry of Education, Department of Information, 2000-2001).

Recurrent expenditure per primary school student = 356 LE (Egypt Human Development Report, 1998/99).

Secondary school enrollment rate (%) =68.5% (adjusted from Ministry of Education, Department of Information) (69.25% for males, 67.69% for females).

Students /secondary school teacher = 13.23 (Ministry of Education, Department of Information, 2000-2001).

Student/secondary school = 885.96 (Calculated from Ministry of Education, Department of Information, 2000-2001).

Recurrent expenditure per secondary school student = 746 LE (Egypt Human Development Report, 1998/99).

Secondary = general secondary, industrial, agriculture and commercial.

Section Three

The “Medium” Projection Scenario

Replacement level fertility by the year 2017

Year	2000	2002	2007	2012	2017
Fertility					
Input TFR	3.50	3.38	3.09	2.79	2.50
Child-women ratio	0.48	0.48	0.48	0.45	0.39
Mortality					
Male LE	66.70	67.50	69.50	71.20	72.50
Female LE	71.00	71.90	74.00	75.80	77.20
Total LE	68.80	69.70	71.70	73.50	74.80
IMR	42.50	39.80	33.30	28.30	24.70
U5MR	52.90	49.20	39.90	33.80	30.40
Vital Rates					
CBR per 1000	27.50	27.20	25.90	23.40	20.10
CDR per 1000	6.10	6.00	5.70	5.50	5.40
RNI percent	2.14	2.12	2.02	1.79	1.47
Doubling time	32.70	33.10	34.60	39.10	47.50
Annual births & deaths (Millions)					
Births	1.77	1.82	1.93	1.91	1.78
Deaths	0.39	0.40	0.42	0.45	0.48
Population (Millions)					
Total population	64.20	67.01	74.40	81.87	88.76
Male population	32.70	34.09	37.77	41.48	44.92
Female population	31.50	32.92	36.63	40.38	43.84
Percent 0-4 (both sexes)	12.15	12.26	12.19	11.38	10.05
Percent 5-14 (both sexes)	23.21	22.18	20.94	20.97	20.60
Percent 15-49 (both sexes)	51.87	52.32	52.37	51.86	52.43
Percent 15-64 (both sexes)	60.59	61.34	62.33	62.65	63.61
Percent 65 and over (both sexes)	4.05	4.22	4.54	5.00	5.73
Percent females 15-49/Female Population	52.06	52.35	52.10	51.38	51.68
Percent females 15-49/Total Population	25.54	25.72	25.65	25.34	25.53

Total Population, both sexes (millions)

Year	2000	2002	2007	2012	2017
0-4	7.80	8.22	9.07	9.32	8.92
5-9	7.40	7.44	8.16	9.02	9.28
10-14	7.50	7.42	7.42	8.15	9.01
15-19	7.50	7.59	7.40	7.40	8.13
20-24	6.30	6.86	7.56	7.38	7.38
25-29	4.90	5.40	6.82	7.53	7.35
30-34	4.10	4.32	5.37	6.78	7.49
35-39	3.90	3.93	4.28	5.33	6.74
40-44	3.60	3.73	3.88	4.23	5.28
45-49	3.00	3.22	3.65	3.81	4.16
50-54	2.40	2.60	3.12	3.55	3.72
55-59	1.80	1.98	2.47	2.98	3.41
60-64	1.40	1.47	1.82	2.30	2.80
65-69	1.20	1.21	1.30	1.63	2.07
70-74	0.80	0.89	1.00	1.09	1.39
75-79	0.40	0.47	0.66	0.75	0.83
80+	0.20	0.25	0.42	0.62	0.80
Total	64.20	67.01	74.40	81.87	88.76

Males (millions)

Year	2000	2002	2007	2012	2017
0-4	4.00	4.21	4.63	4.76	4.57
5-9	3.80	3.81	4.18	4.61	4.74
10-14	3.90	3.84	3.80	4.17	4.60
15-19	3.90	3.95	3.83	3.79	4.16
20-24	3.30	3.59	3.93	3.81	3.77
25-29	2.50	2.80	3.56	3.90	3.79
30-34	2.00	2.14	2.77	3.54	3.88
35-39	1.90	1.91	2.11	2.75	3.51
40-44	1.80	1.84	1.87	2.09	2.72
45-49	1.50	1.61	1.80	1.83	2.05
50-54	1.20	1.29	1.55	1.74	1.78
55-59	0.90	0.98	1.22	1.46	1.65
60-64	0.70	0.73	0.89	1.11	1.35
65-69	0.60	0.60	0.63	0.78	0.98
70-74	0.40	0.44	0.48	0.51	0.64
75-79	0.20	0.23	0.32	0.35	0.38
80+	0.10	0.12	0.20	0.29	0.36
Total	32.70	34.09	37.77	41.48	44.92

Females (millions)

Year	2000	2002	2007	2012	2017
0-4	3.80	4.01	4.44	4.56	4.35
5-9	3.60	3.63	3.99	4.42	4.54
10-14	3.60	3.58	3.62	3.98	4.41
15-19	3.60	3.65	3.57	3.61	3.97
20-24	3.00	3.27	3.64	3.57	3.61
25-29	2.40	2.61	3.26	3.62	3.56
30-34	2.10	2.18	2.59	3.25	3.61
35-39	2.00	2.03	2.16	2.58	3.23
40-44	1.80	1.89	2.01	2.14	2.56
45-49	1.50	1.61	1.85	1.98	2.12
50-54	1.20	1.30	1.57	1.82	1.94
55-59	0.90	0.99	1.25	1.52	1.76
60-64	0.70	0.74	0.93	1.19	1.45
65-69	0.60	0.61	0.67	0.85	1.09
70-74	0.40	0.45	0.52	0.58	0.75
75-79	0.20	0.24	0.34	0.40	0.46
80+	0.10	0.13	0.22	0.33	0.43
Total	31.50	32.92	36.63	40.38	43.84

Year	2000	2002	2007	2012	2017
Average Effectiveness	0.94	0.94	0.94	0.94	0.94
Prevalence %	56.10	57.53	61.11	64.69	68.27
Total fertility rate	3.50	3.38	3.09	2.79	2.50
Women of Reproductive Age (millions)	16.40	17.23	19.09	20.75	22.66
Married Women of Reproductive Age (millions)	11.15	11.71	12.97	14.10	15.40
Users (millions)	6.25	6.74	7.93	9.12	10.51
Acceptors (millions)	1.81	1.89	2.08	2.26	2.51
CYP (millions)	7.59	8.11	9.39	10.71	12.38
Births (millions)	1.77	1.82	1.93	1.91	1.78
Pregnancies (millions)	2.03	2.09	2.22	2.20	2.05
Total Fecundity	13.40	13.40	13.40	13.40	13.40
Commodities (millions)					
Condom	11.17	12.03	14.16	16.29	18.77
Injectable	2.72	2.94	3.45	3.98	4.58
IUD	1.78	1.86	2.04	2.22	2.46
Sub-dermal	0.01	0.01	0.01	0.01	0.02
Pill	13.79	14.86	17.48	20.12	23.19
Female sterilization	0.02	0.02	0.03	0.03	0.04
Growth rates of contraceptives					
Condom	3.89	3.56	2.98	2.75	2.99
Injectable	3.89	3.56	2.98	2.75	2.99
IUD	2.29	2.06	1.70	1.89	2.07
Sub-dermal	3.39	3.15	2.74	2.85	2.99
Pill	3.89	3.56	2.98	2.75	2.99
Female sterilization	2.59	2.50	2.33	3.03	2.99

Annual Needs - Health Sector

Year	2000	2002	2007	2012	2017
Doctors** (Thousands)	144.40	150.73	167.34	184.14	199.64
Nurses** (Thousands)	169.62	177.05	196.56	216.29	234.50
Health centers** (Thousands)	65.05	67.90	75.38	82.95	89.93
Hospitals** (Thousands)	2.32	2.42	2.69	2.96	3.21
Beds** (Thousands)	140.17	146.32	162.44	178.75	193.80
Annual recurrent health expenditure** (Billions LE)	2.93	3.06	3.40	3.74	4.06
Population at high health risk* (Millions)	24.20	25.45	28.15	30.07	31.58

* Total of babies, children (less than 5 years), and women at reproductive age (15-49 years)

** Assumption: the 2000 rates will be kept constant.

Required Doctors and Nurses

Year	2000	2002	2007	2012	2017
Total Population (Million)	64.20	67.01	74.40	81.87	88.76
Doctors	144,431	148,963	160,555	171,354	180,005
Public General Practitioners	44,026	45,404	48,937	52,229	54,866
Public Specialist	14,669	15,135	16,312	17,410	18,289
Private Sector	85,718	89,458	99,324	109,296	118,495
Doctor/ 10000	22.23	21.58	20.93	20.28	20.29
	6.60	5.95	5.30	4.65	4.65
	2.28	2.28	2.28	2.28	2.28
	13.35	13.35	13.35	13.35	13.35
Nurses **	169,620	192,019	248,016	304,013	360,011

* Assumption: for public general practitioners to reach the goal of HSR of one GP per 500 families

** Assumption: for nurses to reach the goal ratio to physicians of 2:1

Annual Needs - Labor Force Sector

Year	2000	2002	2007	2012	2017
Total population (Million)	64.20	67.01	74.40	81.87	88.76
Labor force (Million)	17.86	18.88	21.32	23.57	25.91
	15.17	16.05	18.12	20.04	22.11
	2.69	2.84	3.20	3.54	3.80
Unemployment rates %	4.95	4.61	3.75	2.90	2.04
	22.61	20.19	14.14	8.09	2.04
Employed (Million)	16.50	17.57	20.19	22.70	25.43
Unemployed (Million)	1.36	1.310	1.13	0.87	0.53
Child dependents (Million)	22.70	23.10	24.70	26.5	27.20
GDP (Billion LE)	302.20	339.55	454.40	608.09	813.76
GDP per capita (Thousand LE)	4.71	5.07	6.11	7.43	9.17

Labor Force: The population aged 15-64 who is able and willing to work. The male participation rate =0.77 and the female participation rate = 0.14 (Human Development Report, 1998/99), they are assumed constant.

Unemployment rates: For 2000 (Labor Sample Survey, 2000. For 2017 (The National Strategy for Economic and Social Development (1900/91 - 2016/17)

Child dependents: children under age 14.

GDP: Human Development Report 1998/99. The current annual increase of 6% is assumed to continue.

Note: This is not intended to be a forecast of actual GDP, but is used to demonstrate the impact of population growth on GDP per capita, given constant economic growth.

Annual Needs - Education Sector

Year		2000	2002	2007	2012	2017
Children of Primary School Age (million)	M	3.81	3.84	4.11	4.53	4.70
	F	3.59	3.63	3.91	4.33	4.50
	Total	7.40	7.46	8.02	8.86	9.20
Primary Students (million)	M	3.75	3.77	4.04	4.45	4.62
	F	3.39	3.43	3.70	4.09	4.26
	Total	7.14	7.20	7.74	8.55	8.88
Primary teachers required (thousand)		320.28	321.11	345.62	383.94	401.24
Primary schools required (thousand)		15.55	15.59	16.78	18.64	19.48
Primary recurrent expenditure required (Billion LE)		2.54	2.54	2.74	3.05	3.19
Children of Secondary School Age (million)	M	2.38	2.35	2.26	2.30	2.58
	F	2.20	2.18	2.15	2.18	2.46
	Total	4.58	4.53	4.41	4.48	5.04
Secondary students (million)	M	1.65	1.63	1.57	1.59	1.79
	F	1.49	1.48	1.46	1.48	1.67
	Total	3.14	3.10	3.02	3.07	3.45
Secondary teachers required (thousand)		237.72	238.03	228.97	232.52	258.93
Secondary schools required (thousand)		3.54	3.55	3.41	3.46	3.86
Secondary recurrent expenditure required (Billion LE)		2.34	2.34	2.25	2.29	2.55

Primary school enrollment rate (%) = 96.5% (adjusted from Ministry of Education, Department of Information) (98.34% for males, 94.56% for females).

Students /primary school teacher = 22.26 (Ministry of Education, Department of Information, 2000-2001).

Student/primary school = 459.42 (Calculated from Ministry of Education, Department of Information, 2000-2001).

Recurrent expenditure per primary school student = 356 LE (Egypt Human Development Report, 1998/99).

Secondary school enrollment rate (%) =68.5% (adjusted from Ministry of Education, Department of Information) (69.25% for males, 67.69% for females).

Students /secondary school teacher = 13.23 (Ministry of Education, Department of Information, 2000-2001).

Student/secondary school = 885.96 (Calculated from Ministry of Education, Department of Information, 2000-2001).

Recurrent expenditure per secondary school student = 746 LE (Egypt Human Development Report, 1998/99).

Secondary = general secondary, industrial, agriculture and commercial.

Section Four

The “High” Projection Scenario

Constant fertility

Year	2000	2002	2007	2012	2017
Fertility					
Input TFR	3.50	3.50	3.50	3.50	3.50
Child-women ratio	0.48	0.48	0.52	0.54	0.52
Mortality					
Male LE	66.70	67.50	69.50	71.20	72.50
Female LE	71.00	71.90	74.00	75.80	77.20
Total LE	68.80	69.70	71.70	73.50	74.80
IMR	42.50	39.80	33.30	28.30	24.80
U5MR	52.90	49.20	39.90	33.80	30.40
Vital Rates					
CBR per 1000	27.50	28.30	29.20	28.30	26.40
CDR per 1000	6.20	6.00	5.30	5.90	5.30
RNI percent	2.18	2.24	2.39	2.24	2.11
Doubling time	32.10	31.40	29.30	31.20	33.10
Annual births & deaths (Millions)					
Births	1.80	1.90	2.20	2.40	2.50
Deaths	0.40	0.40	0.40	0.50	0.50
Population (Millions)					
Total population	64.20	67.10	75.30	84.70	94.60
Male population	32.70	34.10	38.20	42.90	47.90
Female population	31.50	33.00	37.10	41.80	46.70
Percent 0-4 (both sexes)	12.15	12.37	13.15	13.22	12.58
Percent 5-14 (both sexes)	23.21	22.06	20.85	21.37	22.20
Percent 15-49 (both sexes)	51.87	52.16	51.93	50.06	49.37
Percent 15-64 (both sexes)	60.59	61.25	61.75	60.57	59.83
Percent 65 and over (both sexes)	4.05	4.32	4.52	4.84	5.39
Percent females 15-49/Female Population	52.06	52.12	51.75	49.52	48.61
Percent females 15-49/Total Population	25.54	25.63	25.50	24.44	24.00

Total Population, both sexes (millions)

Year	2000	2002	2007	2012	2017
0-4	7.80	8.30	9.90	11.20	11.90
5-9	7.40	7.40	8.30	9.90	11.20
10-14	7.50	7.40	7.40	8.20	9.80
15-19	7.50	7.60	7.40	7.40	8.20
20-24	6.30	6.90	7.60	7.40	7.40
25-29	4.90	5.40	6.80	7.50	7.40
30-34	4.10	4.30	5.40	6.80	7.50
35-39	3.90	3.90	4.30	5.30	6.70
40-44	3.60	3.70	3.90	4.20	5.30
45-49	3.00	3.20	3.70	3.80	4.20
50-54	2.40	2.60	3.10	3.60	3.70
55-59	1.80	2.00	2.50	3.00	3.40
60-64	1.40	1.50	1.80	2.30	2.80
65-69	1.20	1.20	1.30	1.60	2.10
70-74	0.80	0.90	1.00	1.10	1.40
75-79	0.40	0.50	0.70	0.80	0.80
80+	0.20	0.30	0.40	0.60	0.80
Total	64.20	67.10	75.30	84.70	94.60

Males (millions)

Year	2000	2002	2007	2012	2017
0-4	4.00	4.30	5.10	5.70	6.10
5-9	3.80	3.80	4.20	5.00	5.70
10-14	3.90	3.80	3.80	4.20	5.00
15-19	3.90	3.90	3.80	3.80	4.20
20-24	3.30	3.60	3.90	3.80	3.80
25-29	2.50	2.80	3.60	3.90	3.80
30-34	2.00	2.10	2.80	3.50	3.90
35-39	1.90	1.90	2.10	2.70	3.50
40-44	1.80	1.80	1.90	2.10	2.70
45-49	1.50	1.60	1.80	1.80	2.00
50-54	1.20	1.30	1.50	1.70	1.80
55-59	0.90	1.00	1.20	1.50	1.70
60-64	0.70	0.70	0.90	1.10	1.30
65-69	0.60	0.60	0.60	0.80	1.00
70-74	0.40	0.40	0.50	0.50	0.60
75-79	0.20	0.20	0.30	0.30	0.40
80+	0.10	0.10	0.20	0.30	0.40
Total	32.70	34.10	38.20	42.90	47.90

Females (millions)

Year	2000	2002	2007	2012	2017
0-4	3.80	4.10	4.80	5.50	5.80
5-9	3.60	3.60	4.00	4.80	5.50
10-14	3.60	3.60	3.60	4.00	4.80
15-19	3.60	3.60	3.60	3.60	4.00
20-24	3.00	3.30	3.60	3.60	3.60
25-29	2.40	2.60	3.30	3.60	3.60
30-34	2.10	2.20	2.60	3.20	3.60
35-39	2.00	2.00	2.20	2.60	3.20
40-44	1.80	1.90	2.00	2.10	2.60
45-49	1.50	1.60	1.90	2.00	2.10
50-54	1.20	1.30	1.60	1.80	1.90
55-59	0.90	1.00	1.30	1.50	1.80
60-64	0.70	0.70	0.90	1.20	1.40
65-69	0.60	0.60	0.70	0.90	1.10
70-74	0.40	0.50	0.50	0.60	0.70
75-79	0.20	0.20	0.30	0.40	0.50
80+	0.10	0.10	0.20	0.30	0.40
Total	31.50	33.00	37.10	41.80	46.70

Year	2000	2002	2007	2012	2017
Average Effectiveness	0.94	0.94	0.94	0.94	0.94
Prevalence %	56.10	56.10	56.10	56.1	56.10
Total fertility rate	3.50	3.50	3.50	3.50	3.50
Women of Reproductive Age (millions)	16.40	17.23	19.09	20.75	22.70
Married Women of Reproductive Age (millions)	11.15	11.71	12.97	14.10	15.43
Users (millions)	6.25	6.57	7.28	7.91	8.66
Acceptors (millions)	1.75	1.78	1.84	1.90	2.01
CYP (millions)	7.39	7.69	8.39	9.04	9.96
Births (millions)	1.77	1.88	2.18	2.40	2.50
Pregnancies (millions)	2.03	2.17	2.51	2.75	2.87
Total Fecundity	13.40	13.40	13.40	13.40	13.4
Commodities (millions)					
Condom	11.17	11.73	13.00	14.13	15.46
Injectable	2.72	2.86	3.17	3.45	3.77
IUD	1.72	1.75	1.81	1.86	1.96
Sub-dermal	0.01	0.01	0.01	0.01	0.01
Pill	13.79	14.49	16.05	17.45	19.09
Female sterilization	0.02	0.02	0.02	0.02	0.03
Growth rates of contraceptives					
Condom	2.58	2.28	1.79	1.63	2.04
Injectable	2.58	2.28	1.79	1.63	2.04
IUD	1.00	0.81	0.53	0.79	1.10
Sub-dermal	2.12	1.91	1.58	1.77	2.04
Pill	2.58	2.28	1.79	1.63	2.04
Female sterilization	1.32	1.27	1.20	2.02	2.04

Annual Needs - Health Sector

Year	2000	2002	2007	2012	2017
Doctors** (Thousands)	144.40	150.92	169.37	190.51	212.78
Nurses** (Thousands)	169.62	177.28	198.94	223.78	249.93
Health centers** (Thousands)	65.05	67.98	76.29	85.82	95.85
Hospitals** (Thousands)	2.32	2.42	2.72	3.06	3.42
Beds** (Thousands)	140.17	146.51	164.41	184.93	206.55
Annual recurrent health expenditure** (Billions LE)	2.93	3.07	3.44	3.87	4.32
Population at high health risk* (Millions)	24.20	25.50	29.10	31.90	34.60

* Total of babies, children (less than 5 years), and women at reproductive age (15-49 years)

** Assumption: the 2000 rates will be kept constant.

Required Doctors and Nurses

Year	2000	2002	2007	2012	2017
Total Population (Million)	64.20	67.10	75.30	84.70	94.60
Doctors	144,431	149,194	162,537	177,327	191,911
Public General Practitioners	44,026	44,272	44,793	44,885	43,989
Public Specialist	14,669	15,332	17,205	19,353	21,615
Private Sector	85,718	89,590	100,538	113,089	126,307
Doctor/ 10000	22.50	22.23	21.59	20.94	20.29
	6.86	6.60	5.95	5.30	4.65
	2.28	2.28	2.28	2.28	2.28
	13.35	13.35	13.35	13.35	13.35
Nurses **	169,620	194,820	257,821	320,822	383,823

* Assumption: for public general practitioners to reach the goal of HSR of one GP per 500 families

** Assumption: for nurses to reach the goal ratio to physicians of 2:1

Annual Needs - Labor Force Sector

Year		2000	2002	2007	2012	2017
Total population (Million)		64.20	67.10	75.30	84.70	94.60
Labor force (Million)	17.86	18.77	21.32	23.47	25.99	25.91
	15.13	15.96	18.12	20.17	22.19	22.11
	2.73	2.81	3.20	3.30	3.80	3.80
Unemployment rates %	4.95	4.61	3.75	2.90	2.04	2.04
	22.61	20.19	14.14	8.09	2.04	2.04
Employed (Million)		16.49	17.47	20.19	22.62	25.46
Unemployed (Million)		1.37	1.30	1.13	0.85	0.53
Child dependents (Million)		22.70	23.20	25.50	29.20	32.90
GDP (Billion LE)		302.20	339.55	454.40	608.09	813.76
GDP per capita (Thousand LE)		4.71	5.06	6.03	7.18	8.60

Labor Force: The population aged 15-64 who is able and willing to work. The male participation rate =0.77 and the female participation rate = 0.14 (Human Development Report, 1998/99), they are assumed constant.

Unemployment rates: For 2000 (Labor Sample Survey, 2000. For 2017 (The National Strategy for Economic and Social Development (1900/91 - 2016/17)

Child dependents: children under age 14.

GDP: Human Development Report 1998/99. The current annual increase of 6% is assumed to continue.

Note: This is not intended to be a forecast of actual GDP, but is used to demonstrate the impact of population growth on GDP per capita, given constant economic growth.

Annual Needs - Education Sector

Year		2000	2002	2007	2012	2017
Children of Primary School Age (million)	M	3.81	3.87	4.13	4.88	5.58
	F	3.59	3.67	3.93	4.68	5.38
	Total	7.40	7.54	8.06	9.56	10.96
Primary Students (million)	M	3.75	3.80	4.06	4.80	5.49
	F	3.39	3.47	3.72	4.42	5.09
	Total	7.14	7.27	7.78	9.22	10.57
Primary teachers required (thousand)		320.28	323.08	348.84	413.53	474.19
Primary schools required (thousand)		15.55	15.84	16.93	20.07	23.02
Primary recurrent expenditure required (Billion LE)		2.54	2.59	2.77	3.28	3.76
Children of Secondary School Age (million)	M	2.38	2.38	2.39	2.37	2.60
	F	2.20	2.21	2.23	2.27	2.49
	Total	4.58	4.59	4.62	4.64	5.09
Secondary students (million)	M	1.65	1.65	1.65	1.64	1.80
	F	1.49	1.50	1.51	1.54	1.69
	Total	3.14	3.15	3.17	3.18	3.49
Secondary teachers required (thousand)		237.72	238.25	239.57	240.89	263.08
Secondary schools required (thousand)		3.54	3.55	3.57	3.59	3.92
Secondary recurrent expenditure required (Billion LE)		2.34	2.35	2.36	2.37	2.59

Primary school enrollment rate (%) = 96.5% (adjusted from Ministry of Education, Department of Information) (98.34% for males, 94.56% for females).

Students /primary school teacher = 22.26 (Ministry of Education, Department of Information, 2000-2001).

Student/primary school = 459.42 (Calculated from Ministry of Education, Department of Information, 2000-2001).

Recurrent expenditure per primary school student = 356 LE (Egypt Human Development Report, 1998/99).

Secondary school enrollment rate (%) =68.5% (adjusted from Ministry of Education, Department of Information) (69.25% for males, 67.69% for females).

Students /secondary school teacher = 13.23 (Ministry of Education, Department of Information, 2000-2001).

Student/secondary school = 885.96 (Calculated from Ministry of Education, Department of Information, 2000-2001).

Recurrent expenditure per secondary school student = 746 LE (Egypt Human Development Report, 1998/99).

Secondary = general secondary, industrial, agriculture and commercial.

Section Five

Comparisons

Year	2000	2017		
		Low	Medium	High
Fertility				
Input TFR	3.50	2.10	2.50	3.50
Child-women ratio	0.48	0.34	0.39	0.52
Mortality				
Male LE	66.70	72.50	72.50	72.50
Female LE	71.00	77.20	77.20	77.20
Total LE	68.80	74.80	74.80	74.80
IMR	42.50	24.70	24.70	24.80
U5MR	52.90	30.40	30.40	30.40
Vital Rates				
CBR per 1000	27.50	17.30	20.10	26.40
CDR per 1000	6.10	5.40	5.40	5.30
RNI percent	2.14	1.19	1.47	2.11
Doubling time	32.70	58.60	47.50	33.10
Annual births & deaths (Millions)				
Births	1.77	1.50	1.78	2.50
Deaths	0.39	0.47	0.48	0.50
Population (Millions)				
Total population	64.20	86.43	88.76	94.60
Male population	32.70	43.73	44.92	47.90
Female population	31.50	42.71	43.84	46.70
Percent 0-4 (both sexes)	12.15	8.93	10.05	12.58
Percent 5-14 (both sexes)	23.21	19.90	20.60	22.20
Percent 15-49 (both sexes)	51.87	53.80	52.43	49.37
Percent 15-64 (both sexes)	60.59	65.29	63.61	59.83
Percent 65 and over (both sexes)	4.05	5.89	5.73	5.39
Percent females 15-49/Female Population	52.06	53.02	51.68	48.61
Percent females 15-49/Total Population	25.54	26.20	25.53	24.00

Year	2000	2017		
		Low	Medium	High
Average Effectiveness	0.94	0.94	0.94	0.94
Prevalence %	56.10	73.13	68.27	56.10
Total fertility rate	3.50	2.10	2.50	3.50
Women of Reproductive Age (millions)	16.40	22.64	22.66	22.70
Married Women of Reproductive Age (millions)	11.15	15.39	15.40	15.43
Users (millions)	6.25	11.25	10.51	8.66
Acceptors (millions)	1.84	2.71	2.51	2.01
CYP (millions)	7.67	13.34	12.38	9.96
Births (millions)	1.77	1.50	1.78	2.50
Pregnancies (millions)	2.03	1.72	2.05	2.87
Total Fecundity	13.40	13.40	13.40	13.40
Commodities (millions)				
Condom	11.17	20.10	18.77	15.46
Injectable	2.72	4.90	4.58	3.77
IUD	1.80	2.66	2.46	1.96
Sub-dermal	0.01	0.01	0.02	0.01
Pill	13.79	24.82	23.19	19.09
Female sterilization	0.02	0.04	0.04	0.03
Growth rates of contraceptives				
Condom	4.42	3.28	2.99	2.04
Injectable	4.42	3.28	2.99	2.04
IUD	2.78	2.35	2.07	1.10
Sub-dermal	3.87	3.28	2.99	2.04
Pill	4.42	3.28	2.99	2.04
Female sterilization	3.04	3.28	2.99	2.04

Annual Needs - Health Sector

Year	2000	2017		
		Low	Medium	High
Doctors** (Thousands)	144.40	194.33	199.64	212.78
Nurses** (Thousands)	169.62	228.27	234.50	249.93
Health centers** (Thousands)	65.05	87.54	89.93	95.85
Hospitals** (Thousands)	2.32	3.12	3.21	3.42
Beds** (Thousands)	140.17	188.65	193.80	206.55
Annual recurrent health expenditure** (Billions LE)	2.93	3.95	4.06	4.32
Population at high health risk* (Millions)	24.20	30.40	31.58	34.60

* Total of babies, children (less than 5 years), and women at reproductive age (15-49 years)

** Assumption: the 2000 rates will be kept constant.

Required Doctors and Nurses

Year	2000	2017			
		Low	Medium	High	
Total Population (million)	64.20	86.43	88.76	94.60	
Doctors	144,431	175,337	180,005	191,911	
Public General Practitioners	44,026	40,190	54,866	43,989	
Public Specialist	14,669	19,748	18,289	21,615	
Private Sector	85,718	115,399	118,495	126,307	
Doctor/ 10000	Total	22.50	15.64	20.28	20.29
	Public General Practitioners *	6.86	4.65	4.65	4.65
	Public Specialist	2.28	2.28	2.28	2.28
	Private Sector	13.35	13.35	13.35	13.35
Nurses **	169,620	350,674	360,011	383,823	

* Assumption: for public general practitioners to reach the goal of HSR of one GP per 500 families

** Assumption: for nurses to reach the goal ratio to physicians of 2:1

Annual Needs - Labor Force Sector

Year		2000	2017		
			Low	Medium	High
Total population (million)		64.20	86.40	88.76	94.60
Labor force (million)	Total	17.86	25.91	25.96	25.99
	M	15.13	22.11	22.06	22.19
	F	2.73	3.80	3.89	3.80
Unemployment rates %	M	4.95	2.04	2.04	2.04
	F	22.61	2.04	2.04	2.04
Employed (million)		16.49	25.38	25.43	25.46
Unemployed (million)		1.37	0.53	0.53	0.53
Child dependents (million)		22.70	24.90	27.20	32.90
GDP (Billion LE)		302.20	813.76	813.76	813.76
GDP per capita (thousand LE)		4.71	9.42	9.17	8.60

Labor Force: The population aged 15-64 who is able and willing to work. The male participation rate =0.77 and the female participation rate = 0.14 (Human Development Report, 1998/99), they are assumed constant.

Unemployment rates: For 2000 (Labor Sample Survey, 2000. For 2017 (The National Strategy for Economic and Social Development (1900/91 - 2016/17)

Child dependents: children under age 14.

GDP: Human Development Report 1998/99. The current annual increase of 6% is assumed to continue.

Note: This is not intended to be a forecast of actual GDP, but is used to demonstrate the impact of population growth on GDP per capita, given constant economic growth.

Annual Needs - Education Sector

Year		2000	2017		
			Low	Medium	High
Children of Primary School Age (million)	M	3.81	4.39	4.70	5.58
	F	3.59	4.20	4.50	5.38
	Total	7.40	8.59	9.20	10.96
Primary Students (million)	M	3.75	4.32	4.62	5.49
	F	3.39	3.97	4.26	5.09
	Total	7.14	8.29	8.88	10.57
Primary teachers required (thousand)		320.82	372.42	401.24	474.19
Primary schools required (thousand)		15.55	18.04	19.48	23.02
Primary recurrent expenditure required (Billion LE)		2.54	2.95	3.19	3.76
Children of Secondary School Age (million)	M	2.38	2.54	2.58	2.60
	F	2.20	2.42	2.46	2.49
	Total	4.58	4.96	5.04	5.09
Secondary students (million)	M	1.65	1.76	1.79	1.80
	F	1.49	1.63	1.67	1.69
	Total	3.14	3.39	3.45	3.49
Secondary teachers required (thousand)		237.18	256.57	258.93	263.08
Secondary schools required (thousand)		3.54	3.83	3.86	3.92
Secondary recurrent expenditure required (Billion LE)		2.34	2.53	2.55	2.59

Primary school enrollment rate (%) = 96.5% (adjusted from Ministry of Education, Department of Information) (98.34% for males, 94.56% for females).

Students /primary school teacher = 22.26 (Ministry of Education, Department of Information, 2000-2001).

Student/primary school = 459.42 (Calculated from Ministry of Education, Department of Information, 2000-2001).

Recurrent expenditure per primary school student = 356 LE (Egypt Human Development Report, 1998/99).

Secondary school enrollment rate (%) = 68.5% (adjusted from Ministry of Education, Department of Information) (69.25% for males, 67.69% for females).

Students /secondary school teacher = 13.23 (Ministry of Education, Department of Information, 2000-2001).

Student/secondary school = 885.96 (Calculated from Ministry of Education, Department of Information, 2000-2001).

Recurrent expenditure per secondary school student = 746 LE (Egypt Human Development Report, 1998/99).

Secondary = general secondary, industrial, agriculture and commercial.